

Northumbria Research Link

Citation: Hay-Gibson, Naomi (2011) Risk and Records Management : Investigating Risk and Risk Management in the Context of Records and Information Management in the Electronic Environment. Doctoral thesis, Northumbria University.

This version was downloaded from Northumbria Research Link:
<https://nrl.northumbria.ac.uk/id/eprint/3308/>

Northumbria University has developed Northumbria Research Link (NRL) to enable users to access the University's research output. Copyright © and moral rights for items on NRL are retained by the individual author(s) and/or other copyright owners. Single copies of full items can be reproduced, displayed or performed, and given to third parties in any format or medium for personal research or study, educational, or not-for-profit purposes without prior permission or charge, provided the authors, title and full bibliographic details are given, as well as a hyperlink and/or URL to the original metadata page. The content must not be changed in any way. Full items must not be sold commercially in any format or medium without formal permission of the copyright holder. The full policy is available online: <http://nrl.northumbria.ac.uk/policies.html>

Risk and Records Management: Investigating Risk and
Risk Management in the Context of Records and
Information Management in the Electronic
Environment

Naomi Hay-Gibson

PhD

2011

Table of Contents

Tables, Figures, Illustrations	6
Appendices	8
Declaration	9
Acknowledgements	10
Thesis conventions	10
Glossary of abbreviations related to the study	11
Glossary of abbreviations related to subject area	11
Chapter 1: A Transdisciplinary Investigation into Risk Management within E-records Management	13
1.1 Risk and Records Management - An identified knowledge gap	13
1.2 Study background	13
1.3 Statement of the scope of this work	16
1.4 Definitions	16
1.4.1 Risk	16
1.4.2 Risk Management	17
1.4.3 SME	18
1.4.4 Records	18
1.5 Study aims and objectives	18
1.5.1 Aims	18
1.5.2 Objectives	18
1.5.3 Outline of the study as answers to problems	19
1.6 Research questions	19
1.6.1 Development of Research Questions	20
1.7 Chapter-by-Chapter Synopsis	22
1.7.1 Chapter 1 – The wider context and nature of the project	22
1.7.2 Chapter 2 – Existing work examining the subject	22
1.7.3 Chapter 3 - Study methods and their execution	22
1.7.4 Chapters 4, 5 and 6 - Case studies	23
1.7.5 Chapter 7 - Discussion and exploration of participant narratives	23
1.7.6 Chapter 8 – Conclusions	23
Chapter 2: Existing work examining the subject	25
2.1 Literature review of the disciplines within the study	25
2.2 Influences and guides - key works for the study	25
2.3 Electronic Records	27
2.4 Conceptual models for managing e-records	30
2.4.1 Record maintenance and similarity to archive functions	35
2.5 Current Records Management Models	35
2.5.1 InterPARES ('COP' and 'BDR' Models)	36
2.5.2 Hofman's 'Unified Model'	37
2.5.3 The 'Pittsburgh Project'	39
2.5.4 MoReq 2	40
2.5.5 'Records continuum' (Upward, 2000)	41
2.5.6 The 'Life Cycle'	42
2.6 Risk management	42
2.6.1 Risk society and social philosophy	44
2.6.2 Risk management frameworks and models	46
2.6.2.1 Specific Risk Models	46
2.6.2.2 Generic risk management models	47
2.7 Four risk management approaches	48
2.7.1 The 'Four T's'	48
2.7.2 Risk Management – The AIRMIC Standard (2002)	48

2.7.3	Risk diagram for nanoparticles – Morgan (2005)	49
2.7.4	The Orange Book – HM Treasury (2004a)	51
2.7.5	Risk modelling and applicability to records management	52
2.8	Transdisciplinarity	53
2.8.1	Subject area transdisciplinary works	54
2.8.2	Risk and transdisciplinarity	55
2.9	Business and SME literature	56
2.9.1	Taxonomies and models within business focusing on drivers	57
2.9.1.1	Model of the sustainability of firms	57
2.9.1.2	Taxonomy of drivers of productivity within the UK	59
2.9.2	Business risk approach	60
2.9.3	Risk appraisal	60
2.1	Business and Systems	61
2.11	Conclusion	62
Chapter 3: Study Methods and their Execution		65
3.1	Methodologies	65
3.2	Key works and authors in regards to the methodology of the study	65
3.3	Research paradigm: Interpretivism	67
3.4	Methodological approach	69
3.4.1	Mixed method approach	70
3.5	Research Strategy	71
3.5.1	Case studies	71
3.5.2	Case study alignment	72
3.6	Data Collection	75
3.6.1	Sampling	75
3.6.2	E-tool questionnaire	75
3.6.3	Interviews	75
3.6.3.1	Activities during interviews	76
3.6.3.2	Interviews using questionnaires as a basis (BETA and GAMMA)	76
3.6.3.3	Skype as an interview tool	78
3.6.3.4	Style of interview questioning	78
3.6.3.5	Final interviews	78
3.7	Contribution of individual methods within the study	78
3.8	Data coding	80
3.8.1	Corpus linguistics	82
3.8.2	The Corpus	82
3.8.3	Corpus Sampling	83
3.8.4	Corpus Construction	84
3.8.5	Data coding and analysis preparation	84
3.8.5.1	Narrative analysis	84
3.8.5.2	Forensic soft systems methodology (fSSM)	85
3.8.5.3	Data analysis using the corpus	87
3.8.6	Integration of study methods	87
3.8.6.1	Advance outcome framework	91
3.9	Provisions for ensuring trustworthiness in the research	92
3.9.1	Provisions for ‘Trustworthiness’, ‘Credibility’, ‘Dependability’, and ‘Confirmability’	92
Chapter 4: ALPHA, A Market Research Group		98
4.1	Introduction to case study	98
4.2	ALPHA: A description of the SME	98
4.2.1	The Site	98
4.2.2	The Workforce	99
4.2.3	Interview patterning	99

4.2.4	Introductory profiles	100
4.3	A1, an IT manager	100
4.3.1	A1's duties	100
4.3.2	An incident of risk	100
4.3.3	A1's future plans	101
4.3.4	A1's risk assessment process	101
4.3.5	Data Management for A1	102
4.3.6	A1 – Commentary	103
4.3.6.1	Framework of roles	103
4.3.6.2	Information retrieval	106
4.4	A2, Finance Manager	107
4.4.1	A2's experience of records	108
4.4.2	Experiences of record organization	109
4.4.3	A2 and e-records	110
4.4.4	A2 – Commentary	111
4.4.4.1	A2's information processes	112
4.4.4.2	Errors with hard copy and organization	115
4.5	A3, Data Manager	116
4.5.1	Data collection as a task	117
4.5.2	An incident of risk management by A3	118
4.5.3	E-records and the management process	119
4.5.4	Controlling data and records	120
4.5.5	Thinking about risk	121
4.5.6	A3 – Commentary	122
4.5.6.1	A3 and processing	122
4.5.6.2	A3 – fSSM	124
4.5.6.3	Processing and risk	124
4.5.6.4	A3 and maintaining records/records storage	127
4.5.6.5	A3 and reaction to risk	127
4.6	Case fSSM diagrams	128
4.7	Summary of case	128
Chapter 5: BETA, A Manufacturer		132
5.1	BETA: a description of the SME	132
5.1.1	The site	132
5.1.2	The workforce	134
5.1.3	Introductory profiles	134
5.1.4	The Systems	135
5.1.5	Records within the company	136
5.2	MB1, joint manager	137
5.2.1	Use of the GM2000 program	137
5.2.2	MB1 and computing	138
5.2.3	MB1 and records management in the SME system	140
5.2.4	MB1 and the vocabulary of records management	141
5.2.5	MB1 and the future	141
5.2.6	MB1 and e-records	142
5.2.7	Technology and risk	143
5.2.8	MB1 Commentary	143
5.2.8.1	Awareness of the need for records management	144
5.2.8.2	BETA fSSM diagram, Version 1	144
5.2.8.3	Building for a specification: GM2000, ISO9000 and DIR management	144
5.2.8.4	MB1 and an awareness of computing	148
5.2.8.5	Faxing and Paperlessness	149
5.2.8.6	Hardware, software and the scanned record	151
5.3	B2, A secretary	152

5.3.1	B2's training	153
5.3.2	B2's use of computer systems	154
5.3.3	B2 Commentary	155
5.3.3.1	B2 and a working pattern in terms of records management	155
5.3.3.2	B2 and her 'Bible'	156
5.3.3.3	B2 and the database of GM2000	156
5.3.3.4	B2 and <i>Sage</i>	159
5.3.3.5	B2 and the concept of auditing	159
5.4	B3, A Counterman	159
5.4.1	Processing work	160
5.4.2	Problems with hard copy	161
5.4.3	Growth and change	162
5.4.4	Maintaining records	163
5.4.5	B3 – Commentary	163
5.4.5.1	B3's attitude	163
5.4.5.2	Hard copy and e-records	164
5.4.5.3	Use of DIR management within the business	165
5.4.5.4	Influences and experience	167
5.4.5.5	Responsibility for records management in the hierarchy	168
5.5	B4, A senior secretary	170
5.5.1	B4 and her input on the use of IT in the SME	171
5.5.2	B4 and email	172
5.5.3	B4 and records management in their system	173
5.5.4	Records Management systems	174
5.5.5	VAT change and its effect on records	176
5.5.6	B4 – Commentary	178
5.5.6.1	B4 and the codes	178
5.5.6.2	The concept of EDRMS	180
5.5.6.3	B4 and viruses	182
5.6	FSSM Diagrams	184
5.6.1	BETA fSSM diagram, version 2	185
5.6.2	BETA fSSM diagram, version 3	187
5.7	Summary of case	188
Chapter 6: GAMMA, A Retailer		189
6.1	GAMMA: A description of the SME	189
6.1.1	The Site	189
6.1.2	The Workforce	190
6.1.3	The Systems	190
6.1.4	Introductory profiles	190
6.1.5	Diagrams and fSSM diagrams	191
6.1.5.1	The initial computing system	191
6.1.5.2	fSSM diagram	192
6.1.5.3	fSSM diagram – 2 (revision)	193
6.2	G1, the Main Manager	194
6.2.1	Databases and information	196
6.2.2	Stock ordering	197
6.2.3	Risk attitude	198
6.2.4	Systems and efficiency	198
6.2.5	A risk experience	199
6.2.6	G1 – Commentary	201
6.2.6.1	Use of the inventory system as a form of records management	201
6.2.6.2	History of the business	202
6.2.6.3	Records, Theft and Preventative Actions	202
6.2.6.4	Maintaining Inventory Records - Problems and Solutions	204

6.2.6.5	The <i>Sage</i> system	204
6.3	IT manager and main manager	207
6.3.1	G2 and Enterprise Resource Planning	207
6.3.2	Working with the computer systems	208
6.3.3	Noticing flaws	209
6.3.4	Data theft	210
6.3.5	Data security	212
6.3.6	The human angle	213
6.3.7	Technological solutions	214
6.3.8	'Security by obscurity'	215
6.3.9	The new system	216
6.3.10	Natural growth as a problem	217
6.3.11	G2 – Commentary	218
6.3.11.1	Data Theft and Legal Possibilities	218
6.3.11.2	System Creation	218
6.3.11.3	The CIA principle in terms of SME records	218
6.3.11.4	What purpose has hard copy?	220
6.3.11.5	Record types held	221
6.4	G3, A teleworker and webmaster	222
6.4.1	G3 as a remote worker	222
6.4.2	G3 and inter-office records management	223
6.4.3	G3 and technological solutions to records storage	224
6.4.4	Communication and the company	224
6.4.5	Organization of records	226
6.4.6	Record creation	227
6.4.7	Record transmission	228
6.4.8	G3 – Commentary	229
6.4.8.1	G3 and her approach to the changing system	230
6.5	G4, A Senior Secretary	231
6.5.1	G4's skills	231
6.5.2	Experience with records management	232
6.5.3	Emergency routines	233
6.5.4	The life of hard copy	233
6.5.5	Sensitive data	234
6.5.6	Customer service systems	234
6.5.7	Administrative skills	235
6.5.8	Hard copy and retained data	236
6.5.9	Interactions with the <i>Sage</i> system	237
6.5.10	<i>Protx</i> as a new system	238
6.5.11	Risk awareness and sensitive data	239
6.5.12	G4 – Commentary	240
6.5.12.1	The benefits of previous experiences	240
6.5.12.2	G4 and her recordkeeping	240
6.6	Summary of case	241
Chapter 7 - Discussion and Exploration of Participant Narratives		242
7.1	Comparison of case studies	243
7.1.1	Records management commonalities	244
7.1.2	Management of e-records within the SMEs	245
7.1.3	SME management	245
7.1.4	Study questions, study areas, emergent themes and drivers diagrams	247
7.1.5	Relationships between the diagrams	252
7.2	Analysis of the narratives	252
7.3	Corpora and Glossaries	253
7.3.1	Themes within the glossary	254

7.4	Outcomes	256
7.5	Typology	257
7.5.1	Explanation of the typology's hierarchy	257
7.5.2	Validating the fit of the typology	259
7.5.3	Analysis of the typology	260
7.6	Models	261
7.6.1	Definitions of the term 'model' for this study	261
7.6.2	The 'Explanatory Sequence' Model	262
7.6.3	The 'Narrative Sequence Model'	263
7.7	Models emergent from the study	266
7.7.1	The 'Participant Records Management Model'	266
7.7.2	The 'Participant Risk Management Model'	267
7.7.3	The 'Participant Records Management Model' contrasted with others	269
7.7.4	The 'Participant Risk Management Model' contrasted with others	270
7.7.5	Comparison of the 'Participant Records Management Model' and other records management models	271
7.7.6	Comparison of the 'Participant Risk Management Model' and other risk management models	272
7.7.7	Interactions between the 'Participant Risk Model and the Participant Records Model'	273

Chapter 8: Conclusions 275

8.1	Introduction	275
8.2	The study's aims and objectives reviewed	275
8.3	Vocabulary of Risk	277
8.4	Attitudes, Perceptions and Drivers	278
8.5	Do multiple roles in an SME confuse the overall purpose of an employee when dealing with risk in the terms of e-records management?	280
8.6	Approaches to Risk	281
8.7	Are heightened reactions to risk rewarding for the SME?	282
8.8	Is self-awareness of risk an asset to SMEs?	283
8.9	Contribution to knowledge	284
8.10	Contribution via methodology and study design	286
8.11	Reflection on methodology and study design	289
8.11.1	Shared aspects of theme confluence of 'technology', 'loss' and the physical record'	293
8.11.2	Disparity between the views of academia and of SMEs in perception and self-perception	294
8.12	Summary	295

Bibliography 297

Tables, Figures, Illustrations

Table 1	Basic notations for transcription	11
Table 2	Study problem and research proposal	19
Figure 1	Four T's Diagram	48
Figure 2	Morgan's (2005, p. 1625) 'Preliminary Framework for Risk Analysis of Nanoparticles'	50
Figure 3	The Risk Management Model from HM Treasury's 'Orange Book' (2004a)	51
Figure 4	Venn diagram showing study areas and their works of literature	63
Figure 5	Original plan for study	69
Figure 6	Case study paradigmatic and methodical alliance – the Celtic Cross	73

	model of case study	
Figure 7	Risk grid, based on Webb (2007) as presented to participants	76
Figure 8	Venn diagram of the fields of the study	80
Table 3	Aims and Objectives Grid, following Pitts (1994) (A3 insert)	81
Table 4	Kennedy's (1998) criteria of corpus construction and the SME corpus	85
Figure 9	List of procedures for corpora	87
Figure 10	Diagram of research plan following Baxter and Eyles (1999, p. 313)	88
Table 5	Methods of data collection and data analysis used in the study	90
Figure 12	A layered framework outline for the study	91
Table 6	Interview patterning for ALPHA	99
Illustration 1	An fSSM diagram of the D/I/R flow of Company ALPHA from A1 and A2	104
Table 7	A2's activities ranked by importance	112
Figure 12	An fSSM diagram of A2's email decision processes	114
Illustration 2	An fSSM diagram of A3's perspective regarding record use within ALPHA	123
Figure 13	Diagram of risk incident showing groups involved and types of risk for a single risk incident	126
Illustration 3	An fSSM diagram of the D/I/R flow of Company ALPHA from A3	129
Illustration 4	An fSSM diagram of the D/I/R flows of Company ALPHA, from the interviews and questionnaires of A1, A2 and A3 and verified by A1	131
Figure 14	fSSM diagram, version 1 – D/I/R flow through the business	145
Figure 15	B3's envisaged model of a paperless system for GM2009	166
Illustration 5	fSSM diagram, version 2 - amended D/I/R flow through the business	186
Illustration 6	fSSM diagram of the relation of GM 2000 to the 'Job Sheet' of hard copy management	188
Figure 16	The initial computing system used by GAMMA	192
Illustration 7	fSSM diagram for GAMMA – 1	193
Illustration 8	fSSM diagram for GAMMA as annotated by G1 and the researcher from G1's final meeting	195
Figure 17	A cycle of record updating in GAMMA	205
Figure 18	Set diagram of the relationships and distinctions in the study between vocabulary, narrative, corpora and glossaries	243
Table 8	Table of observed characteristics of the case study SMEs in relationships of size of SME and leadership in attitudes to risk and records management	244
Figure 19	Key research areas, themes and analysis of terms from the glossary	248
Figure 20	Study areas and emergent themes	249
Figure 21	Emergent themes leading to motivations from case study evidence and research questions	250
Table 9	Research questions and factors in Figure 21	251
Table 10	Themes within a selection of high propensity terms selected from the corpora	254
Figure 22	Typology of a top-down hierarchy of five types of small business employees who interact with records, based on observation within case studies observations on risk and records management attitudes and behaviour	258
Table 11	The 'Five Types' typology proposed and validated with ALPHA, BETA and GAMMA	260
Figure 23	Narrative Analysis model from Ochs & Capps, described as 'Explanatory Sequence model' (Ochs & Capps 2001, p. 174). Reprinted by permission of the published from LIVING NARRATIVE CREATING LIVES IN EVERYDAY STORYTELLING by Elinor Ochs, p. 174 Cambridge, Mass. Harvard University Press, Copyright © 2001 by the President and Fellows of Harvard College.	264

Table 12	Cases within the study and their fit to the ‘narrative model’ of Ochs and Capps (2001) and the researcher’s ‘Narrative Sequence’ model	265
Figure 24	‘Narrative Sequence’ model, based on the Ochs and Capps model of explanatory sequences 5.1 A – C (2001, p. 174)	266
Figure 25	The ‘Participant Records Management Model’ – a model depicting records management as perceived by SME participants in the study	267
Figure 26	The ‘Participant Risk Management Model’ – a model depicting risk management as perceived by SME participants in the study	268
Table 13	Stages of commonality and dissimilarity between the ‘Participant Model’ and other records management models	269
Table 14	Comparison of other records management models and the ‘Participant Records Management Model’	270
Table 15	Comparison of other risk management models and the ‘Participant Risk Management Model’	273
Figure 27	Illustration of originality in subject in comparison with current key literature	285

Appendices

Appendix 1	Ethics policy considerations	313
Appendix 2	Case study risk assessment framework and ethics policy	316
Appendix 3	E-tool part 2 questions	321
Appendix 4	Computerised corpus creation from spoken-word sources: Rules and semantics, v 1.0, December 2008 - January 2009	323
Appendix 5	Organizational chart for BETA, drawn by the researcher	326
Appendix 6	Spidergram style diagram	326
Appendix 7	Statistics and the representative corpus	328
Appendix 8	Sampling and emergent design in regards to data collection	338
Appendix 9	Topic diagram for GAMMA (December 2008)	344
Appendix 10	Glossaries	345

Declaration

I declare that the work contained in this thesis has not been submitted for any other award and that it is all my own work.

Name: NAOMI V. HAY-GIBSON

Signature:

Date: 03/07/2011

Acknowledgements

“How many of us begin a new record with each day of our lives?”
(Stoker, 1899)

I am most grateful and thankful to my supervisory team of Professor Julie McLeod and Professor David Wainwright, of the School of Computing, Engineering and Information Sciences, Northumbria University. Without their help and expertise, their guidance and patience, I would not have been able to complete the work of the past four years in what is arguably a vital step in exploring the electronic record in terms of risk within small businesses.

Thanks are also due to the AHRC for my studentship, and enabling me to take on the demands of research. Other important thanks must go to the organizations used as case study investigations. In the nature of the study, they will remain anonymous but have carried the most important burden of the research: their patience, their enthusiasm for improvement of small businesses amidst the most discouraging of fiscal crises at the time of the research, and their tolerance of my requests as a researcher at the same time as running their businesses must be praised. Without them, there would be no study. I also wish to thank Dr A. Shenton for his invaluable help, and Mr L.C. Graeme for his assistance. This work is dedicated to my mother and my father, Ruth and Ian Hay-Gibson.

Thesis conventions

For ease of reading and reference, the abbreviations used in this work are listed here. As anonymity is preserved for the participants of the case studies, they are referred to by case study name only. These names are Greek-letter alphabetical (ALPHA, BETA, GAMMA) and the order refers to when each case study was undertaken. The transcription followed a set of basic notations in transcribing the text (Table 1), some of which are reproduced in the narrative excerpts. These are not standard notations such as the “Jefferson System” (See Antaki, 2011) but work in a similar manner to describe nuances in speech.

Table 1: Basic notations for transcription

...	Pause
[...]	Elision in text for extract purposes
A: In terms of the... /pressure/... pressure, yeah B: /pressure/?	Speech between slash marks indicates speakers overlapping
(claps or slaps hands, gesturing)	Item in brackets indicates a non-verbal action

References for pieces of evidence are referred to in square brackets. The first alphanumeric code before the comma indicates the speaker, and the alphabetical code after it indicates the session. Line numbers, where included, relate to the West QDA database transcript used by the researcher. A *Harvard* manner of citation is used throughout this work and its bibliography.

Glossary of abbreviations related to the study

A1, A2, A3 – participants from ALPHA

BD – The ‘Briefing Document’, a specialist record used by ALPHA

Ept1/ept2 – e-tool, a questionnaire designed by the researcher and sent to participants via email

fSSM – Forensic soft systems methodology, a method created for the study using the mapping techniques of SSM

G1, G2, G3, G4 – Participants from GAMMA

IM – Initial meeting

MM – Main meeting

FM – Final meeting

MB1, B2, B3, B4 – Participants from BETA

Glossary of abbreviations related to subject area

BDR – ‘Business-Driven Recordkeeping’ model, created by the InterPARES2 project team

CCL – Computer(ised) Corpus Linguistics

COP – ‘Chain of Preservation’ model, created by the InterPARES2 project team

E-documents – Electronic documents

EDRM(S) – Electronic document and records management (system)

E-records – Electronic records

ERP – Enterprise Resource Planning, a form of computerised asset and resource management and planning database system

RKMS – Australian Recordkeeping Metadata Schema (Acland, Reed and McKemmish, 1999)

SME – Small to Medium Enterprise

SSM – Soft Systems Methodology, a mapping form of problems analysis for complex systems as initially created by Peter Checkland and others (Checkland and Scholes, 1990)

TEI – Text Encoding Initiative, a consortium for promoting metadata encoding through XML and other methods

Chapter 1: A Transdisciplinary Investigation into Risk

Management within E-records Management

1.1 Risk and Records Management - An identified knowledge gap

Risk management within records management – and especially in an electronic records context – is a subject that has not been wholly explored in relation to small to medium enterprises (SMEs). SMEs may not have access to the resources that a records manager can provide; they may have no formal training in records management, or risk management, and they may therefore suffer as a result. Problems for SMEs in terms of their exposure to risk through records management have not been fully explored.

Whilst there has been an emphasis on the problems that larger organizations and in particular, the risks that the UK government has faced, there is little or no evidence to describe the difficulties and situations of risk which SMEs may face. Many problem scenarios that currently affect larger organizations, such as litigation and public embarrassment in the face of issues such as record loss, are not reported upon if they are the true concerns of SMEs. Further consequences from risks, such as the application of large fines to businesses, are infrequently commented upon in terms of their application to smaller scale businesses and SMEs. Yet in the assumption that risk within records – and with a particular focus on the growing world of electronic records – there is a greater need than ever not only to acknowledge that SMEs face these risks, but also to identify exactly what they face and how it is dealt with. One way of filling the knowledge gap in terms of the risks faced by SMEs and their reactions to risk in records management is to identify the language used by SMEs to describe records and their management, so that processes and drivers for records management can be identified. The same can be done for the elements of risk within such records management.

1.2 Study background

The specialist need to address the management of e-records in a business context was first formally identified in the early 1990s, and this impetus drove several programmes and studies to consider developing needs of business in regards to the e-

record environment. A further development in the management of records was that of the international Standard, ISO 15489 (2001), which laid out a clear definition of records management, and which crucially was inclusive of e-records. However, despite the prevalence of innovative systems designed to maintain e-records, such as VERS (State of Victoria, 2009), DIRKS (National Archives of Australia, 2003) and OAIS (Consultative Committee for Space Data Systems, 2002) amongst others, the responses to the need to maintain e-records within business have not been as greatly explored. In particular, SMEs may not have access to research, information, or specialist advice on records management for the electronic or hybrid environment. Again, as there has been little relevant exploration of the risks that SMEs may face either to their records, or to themselves through inadequate management, this remains an area that calls for further research.

Little research has been carried out into the role of risk management in e-records management for SMEs, and it is posited that this research fills a niche previously overlooked. The SME perspective is a vital one: in terms of the UK economy, 4,766,295 SMEs were registered for VAT in 2007 (Department for Business Innovation and Skills, 2009a) whilst the number of new registrants for VAT in 2007 were 2,057,000 businesses (Department for Business Enterprise and Regulatory Reform, 2008, p. 3) and an “estimated 4.7 million private sector enterprises in the UK” at the beginning of 2007 (Department of Business, Enterprise and Regulatory Reform, 2008). Smaller SMEs and entrepreneurs with a threshold under the requirements of HMRC for being VAT registered were not calculated, so whilst VAT registration is a useful way of identifying SMEs, it does not identify the smaller micro-enterprises and entrepreneurs. There has been little or no assessment as to the impact of the size and form of the business on its records management skills. Many SMEs may not have a dedicated records manager in any form, instead relying on the skills of the owner and staff: in 2007, 72.8% of SMEs were owned by entrepreneurs or were comprised of an ‘owner-director’ (Department for Business Innovation and Skills, 2009a).

Storey’s experience with small business research (Storey, 1994) appears to spell out clearly sentiments found from small businesses in terms of the value of research:

“‘Four years?’ said the incredulous small businessman. ‘You’re going to spend four years looking at the problems of small businesses, and what government should do about it? You don’t need to do that. I can tell you what the problems are and I can tell you today.’” (Storey, 1994, p. 1)

This experience is enough to affect even the most hardened of researchers, as a denial that there needs to be any research – especially degree-level research, into a specific problem affecting SMEs – turns an open exploration into a form of careful discovery. Things which are often ‘taken as read’ within the business sphere are often unknown to the researcher. Research into risk in the context of records – and focusing on electronic records in particular – may help to draw a better portrait of the drivers and motivations for risk management within e-records management of SMEs.

Incidents of risk that are ‘high profile’ - as Gouanou and Marsh noted in 2004, help to highlight issues in the conjunction of risk and records management. Public awareness of risks (such as the notable government loss of two discs with the personal data of the UK’s child benefit system – see Poynter, 2008) has maintained a strong interest in tackling the problems already encountered by public and private enterprise, as well as government:

“The high profile business compliance failures and poor record-keeping that seem to be constantly in the news; the leaked e-mails; bugging of competitors and even friends; interception of e-mail and mobile phones; electronic identity theft, and money-laundering; the litigation against tobacco companies, with the associated risk and cost of electronic legal discovery exercises; litigation against pharmaceutical companies, local councils and hospitals; breaches of government and monarchy secrets; the debates about the potentially conflicting freedom of information and data protection legislation; and other publicity, have made the citizen and governments, business leaders, shareholders and investors hyper-aware of the difficulties of protecting confidential information and records in an electronic environment.”

(Gouanou and Marsh, 2004, p. 62)

This quotation – a litany of risks - identifies some of the recent circumstances in which there have been (during the period of time in which this study was carried out) many risk incidents which were publicised in the media, and which related to the handling of records by the government. In terms of the larger scope of the problem, it highlights the idea that if large organizations such as the UK Government have difficulty in preventing risk to their records, even with access to significant

advantages such as records managers and finance for records management systems – then how do smaller enterprises cope without these aspects?

1.3 Statement of the scope of this work

This thesis deals with concepts in the topic of risk management and records management practices, models and transdisciplinary research. Given that these are study areas with very wide areas of focus, some definition is needed of what this study encompasses.

As the study looks at risk management, this focuses on the area of risk management of records and e-records, rather than wider concerns such as management of risk within a single discipline. A further breakdown of the aspects in which risk management emerges is given in the literature review. The study covers three businesses as case studies.

The focus of records management looks specifically at the area of e-records, but also notes the liminal areas between understanding of physical and electronic records and their differences in terms of their management.

The focus given to the study area of SME organizations is one that centres on their dealings with both risk and records management based on their own perceptions and experiences. This may cover both e-records and hard copy records, and risk in terms of their own perceptions of what this may consist of (elements of both practice and academic concepts).

1.4 Definitions

In order to clarify the nature of the investigation being carried out, a brief definition of the terms *risk*, *risk management*, *records* and *records management* will be given.

These definitions have been selected to reflect the study's approach, and are contextually appropriate to the study.

1.4.1 Risk

For this study, the definition of risk is one that is in part defined by such as Luhmann (1993) and Beck (1992). Risk can be an amorphous calculation of a possibility, but

whether that possibility holds a benefit for the SME is dependent on the nature of the risk itself. The term 'risk' can occur within different disciplines, which will be reflected upon later within the literature review, and which has been reviewed by Hay-Gibson (2008). Within this study it is proposed that all risk which occurs within the subjects of finance and probability for insurance can be described generally as 'financial risk'; that all risk which involves physical hazards or actual damage be considered as posing 'physical risk', and finally, that 'intellectual risk' be posited as the umbrella term for intangible concepts such as the philosophy of risk, and abstracts of risk.

Risk is a concept highly linked to probability because of its origins in mathematical use, and it is in this sense of a 'probable chance' that risk is used within many disciplines. However, here it is more suitable to extend the amorphous concept of risk as proposed by Luhmann, Beck and also Giddens (1998) in the form and concept of a 'risk society' and to apply to the actuality of an instance of an action the attributes of its action, and any implications that may arise from the event happening. In this case, risk in a broader sense can be understood as an action and its repercussions. According to ISO/IEC 73 (ISO, 2002), Risk is the "combination of the probability of an event and its consequence." Whilst this definition is currently used as a standard, the explorations of this study will question if the SME participants hold the same definitions. In HM Treasury's *Orange Book* (2004), for instance, risk is defined as an 'uncertainty of outcome'.

1.4.2 Risk Management

Whilst risk, according to Douglas and Wildavsky (1982, p. 4) is something with "no single correct conception", a risk management standard created by the Institute of Risk Managers and others describes it as "the process whereby organisations methodically address the risks attaching to their activities with the goal of achieving sustained benefit within each activity and across the portfolio of all activities." (AIRMIC, LARM, IRM 2002 p. 2) Risk management is described as a "core business activity" (Institute of Chartered Accountants in England and Wales, 2002) and is carried out in different forms.

1.4.3 SME

As the study focuses on UK SMEs, it uses the EU standard definition of an SME ('small' defined as less than 50 employees and 'medium' as less than 250 and with a turnover of less than €40m.) In terms of the size of small businesses, the 'microbusiness' is the smallest of the SME sizes, and is termed as a business with a headcount of less than 10 people, and a turnover of less than €2m. (European Commission's Directorate General for Enterprise and Industry, 2009).

1.4.4 Records

Records, as defined by the independent standard ISO 15489, are "Information created, received, and maintained as evidence and information by an organization or person, in pursuance of legal obligations or the transaction of business". (ISO, 2001, p. 3) The same standard also defines a document as "recorded information or (an) object which can be treated as a unit" (ISO, 2001, p. 3)

1.5 Study aims and objectives

1.5.1 Aims

The aims of the study were:

- To investigate risk in the context of electronic information and records management within small and medium sized enterprises (SMEs); and
- To develop a working conceptual model or theory for risk management of electronic information and records

1.5.2 Objectives

The objectives of the study were:

- To critically evaluate the vocabulary of risk and risk management
- To investigate the history and historiography of risk management and records management
- To identify the use of a common vocabulary of risk in records management within the SME context
- To investigate and analyse attitudes and drivers for risk management of electronic information and records management in SMEs; and

- To characterise the approaches to risk and electronic information and records management taken by SMEs

1.5.3 Outline of the study as answers to problems

In terms of a qualitative understanding of the study, viewing the aims and objectives as problem and proposed investigation (Table 2) formed the research questions.

1.6 Research questions

The initial research questions were:

- (1) What are the attitudes and drivers for risk management within e-records management in SMEs?
- (2) How do SMEs talk about, describe and relate risk management within the context of e-records and e-records management? Is there a vocabulary within SMEs for risk and e-records management?
- (3) How do SMEs manage their e-records – what are their approaches? Is there any evidence of risk management and awareness in their e-records management?

Table 2: Study problem and research proposal

Problems	<ul style="list-style-type: none"> • No investigation has been made of how SMEs respond to risk to their e-records • Do SMEs use any recognised records management terms?
Proposed investigation	<ul style="list-style-type: none"> • Investigating how SMEs <i>talk about</i> and <i>describe</i> risk (particularly in the context of e-records) within case studies of three organizations
Fieldwork	<ul style="list-style-type: none"> • Interviewing participants • Issuing a questionnaire
Aims	<ul style="list-style-type: none"> • To investigate risk in the context of electronic information and records management within small and medium sized enterprises (SMEs); and • To develop a working conceptual model or theory for risk management of electronic information and records
Objectives	<ul style="list-style-type: none"> • To critically evaluate the vocabulary of risk and risk management • To investigate the history and historiography of risk management and records management • To identify the use of a common vocabulary of risk in records management within the SME context • To investigate and analyse attitudes and drivers for risk management of electronic information and records management in SMEs; and • To characterise the approaches to risk and electronic information and records management taken by SMEs

1.6.1 Development of Research Questions

After approaching the first and second SMEs, the research questions changed and were adapted to better investigate the circumstances found. Whilst the question regarding vocabulary could be answered by looking at several strands of evidence for the interviews being carried out in SMEs, individual points in each needed to be addressed. One example of why this became important is that risk management was often discussed in case study ALPHA as a separate issue to records management. Splitting up this research question into two aspects – risk management and its vocabulary – allowed for the separate formulation of research ideas. Several revisions were carried out to the original research questions refined by experiences within fieldwork.

One way to develop research questions based on an already developed model, as recommended by Farber (1970, p.57), is to “apply an analogy and to suggest that the characteristics of this model are applicable in many situations beyond their obvious relevance.” The hierarchy of questions as noted by Farber is a description of the research project as a series of answers to questions. This transdisciplinary expansion of research questions is based on the concept that the application of analogy as a form of hypothesising whilst grounded in research is a valid way of extending research questions.

In developing a more extensive range of research questions to tackle the issues raised by fieldwork experiences, a second order of research questions was developed, and then a third.

Farber (1970, p. 60) suggests that questions can be sufficiently reinforced in quality and incisiveness by periods of fieldwork held to inform the researcher about the situation that they are entering into and investigating. “Accordingly, the nature of the fieldwork changes as the project advances”. This is a strikingly grounded approach and allows for the study to advance through constant comparison of data from multiple perspectives to form a coherent whole that can be holistically investigated. This in turn leads to the possibilities afforded to this study in regards to the forms of data collected by the researcher.

A third order development of the research question focuses on the linguistic facet of the research areas:

- What can we deduce from the language of the SMEs as to their relationship with records, records management, risk, and risk management?

The questions were split into smaller components, and were then taken as a series of progressively interrelated questions. The second order of closer research questions was expanded to fully develop them, and through a series of iterations, the final set was as below:

- (1) What are the attitudes and drivers for risk management within e-records management within SMEs?
- (2) How do SMEs describe and relate risk management within e-records and e-records management?
- (3) Is there a vocabulary within SMEs for risk and e-records management terms?
- (4) How do SMEs manage their e-records – what are their approaches? Is there any evidence of risk management and awareness within their e-records management?
- (5) What can we deduce from the language of the SMEs as to their relationship with records, records management, risk, and risk management?
- (6) Is there any evidence of risk management and awareness within SME e-records management, and what form does this take?

In identifying the reason why the research questions were reconsidered, we can regard that it forms an important part of the formation of the study plan. In acknowledging that the study questions were overly complex, creation of simpler questions forms a stronger investigation. In identifying the key factors that form each study question, it has enabled the approach of each subject in a more focused manner.

The formulation and development of these research questions allowed for the further evaluation of the topics, and led specifically to the choice of a methodology, and the development of an interview approach, both informed by the research literature.

1.7 Chapter-by-Chapter Synopsis

In order to guide the reader through this study, a short chapter-by-chapter synopsis is shown here.

1.7.1 Chapter 1 – The wider context and nature of the project

The nature of the project's investigation is identified and placed within the context of risk management of e-records within SMEs. Key points of the study, such as the origin and development of the project, are noted and discussed in terms of limitation and scope. Aims and objectives are highlighted and described.

1.7.2 Chapter 2 – Existing work examining the subject

The existing literature associated with this subject is represented from several different areas, and in the domains of risk and of records management. Exploration of such pertinent literature first examines risk management, records management, and issues relating to these topics. Transdisciplinary methodology, perspectives and techniques are also examined. Similar studies, drawing from both theory and examples of practice, are discussed and analysed for their value in understanding intrinsic concepts within the study, in relation to methodology and method.

1.7.3 Chapter 3 - Study methods and their execution

Literature relating to methodology and method is followed through from Chapter 2, through Chapter 3, in an analysis of the chosen paradigm, the methodology and the mixed methods of the study. The research design and its implementation are also discussed in the context of the study's focus on answering the research questions. The paradigmatic alignment is demonstrated in a conceptual diagram used to plan out the alignment of the method and methodology of case study research.

Research methods dealing with the investigation and analysis of the evidence are described more fully in this chapter. A short explanation of the considerations behind the use of corpus linguistics is given. Assessments of the project's characteristics within the research process reflect upon the provisions for 'Trustworthiness'.

1.7.4 Chapters 4, 5 and 6 - Case studies

These chapters give the first-order synthesis of the evidence collected from the case studies in the form of reports and individual narratives of case study participants. The fieldwork's context is discussed in terms of detail not given within the case studies themselves. This grounding detail, including the geographical area in which the work took place and the organizations from which samples were drawn (in terms of their shared and unique characteristics) is part of the overall holistic appearance of the case studies.

This detail complements the ALPHA, BETA and GAMMA case studies that are given in this section, and models them in more granular detail. Included in this section are the second-order synthesis diagrams for case study analysis, the fSSM diagrams.

1.7.5 Chapter 7 - Discussion and exploration of participant narratives

This chapter covers a holistic discussion of the evidence and second-order analyses, as well as products of these analyses.

As one of the objectives of the study, this element addresses the glossaries found through interview, and questionnaire. This chapter also deals with findings in terms of the content areas, based on the results of the study through both research and the application of second- and third-order research. A relationship map showing the links between emergent evidence, themes and study areas is illustrated. Bringing together the emergent evidence from the research design, and the analyses from the transdisciplinary methods, proposals are made for (a) a specific typology of employees in SMEs in terms of risk management in records management; (b) a model of analysis of the formation of narrative within interview transcripts in regards to risk management, based on the work of Ochs and Capps (2001). The typology, relationship map and models are further analysed and discussed in terms of their creation and adaptation.

1.7.6 Chapter 8 – Conclusions

Implications for the study findings in relation to the content areas already discussed are finalised within this chapter.

This chapter concludes the study and notes the activities and planning done within the thesis, as well as describing its findings. It is a review of the study's aims and its achievements.

Chapter 2: Existing work examining the subject

2.1 Literature review of the disciplines within the study

Though a large number of works have been evaluated over the course of this study, which forms its reference base, there are certain works in particular which have formed the guiding elements of influence for the study's style. This also shaped the approach to the research questions of what attitudes and drivers there are for risk management within e-records management in SMEs, and also how SMEs describe and relate risk management.

Specific key works – which will be discussed in turn – have been identified which relate to each of the three research fields; risk management, records management and SMEs. This guided the investigation, and shaped the perspective and methodology of the study.

2.2 Influences and guides - key works for the study

Seven authors were chosen to illustrate and highlight progress within their fields in terms of the development of the topic, and have deeply influenced the style and progress of the study. They were selected from the literature read during three years of study, and chosen on the basis of their level of influence on the study itself, for their transdisciplinary view of their subjects, or for their particular unique evidence, pertaining to the areas of the thesis. These authors and their works have provided a set of views and key criticisms on all areas from paradigm to evidential analysis. Looking at them in terms of their progressive influence in the study, we can construct a list of some of the most influential authors for the text: McDonald (1995a; McDonald, 1995b; McDonald, 2005) H. Felix Kloman (1999) and Bearman (2002).

In terms of impact on the concept of the study as an entirety, McDonald's work (McDonald, 1995a; McDonald, 1995b; McDonald, 2005) influenced the study from its inception. The idea of progress from a 'wild frontier' in the period of ten years of development in e-records carries with it the possibility of new perceptions from a developed historical point of view. It helped to launch this study, as a doctoral inquiry linked to the Northumbria University's *AC+erm* project (McLeod et al., 2010).

Regarding the conceptual and historically grounded approach of the study, H. Felix Kloman's timeline of risk management (H. Felix Kloman, 1999) was one of the first works to suggest a historiographical basis to a study of risk management. This unique perspective was revisited as a historiographical description and diagram by Hay-Gibson (2008), and formed the basis of the risk management research for this study.

Within the field of records management, it is important to note that the topic of risk within e-records has three major protagonists who have developed some key works in terms of acknowledging, describing and assessing the concept of risk in terms of e-records. Lemieux (2004) explores the subject specifically as the concept of e-records and the risks to them in practical terms; Bearman (2006) takes a more academically critical stance, and assesses the concepts of risk in e-records management, and McDonald (1995a; 1995b; 2005) tackles the issues of e-records management in terms of a paradigm shift in the development and vista of e-records. Risk management, however, has its own critical experts and conceptual evaluators. Beck (1992) is one of several critics who have explored risk as a concept, concentrating not on the physical but on the theoretical. Luhmann (1993) is also concerned with the realm of risk as an abstract, but looks at it as a sociological and conceptual construct.

Within the three linked areas of risk and e-records management in the scope of the study – risk management, records management, and SMEs – a knowledge gap was identified in terms of the interaction between e-records and factors of risk in SMEs. This literature review identifies extant literature within not only the subject areas of the study, but also transdisciplinary literature within the areas of both the methodology and methods that were used within the study.

The basis of inclusion of material for the study was that historical information and evidence would be incorporated to help understand the role of cumulative inputs to records management. This was the basis for the use of sources older than 30 years. An effort to focus on current research was made in reference to recent developments in the field of e-records management and technology governing e-records management.

2.3 Electronic Records

McDonald's paper on e-records within the office, and the potential future of the use of e-records (McDonald, 1995b) declared the vista to be that of a "wild frontier", where "the autonomy of the individual reigns supreme." (McDonald, 1995b, p. 70) This concept of creation that is both indiscriminate and unrestrained called for a work environment where e-records were managed as well as the faithful hard copy. However, there were already conflicts: what could be conceived as a record? The latest innovation in the office was already confusing: "Is e-mail a record? If it is a record, what should be done with it? Does everything need to be documented?" (McDonald, 1995b, p. 39)

But prior to McDonald's work, the view had already been doubtful. Earlier conferences regarding organizational memory suggested a limited future for email as a formal record:

"While email does indeed have an acceptably low capture cost, it does not provide an effective record, because email messages are strictly personal and are stored that way, and because the email record, even for an individual, is so poorly organized and structured that it cannot effectively augment even an individual's memory." (Conklin, 1992, p. 135)

In retrospect, it may be easy to say that this was one of the first evaluations of an early and limited technology. But by the time of McDonald's work in 1995, the vista had changed dramatically to that of a certainty that email could be considered as a valid form of e-document, but of total uncertainty in the *how* and *what* of e-records management, and only a conceptualised future which involved the use and management of e-records: "While we continue to live in a multi-media environment of microfilm, paper, etc., the *de facto* record of the business of our government will be electronic." (McDonald 1995, p. 78)

In terms of practitioner-based advice, Moore's contemporary article on safeguarding business records (Moore, 1996) advises care only of the physical aspect of records, even to the point of mentioning the 'clean desk policy' which ensures that "... no critical work in progress is left on a desk or in an unidentified drawer". (Moore 1996, p. 48) As this advice was aimed at practitioners, it can be assumed that whilst the

pressing problem of the preservation of e-records was already an agenda (*vide* Bearman, McDonald) it was not yet something that was dealt with by all practitioners at the time. Only three years before this practitioner article, Bearman (1993, p. 16) had noted that the methods of communication within organizations had been “rapidly and radically” transformed by the introduction of e-records.

In identifying that “We make no distinction between the substantive message and the informal ‘let's do lunch’ type” (McDonald 1995b, p. 71), McDonald did not only assess the situation current for 1995, but also predicted the general direction of flow in terms of the propagation and indiscriminate creation of e-documents in the workplace. The spread of indiscriminate emailing has become worse. Flynn (Flynn, 2004a, Flynn and Kahn, 2003) has created and set out rules for the workplace in terms of email, but technologies and e-documents themselves are evolving and changing. In looking at the question of what can be considered to be an e-record, the work done in gathering organizational views on the contemporary concept of e-records has in the main been led by projects looking at the problems connected with the identification of e-records (The ‘Pittsburgh project’) and the storage of inactive records (InterPARES 1) reviewed later in this chapter.

In McDonald’s ten-year perspective on his initial article (McDonald, 2005) he notes that the concept of the “wild frontier” is still very much a reality. His hopes for a coming reorganization of electronic media were rather bitterly termed “naïve” (2005, p. 2) and the main questions still remain the same as before – of what needs to be done to tame e-records management within businesses.

McDonald highlights the lack of policy implementation as one of the key reasons why e-records are not managed well within business, if they are managed at all. Whilst there has been legislative activity in the management of records and procedures for business (most notably the Sarbanes-Oxely Act; U.S. Government Printing Office (2010) for America, and the Freedom of Information Act (2000) for the UK), there has been little radical change in the development of infrastructure for e-records management within business. In terms of SOX and its obvious allusions to records management structures, there has been criticism of the identification of SOX with records management. Silver (2004) has noted brusquely that “despite the blizzard of

webinars, white papers and magazine stories to the contrary, SOX compliance is not fundamentally a problem of records management” (Silver, 2004, p. 14), instead describing it as a function of analysis and process control combined with aspects of records management.

In the handling of concepts such as compliance through records management (which is explicitly not explored in terms of risk management within this study) Robinson (2005) notes the stress put on IT departments to act in compliance with the coming of several SOX-like regulations, with at least one of her sources indicating that it should be an IT department’s responsibility to have an “adequate infrastructure” in place which has a “framework of controls” including reporting controls and reporting deadlines, which are very close to some functions of records management.

However, new standards have been developed which offer an opportunity for the management of electronic records. The creation of an international standard, ISO 15489 (ISO, 2001), has been instrumental in formulating a set of guidelines, which apply to records in any format.

The definition of a record has been created in order to ensure standardization in the management of all formats of record— something that McDonald (1995a; 1995b; 2005) and Bearman (2002, 2006) both have argued convincingly for, as the literature review will show. The term ‘recordkeeping’ has been described as “making and maintaining complete, accurate and reliable evidence of business transactions in the form of recorded information” (United Nations, 2006), whereas ‘records management’ is “a process for the systematic management of all records and the information or data that they contain.” (JISC Infonet, 2009). These definitions are key in understanding the scope of each operation. ISO 15489 (ISO, 2001) also defines the context in which records may be kept and for what purpose. The need to define a context in which to keep records is paramount.

The growing need for specific expertise on how to manage e-records systems within business must also be considered. McDonald (2005, p. 5) notes a “general lack of expertise required” for the conception and construction of these systems within business, despite the initiatives furthered by such projects as IMOSA, InterPARES

and the ‘Pittsburgh project’. Though the management of email was an early focus, the emergence of both new technologies and new ways of transmitting e-records and e-documents mean other e-record formats need to be managed; indeed, Flynn has approached this in a work on the feasibility of the use of Instant Messaging (IM) within the workplace (Flynn, 2004b). However, this does not approach the full extent of the problem of the maintenance of e-records within business; whilst it is vital to identify the forms of items which constitute valid business records for capture into an e-records management system, it is also equally vital to recognize the limits which should be imposed on such e-records management systems in terms of storage and retention.

Although it can be said that the various successes of IMOSA, InterPARES and other initiatives have pushed forward the concept of McDonald’s “wilderness”, even with the use and development of ISO 15489, there is still no singular code of e-records management which is universally implemented. The ISO standard remains only a guide to how records management may be implemented, and is not a schema, framework or model for a system of e-records management.

2.4 Conceptual models for managing e-records

From the early influences on e-records management, several models and approaches have been put forward as ways of managing the wealth of records amassed by organizations such as local and national government.

The impact of innovations within records management has positively affected the development of digital document retention by not only addressing the concept of the actuality of the electronic record, but also approaching the concept of the ‘life cycle’ of records and its feasibility when applied to e-records.

The frameworks and models proposed by VERS (Victorian Electronic Records Strategy) (State of Victoria, 2009) approach the problems associated with e-records in different ways. Though VERS is designed predominantly for Governmental records management linked with archival preservation, the overall approach for its design takes into account one particular risk applicable to all e-records: their format dependencies.

“Electronic objects can be subject to undetectable change, thereby making it difficult to maintain the evidentiary and accountability status of the records.” (State of Victoria, 2009)

Other conceptual aspects of records management which have been altered by the management of e-records include management techniques, tenets of management, and research into the new field.

From the early days of e-records as noted by McDonald (1995), problems were found in the treatment of e-records as analogous to hardcopy. In the use of email as a record, as can be seen from Conklin’s (1992) observations, early key issues with this form of e-record were that retrieval was a very pressing issue. More specific problems within this area of the management of e-records were noted as “lack of controls, frameworks and standards in this rapidly evolving area” (Acland and Reed, 1999) – again, reflecting McDonald’s view of a frontier which was rapidly expanding, but which initially had no overall governance.

Some schemas sought to address the problem of e-record/hardcopy equivalency by finding different ways to distinguish between forms and ownerships of records. The actuality of the electronic record, however, still proves to be a problem of definition. In order to describe the concept of a model for records management that did not rely upon the older and more conventionally hardcopy-oriented notions of the ‘records life cycle’, the ‘records continuum model’ was conceived. Upward, along with Reed, Schauder and Piggott (2005) constructed a multidimensional model, which relies on technical complexity in order to impart its information.

The creation of an international standard means that there is no longer such an empty wilderness as McDonald describes: for those who wish to create or maintain use of a system where there are standardizations for the maintenance of e-records within an organization, there is a new optimal standard to use. Research into the collection and construction of standards from the experience and work of others has created an evidence-gathering project which resulted in the creation of a new standard, making

available the culmination of others' experiences and the practical and theoretical reasoning of other studies (McKemmish et al., 1999).

The concerns of recordkeeping may be said to be those described broadly in McKemmish et al. (1999) as societal motives:

“Maintaining reliable, authentic, and useable evidence of transactions through time and space has significant business, social, and cultural implications, as records provide essential evidence for purposes of governance, accountability, memory, and identity.”(McKemmish et al., 1999, p. 6)

This view of the reasoning for records management places an emphasis on the preservation of records to fulfil many further social needs. The societal motivation for records management is one facet which is essentially archival in nature. But in the terms of the business worldview, such a perspective may not be as relevant. Looking again at the origins of the “wild frontier”, the concept of an e-record environment is still a view of the future. Whilst the concept of a ‘paperless office’ exists (Sellen and Harper, 2002), this has not been fully realized within a small business construct to any extent which has been published and studied. However, within the concept of a wholly electronic business environment lies the start of electronic records management, and Hedstrom and Wallace (1999, p. 331) have discussed the impact of digital recordkeeping in this vein, noting that records management at the end of the records life cycle is not the direction for future systems:

“The inadequacy of addressing archival issues at the end of the information life cycle has forced a realignment of records management and archival concerns, and most archivists now agree that consideration for future access and preservation should be an integral part of information policy and systems design. In theory, recordkeeping, which traditionally has been treated as an afterthought, must be catapulted into the up-front design considerations for policies, systems, and applications.”

Hedstrom and Wallace’s identification of the fact that (archival) records need to be managed at a different stage points towards a need to re-examine the design of records management systems which deal solely with those records for which there will be serious considerations for future accessibility – such as e-records (Hedstrom and Wallace, 1999).

This view makes a strong start for an examination of the drivers for e-records management in the context of an e-records management friendly view of a 'cycle' in which records take their part within businesses.

Records management as a skilled discipline is closely allied with archives and archival science. Archiving and records management share the same skills in preservation and retention of records, but differ in aims. Records management as a science focuses on activities that create records and maintain them, and manage them once their period of use is over. Archival management concentrates on the primacy of the record itself, concerned with the actuality of the record whilst preserving it for its future use and its historicity. Whilst not ignoring the basic textbooks for this subject (such as Shepherd and Yeo, 2003) this study takes a wider range of records management theory on board, from McKemmish et al.'s (2005) expansive conceptual view of archives and the concept of the role of records management, especially in the terms of society and societal obligation, exclusion and inclusion, to the mental abstraction of the term 'archive' as explained and rationalized by Derrida (1996). McDonald's frontier, though, has not been tamed. Indeed, it might be more prudent to say that whilst there is a form of law carried by the pioneers, there are also "natives" in contrast to "digital immigrants" (Bentley and Sparrow, 1998, c.f. Prensky, 2001) who have learned to be in harmony with the e-record as much as with hard copy. These digital natives are those who have created their own e-records management 'rules', from nothing, with neither training nor experience of records management.

The concept that electronic records do not have a physical existence per se leads to the conclusion that they cannot therefore be treated in the same way as a physical record. In this light, McDonald's idea of a scheme based on activities essentially as bound by the physicality of the medium is a difficult one. Turnbaugh's chapter in Dearstyne (2002) discusses how an electronic record was redefined in the circumstances of the history of the US government's retention of electronic records, noting that it was a struggle to gain recognition for data tapes to be acknowledged as electronic records in law.

The call for an 'electronic' way of describing the life cycle of an electronic record has been one of interest. One view of the electronic and hard copy record life cycle is the

proposed ‘continuum’ approach. As described by Upward (1996), the continuum approach regards records not by dint of their physical nature, but by their meaning and intrinsic value. The continuum is not an equivalent to the records management life cycle but instead represents a “time/space model” (Upward 1996, p. 268) that is intended to show the principles of archival practice. The concept of an archive with “multiple realities” (Upward, 1996, p. 269) is perhaps the closest to a concept of the electronic record, which exists in multiple locations at the same time, which can be shared with an infinite number of people, and which can be stored either with or without metadata. Another view is that the hard copy record is different but not totally divorced from the electronic record. The guiding principles of ISO 15489 do not define what media should be used to store and transmit records: rather, the principles of records management and retention define how records should be created, stored and preserved.

Key records management standards and models include the following:

- ISO 15489-1 (ISO, 2001)
- “Unified Model” (Hofman, 2004)
- The ‘Pittsburgh Project’ (2002)
- MoReq 1 and MoReq 2 (Cornwell Management Consultants PLC, 2007)
- The ‘Records continuum’ (2000)
- InterPARES I & II (1999-2007)
- The ‘life cycle’ (Penn at al., 1989)

Others exist which are explicitly linked with archival management and digital preservation, such as OAIS (Consultative Committee for Space Data Systems, 2002) and VERS (State of Victoria, 2009) but are not pertinent to discussion within the subject boundaries of the thesis. Some, but not all of the standards above, have accompanying theoretical and practical models. Where these descriptions are used, they indicate that the basis of the model is either intended to be theoretical or intended to be used practically. Some explicitly consider risk, dealing with it in a qualitative way. Quantifying risk is generally a view of financial risk and therefore does not deal innately with the more holistic, wider views of risk.

2.4.1 Record maintenance and similarity to archive functions

In terms of creating the 'record', the concept of archival management and records management is similar in the action of accessioning. However, the archival system lacks certain aspects of the more continuous functions of records management, given that records may be in and out of use rapidly. The distinction between a system generated towards retention and one that is generated towards daily maintenance of a balance between accession and agreed period of aggregate dispersal is that archives are generally intended to aggregate for far longer than a simple records management system.

The life of business records, now digital, is getting longer. One of the case study businesses in this research (BETA) asked why they should be deleted at all. In this sense, the skills of an electronic archivist are becoming more widely used in the arena of business records management. Maintenance of records is more widely expected to be long-term than before, when paper store sizes dictated how much a business could physically keep and the size of the archive (in some ways what could be considered a data store) was defined by the ability of the company to physically store the paper. The disposition was also more of a strategic problem in contrast with the digital archive which has a potentially easier or more logical process to outline for file and record disposition.

The main problem with the difference in semantics is that there may be a significant lack of appreciation by the SME for the subtleties of the concept of 'archive'. This may, however, cause a lack of parity between the discipline of business and that of the archive. The complexities of the conceptual system whereby every record has a wrapper in order to identify it via metadata may similarly be lost on businesses, who tend to regard an electronic document as a file only, and where the lack of terminology conciseness can cause difficulties in business.

2.5 Current Records Management Models

Moving from a base of professional knowledge, we now draw on the evidence of models generated within the arena of records management in order to understand their formative concepts. Current models are described and their value noted.

2.5.1 InterPARES ('COP' and 'BDR' Models)

InterPARES (a project comprised of three parts) aimed to further “the development of theory and methods ensuring the preservation of the authenticity of records created and/or maintained in databases and document management systems in the course of administrative activities, and took the perspective of the preserver.” (InterPARES Project, 1999-2009)

It was the results of InterPARES 1 that suggested that a further and more sophisticated exploration of how to successfully preserve authentic metadata in electronic records could be a worthwhile aim, and so InterPARES 2 was created to focus on “records produced in complex digital environments” (Bearman, 2006, p. 22). Bearman’s concerns for e-records are primarily with metadata, the core point of record authenticity within an electronic record. This concern over metadata, as highlighted by earlier works such as Hedstrom and Williams (1999), indicates the growth of ways to incorporate more retrieval detail, overall control and organization of e-records.

The InterPARES ‘COP’ (Chain of Preservation) and ‘BDR’ (Business-Driven Recordkeeping) models look at the depiction of an electronic record’s ‘life cycle’ and specify the actions and stages which they must go through within a lifetime (Eastwood, Hofman and Preston, 2007). The emphasis of the project of InterPARES 2 was to understand records generation by businesses theoretically, which itself could contribute to the understanding and modelling of records management for science, arts and governmental records (Eastwood, Hofman and Preston, 2007, p. 1). This project also looked at long-term preservation of electronic records, and, in doing so, two models were created. The COP model looks specifically from the perspective of the organization or entity which holds the record, whilst the BDR model looks at preservation of business records within their own business context, and holistically from the business’s perspective.

The prospective audience for such models is primarily those interested in the archival side of records management, rather than management of day-to-day activities which produce records. The long-term aspect of the lifespan of e-records is given more thought in such archival-oriented models. Whilst they are highly complex models,

they allow for the modularity of e-records in regards to lifespan that is quite different from the 'life cycle' model.

The applications of such models serve to highlight the need for awareness of what records are generated by business, and "the nexus between the needs and activities of the business of a given organization and the records generated by those needs and activities and kept by the organization" (Eastwood, Hoffman and Preston 2008, p. 48).

2.5.2 Hofman's 'Unified Model'

The 'Unified Model' is a result of InterPARES II research, and some of its creation is noted in the Business-Driven Recordkeeping (BDR) model development. This model is one of the first clear steps to recognising and acknowledging a contribution to the development and management of records from multiple points of view.

The unified model incorporates these multiple points of view (in part illustrated by the use of UML). A dual perspective from both archives and records management has given a business drive and focus to a large-capacity preservation-driven system. Hofman notes that the main focus or aim for the model is that which explores the relationship between the disciplines of records management and archives management.

"A unified model offers good basis and understanding of the interrelationship between business, records and archives, and for developing a coherent and comprehensive RM policy" (Hofman, 2004)

In adding together and assessing the value of both archival and records management systems with a take on business systems and needs, Hofman has created a far more SME-centric records model than the other more 'public' ones, even if it is speculative. Hofman's innovation is to introduce the archival concept into records management which "(Represents) a level beyond the individual archive of an organization" (Hofman, 2004). This is rather adventurous, and forms an interdisciplinary aspect of archive management with records management that is not seen in other models. The inference that the 'level beyond' is directly linked to archival theory is lost without a

further referenced explanation, as the presentation fails to delineate what this 'level' is in terms of the concept of a mixed concept of records and archive management.

However, Hofman blends the concepts of archival and records management in that he brings in the values of the records as object (RM and business perspective) as well as the archival value of maintaining and holding such record-objects. This is the only model which blends the concepts of the drive for ICT use and involvement with that of the need for the company to maintain records in a way adequate for them.

Implementation of this system, however, may require that business thoroughly understand and utilise recordkeeping standards. In practical application, this may not be possible, as business processes that are already in place could be found to be lacking in sufficient records management processes.

“Modeling of the creation, maintenance and preservation of records, both from the preserver viewpoint and from the business process viewpoint, presents a picture of all the activities of records making, records keeping, and records preservation and their relationship for researchers in the Project to utilize.” (InterPARES 2 pt. 5 p. 1)

The InterPARES model for e-records management is a theoretical model with practical leanings, based upon the principles of preservation and retention of metadata.

Two models were produced: the Chain of Preservation (COP) Model and the Business-Driven Recordkeeping (BDR) Model. COP was intended to preserve records using the principles of archival science and to show slightly different perspectives of the records management of businesses, through a reinterpretation of three other models of aspects of the records management life cycle. The BDR, on the other hand, is a model intended to be “technologically independent” (InterPARES 2008, p. 47) and is business-centric. It looks from an interdisciplinary perspective at the business needs and demands, and uses a more holistic and stakeholder-oriented approach. However, the main problem with the BDR model is that it is overly complex in trying to reflect the concept of a business's recordkeeping actions and policies. This complexity needs to be sufficiently scaled down for smaller businesses, which does not appear to be an easy task.

The BDR model is not based on physical processes. However, small businesses can base their records management upon hard copy processes and will not build processes around a central base of records management processing. The use of a theoretical basis for process management requires a certain amount of forward planning, as well as strategic management which carries on the scheme from inception onwards to an ongoing part of the business process which can be carried out without reliance on the member/s of staff who initiated it. Independence of the records management scheme from the notional tenet of a ‘records manager’ should be the focus of any business records management model, yet this idea is seemingly absent from the BDR.

2.5.3 The ‘Pittsburgh Project’

The ‘Pittsburgh Project’, developed by Bearman and Sochats (2002) was a key development in the creation of standards for the creation of electronic records management systems, and incorporates a model that looks at the identification and classification of records through their specific attributes. The goal of the project was to approach the specifications of records as defined by extant literature and investigate the qualities of records, and to evaluate this in order to construct a specification of what formed the evidentiality of records. Bearman and Sochats identified thirteen properties “which are identified in law, regulation and best practices throughout the society as the fundamental properties of records.” This work highlighted the need for unified standards in e-records but took the first literature-based approach.

The ‘Pittsburgh Project’ identifies that records must be kept for business functions. Metadata management can help add value for “formal auditing”: it is noted that:

“...it is possible to define electronic records metadata structures that enable us to search for specific records based on information about the instance or concrete business transaction which generated them.

In addition to ensuring that the data we capture is a record, and can serve as evidence, metadata should be defined so that it makes data objects communicated across software and hardware layers (and therefore any communications over a network)”

Bearman and Sochats (2002)

The resultant model therefore represents the reality of a record at the descriptive level.

A “focus on functional requirements” (Bearman, 1994, p. 34) is one of the major features of most models of electronic records.

“... the design of appropriate documentation methods for archives depends on an appreciation of the centrality of recordskeeping (sic) systems to archival theory and practice and on the concept of records as evidence.”

(Bearman 1994, p. 35)

This quotation – though it clearly refers to archives – is also useful in illustrating the key points of any records management model. The higher level functions of records management shares similar functions with archival management.

The main points of Bearman’s seminal paper highlight the fact that metadata standards are not uniform, and this reflects the volatile nature of the digital environment in that there is continual change and progress possible.

Bearman’s critical viewpoints on projects such as MoReq and OAIS represent some of the main issues in describing the dualistic stance of management of an electronic record, or a record within an electronic environment. The latter phrase is used because, as Bearman notes, MoReq “suggests a very physical model” (Bearman 2006, p. 22). This ‘physical model’ however is not the antithesis of the idealized e-records system, as described by McDonald, based on “the functions and activities of the user – a scheme that should, ideally, already be reflected in the function/activity based classification scheme used by the records management program” (McDonald, 1995, pp. 73-74). This suggests an evolution for the science of records management, using practical principles applied to the virtual realm. However, there is a contrasting view.

2.5.4 MoReq 2

MoReq 2 is an informal standard that offers specifications for records management, designed to be applicable to a wide range of applications. It is described as a standard containing “a model of how filing plans, files and records relate to each other within the context of a classification scheme, and, very importantly, it can be applicable to both electronic (digital), physical (paper), and hybrid files.”

(DML Forum, 2009)

The MoReq scheme has been criticised for minimal improvement over a long period of time between the release of versions. The model deals with the maintenance of metadata within records, but does not have the same archival slant as other models such as OAIS, instead concentrating on the functionality of the records management mechanism.

There is “less detailed functionality” available in MoReq for the use and inclusion of hard-copy records or other formats which are non-electronic, and this point may show the drawbacks of a dual-format records holding system.

2.5.5 ‘Records continuum’ (Upward, 2000)

The ‘records continuum’ model as refined by Upward and originally created by Upward, Reed, and Schauder (Upward, 2000; McKemmish et al., 2005) provides “a view of recordkeeping at the point of creation, within groups, at organisational levels, and at inter-organisational levels” (Upward, 2000 p. 116). It provides an overview of the characteristics of recorded information, in terms of position, place and origin, as well as showing a ‘worldview’ of records that “can help harness the development of knowledge in archives and records management globally.” (Upward, 200 p. 127)

In evaluating the attributes of records, there is often distance between their origins, their value and their status. In the ‘continuum’ model, it is easier to associate all three on the rings and alignment of the diagram. The audience for such a model is comprehensive: archivists and records managers can interpret the place of their own records in the context of the continuum.

The problems with such a model is that it is not readily accessible as a view of reality, as to try and comprehend any view in more than three dimensions is acutely difficult. In terms of a ‘practical’ usage, it does not represent a way of management. It portrays possibilities and temporal/logistic elements, but not a clear and represented path for specific record types. This is a valid criticism for models in the view of provision of a model that is more practically oriented. The ‘continuum’ is a highly academic model that has emerged from an understanding of a principle-based understanding of the record as a philosophical ‘form’.

2.5.6 The ‘Life Cycle’

The records management life cycle as described by Penn (1989) is that of a “biological organism” where the metaphor of life is adequately applied to the phases of hard copy records management:

“It is born (creation phase), it lives (maintenance and use phase), and it dies (disposition phase).” (Penn 1989, p. 9)

The separate elements within these phases cover other aspects of the life of a hard copy document. The audience for such a model is very comprehensive – as this model embraces a practical aspect of records management in hard copy, even those who have no formal records management training can apply an understanding of the metaphor of a life to the records they hold. However, in terms of the evolution of the digital record, the life cycle has a particular problem, in that the model is not flexible enough to demonstrate that an electronic record may be between phases, or can occupy two phases at once. Whilst the model can be successfully applied to a hard copy only system of records, there are inherent difficulties in using such a model to describe the activities of electronic records.

In looking at these current records management models, we can see that there are a range of models built on the need for records management within business, but these do not specifically focus on the needs and requirements of an SME. Having looked at these models, we will see that the data collected and analysed for this study can provide a different type of model based on the contributions of narratives by participants.

2.6 Risk management

We move now to an exploration of the literature of risk management. Jasanoff (1993, p. 128) noted that qualitative research “can help to illuminate the blind spots in established approaches to risk assessment”.

The combined nature of the theoretical aspect of risk and the practical assessment of risk makes for a very large disciplinary field. In narrowing this field to a suitable frame of study for this research, areas concerning risk that would be more likely to

stem from the use of or acts of records management within an SME were highlighted. It was chosen to investigate risk in specific categories within the literature (e.g. practical risk, environmental risk, financial risk and technological risk) centring on risks that could affect both e-records and SMEs in some form. As the term 'risk' is so broad, a literature search was carried out for risk management schemes for documents, and risk pertaining to records (especially recent news stories on risk through loss of records). Concentration is focused on their theoretical counterparts, in the aim of understanding the interdisciplinary approach and concept of risk theory.

In risk management, some of the most important critical research about the theory and practice of records management looks at varying types and aspects of risk (physical risk, financial risk, etc.). The discipline separates theory and practice. Key risk theoreticians, such as Beck (1992), Luhmann (1993) and, to a different extent, Boyne (2003), approach the concept of risk as a discipline that can be allied with pure theory. Giddens (1998) seemingly supported this notion by his philosophical approach. Epitomising this practical/theoretical split, Ericson and Haggerty (1997) made a visible division between practical activities and theoretical concepts of risk in policing by separating their book initially into main sections between the two topics. Only after this did they evaluate the combined disciplines. This inspired an exploration of the philosophy of risk. The sociology of risk, too, has become an idea greater than simply the sum of its parts. In his anthology, Slovic (2000) focuses on essays with aspects of social risk perception in the same vein as Peters' work on the social aftermath of Chernobyl (Peters, 1992). The practical aspect of risk management is represented by such texts as Jaynes (2002) and a Health and Safety Executive (HSE) report on risk reduction (Health and Safety Executive, 2001). As part of the historical research into these subject areas, the historical and historiographical areas of risk management were investigated, as focused through records management. Hertz and Thomas's (1984, p1-4) concept of risk analysis demonstrates the close affinity with decision sciences that the discipline originated from, something postulated by Hay-Gibson (2008). Drawing on sources as varied as H. Felix Kloman's 'timeline' structure for risk management (H. Felix Kloman, 1999), original evidence from the earliest points of risk management as a science, such as Arrow (1965), and the later works of those who have identified and examined the historical aspects of 'risk' (Bernstein, 1996), the paper examined the strands of risk seen today (physical risk, technological risk,

financial risk) and looked at some example works within each genre. This also had a parallel strand of a perspective on risk theory, with such expert opinions and discussions as Luhmann (1993), Beck (1992), Boyne (2003) and Giddens (1998) forming the basis of an examination of risk theory.

The conclusions reached by this research overall were that works on the theory of risk and risk management do not investigate the specific viewpoints of risk theory in SMEs. Brockhaus (reprinted in Storey, 2000, p. 1248) describes SME and entrepreneurial risk-taking propensities in terms of a quantitative view of risk calculation. Factors such as “financial well-being” and “psychic well-being” are offered as those that are at risk. However, these are not then interpreted in a qualitative manner, as one might expect these qualitative factors to be. Instead, they are counted and factored into a form of mathematical risk analysis, such as those seen in calculations of financial risks. The modelling of entrepreneurial risk-taking in this example is closer to the decision analysis formative roots of early risk management – decidedly quantitative. Brockhaus’s article should be seen in the context of the development of risk management as an individual discipline, a structure that Hay-Gibson (2008) proposed in her ‘rivers of risk’ conceptualization. Though first published in 1980, at a point in the timeline where risk analysis and decision analysis were still allied, the study of the risks encountered by SMEs forms a specific unique aspect to this early paper (Brockhaus, reprinted in Storey, 2000).

2.6.1 Risk society and social philosophy

Risk society, as described by Beck (1992) and commented on and discussed by others (Ericson and Haggerty, 1997; Löfste, 1998; Giddens, 1998) is a philosophical construct and view of risk. Giddens (1998) describes the evolution of society’s technological status as a framework in which to perceive the nature of risk as inherent, and as an aspect of life, hearkening to Rescher’s views that actions are inherently risky: “Risk...an ineliminable part of human existence” (Rescher, 1983, p. 9.) Risk can also be seen as a framing construct in which to place other concepts: Ericson and Haggerty (1997) looks at the concept of the risk society in terms of its intersection with the discipline of policing.

Risk, as noted by Althaus (2005), has progressed to an interpretation of risk as a quality within certain subjects, in particular with regard to sociologies, taking on the feel of a quality rather than the structure of a discipline:

“Suddenly, there are no ‘experts’ and the scientific definition of risk has become nebulous and rubbery. Society’s emphasis now in its definition of risk has become loaded with ideas of fear or trust...” (Althaus 2005, p. 575)

In accepting Luhmann’s surmise (Luhmann, 1993) that risk can be not only a discipline but also a quality, a definition can be formed. Depending on the type of risk identified, a different interpretation of the term can be used, leading to a sufficient argument for the use of specific risk vocabularies being identified and used within distinct spheres of risk. Hutter and Power (2005, p.9) have identified that “risk language may also serve to ‘amplify’ risk representations within organizations themselves”, as well as risk itself functioning as “an ‘organising’ category for management in general” (Hutter and Power, 2005, p. 9). In this sense, risk as a quality can be viewed as both negative and positive – with the positive sense associated with organising the capabilities of a business against the difficulties brought by risks encountered.

Risk varies its interpretation each time it is used in a new discipline. The extant glossaries of risk such as that offered by the Health and Safety Executive (2001) and the CCTA, (Government Centre for Information Systems, 1993) as well as that of ISO/IEC 73 (2002), the standard which addresses risk vocabulary within any ISO standard, are all different and specifically made for purpose. Their specialisms indicate that there is no one glossary that fits all risk.

In researching risk management, there seems to be little self-classification within articles and books to describe the specific types of risk they discuss. As Kleindorfer et al. (1993) have noted, the disciplines that fed from and feed into decision science are varied. Hay-Gibson (2008) has identified that decision theory is a significant antecedent of the developing discipline of risk.

Other research is currently being carried out into the perception of risk. *Projection Point*, a project by Dylan Evans and Benjamin Jakobus investigating “risk

intelligence” linked to people’s overconfidence or a lack of confidence, associates uncertainty and “risk intelligence” with problems in the financial sector in 2007 (Projection Point, 2009). However, the concept of identifying a specific “calibration curve” in order to understand attitudes to risk is not viable in highly specific areas such as records management. The evaluation of attitudes to risk can be carried out in a significantly different way where perception of risk may not be quantitatively described or evaluated. Gigerenzer (2002) noted that frequencies and probabilities are ways to express risks, but it is also important to note that risks can be materially described by the events surrounding them, as well as using mathematical concepts. Perception of risk and social construction of risk are therefore closely connected, in that one helps to create the other. Social construction and social perception of risk are similar in their effect and their result. One study, looking at the impact of information sources after a nuclear accident on a country’s occupants (Peters, 1992) explored the management of information after Chernobyl, within West Germany. Peters found that the communication of risk information was mitigated by people’s understanding of it; and in particular, the communication of the information. He also concluded that people’s processing of risk information was based to a great extent, on the perceived credibility of the source. (Peters, 1992, p. 337)

Looking to historiographical evidence, Holmes (2002) defines different forms of risk. The volume is a summary of the principles of risk management. It was intended for the business community, and historiographically it tells us that the disciplinary roots of risk management (Kleindorfer et al., 1993) can be seen in later works, and that the business and industrial community still requires information about risk. The fact that it is in the form of a synthesized summary is also important. Holmes’ basic sets of risk (Holmes, 2002) include areas such as finance and physical risk. These terms allow for some quantification of the subject that has, formerly, been lacking.

2.6.2 Risk management frameworks and models

2.6.2.1 Specific Risk Models

Models and frameworks for risk management are as varied as types of risk, and therefore this study has been selective by highlighting only risk-relevant models. Risk

management for physical objects, or for finance, are not described here as they reflect a different concept of the term 'risk management' as has been noted by the literature review of this study. Models for financial risk, such as 'Monte Carlo Analyses', are not suitable for comparison, and neither are models of risk that deal with risks experienced physically in industry.

Other frameworks for risk management concentrate only on risk as a discipline, and the subject of the framework is itself often relatively unexplored. Jones's (2007) framework for information security risk management deals with risk identification and assessment, but does not formally identify the context of 'information security' or identify any ways in which this framework could be used practically.

2.6.2.2 Generic risk management models

An intersection of disciplines, such as risk management and records management, is not often noted within earlier risk management models and frameworks.

One such risk management framework, devised for complex critical systems as proposed by Koubatis and Schönberger (2005), noticeably does not have records management as a function within business. Whilst this framework details the resources for business systems very closely, the ability to manage records is not noted as an operation.

Following Beaulieu's history of the model as construct within a specific school (Beaulieu, 2003), this study looks at the research constructs that have been used to describe risk management. Beaulieu's study examined specific built models of information behaviour; risk management has a more wide-ranging choice of format. Amongst those offered to explain methods and modes of risk management have been models, diagrams, typologies, frameworks and taxonomies. The reasoning behind this wider spread is that Beaulieu's work is selectively representative in the choice of models representing the evolution of a school of thought. Risk management has not developed in the same way; it is a subject that has multiple facets of application (Hay-Gibson, 2008). Its development has been interdisciplinary and not linked to a singular subject or a single school. This study therefore scrutinizes a wider range of material in order to assess what aspects of risk management models are most applicable to the problem of risk management within records management.

2.7 Four risk management approaches

Four risk analysis models and taxonomies proposed for business, and for specialist risk management, were chosen to highlight the uses and functions of current risk management modelling.

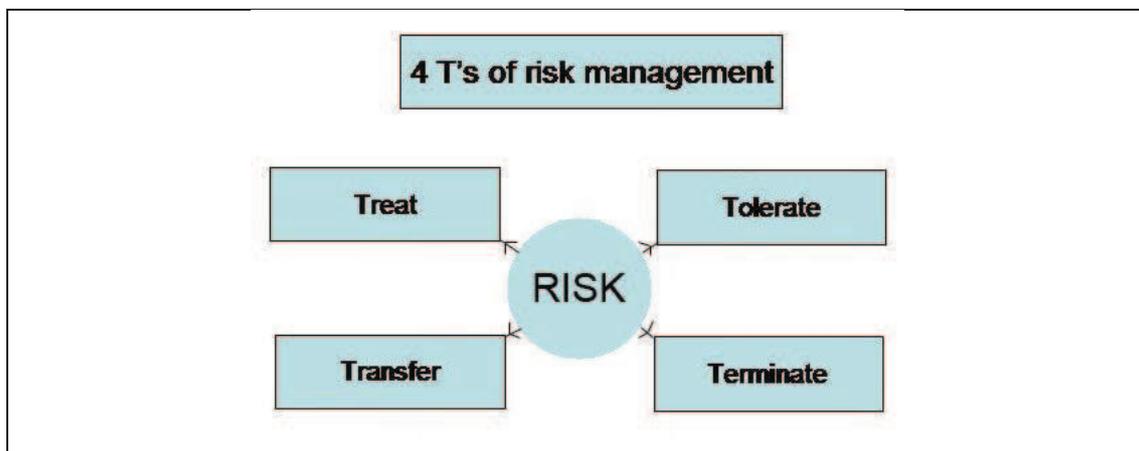
These are:

- The Four T's (Enterprise Nation, 2007)
- 'Drivers of Risk' (AIRMIC, IRM & ALARM, 2002)
- Risk analysis of nanoparticles (Morgan, 2005)
- The Orange Book (HM Treasury, 2004a)

2.7.1 The 'Four T's'

The Four T's model describes management principles in terms of risk management, and is a well-known non-proprietary posited model. The identification of this model can be found in a simple 4-line description (Enterprise Nation, 2007). Figure 1, constructed from the principles noted in the book and pack from Enterprise Nation for dealing with a risk, appears more immediately practical rather than scholarly. It indicates what can be done once a risk factor is present and needs to be addressed.

Figure 1: Four T's Diagram



2.7.2 Risk Management – The AIRMIC Standard (2002)

In 2002, the Association of Insurance and Risk Managers (AIRMIC), in association with the Institute of Risk Management (IRM) and ALARM, The National Forum for Risk Management in the Public Sector, developed a standard that also used the *ISO/IEC 73 Risk Management – Vocabulary* standard. The AIRMIC standard is one

that looks primarily at the drivers of risk, rather than risk management as an initial concept. Their model of “examples of the drivers of key risks” (AIRMIC, IRM and ALARM 2002, p. 3) uses the structuring of business or commercial enterprise in order to form a set of internally and externally driven risks that act on businesses. What is interesting about this standard is that although it refers to risk management, risk assessment is not separated off by areas of business such as records management. Identification of particular risks have to be immediately forthcoming from the participants and then are addressed. There is little or nothing to invoke a careful, self-reflexive review of particular parts of a business.

2.7.3 Risk diagram for nanoparticles – Morgan (2005)

Morgan (2005) describes an ‘influence diagram’ which uses the opinions of experts, and data taken from questionnaires which they answered in order to draw out diagrams on the risk management of nanoparticles. Though the subject is unrelated to records management, it bears comparison because of the clearly identified methodology, the clarity of the study and its simplicity in mapping out concepts of health risk to humans from nanoparticles. This diagram is mentioned in detail as it is closer in aim and structure to the form of risk diagram which the study has carried out, concentrating on the production of diagrams to identify processes and risks emergent from them.

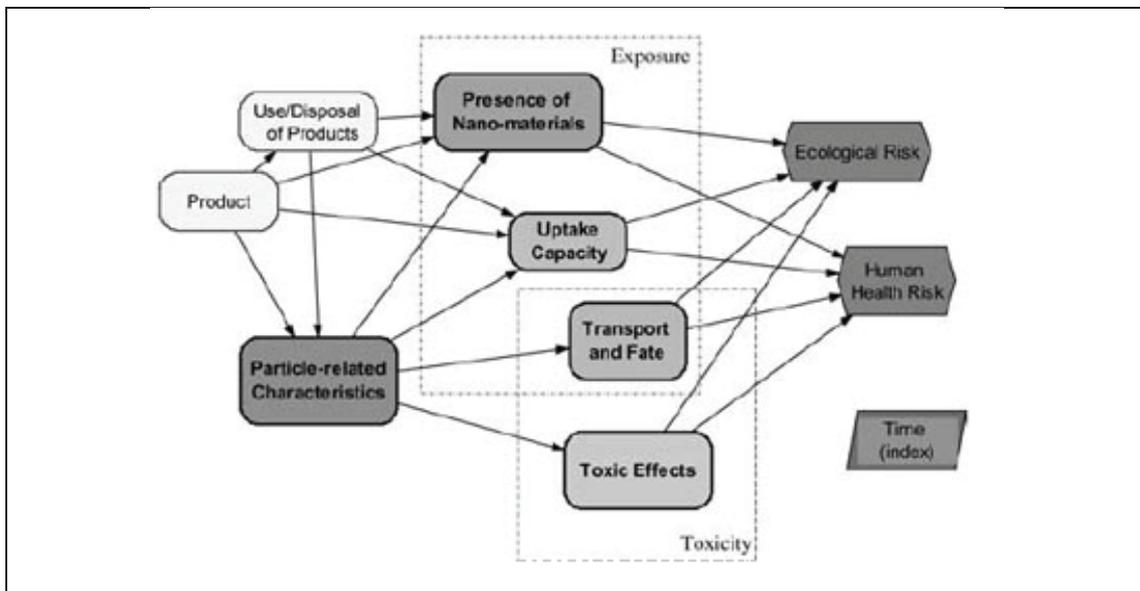
The models she creates identify the concepts that her research subjects have mentioned, and place them in a diagrammatic form. These diagrams show the possible risks from nanoparticles by identifying and representing different points and methods of nanoparticle and human interaction. The models were created with an aim that sought to identify and demonstrate knowledge from experts in the field, in Morgan’s terms, “...the goal was to capture the full thinking of experts...” (Morgan 2005, p. 1623)

At the time of the study, notes Morgan (2005), there was very little formal research done on the subject and this angle, and so the study can be identified as filling a gap not previously addressed by the literature or research.

“Mental modelling (sic) protocols were developed for conducting interviews with nontechnical individuals to learn of their perceptions and understandings about complex, often technically complicated issues. Its use is appropriate in this case because of the great level of uncertainty involved, even from the scientific point of view.” (Morgan, 2005, p. 1623)

Although the technique of mental modelling is not used within this study, it has a parallel to the mapping techniques of soft systems methodology (SSM). Perceptions and understandings of issues such as records handling and management are investigated by the researcher, discussed with the participants, and then drawn out in a structured diagram that indicates action and influence on this system.

Figure 2: Morgan’s (2005, p. 1625) ‘Preliminary Framework for Risk Analysis of Nanoparticles’

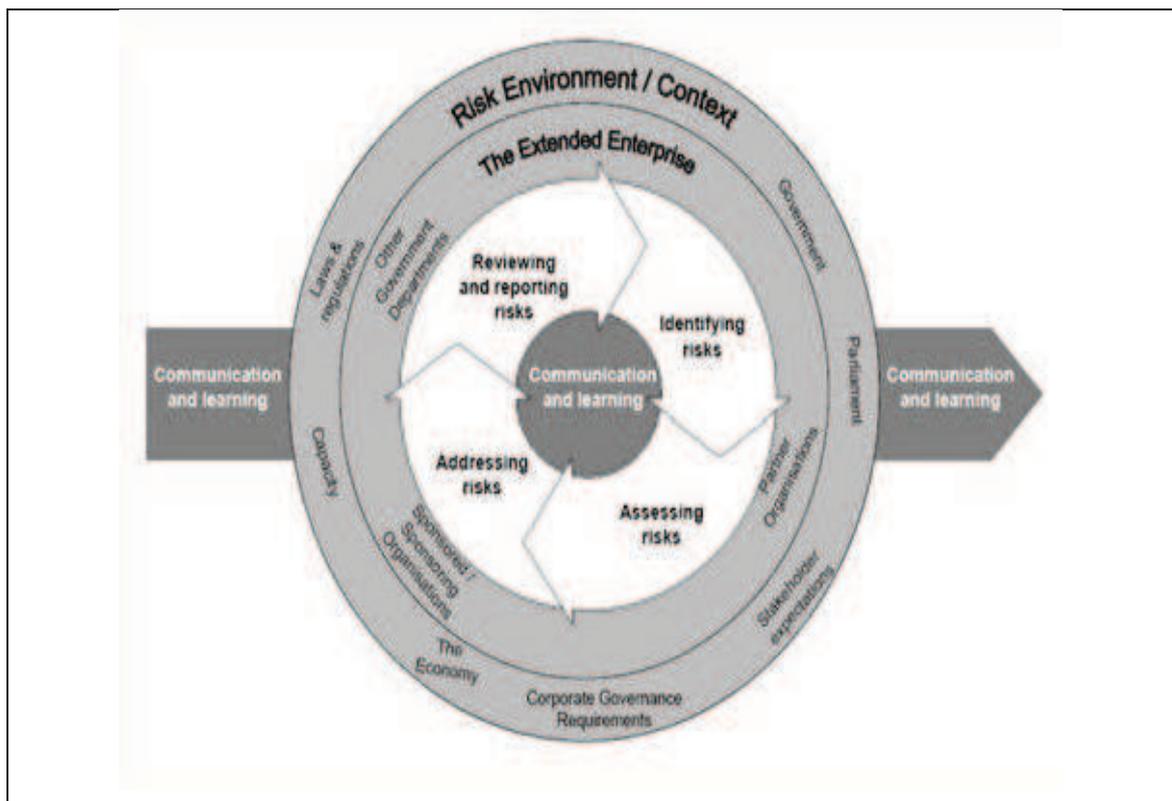


The relative simplicity of the diagrammatic structures proposed by Morgan in Figure 2 (2005) shows the ideas that the experts proposed. The next evolution of the diagram (notably Morgan’s ‘Overview influence diagram for assessing the safety of nanoparticles’) portrays her delineation of the experts’ evidence, identifies that four categories of information (Presence of Nano-materials, Uptake Capacity, Transport and Fate, and Toxic Effects) can be further sorted into two overlapping areas – those of Toxicity and Exposure. These overlapping areas were identified by Morgan, and show an identification of a key area in the risk situation. The relative ease of understanding this form of risk diagram identifies it as being of use in describing other complex situations with multiple affective factors that may lead to specific risks.

In regards to the researcher’s study, by representing in diagrammatic form the complex procedure of records creation, accession, retention and disposal of e-records within an SME, the purpose of mental modelling is being undertaken. In terms of the aims of the study, the ‘mental modelling’ approach may well identify and place in context the concept of risk, and also records management within SMEs. However, the next step, which is equally important, is to be able to understand in which context this data is set. The business’s management systems themselves must be understood as the context of electronic information and records management, within the SME. Only by placing the data gathered from participants in a case study within its appropriate context can such a model become realistic.

2.7.4 The Orange Book – HM Treasury (2004a)

Figure 3: The Risk Management Model from HM Treasury’s ‘Orange Book’ (2004a)



The ‘Orange Book’ (HM Treasury, 2004a), named as such by its creators in the HM Treasury department, acts as a UK central government guideline for managing risk (Figure 3). Though originally created by the Treasury, the generic nature of its risk management model means that it has a wide range of applications. In the centre is an

ongoing emphasis on communication and learning. Surrounding this is a continuous cycle of assessment and addressing of risks. The larger context of risk management is the environment in which the risk is situated (e.g. governmental enterprises), and the closer focus is the form of enterprise, or area – such as a specific department. The basis of the model is not far removed from the ‘four T’s’ model, in that it focuses on a basis of continual assessment from the task at hand, and the course of action is influenced by the context in which the risk is based.

2.7.5 Risk modelling and applicability to records management

Having looked at a selection of risk models, we can deduce that whilst risk modelling can be applied to a number of subjects, the overall form does not have to be linear. Risk modelling identifies threats and maps them out in relation to the protected object or element. As these models deal with subjects including records management, we can conclude that the focusing of protective activities around a core of protected elements is the basis of risk modelling for records management. This also provides a basis for the management of risk within e-records, and its modelling.

One of the interesting aspects of risk modelling is in identifying where the risk is represented – externally, or internally. Risk pertaining to e-records may be found in many separate systems both internal and external to the environment of the entity holding them. Looking at the applicability to risk management within records management, the ‘Orange Book’ model shows a particular attention to contextualization of the management concept. Such a specific environment-centric focus is different from other models, such as AIRMIC, where instead drivers are focused upon initially. The effect of this environmental grounding is that there is an emphasis on which areas the risk affects: this could be ‘Parliament’ or another specific area. The actual risk-establishing principles of the model are internal to the environmental context, and rely on a continual reassessment and review of risks. It is a self-monitoring cycle that could be of use in reviewing the risks inherent in and acting against electronic records management, but relies on a specific system in which to conduct this constant risk review.

2.8 Transdisciplinarity

In discussing transdisciplinarity, it is perhaps prudent to identify the differences between this concept and the related term ‘interdisciplinarity’. Lattuca (2003) identifies transdisciplinarity as “the application of theories, concepts or methods across disciplines with the intent of developing an overarching synthesis.” This associates interdisciplinarity with a much more expansive theme, where Repko (2008) believes it defies “disciplinary limits on what theories, concepts and methods are appropriate to a problem”, involving “being open to inquiry” and “using different disciplinary tools... estimating the degree of usefulness of one tool versus another to shed light on the problem” (Repko, 2008, p. 15). One might be tempted to identify interdisciplinary studies as those that look at the interstices between two relevantly compatible disciplines.

Repko (2008) has an interesting, if not intriguing, concept of interdisciplinarity and transdisciplinarity. There are two instances – one being a repeated story from Wheeler and Miller (1970) – which evoke this difference, but also run into semantic and logical problems. Examining each in turn, it is important to clarify why Repko identifies interdisciplinary studies as he does. To him:

“Interdisciplinary studies relies (sic) primarily on the disciplines for their perspectives, insights, data, concepts, theories, and methods in the process of developing an interdisciplinary understanding of a *particular* problem, not a class of similar problems” (Repko, 2008, p. 15).

Here there is differentiation between the concept of transdisciplinary work and that of interdisciplinary work, where Repko specifies that transdisciplinary covers a lot more in scope than an interdisciplinary work. A multidisciplinary study, notes Repko (2008, p. 15), “limits its activity to merely appreciating different disciplinary perspectives.”. A multidisciplinary focus is one which spans the disciplines but which does not settle on dedication to a single perspective. In contrast, transdisciplinary studies have been used in a breakthrough approach from other disciplines in terms of their use in analysis, which can seem ‘out of the box’ in terms of radical application. This description identifies some of the potential for the use of skills, methodologies and methods from other disciplines that, crucially, are not used either by risk management or records management, within this study. We move now to looking at the literature

that is transdisciplinary in subject, and crucially is within the subject areas of the study.

2.8.1 Subject area transdisciplinary works

Current knowledge within the fields of study encompasses risk management texts, records management texts and approaches, and the literature and hypermedia products involved in the analysis and assistance of SMEs. Some liminal texts cross these fields, but are in the minority and tend to be specialist texts intended for a specific discipline. Most notable amongst these is Lemieux's work (Lemieux, 2004) on risk management in records management. This book is unique and covers risk management from a records manager's perspective, looking at the important facets of records management and accessibility, and bringing in the awareness of risk in specific records management activities. This inspired consideration of what practical steps and theoretical concepts SMEs took without such expert advice.

Lemieux's volume is complemented by the simplicity of a condensed handbook on risk management by Holmes (2002) describing the wider world of risk management in terms of a multidisciplinary identification of risk, risk types and the steps towards risk management. It is notable that this volume is designed for business professionals rather than any other group of practitioner.

Of most importance for this study, however, is the toolkit devised by Webb (2007) created for non-records managers to assess risk within their own records holdings and practices of records management. Taking the form of an electronic download, the kit incorporates a comprehensive booklet on records management, detailing aspects of scheduling and retention concepts. The second half of the kit provides a set of checklists, activities, and ideas through which one can identify risks to one's records holdings, assess how immediate and impacting those risks are, and begin to identify who may be responsible for management of specific risks in specific business areas. Though obviously designed for a 'lay' audience, the kit targets larger businesses that are likely to use group meetings as a way of passing on new skills and information to a section of employees. It was this toolkit that inspired research specifically into smaller businesses, as it was evident from the kit's contents (and reference to group

work) that records management advice was being promoted to larger enterprises, but little appeared within the kit to be tailored to the single person or small business. From this kit, a preference for a particular form of method instrumental in evoking participant response became apparent during the interviews. Webb's use of a 'risk grid' to plot frequency and possible severity of realized risk, though a generic technique, was recognized to have the potential to elicit more data within interviews regarding how participants had responded to risk in the past.

Baxter and Eyles (1999) produced a methodologically thorough transdisciplinary response to the use of in-depth interviews within the study of risk. However, there is little innovation in the subject matter, as the concerns of the social construction of risk have already been appraised by Slovic (2000) in an earlier article and republished in anthology format. Other commentators on social perceptions of risk include Peters (1992). In 2000, Cauchi approached the issue of risk in records management based on issues of security. This paper noted that there was already an extensive literature, but that "the aims and purposes of security for electronic systems are no different from those for physical security" (Cauchi, 2000, p. 14).

2.8.2 Risk and transdisciplinarity

The concept of risk has not remained exclusive to the discipline of management. Throughout this 50-year time period, other disciplines have adopted the terminology and concepts of risk. It is this adoption into multiple disciplines which constitutes the form of 'risk management' observed at the time of writing. Other authors and disciplines (Covello and Mumpower, 1985, Thompson, 1986, Althaus, 2005, Luhmann, 1993) have noted that upon being adopted into the social sciences, the concepts of 'risk' and 'risk management' have changed, and adopted certain characteristics which are more overall reflected in the generic use of the terms.

This adaptation has been noted with the number of cross-discipline papers published that specifically acknowledge 'risk' as a secondary discipline within the main subject of the paper – for instance, Taylor-Gooby and Zinn (2006) cross the disciplines of sociology, psychology and risk. Risk becomes more a quality than a discipline in its own right: risk is used within the context of the other disciplines in order to provide scales of the amount of risk.

The breadth of selection of these texts shows that the field of risk in records management has recently been investigated on an expert level, but texts relevant to modern risks are recently revised basic rubrics, focusing on all varieties of risk within every discipline. This shows that the liminal area of risk within e-records is an embryonic science and the field is still new; significant texts and research have therefore not yet emerged or are still to be published. This then led to the question of what theoretical points of records management were observable within SMEs.

2.9 Business and SME literature

Due to the enterprising nature of small business, self-help guides, such as the Good Small Business Guide and the Small Business Handbook (Belbin et al., 2008; Webb and Webb, 2001), form the bulk of the modern informative literature, whilst research into the history of the SME has been covered in the light of its definitions (Tonge, 2001). Representative groups, such as the Small Business Service (Small Business Service, 2006) and the Federation of Small Businesses (FSB, 2011) characterise the active voice of the small business.

Stokes and Wilson (2002, p. 4) present a mutable view of the small business entrepreneur:

“Small businesses do not conform to any neat parameters. Much depends on the industry in which they operate and the personalities and aspirations of those that run them. These factors vary from manufacturers to retailers, professional managers to husband and wife teams, high growth, high tech start-ups funded by venture capitalists to self-financed tradesmen content just to make a living.”

Whilst this is a representation that is a practitioner viewpoint and not an academic text, it shows a remarkably balanced concept of the SME as a form of business which can be just as varied as the areas of larger businesses.

In terms of SMEs within the UK, there are very few pertinent qualitative assessments that are recent. The UK government’s main business statistics collator, BERR (Department for Business Innovation and Skills, 2009b), provides quantitative data on SMEs, but this does not take into account those SMEs that are too small to register for VAT. The Enterprise Nation Report (Enterprise Nation, 2007) was one of the major

works that inspired the choice of small businesses for the investigatory field of the study. The Enterprise Nation Report focused on the need to identify and assess the nature of small business home start-ups, identified the kinds of people who were most likely to create a home business from start-up, and gave a region by region précis as to what form that these start-ups took. This work was based on quantitative analysis, and featured illustrative, qualitative cameos of SMEs.

SMEs were researched in terms of the theoretical basis of their motivations and drivers (Sparrow, 1999), as well as their practical behaviour (Enterprise Nation, 2007, Lam and Burton, 2005, Karaev et al., 2007) and theoretical composition (Haugh and McKee, 2004), noting any fundamental differences in these factors in comparison with the conventional business management theory of larger businesses. Gathering evidence from multiple sources, it was found that the most appropriate sources for information and evidence ranged fully from that taken in fieldwork, to international studies equivalent in form, but not in concept or method (Ehrich and Billett, 2006, Sarosa and Zowghi, 2003, Slade and Van Akkeren, 2002). Modern literature that focuses on the SME as an entity tends to focus on other angles of the SME, such as technology adoption, e-commerce and marketing (Drew, 2003, Mehrtens et al., 2001, Sarosa and Zowghi, 2003, van Beveren and Thomson, 2002, Lam and Burton, 2005, Nickson, 2007).

2.9.1 Taxonomies and models within business focusing on drivers

This section explores both a taxonomy and model that have developed from a business perspective, looking at drivers. This investigation was carried out to inform development of models and frameworks within the study.

2.9.1.1 Model of the sustainability of firms

Reichel's concept (Reichel, 2007) looks at the sustainability of firms, and is chiefly written from a Systemist perspective. In scrutinising the factors that drive sustainability, models are produced that look at the systems within firms in order to explain the structure of the problems that firms face in sustainability. Crucially for this researcher, Reichel also states that insights within systemic interpretations of innovation within companies have guided him to "...systems theory as an analytical

framework for investigating the innovation of governance processes and innovation management.” (Reichel, 2007, p. 118)

This analytical framework looks at drivers for innovation behaviour, based on the gap noted in the literature by Reichel (Reichel, 2007). The initial diagram of the traditional systemic logic of the firm is a linear diagram that shows four categories, each leading in from the other. Reichel uses “drivers of change” as one such category, and cites “drivers and vehicles of change” as a focus (Reichel, 2007, p. 119). The diagram again is simple, and the linear structure allows for a direct statement of the ideas or concepts of the model. However, the disadvantage is immediate: although this model is suitable for describing fixed and final systems with clear steps, it is not a dynamic model or one capable of showing different opportunities in the model.

The model relies on three elements for composition: looking holistically, Reichel uses sustainability as a *weltangshaung*, the model of the ‘HOLOFAS’ triangle “as transformation guiding principles” (Reichel, 2007, p. 123) and sustainability innovations as a thematic basis. These elements of the model he creates combine to be represented in a simple but not simplistic model of how a sustainable firm can be innovation-oriented. The emphasis is on the facility of the model, in taking three complex themes and synthesizing them into a readily understandable model that expresses each of the three themes practically and in concordance with each of the others.

The advantages of this model, and the immediate influence on the researcher’s work, is that a systematic treatment of the approaches to mapping out the factors for the innovative approach in a sustainable firm have, according to Reichel, two kinds of application. These are noted as:

“...two kinds of application for the given factors: (1) In the form of a problem-solving scheme, these factors are constituent elements of (criteria for) a (new) sustainability-oriented innovation project of a firm. (2) In the form of a check-list, these factors serve as a tool for evaluating already existing projects with regards to sustainability.” (Reichel, 2007, p. 124)

This is a useful model to examine, as it is based on the simplification of complex themes. It is also significant that the other products of Reichel's concept are tools and identification lists for business. This shows that there is potential for the research associated with this thesis to create a model that can be used by SMEs. This may help to assess the status of risk management of SME management of e-records.

2.9.1.2 Taxonomy of drivers of productivity within the UK

A taxonomic list created by HM Treasury and the Department for Trade and Industry in 2004 (HM Treasury, 2004b) shows "drivers of productivity" in the UK economy. These drivers are listed as:

- Investment
- Innovation
- Skills
- Enterprise
- Competition

(HM Treasury, 2004b, section 2.2)

This taxonomy is not a model, as it consists of multiple graphs illustrating key points about the UK economy makeup, and draws conclusions about the five drivers and factors behind them from these graphs. The figures for these graphs are drawn from disparate sources, including Government and non-Government sources. As models represent a version of reality, the comparison of graphs may depict part of a model (in terms of the 2004 UK economy) but the portrayal of drivers by themselves does not therefore create a model. It does not necessarily reveal much with regards to the motivations for SMEs. A more in-depth study of SMEs in particular is needed to identify their motivations, and to inform further studies.

The interesting thing to note about this taxonomy is that it touches on the connection between firms and innovation, as well as enterprise. Innovation is a topic that is intrinsically linked with the sustainability of businesses, in particular those that are SMEs and also those that are start-ups – entrepreneurship. It is notable also that the IPPA report 'Entrepreneurship and Innovation in the North' (Johnson and Reed 2008, p. 4) recommended that the drivers be updated, especially in a regional context.

The impact of models and taxonomies such as these for the study is that of guidance towards a systematic treatment of the approaches to mapping out the factors for drivers. In reiterating a key objective of the study, investigation and analysis of attitudes and drivers for risk management of electronic information and records management in SMEs can be helped by the assimilation of the methods and models of other similar studies.

2.9.2 Business risk approach

Looking from another angle, the concept of business through a risk filter is represented well by Shimell (2002). This work is unusual for its reliance on interview material (often without more than first-order analysis of what has been presented) but interesting when used as material for further analysis and study. The principle of Shimell's work is that of the presence of a growing continuum of risk management and risk theory within all disciplines. In centring upon business, Shimell maintains the viewpoint of a researcher who builds on a predominantly contemporary view of risk management. However, by such a predominant emphasis on the cutting-edge contemporaneity of risk management in business, the volume has not aged well. With interviews that detail the concerns of 2002 such as the Iraq-American tension, the overall effect is that of a work that chronicles the risk and business-related ephemera of a specific time period well, but whose impact is overall lowered by a sense of aged redundancies. Whilst the work deals with a specific time period, it now lacks relevance.

The real difficulty for both researcher and the reader is to distinguish what set of lenses have been used in terms of the interpretation of one discipline through another. Within some works, it is difficult to say if the main focal lens is business (looking at risk) or risk (looking at business). In such cases as these, it is best to view the original intent of the work and consider it on a case-by-case basis.

2.9.3 Risk appraisal

In terms of the literature that discusses risk appraisal within business, works such as Kendall (1998) and Koller (1999), examine the practical side of risk within business.

These guides are intended as manual helpers, rather than specifically tackling single subjects, and does not approach the academic level.

Sadgrove's manual on business risk (Sadgrove, 2005) is more a generic work than a book that deals with specific disciplines of risk. Intended as a practical work, it reflects the whole spectrum of businesses and does not necessarily retain a size-dependent focus. It also makes specific assumptions about the number and style of core staff and staff management within an organization.

2.10 Business and Systems

Further research into SMEs and business processes was combined with the researcher's interest in the use of Soft Systems Methodology (Checkland, 1990) and its possibilities in depicting the SME through system diagrams. This opened the research field into the mechanization and systematization of business practices, which centres in the field of 'organizational cybernetics'. An interest in the 'working' vocabularies of SMEs led to an investigation of 'organizational semiotics'. Both of these fields look at businesses and systems management, and explore the separations involved in understanding the behaviour of organizations in terms of micro-examination of their systems and functions.

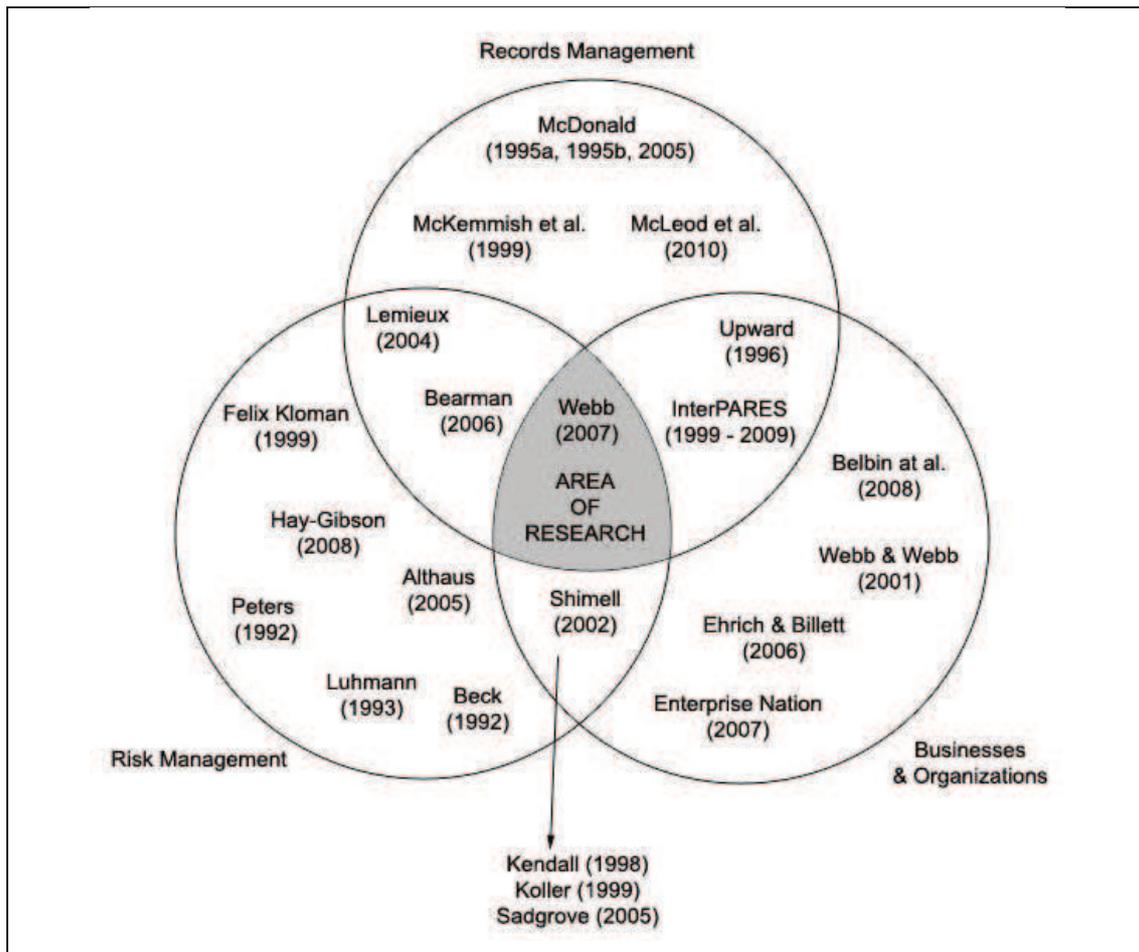
Moving to organizational cybernetics and its role in this study, Beer's work *Cybernetics and Management* (1967) initiated the concepts of management as a construct of systems and sub-systems, and the growth of these inorganic systems as an organic construct. The use of Beer's concepts led to an expansion of the term 'cybernetics' and a conceptual reorganization of the logic of a firm as simultaneously mechanical and organic. Organizational cybernetics, though sounding distant from organizational semiotics, is a discipline allied to it by the component-like nature of the disassembled business. Information and knowledge systems, and their communication and interaction, are described fully in Brier's recent text on cybersemiotics, where the discipline is stated almost like a whole ontology, and bases its aim on evaluating the "human-machine interface" (Brier, 2008, p. 22). This helps to create a mechanical evaluation of the activity in SMEs, and cognisance of processes can then be drawn out as a form of holistic picture, as described by Checkland (1990).

Organizational semiotics, a discipline influenced heavily by the work of Liu (2004) and his involvement in other studies such as Liu, Clarke, Andersen and Stamper (2001), breaks down the organization into definable systems reliant on language and communication for transmission of information, knowledge and data. Semiotics in terms of business area-specific semiotic associations is a slightly more complex subject, tackled briefly by Piranfar and Matthews (2008) in their paper on views of organizational reputation. In showing that semiotics need not be dependent on linguistic analysis, the paper delves further into socio-semiotic values and analysis of cases of reputation and corporate change. The use of semiotics is beneficial in identifying meaning of vocabulary in the workforce, the organization, and the wider environment. By using this approach to the vocabulary of SMEs, more can be found out about the reasoning behind the identification of drivers and motivations to risk management in records management.

2.11 Conclusion

In conclusion, the literature reviewed is, for the main, not ‘informative’ but ‘critical’ in nature. The material chosen shows that the study covers three essential areas which are interrelated through several key pieces of literature, revealing a fourth where they converge. This is where the present study is based, and its originality can be seen in Figure 5.

Figure 4: Venn diagram showing study areas and their works of literature



In opening the topic of records management, a small concentrated base of literature has been reviewed, giving an understanding of the placement of the topic (Figure 4). The links between e-records and archiving are made clear, though this is a subject deep within the discipline as an entirety.

Whilst looking at an overview of risk management, the focal point of risk (whether qualitative or otherwise) in records and e-records has not been critically written about in great enough detail to say that there is a growing genre of such material. Though there are some specialised articles, and at least three specifically critical works (McDonald, 2005, Bearman, 2002, Lemieux, 2004) the material available is not enough to critically describe the situation in terms of e-records and risk within the UK at the point in time of writing this study. Too great an emphasis has been placed on the loss of data, rather than the loss of records, with little actually being produced as critical works examining the phenomena.

In regards to SMEs, a lack of critical evidence and data is contributing to a very indistinct picture of SMEs overall. The literature that does qualitatively describe them and their attitudes is not particularly conducive to the aims of this study.

Chapter 3: Study Methods and their Execution

3.1 Methodologies

The methodologies of the study aim to illustrate the scope in areas of discipline and research of the whole study. In differentiating between the core areas of the study and the outer integral aspects of the study area's research, some of the complexities handled by the researchers who have gone before in their respective fields can be comprehended, as well as the difficulty in integrating some of the transdisciplinary methodologies into the core subjects, themselves with an impressive heritage of research and methodology. The chapter explores key works and authors in regards to the methodology of the study. In exploring these, a greater understanding may be developed of relevant literature which describes specific aspects of the original discipline is explored and evaluated as to its use.

In terms of the transdisciplinary methodology and method choices, this evaluation is also combined with an analysis of the contributions to the study from the relevant field of works that have influenced it. The works of others, such as Althaus (2005), and Ehrich and Bilett (2006) are considered, and the thesis evaluates the techniques that were assimilated into methods, and discusses how these have been applied to the field of study

3.2 Key works and authors in regards to the methodology of the study

The contributions that these works have made to an overall understanding of their subjects in relation to this study's methodology choice are briefly outlined. These 'key works' have significantly influenced the development of the study either methodologically or theoretically.

Beginning with the methodological aspect which helped form the research questions and shaped the process of active research, Charmaz's work (2006) examines the use of Grounded Theory (henceforth abbreviated as GT) in research, from Glaser and Strauss' original piece (Glaser and Strauss, 1967) on the conceptual basis of creating categories from evidence, where GT is used as a holistic framework for studies to her own findings in the use of GT. Charmaz's work is based upon the first concepts of

GT, and strongly advocates that everything which emerges from a study can be considered as data. As an immersive researcher, her methodological views are more suited to those pieces of research that are in-depth, and over a long time period. In particular, her methods of creating coding emergent from the data may appeal to ethnographers and researchers involved in longitudinal studies. Crotty's volume (Crotty, 1998) on methodology and paradigm has informed the study's layout and physical structure, as well as being informative on paradigmatic continuums.

One of the most influential works in regards to risk management within records management is Webb's toolkit to raise awareness of risk within records management (Webb, 2007). This toolkit, based on the principles of risk management and aiming at a form of risk awareness within those using it, provided an insight into the ways that risk could be measured or assessed. This is a risk assessment framework that was designed for a practical use within records management, and its viewpoint was considered for the approach towards conducting research within businesses. Moving onto a transdisciplinary work, Moretti (2005) is a work which examines how studies in English literature can be improved or can benefit from depiction by transdisciplinary methods. He asks the question of whether literature can ever be represented fully by simple textual representations and advocates analysis by trying pictorial interpretations instead.

From Moretti's examples, this study has looked at representations of transdisciplinary analysis more closely to try and bring a meaningful focus to the study's analysis. It is a work that uses transdisciplinary techniques to explore the relative use of transdisciplinary concepts, such as illustrating a literary history with a chart set visually along a timeline, plotted on a map, and is a work which strongly influenced the data analysis and presentation of the thesis study. The value of this text in terms of methodological conception is based on its importance in drawing new conclusions from a different interpretation of the data. The visualization of historical and literature-based evidence is a strong argument for 'out of the box' thinking in terms of data analysis. This directional change in the interpretation of data forms an approach that is more exploratory, and emphasizes the role of perspective in analysis.

Patton (2002) promotes a philosophical look at methodology, and is best described as a philosophy of theory, rather than a practical text of identification of methodological paradigms (such as Miles and Huberman's work on their *Expanded Sourcebook*, 1994) This philosophising covers the more reflective elements of choosing a methodology, reflecting on the nature of data, and in particular identifying approaches to data. The ethical and logical position of the researcher is debated in the terms of their relation to the data, rather than to a particular method. Through this work, Patton shows a vitally important concept in terms of the study of research methodology and understanding as a holism. In terms of the object of the study being a unique object, researchers can be misled about the need to think creatively about the manner of the study. Whilst an element of creativity is essential, the most intrinsic need in the study is to perform an inquiry, exploring in whatever manner is best to investigate sources of evidence about that which is studied. Patton (2002, p. 2) observes that one should study the box, rather than simply thinking outside of it.

Ochs and Capps (2001) accommodate both methodology and theory in the use and concept of narrative analysis as a means for exploring the types of narratives which occur daily. Their discussion of narrative and analysis of what people relate through different aspects of narrative is of great use for any researcher dealing with interview material. They have proposed a narrative model that is inherent within all narratives: there is a setting for the narrative to take place in, and an "unexpected problematic event" (Ochs and Capps, 2001, p. 174, Figure 5.1) is related. This then takes the narrative to the next stage, that of a change, either in the state of the person or an object, or the revelation of an unplanned event. This often leads to a "goal-directed attempt" where an action or similar might take place in order to resolve the situation created by the change. The ramifications of such a model for the evidence collection of this study were great, leading to the creation of a model examining the participant narratives, as will be further described in Chapter 7.

Moving from narrative to linguistics, Kennedy's work on Corpus Linguistics (Kennedy, 1998) is a key text in its instructional layout for those who wish to learn about the practice of creating and understanding what is needed to create a corpus. His descriptions of the creation of specialist corpora have made Kennedy's work vitally important in terms of methodological relevance. The theory and ethics of the creation

of corpora are also examined as a holistic part of the concept of corpus creation. Such a standpoint, whilst not rare for such a subject in its field, is still quite unusual for a text that for the main details the practice of the construction of corpora.

3.3 Research paradigm: interpretivism

The interpretivist paradigm, understood in terms of Guba and Lincoln's concept of the paradigm as "a set of basic beliefs (or metaphysics) that deals with ultimates or first principles" (Guba and Lincoln, 1994, p. 107) sets out the basis for this study, when considering the nature of the evidence dealt with in their study, and the best way to understand and interpret it. Guba and Lincoln's three questions of ontological, epistemological and methodological aspects of study (Guba and Lincoln, 1994, p.108) highlight the nature of research by allowing researchers to think about the nature of knowledge – and more importantly, their perception of it – within their discipline. Schwandt (1994, p. 119) has described the development of interpretivism as trying to address the 'paradox of how to develop an objective interpretative science of subjective human experience.'

The interpretivist stance posits that "in order to understand this world of meaning, one must interpret it." (Schwandt, 1994, p. 118) This can be social construction, and the world of human behaviour. The techniques and tools of the Interpretivist inquirer are those of observation of the human social world, similar in a sense to ethnography, placing an emphasis on the concept of observation. The epistemology of the Interpretivist paradigm – that knowledge is socially constructed – makes the focus of the study's aim easier to understand.

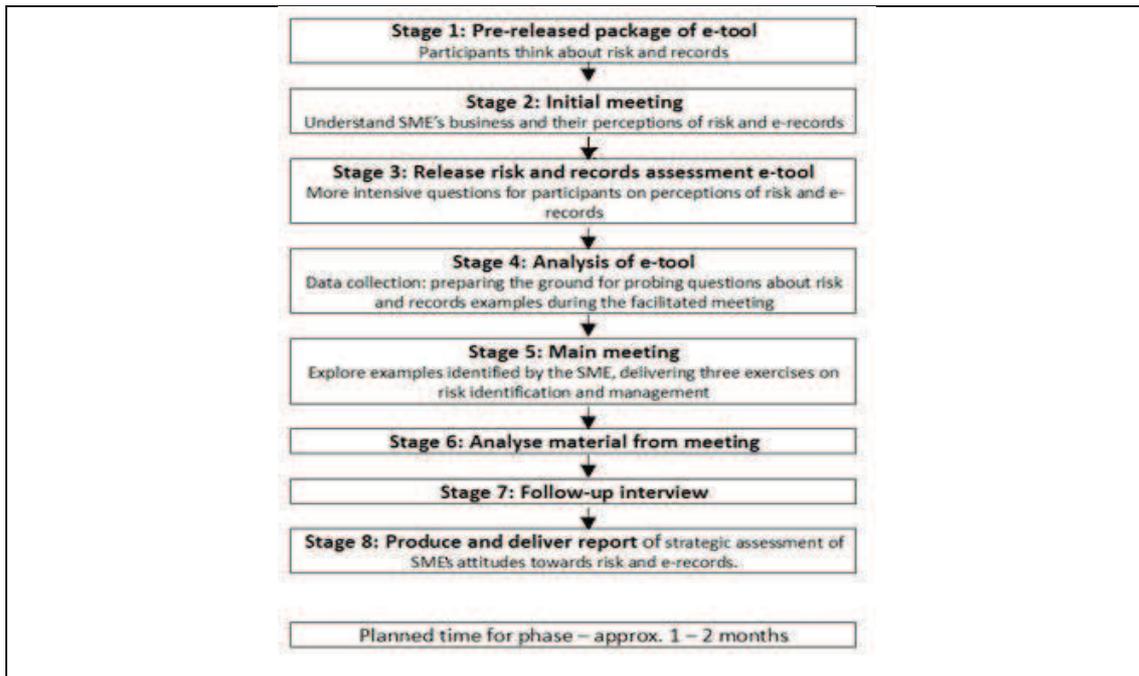
Within the limits of the PhD study, the interpretivist paradigm has been used to shape the inquiry into the identification of drivers for the management of risk. Using case studies to explore, understand and identify what perceptions the employees and managers of SMEs hold about risk and drivers to manage risk in records allows perspective on these perceptions. An interpretivist paradigm posits the acknowledgement of multiple sets of knowledge perceived to be held by people. The drivers behind management of risk, the use of a specific or developmental vocabulary, are all *topoi* where the evidence itself has priority.

Scheepers (2003) appears, though not explicitly, to have followed a similar paradigm for a study of businesses implementing intranet structures, and using cross-case study methods to analyse the data gathered. In looking at “complex role relationships” in large organizations, Scheepers (2003, p. 106) identifies multiple concepts of reality from the participants, the actors and the researcher.

Whilst the researcher’s interpretation of events is important, the role of the researcher as an interpreter (Reichel, 2007) is that of an arbiter who chooses to show a specific focus from their collected data. In this way, the subjectivity of this study is linked to the focus of the SME: looking at the perspective of those inside and around it (the evidential focus), as well as those outside it (the literature focus).

This ontological perspective places an emphasis on how knowledge such as that which is shared by a company and outsiders to the company. For this study, knowledge and data are seen to exist within the company. This needs to be accessed – either through a record or through personnel. A rich picture and holistic whole are not dependent on how the SME is singularly perceived. The complexity that can be observed in the structure of an SME’s planning in regards to risk and e-records management can be interpreted in a variety of ways: e.g. through analysis of interview material and analysis of material provided by the SMEs themselves (such as manuals or receipts). Whilst the latter was not provided in sufficient enough amounts to analyse, it helped provide a cultural grounding for the researcher.

Figure 5: Original plan for study



The timing of phases (see Figure 5) was given as an estimate, but as is noted later within the thesis, more time was found to be needed to process data and to arrange meetings at convenient times for participants.

3.4 Methodological approach

The methodology of the study aimed to illustrate the scope in areas of discipline and research of the whole study. In differentiating between the core areas and outer aspects of the study area's research, when looking at some of the work tackled by previous researchers in their own respective fields, an understanding of how complex these core areas are emerges. The difficulty in integrating transdisciplinary methodologies into the core subjects of the study is shown in the heritage of research and methodology spanning such works in risk management and records management as Althaus (2005), Lemieux (2004) and Slovic (2000).

In terms of the transdisciplinary methodology and method choices, this evaluation is also combined with an analysis of contributions from the relevant field of works that have influenced the study. The study describes the works of others such as Althaus (2005), Moretti (2005), and Ehrich and Bilett (2006), and evaluates the techniques that were assimilated into methods, and how these have been applied to the field of study.

3.4.1 Mixed method approach

The use of multiple methods, triangulated, to address the study aims and objectives is an approach that has been noted for its value by Patton (2002, p. 247).

Tashakkori and Teddlie (2003, p. 4) note that the struggle between paradigms has its “warriors” – those who fight between Positivism and Constructivism. Whilst Oakley (1999) has described where and when the battle may have started, the metaphorical concept of warfare between the paradigms is now thought to have been resolved by the presence of ‘pragmatists’ – those who favour mixed method used as a specific paradigmatic approach (Giddings, 2006; Doyle, Brady and Byrne, 2009).

The concept of mixed methods as described by Tashakkori and Teddlie (2003, p. 5) is that of approaches “which contain elements of both the quantitative and qualitative approaches”. Doyle, Brady and Byrne (2009, p. 178) have noted that the underlying philosophy of a pragmatist view is that the consequences are more important than the process and therefore that “the end justifies the means”.

In terms of their six major data collection strategies, looking from questionnaires to physical data, Johnson and Turner (2003) note the dimensionality of qualitative and quantitative research. Their concept of qualitative and quantitative as polar and dimensional opposites encourages the exploratory use of mixed, triangulatory or ‘intramethod mixing’ (Johnson and Turner, 2003, p. 298) as a coda to data analysis in different styles that make the most of the evidence collected. Overall, they note that researchers “should be guided by the fundamental principle of mixed methods research: methods should be mixed so that they have complementary strengths and nonoverlapping weaknesses.” (Johnson and Turner 2003, p. 316) As can be seen from the tables included in this chapter, such strengths and weaknesses in a mixed method overlap have been addressed within this study.

It is proposed that the use of the methods within this study represents a varied mixed method concept that has great potential in the terms of future work and development. The combination of the use of multiple methods to investigate and explore the study problem, and the use of methods from outside the natural discipline area, mean that the possibilities of exploring all relevant elements of the evidence given by SMEs.

3.5 Research Strategy

3.5.1 Case studies

Case studies have been used in business research (Scheepers, 2003, Cho et al., 2006, Mars and Weir, 2000) instances of social studies research (Strother, 1991) and exploratory studies into situations (Adamson, 2004, Shaw et al., 2004, Green and Sanderson, 2004, Peters et al., 2004).

It is evident that the case study as a method is one that can span disciplines, so is not in this instance transdisciplinary. Though no specific case studies for records management *and* risk management exist, case study methodology has been used within the individual disciplines before (Mars and Weir, 2000, Katundu, 2001).

A set of case studies that have helped to shape and inform the study were research reports published through CRESR (Centre for Regional Economic and Social Research, Sheffield Hallam University). These reports, specifically papers by Adamson (2004) and Shaw et al. (2004) comprise different sets of investigations on urban social welfare. As ‘samples’ of different types of case study, their varied approaches are excellent material for an exploration into writing style for case study work. Adamson’s report (Adamson, 2004) on youth crime, for example, centres on the description of a key youth offenders project, but occasionally uses supplemental evidence in the form of quotations from interviewees. It is a thin but strongly analytical case study, which shows the strength of a case study as an overview of a large project.

Shaw et al. (2004) constructed a more complex social study of society in terms of case study research by examining six case studies. Attention had been paid to subgroups of activity related to the overall theme (i.e. the ‘liveability agenda’ of ‘environmental services’) and a comprehensive executive summary helped to describe and compartmentalise the study. This study (within the group of similar reports for CRESR) was special in that it had a facet of evaluation for the whole report, as ‘emerging lessons’ for the subject area under study.

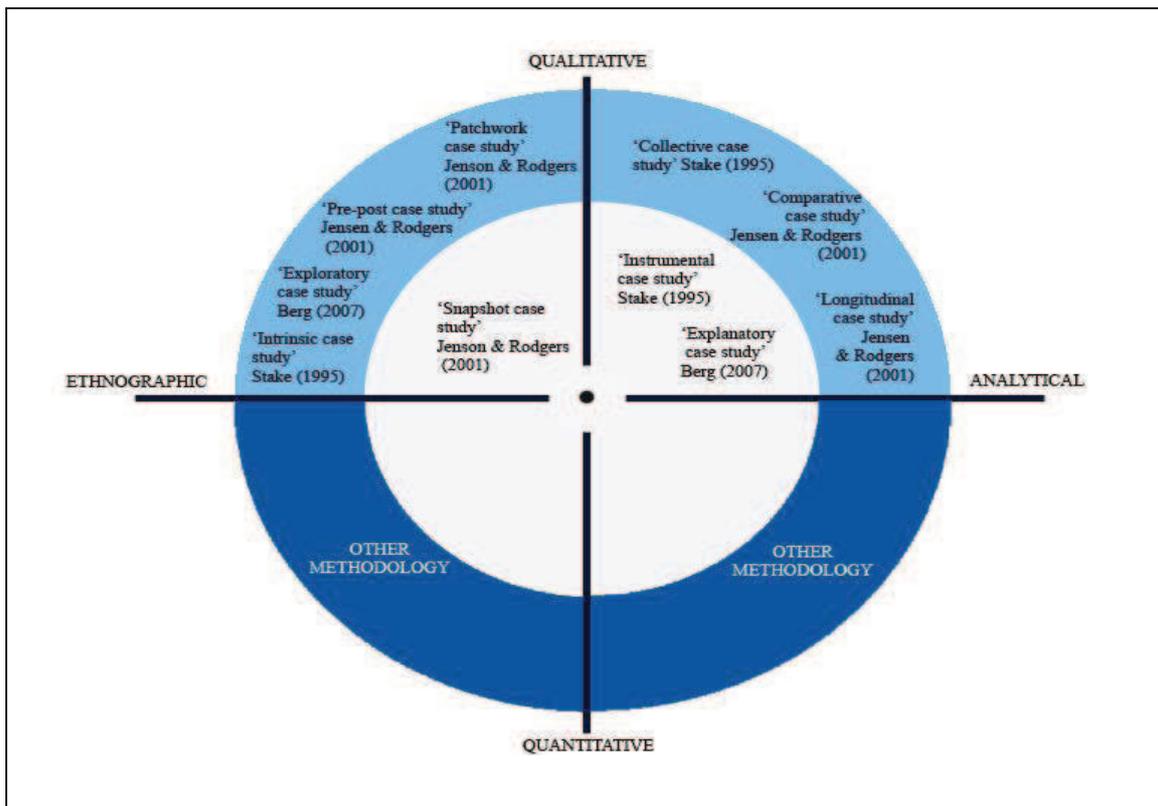
Key authors such as Yin (1993, 1994) and Stake (2000) shaped the initial choices, but Jensen and Rodgers (2001) added significantly to them: thus allowing for the creation of a model of case study framework choice that had breadth and depth. In discussing case studies, Berg (2007) describes more of the facets of case study research, albeit in terms of dimensionality to the concepts, by offering the suggestions of ‘explanatory’ and ‘exploratory’ case studies.

However, Jensen and Rodgers (2001) identified a wider sense of inclusive approaches for case studies, including snapshot, patchwork, pre-post and comparative case studies. The overall ‘linear’ choices of Stake (2000) have been supplemented by a wider span of dimensions as demonstrated by both Berg (2007) and Jensen and Rodgers (2001) in case study – the dimensions of time (concepts past longitudinal case studies), of place (space, as seen in the choice of singular versus multiple spaces) and of form (using one case study to measure against another). In exploring such a dimensionality of case studies, and the possible choice in formation, a model was postulated to try and help identify what kind of a case study the overall study aligned itself towards. This was illustrated by the researcher and is detailed in Figure 6, the ‘Celtic Cross’ model.

3.5.2 Case study alignment

Figure 6 has been named by the researcher the ‘Celtic Cross’ of methodology as it bears a resemblance in shape, with the arms of the cross extending out towards opposing paradigms, and the ring and core providing the dimension of proximity to quantitative study. It was created by the researcher as a way to assess the alignment of different types of case studies. It maps out choices for those choosing a locus for a case study where the subject has been decided upon, but not the precise varieties of case study methodology.

Figure 6: Case study paradigmatic and methodical alliance – the Celtic Cross model of case study research



The horizontal arm of the cross describes the variety from ethnographic case studies to analytical case studies. The vertical direction shows how much of an inclination towards qualitative research the study form uses. The bottom half of the cross indicates the move from the case study methodology to other forms of methodology, orienting themselves around the quantitative, rather than the qualitative.

In this study, alignment lies between the further ring and the inner core, as it is a qualitative study that is tempered in its analysis of qualitative evidence by the use of a method that is partially quantitative in nature, corpus analysis. Looking further at the study, the use of grounded theory to evaluate not only the evidence, but also study procedures, gives the study more of an affinity towards ethnography.

Reading the diagram like a clock face, the alignment of this study on the Celtic cross diagram is placed at around midday – closer to the Ethnographic side than the Analytical, and more qualitative than other variations in the Qualitative-Ethnographic alignment. This reflects the fact that the study relies on narrative contributions as

evidence and takes a good deal of its basis from case studies grounded in the context of small businesses.

A historical (or historical and historiographical) approach was taken to the research into risk management as a discipline, as it was appreciated that a good grounding would be needed, as this is an unusual approach to take. The development of risk management as a science (Hay-Gibson, 2008) has been explored as an avenue of research, and the historical approach also helped inform the formation of the narratives and the approach to commentary on the formed narrative.

To frame the ideas, views and opinions on the drivers for risk management in records management, selected SMEs were chosen as individual case studies. Whilst surveying a larger number of individual SMEs had the possibility to produce a greater set of results, it was felt that simple surveying would not produce the in-depth rich data that was needed from the study in order to elicit the drivers and motivations for SME behaviour. Focus groups were also considered, as they elicit data from all participants involved in the groups, and this can be quite rich. It also allows for the participants to react from one another. However, the technique of gathering participants from a small business setting to participate in focus group research was problematic. Small businesses by definition have few members who can be made available to participate in research sessions at the same time.

In response to the objectives of the study – to investigate and analyse attitudes and drivers for risk management of electronic information and records – methods were sought which could provide rich data for analysis in order to provide answers to the research questions. Case studies were considered because they have formed some precise pictures of activities and responses to these activities within business settings (Scheepers, 2003, Gable, 1994). Case studies can also be compared against each other in cross-case analysis to understand similarities and differences in a pertinent framework. This allows for a greater depth of rich data within analysis.

3.6 Data Collection

The methods of primary data collection were a form of questionnaire, a led form of the same style of questionnaire, and sets of interviews carried out on site within the businesses by the researcher. A research ethics policy was adhered to (Appendix 2).

3.6.1 Sampling

The criteria for choosing SMEs to participate in the studies were influenced by several factors. These are described further in the glossaries within Appendix 8.

3.6.2 E-tool questionnaire

The idea of this questionnaire was based on the tools found within Webb's (2007) toolkit dealing with risk management of records management. As it was clear that Webb's short questionnaire was useful only for a small amount of closed question data collection, a tool was created in the same vein but based on a need to collect rich data and to identify some of the drivers for risk management within specific cases.

In terms of the time scale, the first part of the data collection carried out was the e-tool questionnaire. The e-tool questionnaire was designed to ask questions about risk management and records management. Questions were generated to identify themes, ascertaining specific information about the records management and risk management awareness within the case study SMEs. This is explored further in Appendix 8.

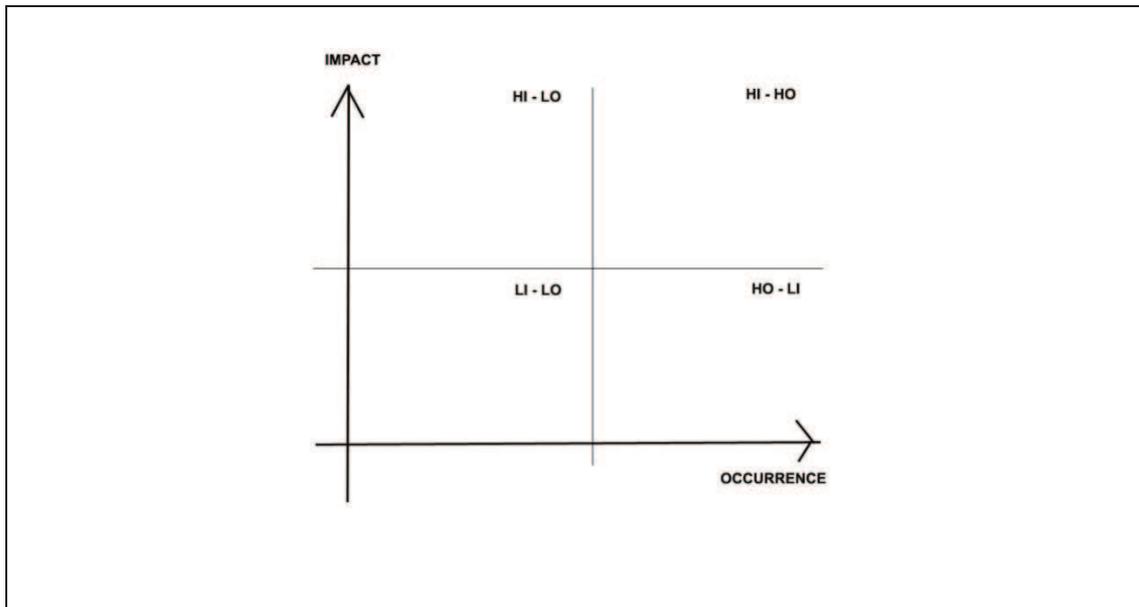
Using prompts from the questions in e-tool part 1, there was leeway for alteration to the questions of part 2 (Appendices 3 and 8). The second part of the e-tool was designed to be given to the participants to complete themselves after an initial meeting between researcher and an SME.

In terms of active deployment and development of this research tool, it was released to ALPHA in its first form in January 2008. This was then completed by ALPHA, and the research results analysed. It then became evident that the level of detail that was obtained with the first version of the e-tool questionnaire was low-level and did not provide as much data as had been hoped. It was clear that the tool could be useful, but required re-engineering in order to get a more granular level of evidence.

3.6.3 Interviews

3.6.3.1 Activities during interviews

Figure 7: Risk grid, based on Webb (2007) as presented to participants



Participants were asked during their second meeting to recall incidents of risk to their records – in particular, e-records – and were provided with a copy of the blank grid above (figure 7). They were asked to place elements of the incident in respective areas of the chart by assessing how much of an impact and how frequent the occurrence of such a risk was. Risks were usually broken down into ‘what would happen if’ questions, in order to encourage the participant to describe the results of a risk to their records and e-records. In encouraging the participant to discuss their assessment of a previous risk, more dialogue was generated within the interview which specifically addressed the issues of risk management and records management. This was used to inform both the formed narratives which were created for the case studies and the creation of the corpus for each SME.

3.6.3.2 Interviews using questionnaires as a basis (BETA and GAMMA)

In reaction to what was found with the use of questionnaires, semi-structured interviews based upon questionnaires were used with BETA. In the case of GAMMA, as no participants had agreed to use the questionnaire, an interviewer-led form of the questionnaire was given instead, in the same manner as an interview.

Data collection consisted of interviewing participants who had completed the questionnaires. All interviews were recorded and transcribed. The audio data were

transcribed by hand, and made into a document that was then anonymised. The participants in the interview were anonymised, retaining the labelling as implemented from the start of the study. All other names were also anonymised in the transcript, and the related information about them was retained in order to make sense of the transcript.

Several authors including Worth and Tierney (1993), King (1994), Fontana and Frey (1998) and Lotter (2009) have described the use of interviews as a method of data collection in similar studies but special attention has been paid to the fact that two of the interviews for the study were carried out remotely. The same skills required for interviewing face to face are used and built upon when remote interviewing is required. The “gold standard of face-to-face interviewing” has been noted in research literature (McCoyde and Kerson, 2006, p. 390), but this is fairly proscriptive, given the development of alternatives to face-to-face interviewing now available at low or little cost to the interviewer and participants that have now been made possible by changes in technology.

In terms of the use of interviewing in similar studies, such a method was adopted by Baxter and Eyles (1999) studying order to gather viewpoints on a community’s views on the siting of a non-hazardous waste plant. They successfully collated rich data “to begin to understand the role of deeper issues like community values and ways of life, which are recognised as important in the risk literature, but which are rarely studied directly” (1999, p. 309). From this study, based on the qualitative data collected, they created a conceptual framework for understanding risk associated with the waste plant site. However, their critical concerns were manifest throughout the work, highlighting the constant criticism levelled at such approaches (based on ostensible lack of rigour) they note that “Qualitative research based on in-depth interviews is often criticised for being anecdotal, based on small samples, and generally lacking rigor.” (1999, p. 308). It is also important to note that the criteria of rigour are often based on quantitative standards, and as such cannot be used to measure the standards of qualitative evidence. This dichotomy is noted in the aspects of mixed method use, and is “not to be dismissed lightly” (Patton, 2002, p. 252).

3.6.3.3 Skype as an interview tool

As two participants for GAMMA had been difficult to contact, remote interviewing was used in order to contact them and hold interviews as planned for completion of fieldwork in the case studies. The employment of Skype as a tool to conduct interviews is a recent phenomenon, and one that was used as the SME already had access to this application, and was familiar with its use. A call was made to the participant using the Skype service, and was recorded with a digital recorder in the same manner as the face-to-face interviews. During both Skype interviews, the calls were interrupted by mechanical faults, but were quickly restored with no other problems. Use of VoIP by researchers has been described elsewhere by the researcher (Hay-Gibson, 2009).

3.6.3.4 Style of interview questioning

The evolving design of the interview allowed for a flexibility in the approach of the participants. One common complaint from participants of BETA was that the questionnaires were difficult to understand when no context was apparent from exemplars. This was considered but fearing that it might bias the questioning, it was decided to instead use the questions from part two of the e-tool questionnaire as questionnaire led by the interviewer.

Baxter and Eyles (1999, p. 309) have noted that “Face-to-face, in-depth interviews are valuable for exploring the meaning of risk, since multiple meanings may be expressed through language”. It was through open questions that participants were allowed to form their own narratives about their experiences of risk within records management.

3.6.3.5 Final interviews

A final interview was carried out with willing participants from each case, exploring what they thought they had learnt or experienced about their risks, risk management and e-records management. Within the case studies, only A1 of ALPHA, MB1 of BETA and G1 of GAMMA were able to give a final interview.

3.7 Contribution of individual methods within the study

We now look at the role of the different elements of research design in the formation of the overall shape of the study. In envisaging the disciplines that were being

researched, it was postulated that records management, risk management and the concept of the SME could intersect in the area of study as defined by the aims and objectives, and refined by the research questions. Figure 8 shows such an intersection of disciplines, and the potential area of study, within a Venn diagram.

The elements of the research design therefore had to allow investigation of the disciplines sufficiently well to achieve the aims and objectives of the study. Whilst some choices of methodology were easy to identify and apply to multiple disciplines (such as the concept of using case studies to explore the issues found in regards to SMEs), others emerged as a choice from within the respective disciplines.

The Venn diagram below (Figure 8) illustrates the choices of methodology from within the pertinent disciplines of the study.

Whilst the choice of case study is an approach suited to all three disciplines, in the areas of overlap there is leeway for other methods to be used in order to exploit fully rich or 'thick' data. Between risk management and SMEs as separate disciplines, whilst case studies are applicable methodologies for both, narrative analysis is also a choice of method as it has been used to analyse the motivations and individual meanings within the transcripts of interviews with SME participants, discussing their views and experiences of risk management. This transdisciplinary approach (using methodology and method from one discipline to obtain results within another) opened up a possibility of the collection of richer data.

Figure 8: Venn diagram of the fields of the study



In terms of the research design's ability to fulfill the aims and objectives of the study, the grid provided in Table 3 shows how they have been fulfilled by the data collection and analysis activities, and research (following Pitts, 1994).

As a transdisciplinary choice in methodology was followed, some of the methods used for data collection within the study may seem unusual investigative approaches, but have been a benefit to the study through a mixed method approach, triangulating rich data and analyzing it. Table 3 shows the strengths and disadvantages of using such a mixed method approach within this study.

3.8 Data coding

Data coding was carried out firstly through coding the interview and questionnaire data in order to identify themes, and then through parsing of the interview data in order to assess it through computerised corpus linguistics (CCL). The details of these methods are explained in Appendix 8, and Table 3.

Table 3: Aims and Objectives Grid, following Pitts (1994) (A3 insert, p. 81)

3.8.1 Corpus linguistics

Corpus linguistics is a method of analysis for bodies of specific evidence – that which can be represented as the written word. McEnery et al. define the corpus as “ a body of naturally occurring language” (2006, p. 4). Linguistics, on the other hand, has been described as equally non-prescriptive, but for a different reason:

“...Linguistics is *descriptive*, not prescriptive. Linguists are interested in what *is* said, not what they think *ought* to be said. They describe language in all its aspects, but do not prescribe rules of ‘correctness’. (Aitchison, 1992, p. 4)

Whilst some linguistic work (Tannen, 1995) has attempted to try and identify a link between the users of different forms and modes of language and their roles in the world of business, there has been little which has directly examined the linguistics of SMEs. In particular, corpus creation and development, though not limited by subject matter choice, tends to concentrate on material for which there is already a transcript or written source – such as quick, web-based corpora (Hall and Lee, 2006, Kennedy, 1998). The use of corpora for study of terms and vocabulary of a discipline has been used by Hall and Lee (2006).

3.8.2 The Corpus

Baker, Hardie and McEnery (2006, p. 48) define a corpus as “a collection of texts (a ‘body’ of language’) stored in an electronic database”. Knowles, Witchmann and Alderson (1996, p.1) note that a corpus is “more than an arbitrary collection of texts” - whilst Biber, Conrad and Reppen (1998, p. 246) term it ‘not simply a collection of texts’. The basic element of a corpus is obvious, but as Knowles, Witchmann and Alderson (1996) note, there must be more factors than this in order to make a collection of texts into a corpus.

McEnery and Wilson (1996, p.29) place these factors under four headings, namely:

- Sampling and representativeness
- Finite size
- Machine-readable format

- A ‘standard reference’

These factors are described fully in Appendix 7. Whilst there is debate about each of these factors and their relative importance to corpus definition, it is appropriate to consider them as additional criteria for the term ‘corpus’. A more concrete definition of the representative value of a linguistic corpus allows for a more relevant study of the final item, and a standard for thorough criticism of other corpora.

3.8.3 Corpus Sampling

Sampling refers to the representative value of the corpus. It describes the range of the corpus, and from where it obtains its textual material. Kennedy (1998) is quite open-minded about the possibilities of material for a corpus, including corpora of texts transcribed from the spoken word, and McEnery and Wilson (1996) note that the sample should be a broad range within the chosen medium. Biber, Conrad and Reppen (1998) make a distinction between two types of sampling, proportional and stratified. Proportional sampling, used to gauge a representative sample of language sources for use in a corpus, was considered for the corpus, but with specific caveats. McEnery et al. (2006) has noted that sampling from a spoken-word corpus (such as a collection of interview narratives) does not lend itself to critical sampling techniques or frameworks, as

“... it can be notoriously difficult to define a population or construct a sampling frame, particularly for spoken language, for which there are no ready-made sampling frames in the form of catalogues or bibliographies.” (2006, pp. 19-20)

McEnery (2006, pp. 20-21) goes on to mention that Biber has acknowledged the usefulness of short text chunks as a form of sampling suitable for checking for small linguistic features – but does not clarify what can be done for shorter, interview texts where interchanges are shared by the researcher. Overall, the recommendation is for care to be taken when conclusions are drawn from corpora, rather than specifying rules for spoken-word small corpora. “Whilst balance and representativeness are important considerations in corpus design, they depend on the research question and the ease with which data can be captured and thus must be interpreted in relative terms, i.e., a corpus should only be as representative as possible of the language variety under consideration” (McEnery, 2006, p. 73).

3.8.4 Corpus Construction

Elements of design are the first points of corpus construction, and taking the definitions above into account, it was first necessary to establish the need for a corpus of SME language in regards to risk and records management, as there crucially has not been one before, and there have been no investigations as to what languages are used by SMEs already within a corpus.

No such corpora exist, so there is a clear need for this corpus by records managers interested in the perception of the field, researchers into risk, and researchers into SMEs, as well as others such as linguistic researchers and computer linguistics researchers.

Having fulfilled the most important criterion for a corpus – that of a valid need for such a corpus – it was established that the other definitions could be addressed as described in Table 4.

3.8.5 Data coding and analysis preparation

Data coding and preparation for analysis was broken up into the creation of corpora, the creation of diagrams of data, records and information flow within the SMEs, and the identification of themes from the collected interview material. Computer corpus linguistics analysis (CCL analysis) is described further in Appendix 7, but a basic outline of the data collection and analysis is given in this section to clarify the process.

3.8.5.1 Narrative analysis

Hoey (2001, p. 13) describes the nature of text in terms of a text as artefact, and the “site of an interaction between a writer and readers which the writer controls.”

Writing in terms of education, Cortazzi (2002, p. 1) notes that narrative analysis could be used to preserve elements of the culture that is studied through narrative:

“Use of narrative methods of research can allow us to develop descriptions of teachers’ culture which preserves their voices.”

Table 4: Kennedy's (1998) criteria of corpus construction and the SME corpus

Criteria	SME Corpus
<i>Has been specially or specifically collected in order to form a corpus</i>	Interviews and questionnaires specially undertaken by the researcher to ask about risk management and records management
<i>Has been taken as a sample of a language, situation, or set of extant works, showing intellectual rigour in construction</i>	Exemplifies the language used in SMEs in relation to their risk in records management, especially e-records. Will be annotated to describe important points.
<i>Has a logical order to the collection of materials</i>	Material arranged into hierarchies according to subject
<i>Has no minimum or maximum size, but has a recommended word count of 20,000</i>	Material word-counted to establish size
<i>Has a diversity of vocabulary, regardless of word count</i>	Material comes from three SMEs in the forms of speech from interviews, completed exercises and questionnaires
<i>Has the ability to be searched by machine if appropriate, with a consistent coding and markup</i>	Material transcribed (in the case of interviews), kept in .txt or .doc files, and marked up by the researcher
<i>Should be of sufficient rigour to be made available to other researchers, if required</i>	Corpus will not be made publicly available due to privacy arrangement, but will be cited as part of the thesis, and will be held to this standard. These are available to examiners for inspection.

Narrative analysis is an analysis of participant language, which in the case of the study, the participants have related through interview.

The approach of examining the SMEs through the narratives of their respective employees is a critical one that seeks to establish the roles within each SME as represented by individual employees. This can be beneficial to an overall understanding of how SMEs manage their records or e-records, as it can show whether certain individuals manage records for the SME, or if it is a shared task amongst employees. The distribution of the act of records management is one activity that can be verified if individual narratives are examined.

3.8.5.2 Forensic soft systems methodology (fSSM)

The investigation of soft systems methodology as a form of analysis of the collected data was rewarding because of the richness and depth of data collected. It helped frame the data into a set of rich pictures couched in the terms of analysing structures and processes in the individual SMEs.

Soft systems analysis emerged from a derivative form of systems engineering (Checkland and Scholes, 1990) that was conceived in order to understand problem situations that may be complex, but are not well ordered. SSM is praised for its fluidity (Wilson, 1984).

Mingers (1995, p. 19) notes that “conventional methods pay little attention to the wider business and organizational settings within which the information system must operate”. SSM takes into account the ‘soft’ factors of the surrounding environment of the specified system – in this case, whatever systems are used for receiving, storing, transmitting and otherwise working with electronic records.

Forensic SSM (fSSM) is the technique that was developed within the study from looking at the use of SSM within businesses. It was decided to use the prefix ‘forensic’ in the context of describing the scientific side of an investigation.

It describes the more scientific side of the evaluation of the evidence. Forensic soft systems methodology examines the data that participants have produced without requiring them to be present at the point of analysis. This is a benefit for the SME participants, as time away from their work is minimised, and the resulting diagrams of data, information and records flow within the business are brought back to them for verification. Participants did not need to be involved in a group meeting in order to share their evidence or receive feedback. Triangulation of evidence from the transcripts provided a balanced view of individual perceptions of the SME.

SSM was considered as a possible method of data collection because it analysed the roles of the system – the inanimate data flow within the company – rather than the roles of the people in the company in a particular viewpoint or situation – in this case, records management and also risk management. Others have identified that in certain situations of data analysis, SSM may not be the best form of analysis to use without modification (Lewis, 1993).

However, as the participants could not always feed back information as a group, or during a field visit, the decision was made to perform this individually to make the most of the possibility to collect rich data about individual views of the SME.

The standard techniques of SSM were not used, as solving a problem was not the intended process outcome. The participants were asked to offer examples of risk and records management. The participants were met in an initial meeting, and then were sent the questionnaire, which was a tool designed to find out more about the company its records management and risk management. From their evidence, a ‘snapshot’ of their company based on the evidence that they had produced in the meeting and questionnaire was drawn out. The intended pattern of use for fSSM was that a diagram would be constructed by the researcher, and then shown to participants at a second meeting in order to confirm its validity and to amend it if necessary.

3.8.5.3 Data analysis using the corpus

In order to use the interview data for a different form of analysis, corpora had to be constructed from the data using computer program tools. A list of procedures was created for the creation of corpora for the study (Figure 9, below).

Figure 9: List of procedures for corpora

1. Interview material made into texts
2. Texts uploaded into UAM Corpus Tool
3. Overall word count calculated
4. Chunks of texts identified from participants
5. UAM Corpus Tool used to form a ‘representative corpus’
6. ‘Representative corpus’ used to create lists of high propensity words
7. CORSIS used on ‘representative corpus’ to identify the context of the high propensity words

3.8.6 Integration of study methods

The methods of data collection and data analysis used in the study are summarised here in Table 4. Highlighting where and how the methods are used, this identifies the use of methods of data collection and of data analysis within the study.

Fieldwork was initially planned to follow the stages on the diagram within 1-2 months but it was soon found in active fieldwork that this was not a feasible estimation of the

time needed. The stages of fieldwork roughly followed a pattern of active fieldwork followed by time to analyse and transcribe evidence.

Figure 10 identifies the key aspects of fieldwork in three stages – those of data collection, analysis and presentation. Data collection includes details of participant selection as mentioned in Appendix 8, including the cases, participant numbers and distribution. It also notes the main methods of collecting evidence – questionnaire and interview. Data analysis shows the methods applied to the material from the interviews and questionnaires could be interpreted with. Data presentation shows what was then formed from this analysis stage, with narratives and glossaries being created from the participant contributions, and first and second order syntheses being generated from a holistic view of the study’s findings.

Figure 10: Diagram of research plan following Baxter and Eyles (1999, p. 313)

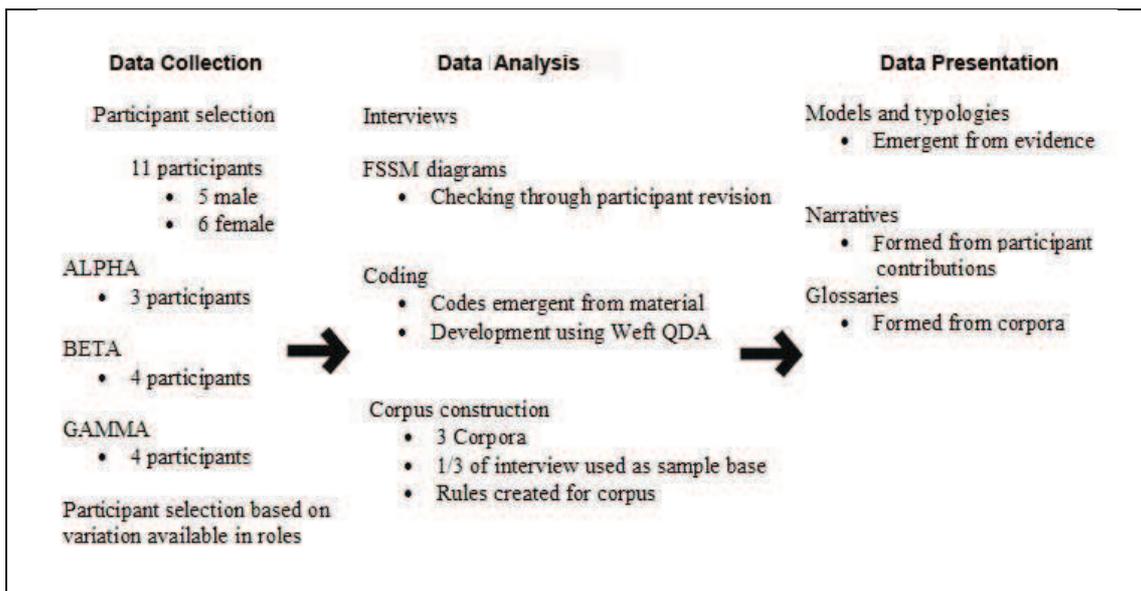


Figure 10 identifies that the choice of method for the data analysis component of the study relied on the paradigm and also the methodology chosen. A list of criteria was made to illustrate the researcher’s needs that had to be addressed within the chosen method:

- A data collection method
- A data analysis method
- A format of displaying the analysed data

Separate phases of the study have been categorised in this illustration to indicate the pattern and flow of the research. Data collection and subject-specific research was carried out in the first phase: after data collection, analysis and interpretation formed the body of phase two. Phase three of the study here related to the presentation of the data and this was formed with the creation of models and typologies.

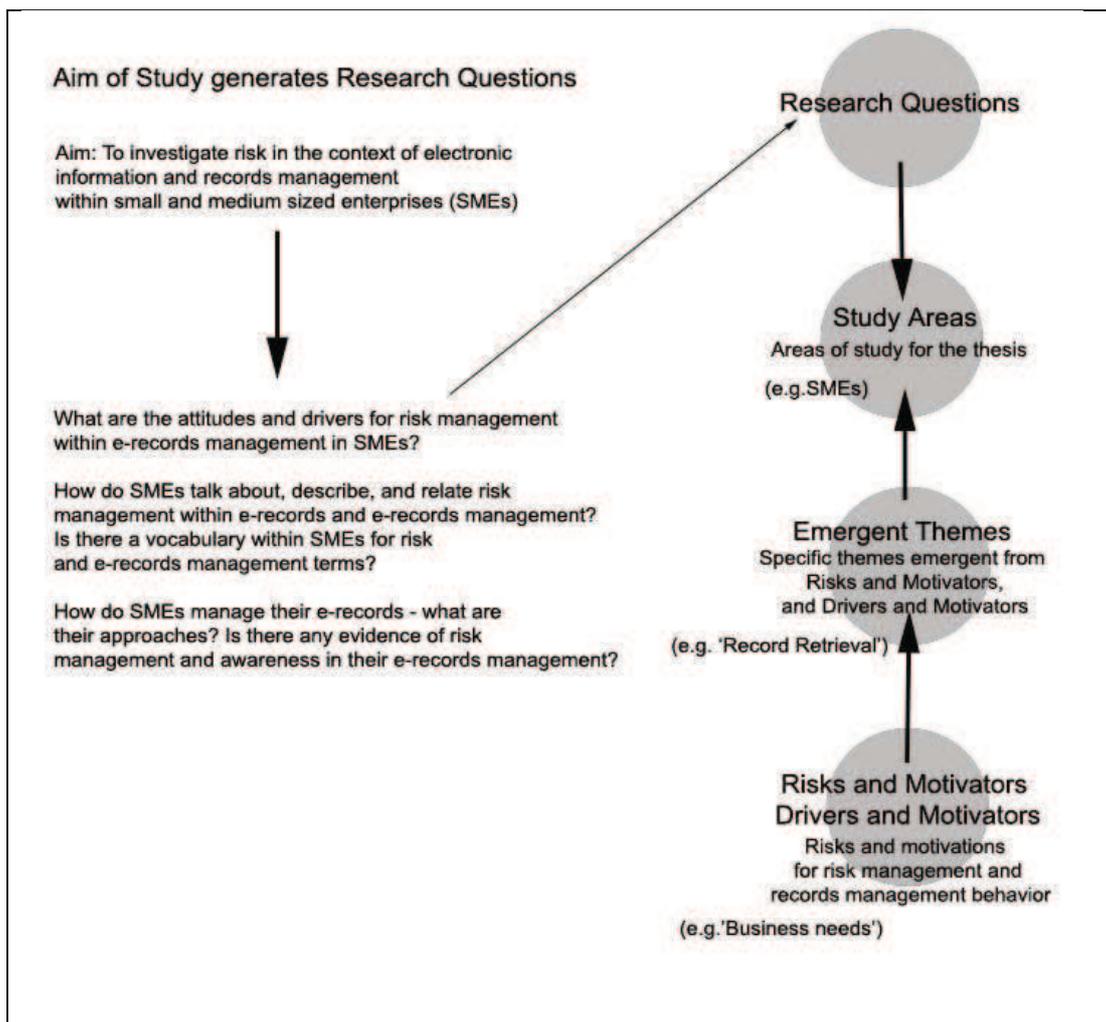
Table 5: Methods of data collection and data analysis used in the study

	Data collection			Data analysis methods		
	Questionnaire	Interviewing	Inductive Coding	The 'Loeb Library' approach to portraying narrative	Narrative analysis	Corpus linguistics
What is it used for?	Collecting simple evidence about the use of records within the SME	Collecting in-depth data about risk situations experienced within the SME, personal opinions of risk and records management,	Identifying themes within the collected data of the interviews and questionnaires	Creating a narrative form that is easier to read and interpret that the full datasets of the questionnaires and interviews from the participants	Evaluating words and phrases within a specific context, in singular and multiple texts	Evaluating words and phrases acontextually from multiple texts
Why is it used?	Identification of which records are held and maintained by the SME	Collecting rich data about participants' experiences	Identifies elements and themes in order to assess if there are any shared motivations, attitudes, or elements of risk in regards to participant views and experiences of risk in e-records	Helps to form a narrative from the gathered evidence with a set of complementary analyses	Helps evaluate why SMEs use the vocabulary they do, and can show participant perspective of incidents experienced which they have related as a narrative	Helps identify terms and instances of their use in participant and SME vocabularies relating to risk management and records management
Where in the study is it used?	Used at the start of the fieldwork, where applicable	Used in the main part of the fieldwork, after questionnaires (where applicable)	After interviews and questionnaires have been employed (where applicable)	After coding and analysis of the elements and themes within the collected evidence	Used after a narrative has been formed from the participants' transcripts and questionnaires (where applicable)	Created after a corpus has been formed from the participant transcripts and questionnaires

3.8.6.1 Advance outcome framework

In addressing the research questions, it was found that analysis of the themes within the interview transcripts helped to identify emergent themes as a whole through the study. The figure below (Figure 12) details the order for such a framework. This can incorporate a collection of themes observed as emergent from the case studies, and would identify risk and motivators, as well as drivers and motivators.

Figure 12: A layered framework outline for the study



The sequence annotated on the side of the diagram shows the research questions in regards to an explored thematic emergence by the researcher from the corpus-based research element. The 'study areas' noted in the diagram are those areas which have been noted as the disciplinary fields for study – namely risk management, records management and SMEs.

Emergent themes are then organised into identified issues in regards to the use of the corpus terms, and these are themselves organised into a further, higher level set of overarching categories.

The identified issue (the aim of the study as detailed in Figure 12) clarifies that the subject being investigated is that of risk within records management. This aim informed the research questions, also detailed in the diagram, and were used to structure the ‘overarching categories’ of emergent themes from the observations made in regards to negative and positive elements as observed from the researcher’s own emergent coding from the case studies.

3.9 Provisions for ensuring trustworthiness in the research

The credibility and the value of the research were asserted through the trustworthiness of the collection of data from participants in the study, and verification of it as evidence. Rolfe (2004) brought forward some interesting points about this, accepting the traditional division of trustworthiness into four separate elements; credibility, dependability, transferability, and confirmability (Rolfe, 2004, p. 305). In terms of this study, attention has been paid to the member-checking aspects of data-gathering and elements of the audit trail as key indicators of trustworthiness.

3.9.1 Provisions for ‘Trustworthiness’, ‘Credibility’, ‘Dependability’, and ‘Confirmability’

In terms of the verification of evidence, it became apparent that asking participants to review their own interview transcripts would not be feasible for this study. The time constraint of the interview periods did not allow for reflection on the transcripts. There was an indication from the feedback of initial trials of the e-tool and exercises from FreePint (section 3.6.2) that participants had very little time to review written materials. Instead, verification was achieved through asking the respondents to verify that the fSSM diagrams were a reasonable representation of the factors they had discussed in a prior interview.

As is noted by Lincoln and Guba (1985), “Rigour ... is not the hallmark of naturalism”. It is a very quantitative assessment, and the very nature of the things

from which qualitative evidence is gathered should make the researcher wary of applying quantitative values to qualitative evidence. The result may be that nuances of the studied object are lost, or remain unobserved, or at worst are considered irrelevant. Baxter and Eyles (1999, p. 311) admit that certain techniques promoting rigour “can be quite difficult to incorporate into qualitative analysis”. In this sense, such rigour is not a suitable measure for this qualitative study.

Of the concepts of trust which have been posited for researchers, Rolfe has suggested some that may help to delineate the forms and concepts within the basis for ‘trustworthiness’:

“Trustworthiness has been further divided into credibility, which corresponds roughly with the positivist concept of internal validity; dependability, which relates more to reliability; transferability, which is a form of external validity; and confirmability, which is largely an issue of presentation.”
(Rolfe, 2004, p. 305)

Given that this study follows an Interpretivist stance, it is clear that this particular stance for trustworthiness is not one that can be held as totally applicable.

Credibility is a measurement of qualitative data which relies on the judgement of the participants (Trochim, 2006). Miles and Huberman note that “truth value” in terms of credibility is a measure not only linked to the findings of the study themselves, but also to the participants within the study, and the study’s readership: “Do we have an authentic portrait of what we were looking at?” (Miles and Huberman, 1994, p. 278)

In trying to establish a way of confirming the credibility of the study, several points were considered from Miles and Huberman’s list of possibilities for such confirmation. The notion of ‘thick description’ in terms of context-rich descriptions within the study is applicable, due to the amount of detail included within the individual cases. Grounding the SME and its work within a particular background, thick and rich description was used in all cases in order to describe the very specific uses and forms of differing use of e-records and e-records management found in different SME scenarios. Grounding consisted of descriptions of the SME’s business in terms of the location, and a basic identification of the proportionality of the

workforce. These were elements required so that a stranger to the business, on reading the study, can familiarise him or herself with the basic appearance and functionality of the business. This functionality also gave rise to indications about what the needs and risks of the SME might be before they were formally introduced by the narratives of the participants.

The narratives themselves were constructed from the original transcripts. Narratives were generated by identifying areas of the transcript that related solely to risk management and records management, and providing interpretative paragraphs as context within them to illustrate what was found by the researcher. Pieces of dialogue or monologue from the participants were used which illustrated the incidents that they wished to elaborate upon in terms of risk management and records management.

In order to make the most of the interview material represented in the transcripts, the narratives were written in a format that was more flowing for the reader, using these pieces of interview monologue to preserve the thoughts, ideas and opinions of the participants.

Elements within the transcripts that were not included in the formed 'narratives' were instances of repetition, or dialogue that had no possible analytical value. The transcripts were therefore purposively sampled for a selection of risk management and records management incidents that could exemplify what participants were discussing. The concept of triangulation of the evidential sources for the study using the methods as outlined in this chapter would not provide as conclusive a form of confirmability of the study's evidence as might have been found with other studies. In terms of the data conforming to an emergent theory, this is again hard to say in data that comes from a non-coordinated transdisciplinary study.

Lincoln and Guba (1985) indicate that member checks are the best way to establish credibility. Sample size is actually a contraindication of validity in samples, so this is not the best and most reliable way of checking for credibility if looking for confirmation amongst participants as a whole.

The member checking carried out in the study was that of checks on narrative accuracy. Participants were shown the fSSM diagrams developed after interview, and

they were asked if these were accurate, and asked to note any points which were inaccurate and which could be amended. However, they were not shown drafts of their interview transcript. Their comments describing changes in the situation acted as a measure of validity, describing the situation as it was at the time of the fSSM diagram to at the time of the check. By looking at the fSSM diagrams, they were able to see how their evidence had been interpreted from transcript form.

“Detached observation” as posited by Lincoln and Guba (1985) can increase the likelihood of the study being more rigorously trustworthy, but can also encourage the researcher to “go native” (Lincoln and Guba 1985, p. 304). As this study was a considerably shorter one than most comparable case study engagements, and with less time in the field as dictated by the needs of the businesses themselves, this was fortunately not the case.

Transdisciplinarity differs from transferability of methods in a very specific way. Transdisciplinarity is the act of using the methods and methodology of other disciplines within a different context, whilst transferability is the result of transferring the concept of what the results of the data means to another context.

Within each case of the study, the findings in regards to the language used by each SME have been interesting to the study in terms of the possible impact on records management. It may be that other types of people, business, or even academics have a different way to talk about the records that they use and maintain and even create. If we are to look at the benefits of using the findings of this research in records management elsewhere, the best benefits could be found in instances of very specialist use of vocabulary. Miles and Huberman (1994, p. 276) comment that “People often have widely varying perceptions of the same phenomenon. Interpretivists consider this natural...”

The findings of the study are ‘internally coherent’ in that the corpus work conforms to the rulebook created in January 2009 (and updated to maintain a consistency for the corpus as advocated by Kennedy, 1998).

This 'internal consistency' in the creation of the corpus means that the information analysed and extracted from the corpus is overall more dependable despite not having been triangulated in the sense posited by Lincoln and Guba (1985). The use of transdisciplinarity in the creation of the study means that any consistency has to be maintained through the use of regulation of both (or more) disciplines as regulators for the work. For instance, the narrative analysis falls under the aegis of linguistic analysis and therefore is not regulated in the study in the same way as records management.

In terms of what rules were used in the confirmation of things, rules were created for the study based around recommendations made in the literature of the discipline to others who had experience in creating a corpus (Beal et al., 2007a, Kennedy, 1998, Tognini-Bonelli, 2001, Beal et al., 2007b)

Tobin and Begley (2004, p. 388) note that triangulation is a "tried and tested means of offering completeness" Though they have found that there is a tendency to use quantitative language as a recourse to prove validity, it "may stem from a desire for intellectual and scientific acceptance by the academic community" (Tobin and Begley 2004, p. 389). The methods used, therefore, to indicate the qualities of trust, validity, dependability and confirmability within a qualitative study may have an inherent bias towards a quantitative outlook.

In appreciating that a change in the framing of questions could bring more granularity in terms of the evidence that was being collected, it was decided to use a framework of emergent design in order to capture more evidence which was relevant to the study by following up specific lines of questioning. It was deemed a poor investigative strategy to simply repeat the same pattern of questions with each participant. Not all participants, for instance, had the same responsibilities for records. Not all participants had the same approach to their duties, and it was evident from the contents of the open questions used to lead into the study that each participant responded very differently to the interview technique.

It was decided to offer the revised technique e-tool questionnaire to all future participants, as establishing the base line of their self-perceived difficulties was the main aim of the e-tool questionnaire.

Chapter 4: ALPHA, A Market Research Group

4.1 Introduction to case study

The first case study, ALPHA, was carried out between January and May 2008. ALPHA is a 'large' SME. A series of questionnaires and interviews were completed with three participants – a finance manager, an IT manager and a data management manager – about risk management within the concept of e-records, and the results are explored in narrative form. An analysis of the language of the SME participants was undertaken, and a 6,000-word corpus was created and analysed. This case study concentrates on the data of the case study participants, A1, A2 and A3 in terms of this case study.

4.2 ALPHA: A description of the SME

Company ALPHA is an SME whose business is collecting and analysing data for clients. It is a large SME of approximately 250 employees, where a standard definition of an SME is usually between 1-250 employees. This SME is dependent on transitional recruited labour where there are many employees recruited as and when needed both within the office and as 'field' agents. ALPHA can therefore be classed as an SME in this sense of the study. They have grown from a small two-partner start-up business based on a home enterprise set up by the current owners, and constantly seek to expand. ALPHA is a limited company by law.

4.2.1 The Site

ALPHA was originally based in a very rural area in North East England, and was run by a minimum number of staff. Planned expansion within the business occurred in 2005, when it was decided to relocate to an urban area. A combination of events, including a fire which affected the business and its processing, led to the permanent use of this urban site as a base of operations for the business. Formerly, the building had been used by the business as an area for a group of data collection recruits, and money had been invested in both the machinery and the workforce for telephone interviewing. This was significantly altered as the company changed their focus in data collection, and decided to reduce the amount of telephone interviewing done. The building could then be redeveloped, and the upstairs area became a set of offices for the managing directors and team managers, whilst the ground floor made use of the office set-up that already existed.

As there is a solid computer network, teleworking is a key feature of their methods of data collection from the field.

There is a spatial split between researchers, data managers and general employees – field employees are contacted on an ‘as required’ basis, and work externally. Both data management team employees and researchers are within the same building. Field employees may be called up and asked to work in specific areas.

4.2.2 The Workforce

ALPHA is an SME which supplies processed data products to clients. The client establishes what they require (usually in the form of a survey or a similar instrument) and ALPHA designs and puts into practice an information-gathering session in order to collect the data. This data may be qualitative or quantitative in nature. It is then processed for validity, cleaned and checked. After this processing, it is usually interpreted by researchers, and then can be presented to the clients. Sometimes, clients may ask for a processed data set only and will interpret this themselves.

ALPHA’s primary responsibility lies in creating and cleansing the sets of data that they create. The mobile portions of the workforce, the ‘field employees’, collect this data and transmit it back to ALPHA’s company base. From there, the data is collated and processed. ALPHA itself has three different ‘arms’ of the business, and each ‘arm’ has a different purpose. ALPHA-1 is a panel organization for commissioned research, ALPHA-2 is a media research wing, and ALPHA-3 deals with research for public service organizations. The same workforce base is used for operations.

4.2.3 Interview patterning

In this SME, A1 and A2 were interviewed together first. A3 agreed to be interviewed after being asked to take part by A1, who was an overall contact for the case (Table 6).

Table 6: Interview patterning for ALPHA

<i>Interviewees</i>	<i>Initial meeting (1st)</i>	<i>Main meeting (2nd)</i>	<i>Final interview (3rd)</i>
A1	A1 and A2	A1	A1
A2		No further meetings	No further meetings
A3	A3	A3	No further meetings

The participants of the case study were interviewed over a period from January 2008 to May 2009. Their narratives are presented here illustrated with excerpts from interview transcripts.

4.2.4 Introductory profiles

A1 is an IT Manager. He is a permanent employee of ALPHA and has had some records management training. He acted as the central contact for the SME in the context of this case.

A2 is the Finance Manager of ALPHA, also a permanent employee. He is a mature employee, and has had experiences of other careers before working with ALPHA.

A3 was a Data Manager for ALPHA, and had been recently promoted to this position from other data work within the SME. She left ALPHA in 2009 and was unavailable to contribute to a final interview held within the SME.

4.3 A1, an IT manager

A1 is the IT Manager for ALPHA. He supervises and maintains the IT policy, computing system and structure for the SME, advises on purchasing, and makes decisions on IT policy. He also actively patrols the network and performs maintenance as and when needed. He retrieves data, documents and records on request, and has put in place many of the technical developments within the SME, including the use of new mobile electronics for easier data collection.

4.3.1 A1's duties

A1 performs constant maintenance, as well as on-site training. He also does ad-hoc training for staff for risk management behaviour. As a member of the upper management team, he holds a dual role – that of records manager and of IT manager. As well as his duties managing the computer systems of the SME, A1 takes a key role in cleaning, storing, purging and archiving data.

4.3.2 An incident of risk

A1 remembers a time when the computer system failed, and the server that dealt with collecting web-based data went offline. Data were lost, and A1 had to contact a computing company in the USA for advice on how to restore the server.

“Another instance, where there was a hardware failure but it was a corruption of data nonetheless...an email server, and I had to take the server down for a couple of days...and then having to format the system and reinstall the operating system, and put

everything on there ...fortunately, it didn't cause too much disruption, although I did a thirty-five hour shift." [A1, IM]

As a result, A1 had considered purchasing and using a backup server. A1 is a focal point for any information retrieval advice: he can remember an incident where he was asked to retrieve a document that showed some business costings, because a colleague could not find it where it was supposed to have been filed. A1 has plans to expand and increase the interactivity of the filing system, especially in terms of the Briefing Document, a digitised customer agreement and record of work. However, he acknowledges that though that this is an idea that could eventually be applied not just to the files that are already in use, but also to older files.

4.3.3 A1's future plans

The pressures of other work mean that for the moment this change must be shelved until there is time to implement another large-scale technological improvement. A1's storage of circulating information includes holding an email archive that dates back five years, where others are encouraged to purge and have limited space. A1 has identified that there is a structure for projects and work for the company. However, he also notes that whilst the system may be understood by most staff, it might be misunderstood by a few. He is happy about technical advancements in the SME, such as the introduction of a new form of data collection for their information products, but knows that it is early days yet before he can announce them a success.

4.3.4 A1's risk assessment process

A1 acknowledges that he uses some documents as risk management reference tools in order to help him. He can access these tools via the Internet:

"...There are some documents I use as clear reference tools so that when you're looking at risk assessment, the Health and Safety for example, there's a wealth of resources on the internet, I mean, you know, they just talk you through the key stages of what you should be doing so you're looking at role-specific risk assessment or location-specific risk assessment so whether it's about the individual in a particular role or whether it's about a particular environment i.e. a premises or an office ...or whatever"

[A1, MM]

But A1 is methodical about what he does – he looks for processes, and uses a logical system by himself to try and assess where risk may occur. His experience with risk management has always been based in health and safety.

Risk may be cumulative from a number of factors within the business. Some risks are there to be avoided totally, like litigation. A1 can identify that there are several points at which risk might occur to data within the process of how ALPHA handles their data. Risks identified included the field employees not recording data accurately, the reprocessing of data from field worker to researcher being incorrectly handled, and the possibility of data loss at that stage.

His emphasis on the quality control aspect of data centres round the business. He notes that as there have been “a lot of reports” regarding data storage and retrieval, that this then is linked to quality management systems, which underpin the business.

Thinking more broadly about the nature of risk, A1 comments that “...the nature of risk is such that it may be hidden for a period until you uncover it, and therefore put measures in place to avert it.” Whilst he asserts that there are “obvious risks”, he also recognises other areas of risk are at this stage unknown and (un)identified”. Thinking more specifically about risk in records, he draws back on his example of a server that went down within the company. However, he evaluates that some form of measurement within that situation of the risk element is variable, as “the immediate impact is ... one of frustration and ...that you’ve lost something”. But such a loss “isn’t that great because it (data) could be recreated”.

4.3.5 Data Management for A1

Duplication of data is more of a concern for A1, because multiple copies of files circulating within the business can cause confusion. Data security is also a concern; especially the irretrievability of key data outside the business. A1 understands that there is a considerable market in providing services to avert risk. He also sees risk management in terms of the business environment’s influence:

“...people see it every day in their working environment and then they see it outside of that, and then it becomes inherent in society...”

[A1, MM]

He had started doing research into what would mitigate the impact of risk, and found a technical solution of having a mirrored server. He realises that the chances of a server going down are the same as before, “but in fact the impact plummets”. A1 also noted that since he had last spoken in interview, he had considered awareness of this risk, “bringing it to the fore” for him.

4.3.6 A1 - Commentary

Illustration 1 shows the path of data, information and records (DIR) in ALPHA, within an fSSM diagram. D/I/R flow takes is not a ‘top to bottom’ flow (see diagram) from the start of the processes (the initial input from the customer who makes an inquiry) to the finish (the customer is presented with the finished piece of research or data). The flow can centre on a storage point within the business’s system, and then move through to a new part of the process. This illustration was used to analyse what was used in terms of records, and how they were utilised within the SME. It was drawn by analysing participant transcripts, and questionnaires returned by the participants.

4.3.6.1 Framework of roles

Based on evidence from the interviews and transcripts, A1, as an IT Manager, is a very proactive individual. Enterprise Nation’s (2007) report notes that those who implement IT change within companies are often younger employees. Here, A1 is part of this trend, and has a multiple role within the business. Instead of having a singular role in relation to network security, he also retrieves and maintains data as part of his role. A1 in this sense is not so much a man within the SME with a defined single role, but is expected to be able to take on multiple roles within the small business, in order to provide different services to all members of the SME.

His role in retaining e-records is a unique one within the business, as his inbox is the only one to date back five years.

Flynn and Kahn (2003) made several pertinent points about the necessity of having a set of guidelines to deal with email management in this respect: without guidelines as to what is and is not acceptable to transmit across a network, the chances increase that an employee might send defamatory or otherwise unacceptable emails through the network. They note (2003, pp. 15-16) that an 'E-Risk Management Team' to handle these risks should be made up of several roles, although it is pointed out that actual size will depend on the relevant size of the company. In a further piece of evidence, A1 notes that he implements training:

“Q: How do you implement an understanding of risk with employees and team members?

A1: Ad-hoc depending on their role and contact with risks and contributory factors to risk.”

[E-Tool pt.2, A1]

Do multiple roles in an SME confuse the overall purpose of an employee when dealing with risk in the terms of e-records management? In this situation, it does not appear so. Whilst A1 is approached as someone who holds data (within his inbox) and who can search for data which is stored in places other than where they should have been filed, he acts in the manner of a records management professional. His other role of computer specialist does not exclude his role as a records manager. The duality of the roles is seen in his being approached to perform as one or the other –‘network cop’ versus someone who can locate records. However, the skills used for one role are useful and desirable in the other, especially in terms of electronic records.

In regards to the computer system within an SME, Ehrich and Billet (2006) note that there are several models for learning within SMEs. Looking at A1’s description of a risk incident and its repercussion, Ehrich and Billet’s models from SMEs in Australia for learning about the Australian goods sales tax may well apply to how A1 learnt about how to repair the failed server. He notes that he sought external help (from the USA) and spent time on it himself. These two approaches, named in Ehrich and Billet (2006) as “expert others” and “just getting in and doing it”, describe approaches to a risk event which was handled by A1, which had direct ramifications for their e-records. Consulting the knowledge of others was considered in

the Queensland study one way of obtaining “(a) consistently highly ranked contribution to small business learning” (p.13). The latter method of self-tuition was found in this same study to be “...ranked the highest in utility since 24 respondents out of 30 claimed it was very useful or indispensable” (p. 14). However, can A1’s method be truly considered a learning experience that had a choice of method? The Queensland study and A1’s approach to problem solving have two different settings: the SMEs and employees of the Australian study could reflect on a range of choices to deal with their specific problem (using and reflecting on the Goods Sales Tax) whilst A1’s task consisted of returning the SME to operation after the server failure, where the only choices were of how the participant reacted to a risk event. As a result of this event, however, A1 can be seen to express consideration of how to reduce risk in future occurrences of the same problem, and with what kinds of risk this would be most efficacious.

4.3.6.2 Information retrieval

A1 has identified that there is a need to retrieve information from where a pre-arranged system or structure indicates that it should be, and this should be done within a reasonable time. A1’s discussion pertaining to the use of a dynamic file system versus their current static one pulls into focus the question of whether this is a suitable medium for a business, given the benefits and disadvantages of both systems; if a specific incident of potential litigation occurred, then the benefits and disadvantages of both systems could be shown.

As the case of the server was obviously the most memorable risk event within the perspective of A1, it coloured the approach to the topic of risk management in the context of e-records for both interviews and questionnaires. The server incident acts as a reminder for A1 of a clear risk management incident where the impact of the risk played out in one specific area (use of the server) with particular implications for him, rather than others. However, at no point is there a question of risk appetite difference if the risk is to be borne by A1 alone.

A query that stems from this is that if a strong example (such as the server) is used by SME staff members to express ideas about risk, then is it not possible that this is a potential method of discussing and bringing risk management within records management to the attention of other SMEs? In this case, in order to communicate his experiences, A1 used an example that had a large impact on his work and workplace. In evoking that example, it became clear that the incident itself acted as a reminder of the principles of risk management. It is worthwhile

to examine if examples of past events are used as both reminders to do with that specific type of risk management, or are used as watchwords for the principles of risk management itself within such situations as records management.

The storage of email is important within ALPHA, and A1 acts as a gatekeeper for this repository. By limiting the sizes of others' inboxes, he has created a form of solution to the problems posed by email retention, but one that heavily weighs on him and his own access to such a resource.

A1's identification of risk appears to ground itself on the concepts of health and safety, which could themselves be based on either risk standards or risk practices for other businesses. It is key to note that A1 has used a transferable skill in this form of risk management. The application of a form of transferable skill indicates that this skill set was not learnt in-house and might well indicate a lack of specific training, were it not for the emphasis by A1 that he himself provides ad-hoc risk training to the company. This therefore indicates that whilst there may be a lack of a formal risk management awareness trainings structure, there is an informal or 'on demand' one which is adequate for the business.

4.4 A2, Finance Manager

A2 is an older man who shows commitment to his job as Finance Manager for Company ALPHA. He has worked with e-documents and e-records of all types: from those that were born hard copy documents, to born digital documents that were previously hard copy:

“We're always preaching doom and gloom over electronic systems... 'cos I'm not, but we have massively, certainly in my field, we've... massively from where it was ten or fifteen years ago ...some of the places I've worked at...buildings the size of this...the cabinets were full of paper which was nearly all accounting books, now that's because we didn't have computers [...] all your accounts were done longhand ...”

[A2, IM]

Through his working life, he has seen many developments in office-based technology, both within Company ALPHA and within his own experiences. A2 remembers the start of his career and its involvement with computers with amusement, when a great deal of storage space was needed by companies to simply hold accounting books:

“...my first job, in an accounts office, we had fifteen people in the office and two computers, and we had to book time on the computer to do your accounts...”

[A2, IM]

He remembers that this computer use for their records was not to create a record that was computerised, but to simply replicate their working onto computer paper – and this did not impress him. He notes, however, that this action was simply what was conventionally done at the time. He contrasts this with the present situation, where he thinks that we have moved on ‘significantly’ from the older action of creating more paper, replicating physical records from handwritten to computer-printed documents.

4.4.1 A2’s experience of records

A2 considers himself ‘old school’ and says that he reacts to information, responding to something sent around the office if his name is on it. The main bulk of e-records within the company is formed by emails and the digitised customer agreement and record of work, the Briefing Document. These are circulated by email, and he checks these to ensure he has all the details. Every three or four days, he reviews all the emails that he highlights, and transfers the emails that he calls “data sensitive” into his organizer. However the Briefing Document also circulates on the email system whenever it is updated, and A2 checks this update each time in case there is information that pertains to him included on it or with it. What he mainly looks out for is his own name. If he is only referenced, then the item is saved for “reference purposes”.

A2 deals with time sheets, accounts and the organization of the finances at all levels. He remembers having problems with staff who used programs to organise the delivery of hard copy documents – they seemed to be “number dyslexic”, and even though he limited the options for input into the program, there still could be an error:

“And you might get project 615 when actually... when most of the things that I try to give them, they can’t... there’s only one number that they can give, because they’ve got drop-down menus in Excel for example whereas if they go and put that back record [...] sent out seventy-five envelopes and put that information at the postal level and your 615 suddenly becomes 651 because they’ve got a typo in the middle and it’s gone (*claps or slaps hands, gesturing*) and straightaway, ‘noooo!’”

[A2, IM]

4.4.2 Experiences of record organization

A2 also remembers that there are difficulties of organizing timesheets that have to be filled in, according to company policy, with job names and numbers. He recalls one particular example where the name of the project, ‘Cassowary’¹, was filled in with misspelt variants of the name:

“We had one instance where we had a job for the Telegraph which was the Cassowary project... [...] Now... because we were [...] using hand-written time sheets at the time we had five different versions of ‘Cassowary’... so, how do we amass all that information?”

[A2, IM]

Job names and numbers also led to another difficulty with the abbreviations used by staff, as projects are named after the client. Multiple projects can be done for one client, and in this case, a project done for one brand was quickly followed by a second and third – but the timesheets were sent in without project numbers. A2 says that document management is a great concern to the company, especially on improving from a flat-file to a more interactive data system, but he also accepts that the current way of dealing with data will have to do:

“...Let’s walk before we can run ...so, get people to run projects on one uniform way and we’ve got a chance. So, that together with the system that we’ve been using now has enabled that...”

[A2, MM]

A2’s desire is to be able to access a document instantly. He remembers a period of time where this was not possible, and also considers that this might be usual in some cases within a business. To A2, hard copy and electronic documents have the same value. However, he notes that, whilst within the company, hard copy forms can be replaced with electronic versions, other agencies such as the Inland Revenue require hard copies to give specific evidence such as a physical (hard copy) signature rather than a digital one:

“So if you’ve got an electronic copy, it’s got to go through a printer, there’s nothing to aid that development process in the paperless system, which will never get there.”

[A2, MM]

¹ Anonymised project name for case study

A2 notes that whilst the company generates a lot of information, it is not always used. He thinks about the ‘value’ of documentation, and that it can go up and down:

“...base documentation erm...is...is kept for a certain length of time, stuff that’s more intrinsically valuable will be kept for a lot longer, but at some point it will be binned, ‘cause it loses its value over time.”

[A1 & A2, MM]

4.4.3 A2 and e-records

A2 has noticed several developments over time in the company in regards to records management, most of which he can attribute to the use of e-records – especially “the way we navigate data”. The closer the workplace gets to being paperless, the harder it seems to him for it to become totally paperless. He faces the dilemma of having to work in a paperless office, as well as in a situation where the records used to show the taxman still need to be paper – as he evidences by discussing the Inland Revenue’s need for an electronic form but with a hard copy signature rather than a digital one. A2 is very aware of his own feelings that some people, especially the younger employees who have not worked in other places before, do not share the same work ethic, or a similar approach to information – especially the information that they produce. He complains that they don’t share a mindset about information:

“There’s some that work in little boxes, you...you know, this is my base”

[A1 & A2, MM]

Part of the problems that A2 has encountered is that the information they create as a business has value. That people on staff do not seem to appreciate that value concerns him.

For A2, his concerns with electronic records focus on his own area, especially the electronic transmission of particularly sensitive records, such as ‘people’s salary values’. However, he requests that people do not do this, and has noted instances of it before, citing why they need to password protect things – they are ‘sensitive’. He comments that it is “... basic peace of mind more than anything”. However, he notes that what they currently send and circulate is mostly not sensitive. He also classes the need for vigilance regarding email and computer use policies because of finding some emails and visits to websites that were ‘strange and wonderful’:

“...cause they’re kids... You gotta trust people, that’s the bottom line, until that trust’s eroded”

[A1 & A2, MM]

In dealing with electronic documents, A2 notes that they are using them from choice:

“...that’s the currency we’re dealing in, we’re dealing in electronic documents all the time, you’ve gotta decide if you have paper everywhere, you become...you turn the clock back 15 years...”

[A1 & A2, MM]

Although he thinks that there is a ‘lack of trust’ within one internal group in the SME as regards to electronic documents, because:

“ I think that they feel more comfortable with a piece of paper in their hand than an electronic document...”

[A1 & A2, MM]

He himself manages to cope well with electronic records, though any preferences are dictated by how the records are used afterwards:

“I’m quite happy with either, there are certainly requirements that I have to have, and could be able to get away dealing with ‘cos the people I deal with, for example, the Inland Revenue, they...they want bits of paper...”

[A1 & A2, MM]

He indicates, however, that he has seen a “gradual change” in the business’s use of paper, noting that less paper is used at the current site than was used at the previous site.

4.4.4 A2 – Commentary

A2 has a specific responsibility for finance, but the concerns that he expresses in terms of document and records management are more far-reaching. He has expressed that the records that he has a specific use for and involvement with cannot be intrinsically electronic. He has also expressed the idea that there has been a specific long-term change within his working lifetime as to the progression of the management of e-records within business. The change to various forms of e-records from a use of handwritten records shows some of the influences that have occurred long-term within his own experience of records. This concept of long-term

change is reflected in his risk awareness, in that not only hard copy records are thought to be open to risk, but also e-records. A longer-term picture of A2's experience with records helps to identify the types of records that he has worked with and has already assessed risks for, and those which are more recent and may still be being learnt about.

4.4.4.1 A2's information processes

A2's strategy of reaction to information is interesting, as he uses a series of steps to deal with his own records, data and information. This can be broken up into a specific set of techniques to deal with information (Table 7).

In review, his steps are:

- Receiving email
- Selecting messages and items relevant to him
- Reading these
- Dealing with other items later
- Working out what he needs to deal with
- Highlighting the emails relevant to him
- Storing the emails relevant to him
- Performing a transfer of data if necessary

However, some of these activities are of more relevance and importance to him in his personal form of e-records management. In order of importance by his emphases, these items are:

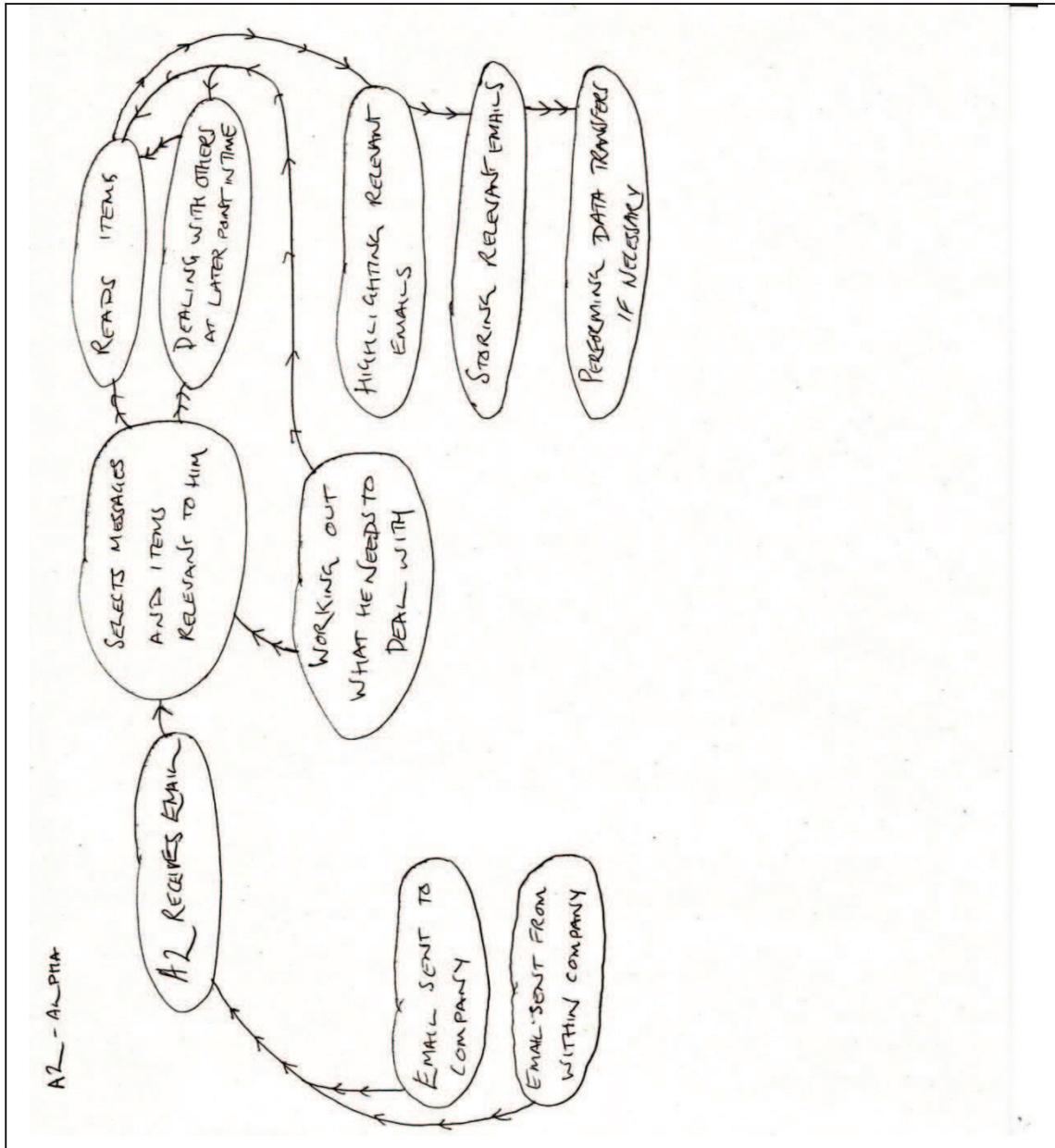
Table 7: A2's activities ranked by importance

Action	Importance
Selecting messages and items relevant to him	High
Working out what he needs to deal with	High
Reading these	Medium
Dealing with other items later	Medium
Highlighting the emails relevant to him	Medium
Storing the emails relevant to him	Medium
Performing a transfer of data if necessary	Low
Receiving email	Low

This process can itself be shown in an fSSM diagram (Figure 12). This fSSM diagram describes A2's electronic records management in terms of his email. The step of assessment ('working out what he needs to deal with') is an aspect of classification. In terms of the records management continuum, his decisions are firmly within the aspect of 'organization' of his records. However, as they are within the company's system, they have a dual identity: not only are they his (those pertaining to him) they are also the business's records. As we can see, the mainstay of the selection activity is the identification and selection of items relevant to him. In terms of a system for the management of records, this shows that whilst a whole business has to think in terms of the intake, archiving, storage and maintenance of all e-records (with particular emphasis on emails) A2 has to perform a far narrower spectrum of intake on a daily basis.

This concept of inclusion/exclusion for creation of company e-records could have significant consequences. Risks in records management can occur when the records storage within ALPHA – in this case, retention centrally and distribution via email – no longer works. A2 has described a risk situation inherent in the way he handles e-records by explaining how he stores and transfers data relevant to him. One of the problems exclusive to e-records is that several people at the same time can store multiple copies of the same information in different places, or with different routes of access. By maintaining an archive of his own business records, A2 shows that he has developed his own strategy to using records, but it is one at cross-purposes with a business-wide records management strategy.

Figure 12: An fSSM diagram of A2's email decision processes



It is to be noted that the emails themselves are a logistical records management problem. They are stored on the email server and archived. Size is not a very restrictive limit to the holdings of emails. A1's inbox goes back several years, holding a very large collection of emails. Conceivably, if an email is a company-wide one, different individuals might hold several dozen copies of an email in different ways across the company.

A2's process of electronic records management only inputs the records onto his own system (his PC and assorted equipment). In comparison with an e-record document management system, there is one important aspect that A2's system misses out: there is no application of metadata to the records that are inputted. This organizational stage is one vital aspect to the business being able to identify their record holdings.

In identifying risks within A2's records management, we can see that whilst not managing electronic records can be a point of risk, management of records that misses out on specific RM principles can equally well be a point of risk.

Another tangible risk within this records management system is that the transfer of selected data-sensitive emails might go wrong, either leaving a potentially vital record behind, or destroying a vital record.

Another possible problem is that of A2 missing a reference to himself in the Briefing Document. If he overlooks this, he has no loop in the system in order to retrieve the Briefing Document from his storage, as it hasn't been inputted and stored for either review or further storage.

Contrast this with A1's approach of retaining a full inbox over many years, and we can see that whilst A2's records management system has structure, it lacks a risk management strategy to its input phase. Because A2 has limited space, the limits of what to store are a pragmatic reality. Decisions are made at the input stage in order to ensure that only relevant records are retained within his own system.

The positive aspects of A2's systems are that he incorporates an element of review in his email management. All unnecessary records are simply not inputted into his system. Records with little value, rather than commercial or vital business records, are merely omitted, knowing that they will be retained on A1's inbox.

4.4.4.2 Errors with hard copy and organization

A2 has identified that there is a crucial difference between the use of electronic version of a document or a record as opposed to a hard copy one – the possibility of user error when inputting data. The difficulty with this is that of the authenticity of a record. In order to meet

ISO 15489's concept of validity of a record, we must look towards the concept of authenticity. Section 7.2.2 of ISO 15489 notes that a record can prove authenticity in three elements. A record must be proven:

- To be what it purports to be
- To have been created or sent by the person purported to have created or sent it,
- To have been created or sent at the time purported.

This makes for a difficult case on looking at the incorrect input of user data from documents that can be classed as records within the SME business system. Looking again at what A2 says we can decide what elements are being used within the ICT system:

“And even though [...] the system generates one unique reference you'd be surprised at the number of times people are...are number-dyslexic [...]And you might get project 615 when actually...when most of the things that I try to give them, they can't...there's only one number that they can give, because they've got drop-down menus in Excel for example whereas if they go and put that back record [...] sent out seventy-five envelopes and put that information at the postal level and your 615 suddenly becomes 651 because they've got a typo in the middle and it's gone (*claps or slaps hands, gesturing*) and straightaway, 'noooo!'”

[A1 & A2, IM]

The concept is not initially evident from the participant's colloquial pattern of speech, but what he describes is the example of an Excel spreadsheet that acts as a record of a project. The project record (project 651) is actually restricted in what it can do: A2 manages the risk of incorrect data values being entered into the record by giving a specific set of choices, as he notes here, on a drop-down menu.

If the employees continue to make mistakes and enter in a different value other than the ones offered on the drop-down menu, there is a considerable risk of the incorrect values being recorded on that spreadsheet. In this case, A2 indicates that it also has repercussive effects on other potential risk incidents. This mirrors what A1 has noticed in commenting about 'nested' risk, risks within or built on other risks.

4.5 A3, Data Manager

A3 is a young woman who had been recently promoted from worker to manager of the Data Management team at the time of her first interview. Her experiences with thinking about risk

in terms of the business have come from theory – she has been on a course to attain an extra qualification, in business:

“Last year, I was having to do an NVQ in management, I think it was...one of it was to do a risk analysis of the company, so I did kind of risk assessment there, as part of one of the modules we do. But it was more to do with the environment-health and safety-risk assessment either that sort of thing than financial data, records, that sort of thing like that...[laughter] it was like a health and safety check for risks.”

[A3, IM]

4.5.1 Data collection as a task

She is now in charge of an aspect of the data management team who process the collected data from other employees. This set of processes (collecting the data, cleansing it and processing it) is a key function of her job, as well as the mainstay of the team’s work.

“...Obviously, a lot of our data comes from surveys [...] my team use a system called ASKIA, which basically is like a survey design software, the data we have comes through that so you kind of have a plotted survey which you can input the data through that ...which isn’t actually done by our team. The data’s stored upon that, so that is our data we then export it to Excel, or something like SPSS which obviously then makes it kind of visible data almost for analysis purposes they’re the two things we would use is ASKIA and Excel, which kind of translates things for us.”

[A1, IM]

“A3: It’s very rare that you can’t find a file, but it’s just reducing that risk you have of not being able to locate it because of some very vague naming really, it’s kind of...”

NVHG: So, you’re aware that...sometimes, you might find that that there would be the risk of having, as you say, a vaguely named file...

A3: Yeah, it’s more to do with data and cleansing it, because you go through various stages and we try to implement the rule that can only have the beginning file, and that’s kept untouched, and however many stages... a ‘cleansed’ file should be named as... ‘cleansed’...”

[A1, MM]

In a simple model of the processes within ALPHA, the type and range of data collection is agreed. Details of the request are also agreed, and the request is stored, and then processed. Data collection is arranged and carried out, and the resulting data stored and cleansed. The ‘data team’ check and reprocess this data, and finally ‘researchers’ analyse the data and create the specified product for the client.

4.5.2 An incident of risk management by A3

A3 has a unique perspective within her management position because before becoming a manager within ALPHA, she had worked as an employee on the data team. She had just been promoted at the mid-point of the case study, and so she remembered the ideas and ways of thinking on how both employees and managers felt. A3 recently had a situation where a file had been overwritten. She examined why this had happened, and found that an older file had been written on top of a newer one by the employees of the data team.

“There had been an issue where the newer file had been overwritten to an older file into separate locations. Of course there was a third location where I had it on my emails, so I could put it back. But there was that if I hadn’t had it on my email then we would have lost the newer file basically. So it’s kind of that we need to check – if there are two files then make sure you check the dates on it. [...] So it’s kind of a bad thing that they weren’t checking it, and I should have brought a copy back, so kind of flag it up and say that we should all have been aware of to check stuff like that. We flag it up and something comes up, and say ‘this could have been a massive problem – thankfully it wasn’t because we had her copies’ – but if it hadn’t been spotted then it could have been even worse really...”

[A3, MM]

She evaluated what she could do, and looked at her own resources to replace the overwritten file with her own copy. She acknowledges that if she hadn’t kept a copy herself, newer data would have been lost. The file was replaced, and A3 talked to her team to ask them to write in dates to the file names in order to ensure that this type of risk situation would not occur. She understands that these risks cannot be totally eliminated, and she therefore gave instruction to her team, briefing that the incident had happened, and that the way to avoid it in future was to include dates in the filename to indicate when it was last altered. On reflection, in relation to this situation, A3 thinks that there could be another method to use, to ensure that it doesn’t happen again – consisting of version numbers:

“...You go through various stages and we try to implement the rule that can only have the beginning file, and that’s kept untouched, and however many stages...a ‘cleansed’ file should be named as...’cleansed...any of the stages needs to be labeled as that or data you know because if you’ve got a file where you know there’s four versions [...] sometimes you can go for version four but actually version 3’s the one you want – it’s that kind of thing that needs to happen – kind of a sensible label to say what’s actually happened to that data at that point ...”

[A3, IM]

The impact of this ad-hoc training had yet to be felt by the time of the conclusion of the first layer of the study. However, A3 was able to rationalize down her course of action when a risk situation occurs, and she could describe it as ‘transferral’ of the risk, according to the Freepint management tool. On reflection, she could apply this to what happened with the overwriting of the file as an incident.

4.5.3 E-records and the management process

Transferring the responsibility to cope with such an emergent risk is down to the team who work with her, ensuring that they are equipped to cope when something like this happens again. A3 is sure that some risk assessment is intuitive. However, she thinks that the approach depends on the individual, and is not a matter of how they’ve been taught to think. It may well depend on their entire outlook and approach:

“If you are ... [internalising] the way I’m doing things it’s not as though you go ‘Oh just this section I’ll be fair, and not that part of my life.’”

[A3, IM]

A3 knows there are things that they do as a business, and that there are things that they do not. Looking at a chart that covers the business processes, A3 is confident in identifying which processes belong to her and her team, and which belong to others in the business. She can also say that areas of the business need improvement, and is keen to implement either processes or rules that will help the data team work more efficiently – perhaps by eliminating the chances of lost or misfiled documents, and working out what to do when problems occur:

“There are checks, to make sure it’s happening...like we have a way that it extends, someone always checks it to make sure that the data’s right, you know, when it’s your data, you’ve look at it and you don’t always spot mistakes...[...] I can obviously see someone hasn’t signed this off [...] I can go and check the procedures and say, I did tell you to do this, have you done it, but you haven’t saved it there, so you have those processes to make sure things...come out right, really...to keep an eye on it, because really when you ask people to do things, they don’t always remember. And it’s just you know what they’re like, they’ve got lots of things on their mind ...they forget...so it’s good to have those sort-of...physical records to make sure that it’s been done: ‘cos if it wasn’t there you wouldn’t know that someone had checked it and signed it off.”

[A3, IM]

A3 makes much of the fact that all incidents are dealt with in an appropriate manner. If there’s an opportunity for learning, she’ll see what can be learnt from it and will apply it

later. She also talks to her team in order to discuss with them what to do or not to do in order to try and prevent incidents occurring.

“Yes, I have a rule – nothing gets deleted! Basically...Nothing, no email, nothing gets deleted... [...] actually, last week... [laughter] I set down the new rules...everything is filed under client and then by project name ‘cos obviously some clients have multiple projects and everything that we have is set by the questionnaire folder, tables folder, data folder...those kind of things. [...]...As of last week, the new rule is, every one should have a job number at the beginning of that file name ...”

[A3, IM]

She also recognises that if something happens outside her area or department, it is their decision or requirement to sort out the problem – as well as showing that she is competent about her own area’s needs and work. The aim of the data management team is that it ensures that work is passed through the company. She realises that the impact of a risk to the company through the records depends on what it is, but she can highlight, both offhand and with thought, what the most serious would be, depending on the situation. She can identify that there are factors that can increase risk, for example, in an email system: if the company suffers a loss of access to email, the problem would be much worse if it were close to a big deadline. But she also notes that the same event “doesn’t really matter at all” when there are no deadlines, or where something could wait for the following day. There is no constant value to a single risk – even with something as important as email, other factors step in to make that risk more or less powerful, and the impact more far-reaching. As she notes, “it depends on the things around it”. This awareness of risks being dependent on other factors extends out to reacting to client demands – A3 knows from past experience that clients may ask for more features to a product, and so by being aware that this may happen, can deal with the impact.

4.5.4 Controlling data and records

For A3, a record within the business can be either hard copy or electronic, but she knows that they deal mainly with e-documents and e-records. Metadata is not widely known about by A3 and her team. But it is known that to be able to check on the accuracy and ease of use of some data, that one of the researchers collated some data from a set of surveys for the purpose of benchmarking. This helps the data management team immensely, and has proved a good technique for staff members to check against. A3 is very happy with it, as it can be regularly updated, and is a useful resource for all the staff. This is her vision of ‘central storage’ –

instead of multiple versions, there is only one version of each document, preferably dated as to when it was last amended. A3 also mentions the fact that another of her risks is linked only moderately directly to e-records. The possibility of staff leaving is another factor that potentially alters the seriousness of another risk.

“And again the impact wavers really depending on what kind of custom or [Inaudible] on how conscientious they were about transferring things, labelling things, putting them into useful storage areas really...[...] It depends on the person really and how well they label things – especially the emails and how well they file things.”

[A3, MM]

She noted that workers’ conscientiousness was a great point within her view of risk, especially pertaining to risk management:

“So it’s quite tricky as to how conscientious they are in the last few weeks of work which I know it’s hard – when you can’t be bothered anymore or ‘I’ve not got the energy’”

[A3, MM]

For A3, control of the project and its associated risks is very important. She is a little dismissive of proprietary attempts to encourage risk management:

“...It’s difficult to implement in business because people think it’s already what they’re doing intuitively or it’s something that they might just say... it’s just dead obvious!”

[A3, MM]

Whilst she agrees that it is important for a new employee to learn a routine, and for staff to be able to keep to routines in order to lower the chances of items being misfiled, it’s best to offer training to help these new people: “...help them work out what’s good, what’s bad and what to focus on”.

4.5.5 Thinking about risk

When shown the risk management tool, *Freepint* (Webb, 2007), she asserted that people new to the firm may need more help with risk management and assessment: “...a graduate straight out of university with no work experience might need something like this.”

Considering what motivates her to think about risk, A3 wondered about situation similar to elements of risk in the media at the time (which included events such as the loss of two discs

from HMRC – vide Osborne, 2007) and decided that these did not directly mirror what might happen to the business in a risk incident. She thought that in the instance of small businesses, it was more likely for them that a comparable risk event would be if they did not deliver on their main service – or a competitor did not deliver (thereby illustrating what might happen to them if they themselves did not deliver), and the disappointed customer expressed their dissatisfaction by going to another business:

“Which is why that has more of a motivating factor on us kind of going ‘Eek that could never happen to us – are we sure that could never happen to us?’”

[A3, MM]

A3 is more sceptical about how change is managed in small businesses, especially in regards to procedure; noting that it is often the combination of people’s skills that really affects how processes are managed and treated, in view to how people deal with risk – they look for:

“...What fits with their business, and what fits with the people really; what fits with the staff skills.”

[A3, MM]

4.5.6 A3 - Commentary

A3 is a manager who has faced risk incidents and who has created and enforced policies in order to manage them. This has specific ramifications on how she approaches and perceives her acts of risk management, and risk management within records management in ALPHA.

4.5.6.1 A3 and processing

A3’s work is based around the nature of the record and the nature of the used information when it is processed through the firm to create the required data product. A lot of emphasis is placed on data hygiene, as this is one of the defining elements that A3 highlights as the difference between firms who encounter risk in e-records management, and those who do not. It raises awareness of the risk, and acts as a driver by making a business aware of the risks associated with not maintaining this data hygiene standard. The awareness of this risk:

“...kind of spread like wildfire, which is obviously you kind of go ‘Argh!’ [...] just make sure that everything we have and all our procedures are given the treatment and that we are very hygienic [...] Because we do have instated an up-to-date cleanliness kind of thing that goes out to clients [...] It’s our 25 point plan of handling data basically – kind

of to ensure what we do is proper. I think of that, rather like HMRC losing data is more how a client might view us in terms of giving data that's not clean – they wouldn't be very happy with us...”

[A3, MM]

A3 has evaluated the risk in terms of the company, and uses comparison to look at this risk in terms of risk management. She has noted that awareness of a particular kind of risk – losing data – has spread and been the drivers for a form of D/I/R management within their own business. External events have effectively influenced the progression of internal ones, in terms of the approach to risk management, and therefore external factors may be an important driver for risk management within records management.

The 25-point plan of data handling is indicative that a risk has been identified and assessed by ALPHA. In reinforcing the need for ‘data hygiene’, the identification of the risk in having poor data hygiene has been used to create specific risk awareness, and from this, a risk management strategy has been generated. There is a chain of response to this risk, but it is also diverse in its influence. A3 was asked about how she had heard about how the company had reacted towards the news of HMRC (HM Customs and Revenue, as a byword for the events surrounding the October 2008 loss of two discs containing the details of 5 million citizens) and this segued into how clients would react to the same news, in terms of their uses of a data-processing service. It is notable that A3 herself had made the connection between poor control of data by an external, Governmental agency and the SME's own use and maintenance of data hygiene. It can be postulated that a driver towards risk management is awareness of the risks that others manage unsuccessfully.

“NVHG: How did you receive your news about that? Was it a grapevine thing?

A3: Yeah, I think so, so I heard it from A1. It's obviously spread from somewhere – whether or not a client has said we're never using this panel [...] ever again and you know people chat on the phone. Or it could be something terrible like ‘we're coming to you now!’ ...”

[A3, MM]

The maintenance of a data hygiene standard for ALPHA is obviously very important. However, this may not be a necessary component across SMEs in general, and it is posited that it reflects a form of risk possibly intrinsic to ALPHA alone. Although the data hygiene aspect may be a great risk for ALPHA, there are other risks that are also problematic. The

processing and maintenance of the e-records for such systems as these concepts is also full of risks. Risks in processing have been noted by A3, and are described in far more detail than other risk incidents.

4.5.6.2 A3 – fSSM

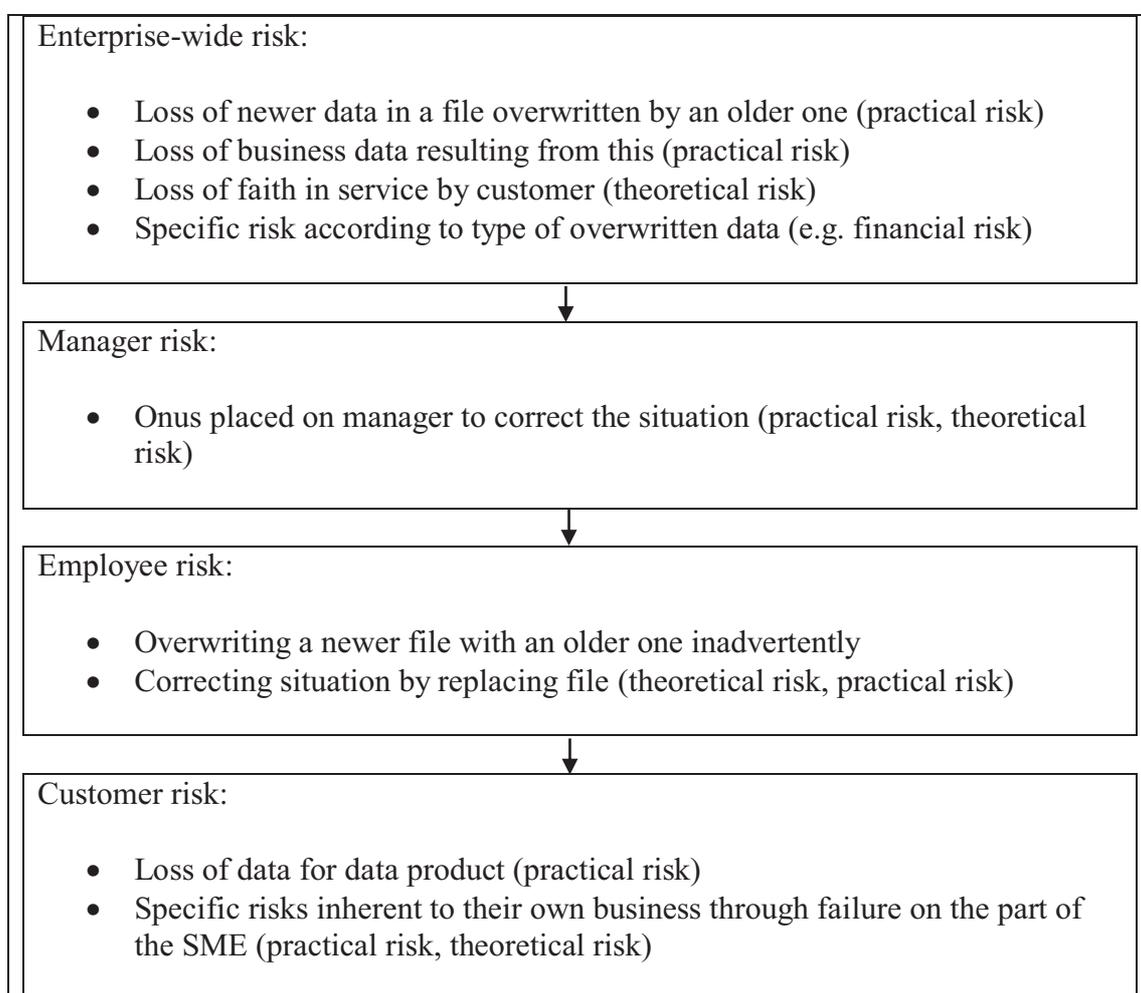
Illustration 2 shows A3's perspective within a rich picture of how records are used within ALPHA. Processes are described and shown in relation to record use.

4.5.6.3 Processing and risk

The processing of data is a key area for ALPHA. However, when this area is investigated for risks, the potential for a risk event happening emerges. A3 has described a risk event where files were overwritten because care and attention had not been taken by the staff processing them to check the dates of data entry on the files. This is a 'risk' on multiple levels that affects multiple people. Such risk incidents can form part of an education about the nature, scope and scale of risk.

However, there has not as yet been a model based on the concept of practical risk based on common processing actions for e-records. Descriptions of these specific risks are also few. One way to describe such risk is by person and by magnitude of risk (Figure 13). As part of the fieldwork undertaken, an individual risk exercise was held both with participants A1 and A3, where they were asked to consider a risk incident that they had experienced. This fed into recollections of specific risk incidents and how they were handled. This has informed the creation of models of risk management for the SME, which will be outlined and fully described within later chapters of the thesis.

Figure 13: Diagram of risk incident showing groups involved and types of risk for a single risk incident



The above risk incident diagram, created from the evidence of ALPHA, shows that all actors within this scenario are affected by the risk of an overwritten file. The extent to which they are affected is not related to the type of risk. For this illustration, both those within the SME and those outside it (customer/s) are affected by a risk starting within the SME.

4.5.6.4 A3 and maintaining records/records storage

Records management, in the aspect of e-records management, is complicated in the business environment by the fact that there may be hybrid holdings within the entire SME, and e-records reliance within some departments may be dependent on the type of work undertaken by them.

In the case of A3, she relates that e-record usage is more common in her document than holding of hard copies, and that in fact hard copy use is generally only practiced by the researchers. In terms of a general view of records holdings, this makes identification of individual holdings very difficult to maintain and update. A1 has related that the ability to search for electronic records on the SME's system means that access is relatively unrestricted, something which cannot be easily achieved with hard copy records.

Access to records in order to facilitate work with them is best maintained with e-records. However, specific problems with e-record storage mean that A3 as a manager is expected to deal with the risks that the workforce encounter. In the example she uses, she was able to match her data storage strategies with the problem and could find a copy of the file needed to replace the overwritten file. However, this strategy has flaws as a records management solution. It relies on the use of the manager as a failsafe device, and there may be points where a manager may not be able to provide the required information. Another point is that the risk (of overwriting a file) is one that is generated by the employees within the SME. If the risk can be managed on the same scale (i.e. by a worker), the impact on the SME might be lessened.

4.5.6.5 A3 and reaction to risk

After the risk incident of the renaming of files, A3 discussed her own personal reactions, and what steps she would take next in regards to risk management. She also used this as a springboard to discuss what others would do within business. She seems to indicate that there is also a fundamental lack of terminology for risk management:

“I think we would say ‘prevent’. If something's happened that's bad we say we will prevent it from happening again. We just don't call it a risk. We don't really think of it in that way.”

[A3, MM]

If the concept of risk lies unformed, then there may well be an issue with how risk management is understood and carried out within the SME.

4.6 Case fSSM diagrams

In order to better understand the involvement of risk management and records management in ALPHA, diagrams were drawn out from the data given by the participants as to the work they performed and any difficulties they encountered. A1 verified this illustration, and any alterations were made to form the second illustration. What Illustration 3 shows through the connecting lines is the flow of the systems in which ALPHA use records, and experiences risk (especially focused within their records).

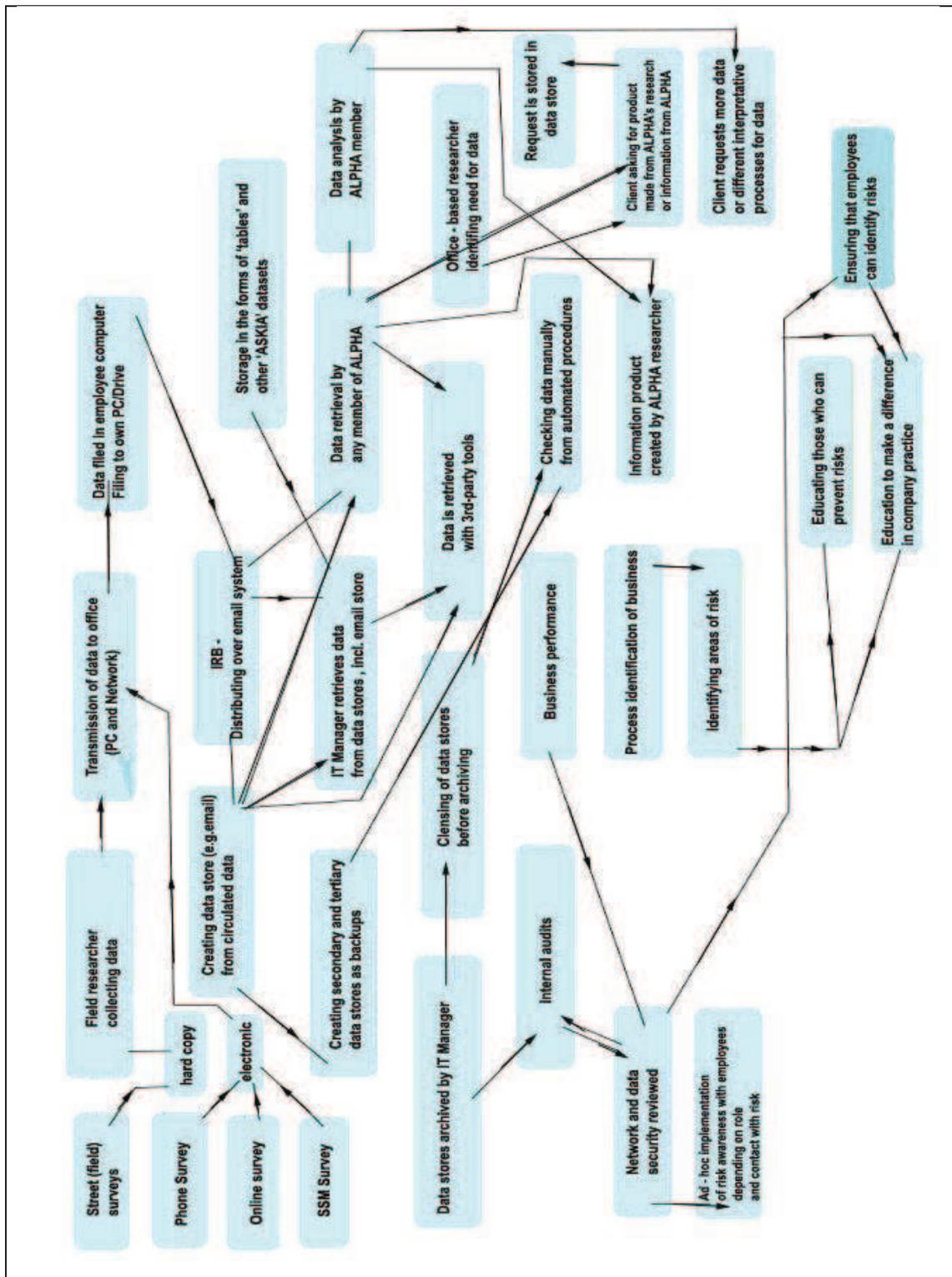
In the final fSSM diagram (Illustration 4), directional paths of the data were clarified, with a distinction made between processes and concepts, shown by the shape of the outline. A cloud shape (see key for details) was used for concepts, and boxes for processes, either filled or line dependent on the type of process. The researcher further defined procedures within the SME as either 'key steps' or 'process steps'. Key steps were those that the SME could not work without, and process steps were those that were undertaken between key processes. In this diagram, it is seen that the process of data flow can start with a customer request for research to be done and a product made.

4.7 Summary of case

The narratives of ALPHA's personal participants in the case study describe and show the development, in an SME, of the acceptance of dual roles within related areas, such as records management and ICT maintenance and implementation. It is noted that risk events appear to shape the responses to risk by the SME's participants, and particularly affects their reactions and ideas for future action.

Some forms of risk management for records management (especially pertaining to storage management, as in the case of the broken server) dominate thinking on the topics of risk, especially within e-records. The approaches to this risk management can be seen to closely resemble the findings in an earlier Australian study by Ehrich and Billet (2006) into SME learning approaches and methods. It is queried if this can be seen as merely a shared form of approach within SMEs, or a form of strategy in dealing with risk.

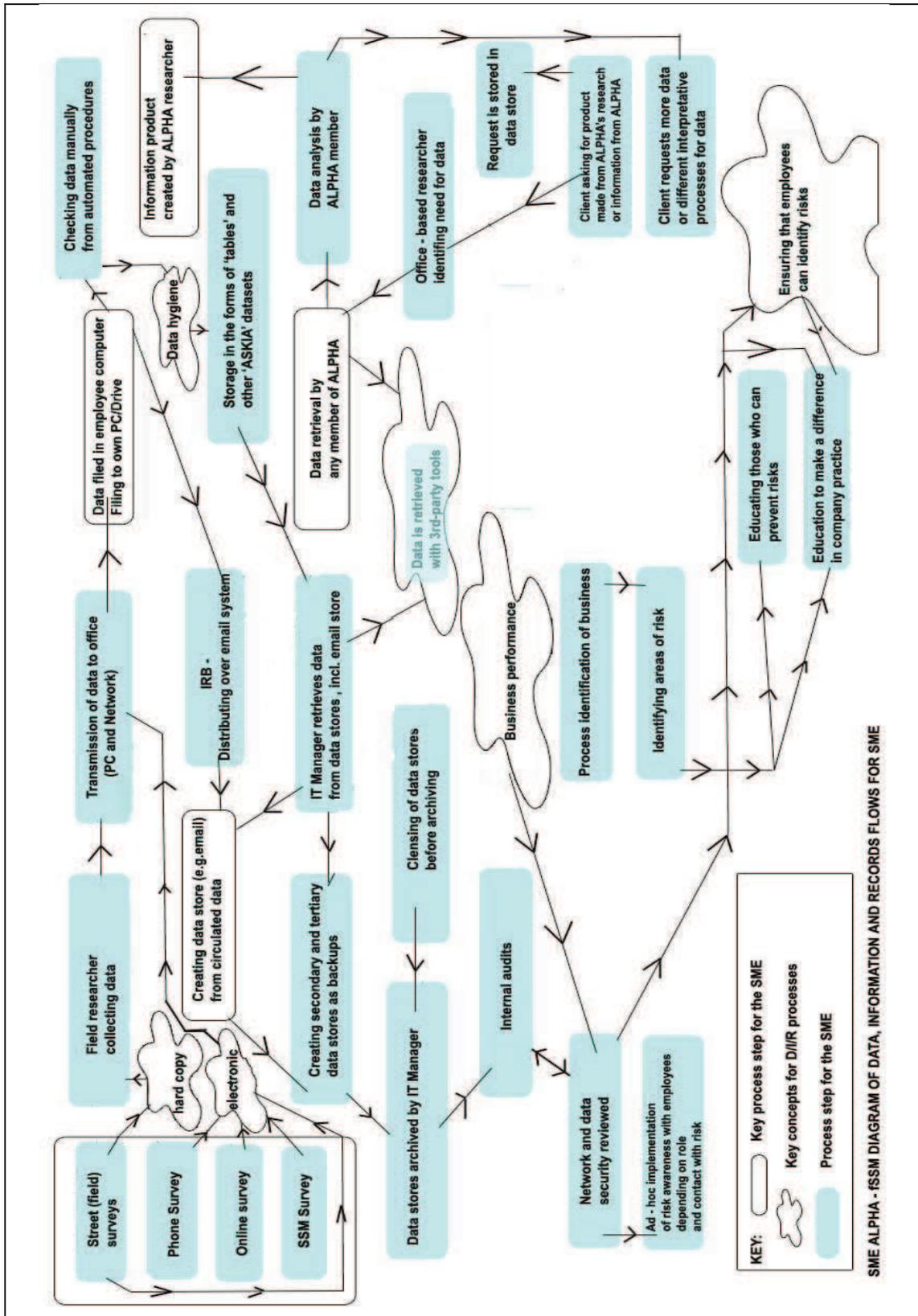
Illustration 3: An fSSM diagram of the D/I/R flow of Company ALPHA from A3



A2's approach of trying to limit the risks of mislaying files is a distinct risk management strategy that concentrates on communicating his own understanding of how important information is to others. This awareness and spread of awareness is similar, but not identical,

to the strategies that A3 uses. A3's approach of risk management by careful organizational conformity to file naming schemes attempts to mitigate any further loss by ensuring that the risk situation's triggers (poor file naming, staff confusion, no backup copies) is not replicated. A1's role in managing risk involves spreading awareness and assessing the need for educating people on risk according to their contact with it.

Illustration 4: An fSSM diagram of the D/I/R flows of Company ALPHA, from the interviews and questionnaires of A1, A2 and A3 and verified by A1



Chapter 5: BETA, A Manufacturer

The second case study, BETA, was carried out between June 2008 and March 2009. BETA could be regarded as a 'small' SME. A single questionnaire and a number of interviews were completed with four participants – a manager, two senior secretaries, and a shop steward, about risk management in e-records. A corpus of approximately 17,000 words was created and from this, a representative corpus was defined and analysed. Keywords and themes emergent from the corpus were explored for relationships. This case study report concentrates on the data of the case study participants: MB1, B2, B3 and B4, elicited via interviews and questionnaire data.

5.1 BETA: a description of the SME

BETA supplies vitreous products manufactured in their own premises. They also outsource certain types of manufacturing process to other companies in order to provide specialist services and customization of vitreous products. Specialization has meant that BETA runs both a main production service, and a side-service dealing with glazing. They are open to both the building trade and to members of the general public. BETA is a family-run firm approximately 100 years old, and continues to be run by members of the family and a small workforce. BETA is also a limited liability company by law.

BETA is based in a large town that is considered one of the wealthiest in the area. The town itself has no 'industrial' districts, but enjoys the benefits of large-scale business successfully integrating into the outermost areas of the town. Urban sprawl has meant that the town bleeds into a number of smaller villages, especially at the periphery, and in these areas of growth, some small enterprises have industrial bases. Housing surrounds the site on two sides, and shops adjoin the workshop itself.

5.1.1 The site

The building consists of two storeys. The ground floor houses a very small 'shop' area with a counter, and is a point of access for staff into the workshop beyond. The workshop stores a large amount of the key machinery used in the manufacture of vitreous products, and storage for the finished items and stock. The computing systems are based on the second floor, within the offices, but several terminals are available downstairs in order to complete the mechanical order-processing scheme. The 'shop' area has a terminal that is used mainly for inputting

orders and processing and printing 'delivery notes' directly to the customer. There are three terminals within the workshop itself. Scanners are also attached to these terminals, but they have no Internet capabilities. They are older machines, approximately 5-10 years old. Most are firmly built into a workbench, or around a corner of the workshop away from the main manufacturing machines. Attached to two machines in the workshop are secondary CNC (Computer Numerical Control) terminals, and the main controller is a unit within the first-floor offices. The work convention is that all CNC machines are programmed through the main controller, or 'upstairs' as it is known by the employees. The physical divide of the office is centred around the workshop. The first floor and its mezzanine are above it; the shop, based on the ground floor, is directly connected to it. There are three clear workspaces where employees are based. Records and documents are stored in all locations. The workforce is divided between employees and managers, with the office staff and the managers working on the floor above the workshop. These offices allow a view of the machinery and the storage areas.

The environment is close and informal: the employees talk happily amongst themselves and with their bosses as they work. Work is the main focal point, and little time can be wasted in idle banter, as the environment is noisy and industrial machinery drowns out music playing in the front of the shop.

The first floor is the area for the staff offices, with two small showrooms on the mezzanine for the products that the company can manufacture. The boss's office is next door to that of the senior secretaries, who in turn are next to the records area, a room that also contains the server. Filing cabinets are still used both in the office and in the shop. The other offices are used by the technician and computing expert, and are relatively small.

The second floor of the business is rarely used, and contains the specialist supplies of the trade, which are an inherited part of the business. The workshop is bustling with energy: specific glass orders are manufactured quickly and handled delicately. A single man usually works each machine, and few machines are still for long. Focal points of the workshop include a piece-working bench at the front right corner of the workshop acting as a point for employees to talk and discuss things, and a large bench in the main workshop's storage room with a CNC worktop for material cutting and moving. Computer printouts are used as schedules and are placed around the workshop so that everyone within can check them. The

proximity of the workshop greatly alters the researcher's impression of distance between the employees and the office-based staff.

The majority of customers' orders are processed and then stored in holding bays off the main workshop. These are identified by stickers on the wrapped orders, and are confirmed by wipe-clean order boards in one holding bay. Within the main storage room, sheets of completed order notes are held in the racks next to the completed orders, and delivery rosters.

5.1.2 The workforce

The bulk of the workforce in the business is male, with three female administrators within the office area. For an illustration of the organizational hierarchy, see Appendix 5.

5.1.3 Introductory profiles

The boss, MB1 is supported by his fellow manager, MB2, who was unfortunately not available for interview. They are the owners of the family business. The next tier of the workforce hierarchy is that of the senior secretaries, B2 and B4, and two other management-level positions. They are in charge of the practical day-to-day acts of records management, finance and other bookkeeping duties, and order data entry. Part-time secretaries or other employees may be used on occasion to assist in the office. The head of the glazing company – an offshoot of BETA - has the glazing aspect of the business to run, and is not primarily involved with work in the main workshop. The IT advisor acts as a computer repair specialist who attends on site where necessary. The employees themselves usually manage the IT on a day-to-day basis, and the IT advisor deals with any specific problems.

The next tier is that of the counterman, B3, who acts as an intermediary between the workforce and the offices. His role is to maintain the ground floor shop, as well as overseeing the process flow for the products, and enter orders into the system. Through interaction between the workshop and the offices, he is able to act as an immediate amanuensis for the bosses and senior secretaries.

The final level on the hierarchy is the employee, who will create the products and note the completion of stages of work by entering work details into the management system. The

employees have a minimal level of contribution to the overall records management system but are instrumental in creating some of the records used within the business.

5.1.4 The Systems

BETA uses three software systems to maintain a workflow of records management for the company: The two in use in the period of initial and main interviews in 2008 were Glass Manager 2000 and *Sage*. A third system was described as within 'break-testing' during the period 2007-08, and was activated in March 2009. This was scanner software, integrated into the hardware already held by the company.

GM2000 is a customised database system that allows for the generation of orders via codes entered into the database. This system can generate quotations for projects, invoices for customers, and records of transactions for the firm. It is capable of generating both electronic and hard copy records.

GM2000 was originally created after BETA had experience with a commercial software package called *Georgina* (Glasscalc Ltd., 2005) which they found to be wanting in many areas. This led to a process of evaluation and development by a programmer and their IT advisor. The product then offered was a simple database system with many customizations, and which was originally based on *MS Access* and a redesigned 'front end' for the application.

GM2000 underwent multiple redesigns, and updates were added onto the program as and when necessary. However, the program has been greatly redesigned and will be rewritten in another computing language in order to improve it. It is also planned that a fax machine with an integrated scanner will be used to perform an initial capture of an order from fax to database. This project – described within this study as GM2009 – ran into problems between June and November 2008, as the planned rollout of the program was halted by software conflicts with other programs used in the business and by the change in the VAT rate in November 2008.

The main design aims driving the creation of GM2000, from the participant's point of view, was the desire for ease of use and the need for a product that could perform specific functions as dictated by the SME. In terms of the same process with GM2000, whilst the current initial

capture of a record is manual, some automation has entered the process by the use of the barcode system to update a stage of work for the record system. Initial capture – from customer order to database – is still a matter of manually typing into an electronic form, which is part of GM 2000. The use of the scanner, an initiative planned for the version GM2009, would automate this process, but has run into practical difficulties.

Sage (Sage UK Limited, 2008) is a finance system and program used by the business to record all financial transactions, and to generate figures and records for the accountant. These can be sent electronically at the end of each day to the accountant. *Sage* can also cover aspects such as customer relation management (CRM), and stock supply. However, as is more fully explored within the narratives, this is not always used as GM2000 covers specific functions such as calculating prices and costing jobs for customers' bills.

The third system, remaining unnamed throughout the study but known as 'scanning software', went online in March 2009 after a period of testing and patching. It consists of a scanning software package, custom-built to work with the fax machine and its own software so that all incoming documents could be scanned and stored by the main system (GM2000). This scanning software also works for diagrams and technical drawings sent into the company by clients. As of April 2009, there is an initiative to phase out all hard copy records that can be otherwise scanned and held on GM2000 or similar databases. These systems are used to cover all the records management needs of the business, but in different aspects, as the narratives will describe further.

5.1.5 Records within the company

The basic business records that are created, held and used by BETA are those standard to any retail company. The records produced by the company are not only for internal use. The records produced to act as invoices and 'delivery notes' are printed off for customers and are also held as part of the overall customer records. These invoices can be queried and searched in order to confirm if an order has been created. The 'delivery notes' are produced for clients who require other records to prove delivery (these records are signed at BETA and are countersigned by the customer) and are printed at BETA. However, in a drive to reduce paper, such records are now only printed off if the customer asks for them.

5.2 MB1, joint manager

MB1 is a joint manager of the family company, having inherited it with his brother. He has been running it since the 1980s, and he notes that he has been responsible for all the technological development. His overriding wish was to be able to keep up and be a competitive business, and on entering the company, he radically changed the existing system of manual records management. Though his office may be lined with books and papers, he does not appear to use these. Instead, the most used equipment on his desk is the telephone and the PC terminal. The computer itself has access to email and the main database of the company, a program called GM2000. This program was devised by MB1, and created when he saw early emergent trends within industry for the use of electronic records.

5.2.1 Use of the GM2000 program

MB1 is relied upon within the business for his knowledge of computing and of GM2000 in general. Although he is not the programmer, he has enough knowledge to be turned to by his employees for assistance, and information. He acknowledges that the program might appear difficult to use due to the complexity of the business processes that it is used to record.

“...It’s quite an easy system to use but it probably takes somebody about 3 –6 months to use to teach them how to use it properly because of all the different processes that we do...and all the things that you gotta remember”

[MB1, IM]

In his role as the joint manager of the business, his work is divided between business responsibilities and the maintenance of the business. He complains that he does not often get free time to attend business-themed events, as the business requires his constant input, even for a short time. He believes that computers are the way forward, but is wary of how much he trusts in them. He understands that the business requires certain elements to be preserved within its records, and ensured that when GM2000 was built to his specification, it had an audit trail feature in order to enable it to be searchable. His concept of the need for an audit trail manifested itself into the creation of the most commonly held record within the business, a “job sheet”.

“...We use that kind of job sheet through the factory, and the job sheet idea was my idea long before we went down the ISO road. First of all, I had a lot of systems in

place...erm...we're possibly doing things more formally and so...more informally in them days, but got more formal as the years have gone on.”

[MB1, IM]

The use of GM2000 to generate a job sheet is reflected in both electronic and hard copy approaches, as MB1 can demonstrate. Using an order already completed, he can describe what happens in order to get a correct order inputted:

“...[Indicating an order on hard copy] as you can see, this one's come via a fax machine, so we have a facility for putting a line in here to get the client to say that all the details that we put on there are correct and we tend to use that out at the counter area, which is where you came in. Because people don't always have official orders. So, what we'll do is we'll take a verbal order at the counter, and we'll let them sign, see that the details are correct and that gives them a chance to check it, make sure that we haven't made a mistake...”

[MB1, IM]

Whilst he can find electronic records quite quickly, he manages to find hard copy just as promptly. This is evinced by the speed at which he retrieves a job sheet from his files which he knows is a completed job, to use as an example for the demonstration of the uses of the GM2000 system.

5.2.2 MB1 and computing

His office uses both hard copy and electronic media, and whilst he uses electronic records, he makes numerous references to hard copy records. The issues he has noted with computing often relate to areas of concern about email and the integration of a new system for both computing and faxing. As faxing and emailing services support a great deal of their business base, MB1 has investigated chaining several products together in order to create a system which is tailored to the business's needs.

However, this has not yet proved profitable, as constant software conflicts mean that MB1 has to employ a software engineer and technicians in order to maintain the system and solve problems that occur with both proprietary and non-proprietary software used within the business.

GM2000 has been of great concern to MB1, as he and the software engineer usually supervise any changes to the program. The planned rollout for this product has also been

delayed. MB1 has a blunt approach to computers. He can identify the benefits of holding electronic records, but can also pinpoint incidents where capturing and maintaining information on his sets of hybrid systems have been problematic.

MB1 recalls an incident where he had assumed that the server used by the company was capable of recording information even when other drives in the machine failed – a very straight description of a failover system. However, he recounts that one of the drives did fail, and none of the other drives picked up where the drive failed, losing the information which should have been written to it. Whilst good with technological ideas, MB1 is more grounded in practical terms, and described how he sought a solution:

“What we didn’t realise was that although the system does keep up and running it doesn’t always compensate for that loss of that hard drive and we did have a big problem because we felt as though we were going to lose data. We were able to restore all the information by other medium which by using the actual tape back ups that we had made and some of the storage back ups that were kept as a back up on the back up turned out to be quite useful because it was a bigger problem.”

[MB1, MM]

MB1 has seen the business encounter other problems with the hardware within the company but this has come from an external source, namely infection by a computer virus. This is recounted by other participants in BETA.

MB1’s approach to computing in general is one of wariness about new products, and he finds it useful to have a stable platform for his business, even though he has explored options for the future. He notes that whilst discontinued support for one particular computer operating system made him change, he has had little or no experience with the latest version:

“...It made the decision for us the fact that we were going to withdraw the support but actual fact I think that XP has been the best system that we have ever had, I mean I can’t speak for Vista because I don’t know but I think that XP seems to have far less problems than what we have had with any other systems, even though we did have problems with XP initially.”

[MB1, MM]

Whilst he accepts that there may be a time to change software and hardware, MB1 would prefer to wait until it becomes necessary to move from one system to another. He appreciates

that withdrawal of support for his chosen operating system may be the main motivation to change. However, he also appreciates the difficulties that this will cause.

5.2.3 MB1 and records management in the SME system

MB1 discusses ISO 9000 (2008) and the need to maintain a quality system in the same sense as auditing. He says that they did not know what the ISO was before they worked towards it, but that they recognised the need for auditing independently before its implementation.

“...We had never even heard of ISO9000 when we first input it because I wanted a system whereby we had some traceability where everything was written down where it needed to be on a computer rather than hand written and you needed to keep a record so you could actually trace it back so even from an early day we were already embracing the quality assure system without actually knowing anything about ISO9000.”

[MB1, MM]

He asserts that the move towards auditing was “natural”, and that the move to electronic records management was something that emerged from a need for efficiency. However, efficiency is not the mainstay of the move to electronic records, and the “benefits of life-work balances” are also mentioned. Manual records are not discounted, and the need for their retention is described as a form of backup for the overall system:

“...Often I do actually look for manual records but I do it for a reason because I want to know are we still doing it right, is there other things that we can input to sort of try and work a better way system, a better way of finding stuff. Is the current system we are operating still working, so I do when I get time, I do like to road test a system that we know works, but I still like to know that it works...”

[MB1, MM]

In discussing risk and records terminology, MB1 understands that whilst he may have a concept of what a specific word or term might mean, that the principle of communication does not always work that way:

“...You might say something to me and well I might understand it but alternatively I might just look at you blank because I don't know what you mean...”

[MB1, MM]

5.2.4 MB1 and the vocabulary of records management

MB1 has also identified that a lack of shared terminology can cause confusion, especially with staff further down the hierarchy:

“...If I went to one of my colleagues for instance and said ‘okay, today I want to have a look at your computer because I want to see how your e-records are being kept to make sure that they are still going to be retained there in a month’s time’, and they’d look at me blank. What you mean you want to test my computer, yeah, oh why didn’t you say that then...”?

[MB1, MM]

5.2.5 MB1 and the future

Finally, MB1 can also look progressively to the future. But whilst he is capable of identifying a direction for technology, he is sceptical of whether he will be able to use it with every business client he has:

“...Probably within two or three years all set, we’ve seen electronic systems move very quickly, I think we’ll be able to...er...produce, er, send the invoice out via email. Erm, for those customers that are enough to actually take them in that form, we’re gonna be actually quite a few years away in being able to do that with everybody.”

[MB1, IM]

When revisited for the exit interviews, he voiced his thoughts about how his business would benefit from the use of his records management software. He cited its immediacy of use:

“...It’s giving us all that information we never thought we would get so now we can...actually go onto the information that’s scanned and stored”

[MB1, IM]

He also opined that there would be specific changes within the business as a result of the new software. His beliefs include rationality for the use of the equipment by claiming that it makes the records it processes more valid:

“The thing is, the information there is just...to hand, and of course, being OCM [optical character] recognition software, it means that it is a genuine record, it can’t be altered in any way. Er, so that’s quite good. You know, it’s in effect a legal document, really.”

[MB1, IM]

5.2.6 MB1 and e-records

The records themselves are used both inside and outside the company. MB1 notes that the electronic records give confidence, and says their usefulness focused on the fact that the hard copy records were occasionally harder to search:

“I think that what gives us the confidence is that, er, when we search, we find what we’re looking for ...I mean ...previously, if somebody had wanted to, say, question an order that whether...sometimes, information we’re asked for, in the old days we’d have to look through all the paper records to find that... [...] You’ve got all the information that you need all pertaining to that order whereas previously you’d have to look in three files to find that information you know because you wouldn’t actually have that information to hand...”

[MB1, MM]

His use of e-records focuses now on the fact that they can be a replacement for paper, and that they are an acceptable replacement for paper. He feels that e-records will be the future for his company, and that the replacement of hard copy with e-records will be self-evident:

“MB1: And, of course, it’ll reduce the amount of paper that we’re gonna store, and eventually we’ll probably reduce the amount of paper we’re using as well so...that is quite good

NVHG: Do you feel as though you’ll be wanting to hold any paper records beside these, or will that just replace...

MB1: well...eventually it will replace and, er things like we’ll be looking to in the future to put this, use this facility for er, ...storing our purchasing invoices as well. So again, it’ll do away with paper records in the long term”

[MB1, IM]

“I think in three months, within three months we’ll be looking at it saying, ‘How did we ever manage under the old system?’ Which is often the way with electronic records, I think.”

[MB1, IM]

Of the software itself, he notes that:

“...There were some issues which we had to address with the software writers and they’ve rewritten this program, er, or parts of the program that didn’t work properly so now we’ve got a system that is up and running and not creating any problems and it’s working as it’s supposed to work, so that’s really good.”

[MB1, MM]

5.2.7 Technology and risk

The problems with the software, once fixed, were the only hindrances that BETA had to face in regards to mechanical setbacks. Whilst no further bad mechanical failures had been noted by BETA, the methods by which orders were being sent out, reprocessed and copied left something to be desired:

“We had a problem just last week where er, a problem came up that we’d been operating a system that in actual fact was inherently flawed [...] Because it relied on us giving the customer a quote which was happening, the customer was then ordering it by giving the quote number which is the correct way that they were doing it, but in actual fact what we weren’t addressing was that mebbe’ the customer’s changed his requirements so in actual fact we didn’t have a sort of a check system in there whereby we were saying ‘Hang on a minute, we’ve given you a price, you’ve ordered it, these are the details [...] are they still actually relevant to the quote or have you changed them? ‘And what we had was a system where we had two occasions one where a customer had changed the details of what they wanted, they hadn’t told us, we hadn’t spotted it either, we should have been aware of the information but we weren’t so we’d made it wrong so that caused a problem...”

[MB1, FM]

The problem that he details has arisen from in part the processes of a system for customer ordering, and the handling of documents within the records management system. In reflecting on the whole process of improving his grasp on records management, MB1 considers the most difficult point to be coping with the risks involved in accepting and using e-records:

“If you do go down that electronic route, then you’ve got to consider what the risks are, and then you’ve got to put in plans I think to actually make sure that you’re covered, You won’t cover every eventuality but you’ve got to do your damndest to try and cover as many as you can.”

[MB1, IM]

5.2.8 MB1 Commentary

The exit interviews make it clear that the problems experienced by BETA that MB1 associated with records are often intrinsically tied to processes rather than being solely in relation to records management.

The need for MB1 to reassess some of his processes in light of the effects on records management is clearer within the exit interviews than in the initial and main interviews. A structure of awareness from the initial interview onwards gradually connects and builds MB1’s concept of the use and importance of records within the business. Awareness has also

been brought about by the change in systems governing the scanning of records into the main EDRMS.

5.2.8.1 Awareness of the need for records management

The awareness of this need has been a gradual one. MB1 seems more aware of the need for specialized records management in the terms of the whole business benefiting, whereas other roles within the business (e.g. senior secretaries, employees) may only have a less widespread and more specific, centralized view of the concept of the need for records management.

5.2.8.2 BETA fSSM diagram, Version 1

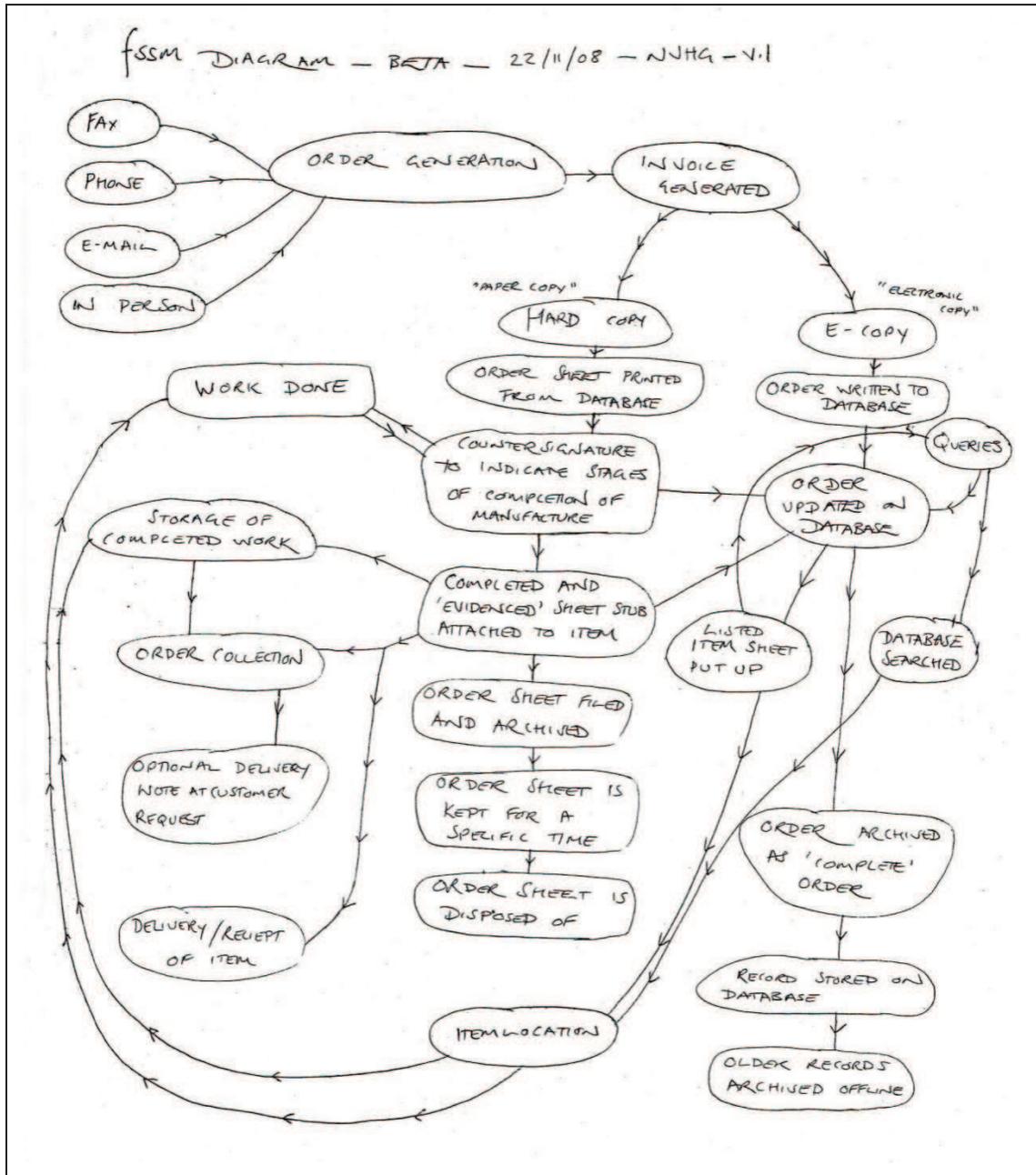
The fSSM diagram (Figure 14) was created after initial interviews had been held with the participants of BETA. The purpose was to gain an understanding of the passage of D/I/R throughout the business in order to establish it in a series of processes, and from there draw it out into a systems diagram so that areas of potential risk could be examined, and the risk clarified.

The first risk associated with Figure 14 is that the D/I/R flow at the 'Invoice generated' stage splits from being only in one medium to being actively in two: a hard copy sheet is created to send down to the workshops, whilst the electronic record sits in the database and is updated periodically until the order is finished and collected. The risk is that whilst the e-record may be relatively easy to locate, as B3 and B4 have identified, there is a significant chance of the paper sheet being lost. There are no other failsafe routines to check that the hard copy sheet is being used to update and amend the electronic record.

5.2.8.3 Building for a specification: GM2000, ISO9000 and DIR management

The theme of 'building for a specification' is one that has only emerged in analysis of the situation. The themes of 'moving forward' as evinced by the coding, the supporting evidence as seen in the words of the participants, and the relative propensity of specific terms which will be detailed later in the study all add up towards an overall theme. This theme was carried further in the exit interviews, with the notion of 'moving forward'.

Figure 14: fSSM diagram, version 1 – D/I/R flow through the business



There is consistency within the action of these themes – the creation of GM2000 in response to the perceived need to move forward, the generation of the program according to the codes already used and specified by the senior secretaries, the creation of an audit trail solution in response to the perceived need for one from MB1’s point of view, and finally the reworking of GM2000 after winning ISO9000 accreditation in order to keep up with MB1’s future vision of an office less reliant on hard copy.

MB1's themes of building for a specification rather neatly tie together. Not only has his instigation of the GM2000 program enabled a paper-based business to progress to using a simple database system for more efficiency at tracking orders and goods, but it has developed to such a sophistication that the system itself has become the main point of reference for the papers produced within it.

In creating the GM2000 system, MB1's main intention was never to comply with a suggested standard. However, as time has passed, the system has been tested and found compliant with ISO9000. The question is one of utility over the need for compliance, and the complex interaction between:

- Regular system users
- Customers
- Developers
- People or bodies who are external to the system

To explore this more fully, it is necessary to conceive of the actors within the system surrounding the database program of the business as forming these four groups. Regular system users are the staff of BETA. Primarily, these are the senior secretaries, MB1 himself, and the counterman, B3. Others will include the foreman of the workshop, and the employees who scan details into the program. Data entry to the program can be done at all levels. Even though he is a manager, MB1 will still take down and enter orders as the senior secretaries do. Regular system users are a large group within the business, and make up practically all of the employees of the business.

Customers are the primary benefactors from the use of the program. They receive some of the output from the program in the form of hardcopy invoices at present, which may be rendered digitally in the future of the business. Customers cannot use the program themselves, but instead rely on a regular systems user such as the counterman to use it in order to dispense details about their orders.

Developers of the program are likely to be neither of the two groups above, and therefore have to be informed by the business in order to carry on their role of developing and process-

building in order to add in new stabilizing features to GM2000. As well as this stabilizing work, they are expected to produce fixes for any technical issues which may arise through software conflicts between GM2000 and any other software (proprietary or not) in use by the business. They are also asked to include additional features to the developing software by the business.

People or bodies who are external to the system will by default not be any of the three groups already mentioned. These people or bodies may include the Inland Revenue, the ISO 9000 inspectors, and other businesses. Their reactions to the system run the gamut of positive to negative. Negative reactions have arisen in the past from the Inland Revenue – B4’s narrative details this with her own account of it, but in essence the negative view of the system arose from the Inland Revenue not appreciating the dual use of GM2000 and the *Sage* accounting system. Positive reactions have included the favourable outcomes of the ISO 9000 audit, where it was judged that BETA had passed the standards required to be an ISO accredited business.

MB1’s creation of GM2000 stems from his perception of previous ways of handling records and documents within the business, a change in the use of information technology like that described by Igarria et al. (1998). His reason for choosing an electronic system was that he sought something that has a key attribute of records management, the ability to retrieve specific records on demand:

“I wanted a system whereby we had some traceability where everything was written down where it needed to be on a computer rather than hand written and you needed to keep a record so you could actually trace it back...”

[MB1, MM]

The need to move from hard copy to electronic can be quite clearly seen here as an unspoken point about the problems of hard copy within the business. The likelihood of losing track of a hard copy record influenced MB1 into investing money into an electronic system, possibly because the record retention system at that point (see B4’s account) had been one of a very elementary and somewhat rudimentary nature, filled with no way to trace an entered record, and with every likelihood of the records themselves being physically lost.

Gibb and Buchanan (2006) note that in the consideration of a business continuity management scheme, larger scale systems are often reduced down to core components which typically neglect the outlier services and other dependant mechanisms. Whilst the problem of a backup for the backup is noted by BETA, the specific concept of redundancy becomes vital for the SME. Redundancy in this sense is “typically used to eliminate single points of failure by building more components and nodes into a system.” (Gibb & Buchanan, p. 135). In examining in more detail the case of the server with multiple drives, of which there was a singular failure, one can evaluate that whilst the original concept of the redundancy plan as covered by the multiple drives in the server was a beneficial one for the business, the difficulties encountered afterwards were what Gibb and Buchanan term as “ripple” or “escalation” effects (2006, p.136). These are knock-on effects caused by the original risk happening. However, the unforeseen nature of these effects made it far more difficult for BETA to have planned out their risk management adequately. MB1’s response to the failure by repeated testing to ensure that the failover works as it was originally thought to is therefore borne out in the sense of a strong business content management-centric approach. (Gibb and Buchanan, 2006, p.137)

5.2.8.4 MB1 and an awareness of computing

It is clear that MB1 is not a programming expert. The details which he discusses are not clearly relevant to an understanding of computing, and his main problem (like much of BETA) seems to be that technology is misunderstood or adapted and used with a flawed reasoning of what is being used and why.

The concept of ‘rewriting a program’ has obviously appealed to MB1 as an explanation, but the misapprehension – that *Access* is a language rather than a program – has caused several misconceptions about the product that is used to handle the records management requirements of the business.

However, this does indicate that there is a problem in the fact that MB1 does not have a grasp of computer programming and shows that there are elements of BETA’s use of technology used in managing RM that are interesting:

- Misunderstanding about the concept of GM2009 being ‘written’ in *Access* (assumption that *Access* is actually a language rather than the back end of a database with a customised front-end GUI)
- Lack of understanding of how a computer virus attaches itself to emails (i.e. within an attachment and not any ‘zip file’)
- Lack of understanding of what a zip file is (confusion with an attachment)

5.2.8.5 Faxing and Paperlessness

The system planned and which had been partially set in place by MB1 is that faxes are to be scanned as they come in. However, there has been a software problem (which is more fully described and analysed in B2’s narrative) which has meant that the specialist equipment bought in for the office fax to be able to scan faxes as they arrive could not do so between early 2008-2009. A change was finally effected in early 2009 and the planned paperless scheme was rolled out in mid-March 2009. A solution has been posited in getting the bought-in software experts to work with the in-house IT specialist to design a program that will work between existing systems and other software without conflicts. However, this is an increased cost for BETA, on top of the cost of the actual machinery, in terms of software development and custom software solutions. It remains to be seen if the solutions he has chosen will be implemented in good time, as there have been several setbacks already to his plan to introduce GM2009; if reliance on the new equipment is also a key factor for the implementation of GM2009, then the difficulty will remain in correcting the elements of equipment and programming before a rollout.

MB1 envisages a paperless, or nearly paperless office. Whilst there has been progress with the practical efforts of this type of venture, there has been scepticism about the value of a truly ‘paperless’ office. The original concept of the ‘paperless office’ was credited as an invention of the creative atmosphere of the Xerox Company at Palo Alto. Sellen and Harper (2002) note that the incongruity of the myth is that it came from a company whose business relied on hard copies: “Paperlessness as a goal ran completely counter to what was then Xerox’s main business: the making of money from paper...” (Sellen and Harper, 2002, p. 3) The point that Sellen and Harper try to establish is that whilst a paperless environment was a conceptual interest, the practicalities of the company relied on paper as much as it ever would, given their business. The drive towards paperlessness was originally an idealistic one, reinforced in legend by experimentation by managers.

Much in the same vein, the task of the SME managing paper records becomes more complex with the introduction of hybrid systems for records management.

Katundu (2001) notes the transition between the two as a set of steps, though in the context of another unique transitory environment, the developing world. In any circumstances where records management may not be a major priority and may have been part of a developing agenda, “the process itself is complicated and requires consideration of a series of actions to be taken before [such] records can effectively be preserved for future accessibility.” (Katundu, 2001, p.180)

One key point is MB1’s statement that he does not trust computers:

“...The problem is that computers can fail, hard drives can fail so you need to be able to retrieve those, that information by other means and I believe we have got quite a good back-up system but I still don’t trust computers 100%.”

[MB1, MM]

How are the two views here reconciled? The questions raised by this belief - or, rather, disbelief – in the capability of computers are interesting. If MB1 is mainly sceptical about the handling capabilities of the computers he uses, then his risk management strategy can take two directions, based on the kind of risk appetite he has for the potential risk. This viewpoint is based on the four-approach risk management scale known as the four T’s, especially in the form of the kind annotated by Webb (2007).

MB1’s later belief that he has to trust computers, and that he is bound to e-records as a precursor and a basis for the future is less of a contrary concept that one might think. MB1 is showing behaviour that is good risk-aware behaviour. He has learnt not to trust totally electronic systems, but he has admittedly not gone totally the other way and taken no chances at all, ignoring the potential of computerised systems.

For MB1, the risks mentioned or implied in the passage above are:

- PC failure
- Hard drive failure

- Possibility of the back-up system failing

For these risks, MB1 displays a ‘treatment’ approach to the risks posed which is a combination of ‘treatment’ and ‘termination’ (See Enterprise Nation, 2007). His standard approaches are backups of data to servers (treatment by prevention) and terminating specific risks by performing active maintenance of the servers, thereby avoiding the risk of a hard drive failing without warning or lying unnoticed.

Whilst the potential for a paperless office for BETA is close with the advent of the automatic capture of some records, the risks associated with the hardware and software to enable paperlessness are not fully overcome. However, MB1 shows he has a grasp on what these are, and has identified ways to minimise the associated risks to his current and future e-records.

5.2.8.6 Hardware, software and the scanned record

MB1 assumes that once he sets up his hardware and software to work in tandem, he will have found a solution to manual capture of records:

“... We are trying to move away from manual storage of documents, work sheets and things, what we are trying to do, is we are trying to scan them electronically and store them as documents [...] so that they can’t be altered in any way and they would be then held as a true record of jobs so that we would start off with an official order from a customer, to a job sheet, to an advice note, to a signature, all the way through so all the documents would be held.”

[MB1, MM]

Could a scanned fax replace a hard copy and manual entry in this business? As long as the records management system establishes and keeps the qualities established as necessary for a record by ISO 15489, there is no difference between a scanned item and a manually entered one in the context of validity. (ISO, 2001, S. 3.15, p. 3)

The qualities described by the standard for record and management system are:

- Reliability
- Integrity
- Compliance
- Comprehensiveness

- Systematic management

The scanned fax will be entering a reliable system – MB1 states that items will not be altered, and that there will be a set of records held in order to maintain congruity. Integrity is also important, but MB1 has already noted that a form of audit trail of who edits the records is already established on any record passing through GM2000.

As compliance has been of great concern to MB1, he has postponed GM2000's successor, GM2009, until all issues have been resolved with items such as software conflicts, VAT change errors and similar problems.

The comprehensiveness of the records is well established, as the variety of records that BETA produces and maintains is limited to a few specific types. As can be seen from the rest of the case study, responsibility is taken for the records created at various levels of the workforce, and overall records management is performed by the whole business acting together to create complete and comprehensive records.

As GM2000 was designed to simplify work for BETA by systematizing specific operations (such as pricing, invoicing and storing records) the systematic management aspect of the ISO standard is amply covered.

5.3 B2, A secretary

B2 is a young mother, and single parent. She works in tandem with B4, as a junior secretary in the office. B2 has been working for BETA for four years. She works an average of three days a week part time with B4, both within the same open-plan office. This used to be shared with another employee, EMPLOYEE N, with whom she trained. However, this ended when EMPLOYEE N left, and B2 has taken on their duties:

“ ...When I first started there was EMPLOYEE N...she was full time and then I came as part time, based on Monday, Wednesday, Friday and B4 does Tuesday, Thursday, Saturday. B4's been here nineteen years and I've been here four...”

[B2, IMpt2]

B2 notes that she has learned a lot from B4. Her training, including training on the GM2000 program, has been based on the job. This includes training through others, her experiences

have not been easy, and this reflects itself through nervousness and uncertainty about her role, expressed in basic terms:

“...EMPLOYEE N ‘s left...[...]...at first for us it was hard because ...I’d not done as much with N--- as what I should have done, and that experience I thought I had it ...I don’t feel as if I know exactly what I’m doing and exactly the same as...I thought, ‘I’ll ask’ I don’t understand how she does, it I don’t understand the job there are certain things that I’ve got to ask, even now, after a year...”

[B2, IMpt2]

5.3.1 B2’s training

B2 acts as a junior secretary for the business, handling everything that B4 does. B2 was, after joining the business, formally trained in the use of *Sage* accounting software, and was sent on a course to do so. This, whilst of interest to her, was not as specific to the business as required. It resulted in her having to un-learn some of the elements of *Sage* that were practical elements of a taught course, as they did not gel with the system as it was used by BETA:

“I mean it was a really good interesting course but we came back, there was [laughter] Just because we did the course at all doesn’t mean...it was wrong for how we do things here ... [...] and she said ‘don’t do it like that, you’ll be pasting things onto the wrong bits’ and keep doing it exactly how we’ve been doing it for years...”

[B2, IMpt2]

Whilst B2 works on the input of orders from the phone and the fax to the GM2000 and *Sage* programs themselves, she realises that there have been attempts to improve the technology – which have been hindered by a problem with software. There is a discrepancy between BETA and other companies which she notes manifests itself in their bias towards using computer services to take the place of more traditional services such as the fax. She notes that BETA has developed so much that they intend to digitise faxes with the purchase of a new machine to do so – though, due to software problems, this has not happened according to schedule:

“Ah because we send faxes from our computer...[...]...we’ve got a couple of companies...are sort of going email...[...] there’s no need for you to fax it, but the idea is that eventually, it should have been a few months ago, but we bought the new fax machine, and everything that comes in is meant to scan to file so we’re not printing it off...”

[B2, IM]

However, when auditing is mentioned, B2 is less sure of why a dual system is maintained:

“NVHG: So...so you keep the paper...is the paper copy for when you do something like an audit?

B2: Must be. I don't actually know, to be honest.”

[NVHG & B2, IM]

5.3.2 B2's use of computer systems

B2 is more confident about her use of the GM2000 system, and notes that at first, she did not understand about the codes used which are inbuilt in the database to indicate product style and type. But after a longer period of time within her work, she realised that some employees placed order codes on items, whilst others did not. This initial confusion was followed by clarity, as demonstrated by her display of how to order as she showed to the researcher during an interview by working through an example with the GM2000 program:

“And then...polishing...they've all got different values now...polish on edge...that's for delivery, it's an order, I know some of them are good about – but some people don't...I mean...if it's a mirror, it'll come through, they might put '6S' which is silvered...because of the glass...and I'm like first of all 'I don't get it, I don't understand!'...But now I do...all the polishing... [...] everything's here”

[B2, IM]

For B2, the GM2000 program is the focal point of the business and generates the majority of their processes. She generates job sheets and labels for the products that are used to identify individual jobs. However, she is better versed with the processes through which the information comes into the business, as these form the most complex chain of the process to create an 'order'.

Whilst she can describe the route that an order takes by fax, she can also describe the more complex route that an order takes by hard copy. She thinks in terms of both routes when describing orders.

Finally, in terms of remembering the complexities of the codes system, as well as additional information on the products for the business and rules and regulations for the building

industry, B2 has compiled a document that she describes as her ‘bible’. This is a set of collected notes that she has either written or photocopied.

“I write... but... and it’s falling to bits, but it’s got everything written on...It's got all the notes there, you know, everything there I mean...”

[B2, IM pt 2]

She knows that she relies on this set of notes, but thinks that others have the same style of working:

“I know that I could manage without it but it’s my bible... [laughter] I know how to do things, but I like...it’s my ...I think everyone's got something, haven’t they?”

[B2, IM pt 2]

B2 has found it easier to work from this ‘bible’ of notes, especially when she has a request for information.

“...You’ve got the regulations there... ‘eight hundred’... it doesn't have to be but below eight hundred, ooh...and I can just look back is the best bit, you know, somebody ringing in from a mobile on a building site. They’ll need to know that immediately – yeah – so you use your hard copy”

[B2, IM pt 2]

Though she has displayed a lack of confidence in dealing with the GM2000 system, she has grown through her training, and is currently taking an NVQ course in business management.

5.3.3 B2 Commentary

5.3.3.1 B2 and a working pattern in terms of records management

B2 describes her working pattern by acknowledging that she shares a joint role with B4 as a senior secretary. There are no demarcations to indicate that B4’s role is superior or inferior. However, in terms of time served with the company, B2 treats B4 as a superior and has approached her as a source of knowledge after her initial training with another employee. The principle of passing on information is a point that requires a concept of held knowledge. From a point already referred to in B2’s story, she keeps a set of hard copy notes about her training, requirements of the building trade, and other information. However, in order to use

this successfully, she defers to knowledge held by a fellow employee in order to make sense of other information. This shows that although records may be held and managed by systems, the systems themselves may not be annotated sufficiently for this employee at least to make a correct decision about what to do with records.

It is also pertinent to note that in terms of records creation, B2's 'bible' holds the codes required for e-record generation within the GM2000 system. Therefore, her use of e-records has been partially reinforced by use of hard copy. The need to maintain a system for e-records is vital, and there is a theme within all accounts in BETA as to the concept of how long it would take to learn the GM2000 codes for the system. B2 uses her 'bible' as a form of coping strategy. Other coping strategies noticed have been the training of employees by MB1 until they were able to use the system for themselves (cf. B3) and the fact that employees were asked to help create the coding by imitation of their original shorthand codes (cf. B4).

5.3.3.2 B2 and her 'Bible'

The case of B2's 'bible' is interesting, as none of the other employees at BETA appear to have something similar in nature, even if they may have something similar in purpose ("I think everyone's got something, haven't they?"). B2's dependency on the hard copy of her notes is similar, but not identical, to B4's use and constant reference to printed emails rather than to the electronic copy. B2 does not show the same reluctance to use electronic media as B4, however, and instead cites the ease of reference in her use of hard copy. Contrast B4, who also has issues regarding her concern at how electronic records can be saved, as she uses hard copy. B2 understands that she can look information up and use it as a point of reference for her work. However, in the example that she gives, the benefit of hard copy is simple expediency. She demonstrates that if she is asked to locate information that is specific to their products in terms of building regulations, she has hard copy sheets dealing with those regulations bound within her 'bible'. This might well indicate that this specific information is part of her 'bible' because it is as important as the codes that are listed to facilitate her use of the records management system.

5.3.3.3 B2 and the database of GM2000

B2's use of the database links to the construction, capture and maintenance of records. Construction of a record can build on previously held information – the split between account customers and non-account ('cash') customers. B2 will, in the case of account customers,

simply use GM2000 to access the customer information already held. Onto this, a new record can be added of what items the customer requires, from their hardcopy order via fax or electronic request via email. This is entered onto the GM2000 database via the codes already described.

Capture of records into the GM2000 system is effectively done manually. As a record for the program is composed of individual database records, the creation of a record that shows a transaction is based on the completion of several fields in the GM2000 database. It has been shown, though, that through B2's reference to the fax machine being used as a scanner, she understands that there is more than one way of capturing a record in order to turn it into a digitised record using the current system. The anticipated move to do this through the fax machinery itself, though held back by software conflicts, presents itself as a unique concept to B2 – the record, for her, will be both hard copy and electronic simultaneously.

Maintenance of a record is done automatically. Although B2 has entered in the information upstairs at one terminal, any member of BETA can access this record electronically, as there are six terminals available on the shop floor for access, and at least four used within the office spaces on the first floor.

B2 cannot be said to be a worker who is in a position to question the creation and capture of the electronic record in the workplace – indeed, *Business Link*, a business advice and support service from the UK government, notes that “Every company must keep official records and these are usually delegated to the company secretary.” (Business Link, 2011). However, in terms of what she experiences as a person who works with records (noting a difference from the role of a records manager), B2 has encountered many of the tropes which McKemmish (2001) describes in terms of the continuum. McKemmish defines three possible record keeping activities that could be said to be particularly context-meaningful in terms of business:

- Proto record-as-trace
- Record-as-evidence
- Record-as-personal/collective memory

McKemmish notes that the “creation of documents in the context of social and organizational activity” (2001, p. 335) is the first of such a list. Looking to B2’s awareness that the fax is an order which becomes a record when the details are transcribed to GM2000, such an awareness of creation is shown within the SME. In surmising that MB1 has been one of the main influences in fostering this awareness, one could conclude that whilst B2 has an awareness of what a record is in certain circumstances (from her references to the GM2000 database, the hard copy job sheets etc.) she has been enabled to think of records as she does – in the dualistic sense of both hard copy and electronic representing evidence of a transaction to be recorded – by MB1’s introduction of the wherewithal to store documents and records digitally via GM2000.

McKemmish’s second point covers the concept of ‘Record-as-evidence’. This is the concept of the capture of records into records management systems, and in this case, would be represented by the business use of both hard copy and electronic media. Again with B2, the concept of this dualist view that a fax can be both a record and the item which will make a record is rooted in the fact that the GM2000/2009 systems will both take the same approach to records: they will in effect, preserve the concept of the record as a hard copy item. This is interesting from a viewpoint whereby though ISO 15489 has not specified that a record is only a record if it is one medium or another – the perception still remains that in order to be a valid record, the item has to look like a record. It has to be understandable as a record to those who use it and to those who create it and maintain it.

In this case, it is proposed that the e-records of BETA look as they do (or in the case of the envisaged GM2009 system, look as they will) look like hard copy records digitised because that is one of the few ways that BETA as a company can recognise a ‘record’.

McKemmish’s third category, dealing with the record as personal/collective memory, is particularly relevant to B2. Her use of her ‘bible’ - the bound collection of notes that she uses as a reference – form part of the business records which are particularly grey. Her bible is personal to her – another secretary may not need the details that she has within it. It would not be counted within a business audit as a vital record itself. However, as part of a personal record collection (and as B2 demonstrated, the information within the ‘bible’ acts as part record, part instruction manual, as she evinced by describing both her notes and the photocopied sheets of regulations with which she answers queries) it is indispensable. In the incident B2 describes where the bible went missing, the effect on the business is obvious:

“I lost that one day... [...] I was in a panic, I was running round the building going ‘who’s been in my office’, and I...texted them, I was saying ‘please’...MD1B came in, we pulled cupboards out and everything [...] you know, I went [gasps] ‘no’... I know that I could manage without it but it’s my bible... [laughter] I know how to do things, but I like...[...]...I think everyone’s got something, haven’t they?”

[B2, Pt2]

Whilst the records may have been indisputably B2’s, the whole business needed to take time to recover the single hard copy set.

5.3.3.4 B2 and *Sage*

B2’s use of the accounting system is not as well described as her use of GM2000. However, she can clearly identify that the course she attended taught her one way of working with the software, in contrast to what she had experienced within the business. In the example she relates, she had difficulty in matching her actions within the course to what was required with the use of *Sage* in BETA. Noting here that *Sage* use within BETA does not extend to full use of the package, it can be seen that B2 is trying to strike a difficult balance between achieving accurate records management with the financial records of *Sage*, and the computing systems which are used within the business.

5.3.3.5 B2 and the concept of auditing

B2 is not clear on the reasoning of why there should be dual systems of records kept within BETA. While she can appreciate the need for the possible use of paper records, she is not as informed as B4, the senior secretary who has been working there for over a decade. B4’s understanding of the reasoning for keeping paper records is possibly more sophisticated because of her length of time in the business. However, as has been seen earlier (section 5.3.2) she has a better chance of coming to know the practical business driven principles of records management through her querying of each of her steps with the software used in the business.

5.4 B3, A Counterman

B3 is a young man who works on the ground floor of the business, with the practical aspects of producing items and dispensing them to customers who come to collect it. He also deals with orders coming into the shop from individual customers, using the GM2000 system.

His interest in technology spans both Windows and Apple Mac operating systems, and extends from home to work. However, this has not helped him with the comprehension of work programs:

“I always had Windows before...had the Mac for about two years... Took a while to get used to it...well it's far superior.

[...]

NVHG: Do you find that that's helped you when you've been working with things like Glass Manager?

B3: Not really, cos it's written by one of the chaps that works here, so it's... it's perfectly designed and sculptured for this environment... So obviously... Macs are so different, aren't they? I mean, have you used a Mac before?”

[B3, IM]

Like many others in BETA, B3 does not have a background in formal Higher Education. He is self taught, and looks to others for growth and development:

B3:It's more like...my old man got me into 'em [laughter] he's never been a whiz-kid in technology, but he's overtaken me now His first computer was a Mac, about five year ago

[...]

B3: And I though, if he doesn't mind, that'll be it, and I played with his and fell in love with it, so I thought 'it's time to invest' so he's inspired me [laughter]

[B3, IM]

B3 admits that he couldn't have worked in the company before the advent of their electronic standardization of measuring and pricing:

“...So everything is taken electronically as such ...gone are the days...I've been here five and a half year...when they used to do paper orders... over my head...I couldn't have worked here then because you had to work out the square metre price of said item [...] Now Glass Manager does it all for you, pre-calculated, you put in an area and it works it out, so... technology for me is perfect [laughter]”

[B3, IM]

5.4.1 Processing work

In describing the processing of work from an order to the final product, B3 explains the scenario from his perspective of the process. The difficulties emerge along the production line, especially when a finished product goes missing:

“... If somebody can't find a bit of glass people'll come on the computer and say, ah, this is what happened to it last - and it gives you the time as well you can kind of track it electronically, as such but the paper side, I think it's for ease it's...you know, we've got a filing cabinet downstairs, which is kind of old-fashioned, but you know, if you could get it, and put it on the system, so whereas the guy who's cut it tags it off on their crew, and the other guy who has it marked 'polishing', it's sent to him so he has a(?) electronically if not, he has to send it to the next person, know what I'm saying? For me, that would work better. Paperwork gets lost here...like you wouldn't believe it goes missing, and that's part of having a physical thing that gets passed around...”

[B4, IM]

B3 also considers that an electronic record is less likely to get lost, as it is part of a long-term retention schedule:

“So if it was electronic, there's less chance of it being lost, obviously, cause the record's stored and we keep 'em for five years electronically, something like that...”

[B4, IM]

The daily pattern of work for B3 is one that involves using the GM2000 system to generate a list of products to be created and finished. Products are given a predicted date of completion, and are stacked in two separate areas of the workshop according to delivery method.

However, the generated list of products also acts as a checking system for the production of pieces, in that it identifies a product loss by its absence from the sheet:

“There is a checking sheet that's put on the system, we have predictive dates, and production and then the job will be complete so every day first thing in the morning, we print off the job list that's gotta be completed for that day and this is where...if the paperwork's gone missing and nobody's twigged... .. it will become apparent on the predictive last day of production which can cause...'where's this?' I dunno...'where's the paperwork?' Dunno... but they can then generate another job sheet once we've found the error...another plate's gone missing...”

[B4, IM]

5.4.2 Problems with hard copy

The list of products is kept in the knowledge that if a job sheet is missing, and a product cannot therefore be found, the only way that B3 knows to rectify the situation is to identify what the loss is, to print out another job sheet and to keep looking for the missing sheet and product – often in a panic:

“...It's pinned up on a wall, that never gets lost does the predictive date sheet, the work sheet but if the paperwork's gone missing, it's still highly likely that the last day of production will be the day it gets found that it's missing...[...] so then we'll generate another job sheet...and then we'll run around like chickens to get it done before the end of t'day [laughter] but if it's a complex job, then obviously...it makes us look bad if we can't... ..complete...”

[B3, IM]

However, B3 notes that he would prefer to move on to all-electronic records, using a method which he terms a ‘photostat’ – though he does not go into the minutiae of how this would or could be achieved:

“...There's a special find feature on the system now and it'll tell you exactly whereas it is now it'll be hard prints, i.e. if that was the job sheet, that is gonna be electronically stored, a photostat of it i.e. when it's been signed for and it's been collected, there'll be a photostat of that so every pound and point of process is a photostat, electronically done on the computers, so you can pull it up [...] with all the signatures from all the people who've worked on it...”

[B3, IM]

“I think we should be able to scrap the paper side of it anything from that (/) to print it, such as it were they could do it more with computers, so that the workstation's got the paper on the screen so it can be passed around the building electronically, which can make it would work perfect, and I would imagine it's doable as well” [B3, IM]

He identifies that they have been working towards the ideal of a paperless office with some of their other office equipment:

“...They do faxing now, off computers which is a new concept for us ...I think it's a new concept for most people It works really well, but then again, it's a physical piece of paper at the other end we're not using paper to send the fax, but they're using...”

[B3, IM]

“...Now we've got text servicing and got that five months ago...when a job's done, where I did all the phoning 'em to say ' you're job's ready', we've got texting now, and it's all built into the computer system so it just texts people, and it's got a ‘BETA, your glass is ready for collection”

[B3, IM]

5.4.3 Growth and change

B3 decided to leave the company approximately two years ago, and took up a position being a sales representative. However, he made the decision to return to BETA after a year of 'repping' – acting as a representative - and feels that he now has a different perspective on his company. He also describes how his time spent away has helped him appreciate the company's growth and changes:

“I've noticed it because I've been away, we had paperwork that existed then... look at the size of your kids, you see them grow, but you don't see how quick they grow because you see them every day. I keep snakes, I don't see the development of those, because you look at them every day and think it's not growing, it's not growing; but it is, you just don't see it- and I'd been away for a year... come back with fresh eyes, and see different things”

[B3, IM]

5.4.4 Maintaining records

Finally, in returning to the business, he has displayed a strong loyalty to the company that would be hard to equal, but which shows the responsibility B3 is willing to take for his company and position in trying to maintain correct records for them:

“Ordering...is a problem...I do the electronic ordering which I do by the electronic fax system [...]...and [...] I frequently order...several times a day...toughened glass...and it frequently comes wrong...”

NVHG: Oh dear...

B3: when ...you've got a hard copy stating fact... it's in a nonsense company there's nobody that takes charge...I can phone up and shout, I mean, it's not my problem: it's not my money that's being wasted here, in this company - but I care a lot about the company. So I'll chase, and I'll phone and shout, and try to get a response...”

[B3, MM]

5.4.5 B3 - Commentary

5.4.5.1 B3's attitude

B3 is somewhat of a curious figure in the study, his personality shining through his work role; his manual position and academic approach to work seemingly contradicting themselves within his sphere. B3 has never had any tertiary employment, but notes mildly his steady and continual employment throughout his life. Despite not having an academic background, his analyses of situations within the business are acutely systematic: after having identified areas

where the most improvement was likely to be made from a move to electronic records, and a cogent argument as to what this move would do for efficiency and the elimination of the seemingly ever-present problem of the loss of hard-copy records.

B3's time is spent mainly as a counterman, but it is clear that from the other duties that he takes on, his role is not limited by his job title, and that a large percentage of his daily work involves DIR management through the database maintained in GM2000. This is based on simple data entry and retrieval, but may encompass motivation in order to chase up items and establish communications between their suppliers and other services, as well as his counter duties.

This study explores some of the reasoning behind the system of DIR flow within the business, and as such, B3 is a key part of the businesses' knowledge store on procedure and protocol. Alongside B3 in this stand MB1, B2 and B3.

5.4.5.2 Hard copy and e-records

B3's suggestions for the removal or elimination of paper within the workshop were suggested as a measure to combat what he considers to be the most pernicious problem. He has rated it as such on a risk evaluation exercise, and has suggested the use of electronic alternatives; as to him they have less potential for being lost.

However, this concept is based on the idea that as the computer network does not physically move (contrasting it with papers, which must) there is no potential for a document or record being lost. He recounts the story of the quality surveyor who is liable to leave hard copy lying about the workshop, who may be deterred from doing so by the same material in a different, electronic format:

“...He can't do that if he's on a computer screen. 'Cause he can't take his terminal with him! 'Just put me laptop here', and, you know. So I think there's a lot less chance of losing paperwork, and your record keeping... because it's electronically stored, I think it's always gonna win over...hard copies - you save paper, for me, but they aren't foolproof: but I think...they're more competent than humans...at storing, anyway [laughter]”

[B3, MM]

B3's concept of paper has been coloured by the experienced of loss of hard copy before within the business, specifically within the workshop environment and affecting the piecework completion style of the business.

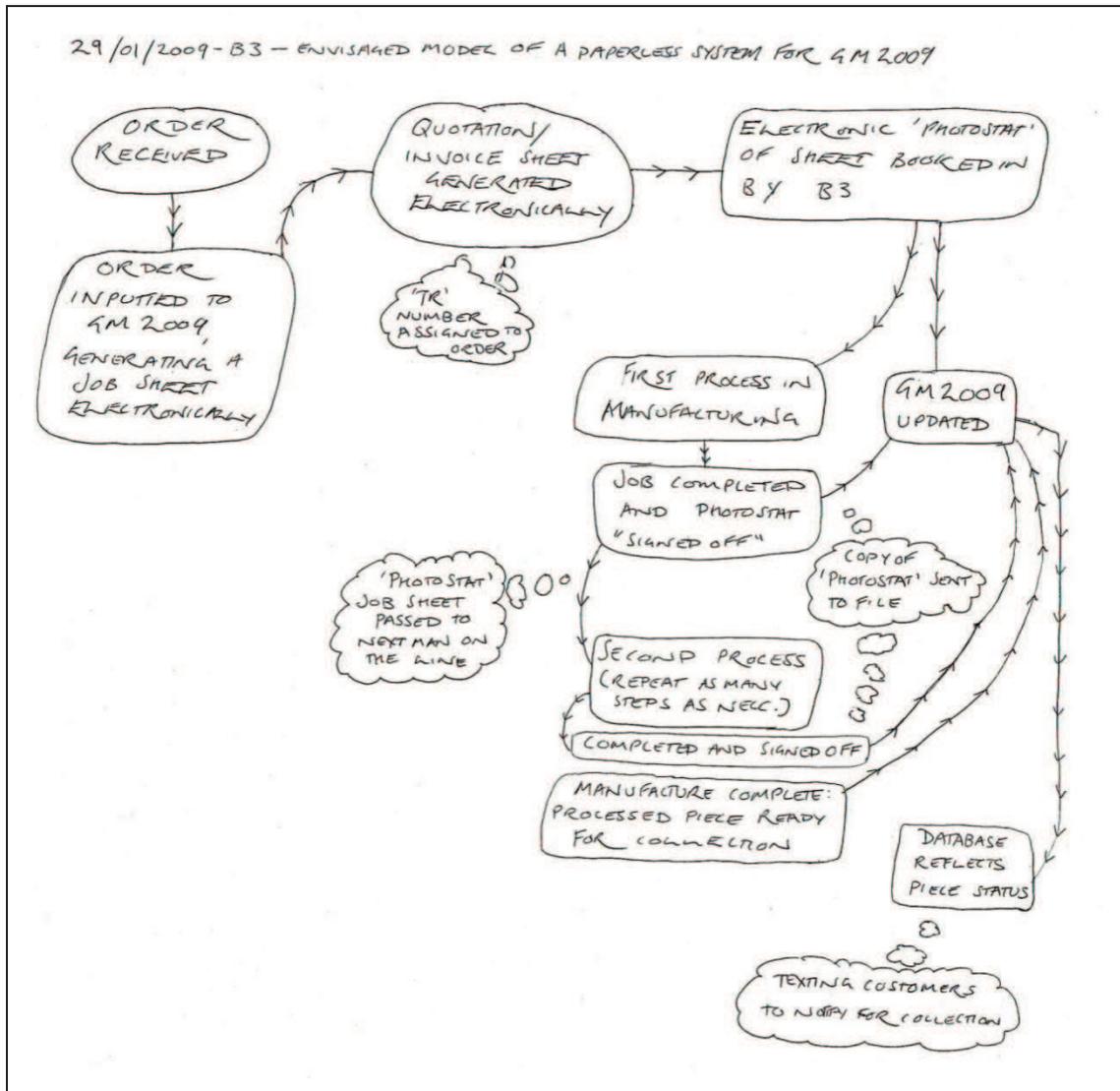
In looking at the conception of a wholly electronic system for records management, the risks that B3 has identified he will eliminate by moving to such a system may not be eradicated at all. Again, Bearman (2006) notes that major risk to records occurs when records are transferred. However, a closer point is that they are "likely to lose their original identity or to be separated from metadata required to establish their authenticity" (p. 31). By planning an all-electronic system whose function is to constantly move e-records on from worker to worker with continual application of data, B3 is more than likely to encounter a high level of the risk of records stripped of context.

His identification of small and practical points about the efficiency of a DIR flow within the workshop allowed him to make within the main meeting, the start of a model which he himself did not visualise, but certainly narrated the development of such (Figure 24).

5.4.5.3 Use of DIR management within the business

DIR stands for 'Data/Information/Records'. At points within the case study, there has been a general nebulosity about what exactly is a record at which point within the identified systems of the business (see Figure 15). In order to ensure that there is an accurate description as possible of the systems within BETA for records management and their handling of documents, the flow of such around a system is described as 'DIR' flow in order to encompass these tentative classifications.

Figure 15: B3's envisaged model of a paperless system for GM2009



ISO 15489 demands nothing more than a stable structure and firm balance of records management principles. In the terms of creating a model of the proposed GM2009 system that works, B3's system actually demands a lot more practically and in terms of both manpower, input and equipment. Terminals, for instance, would have to be available at every point of processing an order.

There is also no explanation of how the order would be signed, if it were totally digital. As the current system relies very heavily on the concept of a hard copy sheet being signed off and then scanned by each worker, it would be considerably more difficult to devise another such scheme for electronic records in regards to authenticity.

DIR flows within BETA are managed by B2, B3 and B4. These DIR flows are generally into, towards and out of GM2000. The auditing feature of GM2000 allows for the user of the system to be tracked:

“[Describing a point in the GM2000 program onscreen] ...when we get past this screen, you’ve then got to input your details, so [motions to the screen]...all the paper now has my initials on, because I produced this so everywhere the paper...it goes...it’s got my initials on it, somewhere.”

[MB1, IM]

Here, records created within the business show authenticity and reliability through the use of the GM2000 program. It is not thoroughly explained how other externally created records are questioned for authenticity.

5.4.5.4 Influences and experience

B3’s experience of ‘repping’ (going out to work as a sales representative) outside his position at BETA has changed his perspective in terms of his own perception of BETA. Using various natural metaphors, he comments on how it has grown and changed.

When B3 describes the risks in the activity of ‘repping’, he makes a strategic link between the potential loss of laptops – a physical risk for the records held within the laptop – and the losses encountered within current event in the UK:

“When I left here repping for a year and we had laptops issued ...the amount of lads that got their laptops nicked out of their cars... You know, so presuming that’s one of the main reasons that they’ve done fingerprint recognition is to that if it was stolen, it’s rendered useless, as it were, so it helps against crime but if somebody breaks in his car and it’s in a laptop bag you’re not knowing what you’re gonna get so it’s not stopping the crime it’s just when they’ve got the laptop, they can’t do anything with it...”

[B3, IM]

“...Like our Government are very good at losing... people’s information [laughter]”

[B3, IM]

“You’ve got the choice to delete something or keep it, where loss ...is out of your hands and normally, bedlam follows... [laughter] you see all these dongles left on trains with

prison records, and nazi...bloody British nazis...and stuff like that...² I mean, it must have been a minefield for you guys you know, this past year, there's been so much loss, hasn't there?"

[B3, MM]

In contrast, B3 can draw on his own experiences of the loss of information. He rather firmly equates loss with a physical loss, as he claims that he has never 'lost' an electronic record in five years. His experiences of loss are to do with physical hard copy, and it is this experience that leads him to suggest electronic records as a way of mitigating the risk from this area.

5.4.5.5 Responsibility for records management in the hierarchy

B3 has a defined place in the hierarchy of the business. Whilst the obvious responsibility for records management lies with the senior secretaries, B3 also has a part to play. In using GM2000, he needs to enter customer details correctly in order to update the e-records on the database. However, there are instances where the limits of his knowledge are reached, and he takes a different approach to the secretaries' use of the manager, MB1:

"...As I say, try and solve it myself beforehand and MB1 says he's really happy that I've got the confidence to bite off ...quite a lot of problems that people'd just go willy-nilly and say ' MB1! MB1! MB1!' ...I try ...try and solve it and it's a last resort, I'll go to him, but I don't like to. It's not accepting defeat, obviously, because I want to do the job right, but if I can't do it myself, then I'll go and chase MB1. But I deflect a lot...of rubbish as well...

[B3, MM]

B3 had noted that he had effectively picked up the database program quickly without too much help from MB1. He showed a fiercely independent streak, and although he does not have much of a chance to apply problem-solving solutions in his job, never seemed to fail to identify what a problem was. If he did so, it brings us to the point of the 'last resort' when trying to manage DIR-related problems. He shows his concept limits - he understands that he and others have a limited field of knowledge, and describes an area where others hold the information he needs to use records fully:

"I mean, obviously I'm not aware of what goes on 'cause I'm...I don't work in the office and I don't do anything like that but I know B4's doing a course for *Sage*, B2 is the main

² The incidents that B3 refers to at this point were all elements of news stories at the time of the interviews that related to data loss, but which have been conflated in recall. The individual stories were (a) the finding of a USB stick containing a copy of the source code for the UK Government's tax portal, (b) the discovery of a folder left on a train in London which contained governmental classified information papers, (c) the loss of a disc containing personal details of UK prison staff and (d) an incident where the personal details of all British National Party members were 'leaked' and released online.

one, she's had courses on *Sage* and what have you... so, she's the 'main brain', really, when it comes to *Sage*..."

[B3, MM]

From this point, he then focuses not on why he cannot do the job, but on a pursuit of someone whom he knows has the knowledge to fix the problem - in this case, his manager. It is revealing that he tends to go for people as resources in problems, rather than physical resources.

This could just be because the amounts of problems that he has are mainly with practical situations. There is no manual for the database that he uses, and in contrast to B2, he has no 'bible' of photocopies to guide him. Instead, people have become by default the walking repositories of the information needed to run the system. It also might be because a manual is not as responsive, not as 'searchable' as a human being can be.

However, this use of such information seeking and identification of a need also has an effect on B3's pride: His last comment within the above quotation ostensibly shows that B3 has a role and a job with specific duties (which he describes in further detail as shooing away telemarketers), but which also is a defence against his need for help. He may need MB1 to tell him or show him how to fix a problem on occasion, but ultimately, he himself provides a constant service to his boss by defending him against intrusive calls. His need for help in retrieving or fixing a problem within the records management area that he deals with are minimal, he tries to explain, against the manager's need for his help in deflecting telemarketers - his pride is an important point when considering the functioning of his job. However, his style of knowledge/information seeking is defensive, and guarded. One point to raise is that of whether a woman would have taken the same approach to the need for assistance with the records management scheme.

Fink (1998) mentions that one of the unique characteristics of SMEs (in respect to factors influencing IT adoption behaviour) can be the character 'psycho-sociological'. In this case, B3's rather pugilistic attitude shows the difference between a male worker's approach to learning a software-driven records management program, when compared to that of a female office worker:

“I pick up quick...when I started, MB1... expected to be mothering me like, two months on the counter and he was gone after about two days, I said 'piss off, MB1, I'll do it myself' [laughter] and he couldn't understand how quick I picked it up...”

[B3, IM]

“...At first for us it was hard because ...I'd not done as much with EMPLOYEE N as what I should have done, and that experience I thought I had it ...I don't feel as if I know exactly what I'm doing and exactly the same as...I thought, 'I'll ask' I don't understand how she does, it I don't understand the job (...) there are certain things that I've got to ask, even now, after a year... [...] I know it will one day, something will just click, but y'know, there was always something there 'oh, I don't understand, I don't understand' can you show me this...”

[B2, pt2]

B2 is more apologetic in nature about her lack of confidence with the system: she actively seeks advice from her supervisors and work colleagues. B3 asks for little advice, and feels brave enough to tell his boss to clear off, as he has mastered the software. However, there is a risk that B3 has confused knowledge of records management with knowledge of how to use EDRMS software. B2, with constant questioning of what to do and why to do it, may encounter more of an awareness of records management through her open attitude. It may be possible that gender and attitude may be more of a motivator in records management than is currently documented.

5.5 B4, A senior secretary

B4 is one of two senior secretaries within BETA, in offices on the mezzanine floor of the company, next door to the main offices for the bosses. She started work in BETA in 1990, nearly nineteen years by the time of the interviews. She characterises her history of working as never having experienced anything else:

“B4: You see, I've never worked in a big business before...[...]...I've never known differently, 'cause I've been here like nineteen years, now...”

[B4, IM]

Her recollections of BETA as a company before electronic records and computers is that of a company who worked using a very complex hard copy system, and one which was very physically demanding:

“...When I started here we used to have a huge big filing cabinet, everything was done, everything was carbonated (*sic*) paper, we had like three copies and then - when we did the, um, then we had to physically add every single account up and if it was wrong you had to find out why it was wrong, but now you just press a button and do one thing it's done”

[B4, IM]

“...We didn't have computers then, it was a big board and you used to have to put all of the invoice details on it and you used to have to carry the balance onto the next bit...it was a huge, big board...and we had to hand-price all invoices, so it was different forms of documents then...they...they were all like printed ones, but they were all handwritten ...and you had to price up on a calculator, and we kept all them, and we used to have a big...it was like...the filing cabinet, but it was like a big drum, and everyone had a card behind, and we had to carbonate the card with the invoice, and it went on, and that was their account card, so it wasn't like an electronic statement, and it were just like a card, and because the year balance were paid we had to write off on the card...[...]the card was only that big...that thing they carbonated...and ... had to add literally every account up with the balance and get a total...”

[B4, MM]

Her views humorously contrast the working methods of big business with small business:

“You see, I've never worked in a big business before, so, when I started here, we used to take orders, write them down and we used to have a little hatch and we used to put it on a clip, and the order...and we'd send it down on a piece of string! Can you imagine a big company doing that? You just couldn't, could you?”

[B4, IM]

5.5.1 B4 and her input on the use of IT in the SME

She has helped to design the codes used for the GM2000 program, by volunteering her own shorthand for the codes. This has shaped the GM2000 program by utilising codes that were already in use, and not over-elaborating a simple design:

“...In time, the way you can think, oh, that's six-mil so we just have '6s'...[...]...put the signs in, so it's gotta be summat...if you had, like '1000' or '1001' you just wouldn't remember those codes, would you?”

[B4, IM]

In terms of personal experience, B4 last year had a time, which she said 'scarred' her. She received an email from a customer, supposedly a trusted source, but which on receipt contained an attachment with a virus. The virus was very deleterious and had managed to corrupt most of the data on her computer, including unsaved data for *Sage*.

“We have had times up here where the computer...I got a virus on my computer, to my whole system and I had a lot of quotes on it and things, and I had to virtually...wipe my computer clean, and start afresh things like that viruses, they can cause a lot of problems 'cause I've got my own I used to have...my own quotes and everything, but now we link them, 'cause if we lose them say on one computer it's gone, in't it ...”

[B4, MM]

At the time, B4 had queried MB1 as to whether she should open it, and she therefore felt very responsible as to the computer contracting the virus. Her attitude varies between questioning what she could have done at the time, and asking why it should have happened:

“...So now it's funny, in't it? You don't know these people, the zip file don't mean anything to us...”

[B4, MM]

5.5.2 B4 and email

B4 takes a specific attitude to email:

“I keep: EMPLOYEE throws away...I like to keep- we have customers like *COMPANY that are one of our biggest customers I keep all their emails I mean, I only keep all my emails that have come to me first stage but I like to keep it because I can look back even just for like email addresses but I can just look back and it's peace of mind for me and I'll - we do a lot of secondary work and I keep everything to do with secondary...”

[B4, MM]

B4 notes that managing a pool of emails can be a case of whoever gets to the email first, leading to possible problems with order reduplication:

“Well, it'll go to 'sales' but if she gets it first she'll delete it after she's rung it through and it's the same if it goes for me, if I get it first then I have to delete it 'cause I've got it so nobody else can get hold of it, supposing it's an order or something, everybody could put the same order out. If it goes to sales, it goes to everybody if it goes to...we all have our own individual, I'm office one, she's office 2, so we've all got our own individual email addresses...”

[B4, MM]

However, B4 assumes that her habits of saving email are atypical, and very personal:

“... I don't know what B2 would do but I don't think she saves it because...I'm just a bit...obsessed with saving stuff, you know?”

[B4, MM]

However, B4 also recognises that her records-keeping habits mean that retrieval of records and documents by others makes life potentially difficult:

“I only work 'til two, you see, that's the reason why I want the office clear, before I go home...I like to have things in trays, and so you find...like it all empty...I just think, if I'm poorly tomorrow, and if someone needs to find summat and I'm not here where it's all got filed away, well...”

[B4, MM]

Although B4 is highly computer-literate, she has no wish to further her training by doing the same NVQ Business Studies course offered to B2. She is annoyed at the perception held by the NVQ assessor that she is old.

“B4: She's doing...I don't know what she's doing ...office management or something... but I'm not, really, to be honest. They told me I was too old but then they said, I'm doing it for oldies now...”

[B4, MM]

5.5.3 B4 and records management in their system

B4 has a good grasp of where in the system a record needs to go and where records of any type can be found. In describing the programs – GM2000 and *Sage* - which the business uses and with which she has contact, B4 can explain and describe where the overlap between them is and the issue with it:

“getting the two to work together, because it has to work alongside *Sage*, you see...”

[B4, IM]

“B4: Yeah there is like, a lot of facilities in here for doing stuff, but you know, ‘cos we don't do ours - like, we have *Sage*, but we don't do our stock and everything through *Sage*, we have our own glass program, [GM2000] which you've seen, so you can't use *Sage* to its full potential, really, ‘cos we're not using them for the stocks, are we... so, like profit and loss and all that, it doesn't make any sense on ours ‘cos we're not using that stock side... really we only use it for the accounting, to bill people, really ...so... You know, our own, personally handwritten sort of program ...that all gets imported into *Sage*, and then really that *Sage* is just the accounts side”

[B4, IM]

In describing what happens to the job sheets she produces, B4 talks in terms of the people who handle them, and what they do with them:

“They’re barcoded, you see so each person’s supposed to scan it as it does each process. EMPLOYEE P scans it when it's cut. And EMPLOYEE J or EMPLOYEE D 'll scan it when it's complete...”

[B4, IM]

She relates that the scanning of job sheets (or, rather, the lack of scanning the job sheets) as a work process in the business is going to be necessary for placating customers and keeping workflow going:

“...As we move further forward, they're gonna have to start doing this because this is the future, isn't it? You're gonna have to see you know what processes, people ring up, they want to know where it is down the line don't they, you shouldn't really have to go look, this should tell you everything, shouldn't it?”

[B4, IM]

In describing what happens to the job sheets, B4 has a grasp of the electronic as well as the hard copy circulation of these records:

“...In fact we actually do electronic...well, we send a paper copy downstairs and then we will have generated the invoice and the job sheet goes downstairs and cutting and everything...”

[B4, MM]

The size of the archive is of much fascination for B4:

“...It can go on forever. The new one, though, the new GM2000 is one huge archive, it can go on for ever and ever and ever. I think this is just...I don't know if it's wrote in Access or whatever, or just, you know, something stops it from having like, just one big archive and we have to separate it, but the new one is just going to be one...never-ending...”

[B4, MM]

5.5.4 Records Management systems

B4’s concept of how they chose to create GM2000 rather than buying an off-the-peg software solution considers the practical elements:

“Cause in the glass industry, you can't just buy a program because with you getting everything, some things are by metre, some by linear you know, some are each you know, so you can't just buy a program off the shelf, you have to have them designed for you and we've had to have *PROGRAMMER design it for our needs really...”

[B4, IM]

However, before this realization, there was a period where an off-the-peg software solution had been considered, and found wanting:

“...I mean, we did buy a glass program called Georgina. And that sort of really gave us the idea for this, 'cause it was a bit rubbish but we always said oh if it could do this then it could do this and then we had a guy that's local, and he wrote this program for us...”

[B4, IM]

B4 can identify that the growth of the GM2000 program came from the concept of feedback as to what was and was not included with the first off-the-peg solution:

“...That sort of really gave us the idea for this, 'cause it was a bit rubbish but we always said oh if it could do this then it could do this and then we had a guy that's local, and he wrote this program for us and he 's wrote the next one, erm it's little things like that, it's feedback, that enables you to get the ideal program, isn't it? ”

[B4, IM]

“...You know if I'd said to EMPLOYEE, You know, be good if it did this, or 'be good if that did that' - because he's local, he can put add-ons on the program...you know, when we first bought this, it was just very basic...erm, the little things like delivery dates, we never used to have that, You know, we can select- a little calendar comes up, you know, like when you do your internet shopping, thing, right, that the day that I want it to go for ...

... Things like that have always been add-ons, and because we're not buying a package off the shelf, we can keep adding on bits that we think will be good for...”

[B4, IM]

However, B4 acknowledges that the current version of GM2000 is now no longer as effective, and a replacement should be better:

“Well, the new program should be a lot better, because this now is... it's seen it's day, I think, it's I mean, it is all self-explanatory, like Dianne a few years ago, within a few days she was booking 'em out, and so it does, it's asking the questions really”

[B4, IM]

However, the rollout date for such a program is not immediately forthcoming. As of December 2008, the program was still not delivered, even when it had been discussed in June:

“...He keeps saying 'a few months' and a few months, and now the VAT thing's thrown it another month out...”

[B4, MM]

However, the implementation is also a great and pressing concern, and B4 is well aware that the system may have flaws. GM2000 has already exhibited some instability:

“...Mine last week wasn't even printing its job sheets... so I was thinking that they were going down, and they weren't going anywhere...was only 'cause we print a label that we knew the job sheets weren't coming, 'cause the labels coming.”

[B4, MM]

B4 notes that there have been anticipatory measures planned and put in place beforehand for the introduction of other systems, and notes that these should be put into place with the introduction of GM2009:

“Yeah to make sure there's anything...we've done it before, we did it with the last program ...run this on its own, just to make sure your figures are all the same, really. And that they're going, so I'll probably have two computers on the desk next time [laughter] two in one, look at one, and then I'll have to book it out twice just to make sure that it's going...”

[B4, MM]

5.5.5 VAT change and its effect on records

One of the most pressing concerns of late 2008 was the change in VAT from a rate of 17.5% to a rate of 15%. This affected the records management capacity of BETA, as B4 could explain:

“Our invoices...all show...VAT at 17.5 % [...] and we have to do a breakdown our...say somebody orders something today, and 'cause we deliver...a lot of our customers, we may deliver it next Wednesday ...That's into December, we book it out for next Wednesday so it's actually an invoice is issued now, for next Wednesday, it has next Wednesday's date on, so it's not paying for it now and not having the goods 'til next Wednesday ...it's a predictive date and it's a date and tax point, because the VAT is changing to 15% from Monday, we're charging at seventeen and a half per cent so we can't book any – we have booked some invoices out but we're going to have to credit them for about seven thousand pounds' worth”

[B4, MM]

In order to create an accurate record, BETA had to put out a predictive tax rate on their invoices. However, as the VAT rate changed, the invoices needed to be rectified to credit the customer with the tax owed, once the order was complete. This caused difficulties in the retention of orders that had been amended, and in how the system was to be set up in respect of the VAT rate change.

“...It’s...going to cost the company a lot of money instead of people being better off, they're gonna be worse off 'cause we're now having to book out, we're having to book out other quotes, because we need a cuttings sheet in the workshop so I'm sending quotes down, so it'll go down on a proper cuttings sheet, like our job sheets but it'll have just the TR number, it won't have an invoice number, because we haven't you know, made an invoice out so, if these job sheets don't come back up, and get changed into invoices then the customer's getting their goods free of charge[...]And we already have a file over there, cash job sheets, and they all have TR numbers on...well, these quotes all have a TR number and some have this GM number, so our theory is ...they just... TR numbers just get...filed away and forgotten about so we could end up losing, really so...instead of a lot of people being better off in the country, a lot of people will be worse off.”

[B4, MM]

B4 describes the job sheets that she creates by their company terminology. ‘TR numbers’ are transaction numbers, issued to each job. ‘GM numbers’ are an internal numbering system for account-holders’ jobs only. ‘Quotes’ are quotations for jobs that can be generated and either changed into an invoice on the system, or are left on the system to be automatically deleted. The contingency methods taken by BETA as a company involved trying to apply a different tracking method to a common type of record:

“...All the ones I've booked out in that red file are then we're sort of doing it as a quote, printing the quote out and stapling it to it and keeping it there, but there's ones that are getting booked out downstairs, I mean in every office there's a computer, so they could be going from anyone but me and B2, are keeping ours, so what is happening with the rest of them I don't know. You see, I filed a lot away this morning, and they could have been some in there that really need to go in that file to be brought into...'cause our quote file is massive if you look...like an archive...I mean, this morning up to now I've only done this since half eight and I've done about fifteen quotes already and I'm doing orders, so...that's a record thing which is panic stations...”

[B4, MM]

In the case of this problem, a resolution was attempted by both B2 and B4 in order to manage what records they had access to which indicated sales.

Finally, B4 has identified a problem about the revision in VAT taxation that she can directly link to records management and her feelings of uncertainty:

“TR numbers just get...filed away and forgotten about so we could end up losing, really so...instead of a lot of people being better off in the country, a lot of people will be worse off. 'Cause I mean, when you look at our stationary, it isn't printed with that, or otherwise we'd lose a lot of money in stationary but no, that's where records are important... and my fear is losing records”

[B4, MM]

5.5.6 B4 - Commentary

5.5.6.1 B4 and the codes

The creation of simple codes for the use of the GM2000 program is a very interesting situation. Though B4 says that she is aware that bigger businesses would use complex, multi-digit codes, she found it easier to suggest alphanumeric codes from a form of workshop shorthand. However, by her own admission, she has never worked in a big business. Her experiences have been solely formed within the small business arena. How much does misperception of the complexities of what a program for big business ‘should’ look like inform B4’s view of what she has produced?

The simple alphanumeric code is valid as it is. The actual processes for coding out into a database shorthand the work required on a piece of glass is quite complex and the nature of the codes is sophisticated enough to reflect that there is a category for material, size, width and height, etc.

Does she equate complexity with seriousness? Certainly, she can equate over-complexity with a foreseeable difficulty in remembering and associating codes with products or services, and so in order to maintain a simplicity and transparency for the process, she chose to use alphanumeric coding:

“...I didn't know what codes were-so, in time, you've got to think, oh, what can we...we've gotta be something that's, you know, they can think of, like six-mil silver so we just have '6s' you know [...] ...put the signs in, so it's gotta be summat...if you had, like '1000' or '1001' you just wouldn't remember these...”

[B4, IM]

The way that she has considered the building and creation of the codes and especially the circumstances behind wanting to build one's own program for the business allow us to make the judgement that she is vitally serious about her role as a participant within the process. She delineates between creating the codes for the program and the act of programming, where she identifies an IT specialist has having 'created' the program.

"B4: So I've been through every stage, even like developing these programs, I've had to put all the information, all the codes, 'cause we've got codes like...'6' for six-mil glass, '4' for four-mil 1 five for...

NVHG: right...so actually you designed the codes, then?

B4: Yeah - I didn't design the program"

[B4, IM]

The original concept for the program, though, has been pinpointed as a program that had been bought off the shelf for the company that was identified as being inadequate for the job. However, the intrinsic nature of the 'program' per se is that it is the codes of a database which give rise to the easy classification of the job. Without the codes, the database itself could not be constructed, as there would be no basis for the logical coding of the processes that govern the creation of a piece of glass. It is interesting that B4 downplays her role in the development of the program that she herself uses, in regards at to her importance in the construct of a logical system that is incredibly complex.

It is also interesting to note that, modesty aside, the GM2000 program is seen as an amalgam of the business's talents. It is due to the unusual nature of the approach to records management by creating what in effect is a form of custom EDRMS that this program has worked. The owner of BETA has not used commercial software and has come up with a solution for his business independently. He has used his own knowledge and resources in order to create a working records management system that has reached compliance with ISO standards despite little or no professional records management input in regards to the business. In tailoring a system to the needs of his business, MB1 has created a perfectly adequate records management system based on his experiences of what is required for the business.

5.5.6.2 The concept of EDRMS

B2 and B4 both separately acknowledge that the two key systems that the company use do not always gel. However, in order to form a records management system, it is to be questioned if a 'complete' or single-package system needs to be used. In examining B4's interviews, there seems to be no point at which she is critical of the system for not being able to fulfil a certain specific function. However, what is criticised is the attitude to adoption of mixed systems for records management:

"...Even when you get the tax office in, they expect you to 'I mean, you're not on that system, you're not doing that' so actually, I expected...yeah, we had a tax woman in, about a year ago, just doing a routine check, and it was 'ugh, you should be doing it like this, you should be doing it like that and so you're expected to keep up with the rest of the country, aren't you?"

[B4, IM]

"... She thought you know, like reconciling the VAT, I've always done it a certain way, and she says, right, 'I want that doing', 'you should be doing this, and..."

[B4, IM]

What B4 describes here is an incident of a tax official's spot check on the business which resulted in the revelation that in this instance, whilst the business records were being maintained in a manner that was accurate, that B4's perception of the tax official's reaction had been one of disapproval, of negativity towards how they were holding records, and their maintenance of records. This could be attributed to the concern of how records are treated when either passed between two systems, or are reliant on two or more systems to handle sets of records. Bearman (2006) notes that:

"It has been widely accepted that electronic records are at greatest risk of losing their "record-ness" at moments when they are transitioning between states, e.g., when control is being passed between different systems."

In describing one of these moments of risk, Bearman's identification of the transition states of records as being of a particular risk might be an explanation for the disapproval of the tax official. The moments of risk continue with another form of transition, this time with in a single system:

“...And so we have to update accounts on here, we have to backup the accounts first, and we have to go into here have to get everybody out of the computer, again, they have to all be posted through to the accounts and then imported into the accounts so this

NVHG: ...If...someone's still on the computers

B4: It just won't start...I have to Task Manager...so now I find it easier to go down and get them all out myself of the computer...”

[B4, IM]

“... 'cause we do have job sheets go missing, mine last week wasn't even printing its job sheets... so I was thinking that they were going down, and they weren't going anywhere...was only 'cause we print a label that we knew the job sheets weren't coming, 'cause the labels coming...[...]...It didn't cost the company any money, really, and people just say 'where's me order' and we say 'ah', it's just honest, you've got to be honest, just to say look, the job sheet has gone missing, and we'll get it for yer next week or sooner if we can, so yeah, nothing really, it's not a big glitch, they do happen...”

[B4, MM]

B3 has found that risk within the records management systems can lie within either one system, *Sage* or GM2000, or both (i.e. in the transactions between systems for different aspects of the same record). However, this has led to the identification of the risk (e.g., the difficulty of running an accounts update on *Sage*, or Job Sheets not printing from GM2000), a key part of risk assessment that has been independently formed from her own decisions, and then decisive action in risk management.

EDRMS packages came under criticism from Ryan in 1995, for allowing the problems of ‘migration and software obsolescence’ to grow whilst IT departments did not represent support for the system. ‘Niche products’ were said to have directed the course of the records management profession (Ryan, 1995). However, in looking at ISO 15489, the description of a document as a changing entity is worth bearing in mind. EDRMS packages or software can only be as good as their next evolution.

In this case, BETA have created their own solution which has incorporated the concept of a records management system that is made up of multiple individual programs that compliment and assist each other in the functions of records management for a business. It is proposed that the term MPEDRMS (Multiple Program Electronic Data and Records Management System) could be used as a new and more appropriate description for what can be seen within BETA.

5.5.6.3 B4 and viruses

“I had opened a virus the other year... [...] just trying to hack into your computers, or just people wasting your time”

[B4, IM]

B4’s encounter with a purely electronic risk to her records ended in a major problem for the business. However, her reactions to this are interesting, as her solutions and responses may well mirror those of other office employees in the same position.

Her first identification of a virus is that of a negative entity that actively seeks to enter the business’ system. At no point does B4 distinguish between different classes of threat, such as viruses, malware, spyware and spam. However, her descriptions involve ‘phishing’, the effects of viruses, and individual problems that could occur when following up spam mail, the gamut of which is described by Pasquinucci as ‘UCE’ or unsolicited commercial mail (Pasquinucci, 2007).

In approaching this problem, it is clear that whilst it is good to have an awareness of the variety of possible or potential risks from a single source (email), it is not wise to react to this variety of threats by a single approach of risk management.

Note that B4 conflates viruses with ‘zip files’

“...Some of them, they do come with the ...um... zip file...know what I mean, and then they're just tryin' to...get into your computer, aren't they?

[...] They're all just links and once you click on that link, that's it, you've lost it... they get your name...they've got all our names, don't they? They get our name...”

[B4, MM]

B4’s confusion of a zip file (a form of compressed file) with that of an attachment (more likely to be connected with emails, and virus-laden emails in general) may be because of her first formative incident with a virus. Although some of her other connotations with forms of technology may be slightly comical – *‘I ha'ant got just one program, I've got Microsoft Office, you know’* - it shows that it is all too easy for a perception of danger (the presence of any file as an attachment, any type of file used as an attachment) to become a general rule of

thumb in dealing with records management. In fact, it has drastically altered the entire business's handling of emails:

“...Yeah...MB1 if it's a file or zip file, if a customer's sent it and I say, I...I'm not opening it...so he'll say 'forward it to me' and the onus is on him, isn't it? [laughter] if he wants to open it, then he can...”

[B3, MM]

MB1 has now been given the unofficial responsibility for opening email attachments, at his own risk. The virus incident was of such a high-risk magnitude for B4 that she will not accept responsibility for opening any attachment, and so the business has developed a coping strategy in the case of email attachments – it is considered better if they are deleted altogether, rather than treating the cost of the risk of another virus being opened by the senior secretaries:

“...If I don't notice somebody could send me, say, you know, they could say I'm sending you a file over and it could be a zip file, I won't open it, MB1 will have to ...rather we deleted...”

[B4, MM]

This approach, it is noted, has probably deleted several real orders that have come via email. This is a highly risky form of risk management – a tolerance for smaller risks in order to avoid or negate the greater ones. It is reminiscent of the tactic of larger firms who are willing to tolerate risks and accept fines for poor or negligible records management in order to manage their own day-to-day business (Boyd, 2006):

“...Because it cost us so much when I had that virus on here, somebody had said to me they were sending me a file and I...and it came through and I opened it...and it was a virus, and ...I had to have a whole new computer [phone rings] we had to get someone in and put all the programs on again, [...]...so now it's funny, in't it? You don't know these people, the zip file don't mean anything to us...”

[B4, MM]

B4's tone is one of almost plaintive confusion. Whilst she can perceive that a zip file might not be a virus, her experiences have taught her differently:

“...Well, some people do send zip files, because it compacts it, doesn't it? If it's like a big text, or something...but viruses also come through... mine was just a simple little one, I

didn't do it on purpose, but it just happened...and it just took everything away. It was a nightmare.”

[B3, MM]

Whilst Bearman (2006) notes that the greatest risk to electronic records is that their preservation over time has not been considered, it might be pertinent to say that a virus as an agent of change or deletion could conceivably cause more problems for both businesses and archives.

“I got a virus on my computer, [inaudible] to my whole system and I had a lot of quotes on it and things, and I had to virtually...wipe my computer clean, and start afresh things like that... viruses, they can cause a lot of problems 'cause I've got my own I used to have...my own quotes and everything, but now we link them, 'cause if we lose them say on one computer it's gone, in't it, but now on the server ...[...] that holds them all together now so everything links, so we don't have that problem too much now about losing anything...”

[B4, MM]

B3's response to the after-effects of the threat was to develop a new routine of records management. Instead of saving quotations on her own machine, she saves them directly to the server.

“If you looked at my emails today, I didn't open them this morning, but look, you'll see [B4 opens up email inbox onscreen, on her computer] ...all junk [laughter] ...[...] you see, I have to pick through these every day and see which [B4 clicks through and opens every email, using the Outlook side-display to preview them] is real and which isn't...a lot of these 'll be viruses we get a lot of zip files come through, and the viruses want you to open them, and then they've just taken over your computer...”

[B4, MM]

“If I opened something that in't meant to be and it is a virus, it's a very big impact...”

[B4, MM]

In this case, her practical experience has forced her into a learning curve about the risk of viruses on a computer and within business – but with a heightened awareness of the risks involved.

5.6 FSSM Diagrams

This leads to the difficulty noted by B3, in that the only check on the whole system is the ‘listed item sheet put up’ - the hard copy list of completed pieces of work due to be collected that week. If there is an inconsistency between the list and the amount of pieces, there has to

be a physical check for both product and work sheet. The risk itself is high – B3 encounters this most of all, and evinced in his risk assessment exercise that it was the highest risk. However, he had a very pessimistic view of what could be done to manage the risk:

“NVHG: and so to the big one... the really big one...what about those paper records?

[quiet laughter]

B3: [laughter] Probably all four t's! I would tolerate it because it's part of the job. Treat...it gets treated... - with my tongue! [laughter] ...needs terminating, but...I can never see it happening, to be fair...[...] I think there'll always be a paper record for us...”

[B3, MM]

Despite using all the interventions that he knows of (telling employees not to lose the hard copy, tolerating the loss and the consequences, and ordering a new hard copy and new piece to fill a missing order), B3 cannot seem to resolve the risk of the loss of a hard copy record, and subsequently the risk of relying on the use of a hard copy to update the e-record on the system.

5.6.1 BETA fSSM diagram, version 2

The creation of this diagram (Illustration 5) came from an amendment of an initial diagram, after the participants of BETA had seen the diagram and had chance to comment on it. After being asked for their feedback, they noted that the original diagram was very accurate and that it showed them the larger scope of the company's D/I/R flow:

“Very correct...[...]... More correct than what I'd follow... [laughter]”

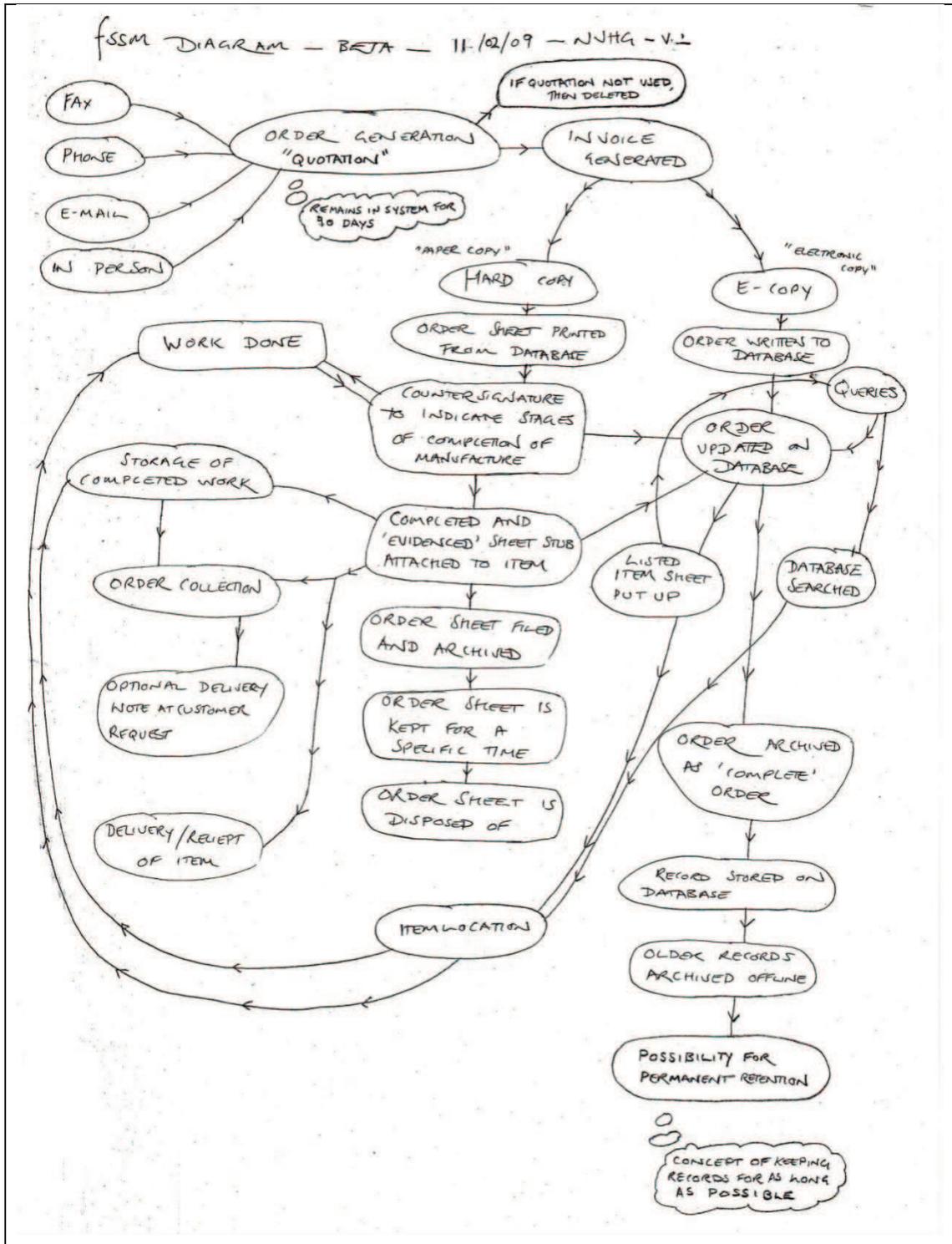
[B3, MM]

“...You don't realise how much goes on, do you? ‘Cause I just see it: I take the order, I suppose in the end it comes back to me but it does a full circle right around the building and then it comes back...”

[B4, MM]

The amendments made were the changes to ‘order generation’ when it was discovered within the main meeting interview with MB1 that records originally started off as quotations which were automatically cleared from the database on an automatic schedule.

Illustration 5: fSSM diagram, version 2 - amended D/I/R flow through the business



“There are certain records like quotations for instance, we don’t keep them, we have a system that auto deletes them, I think it is about 90 days because most codes last 30 days so we keep them for longer than that but every time we create quotations the computer just sets a date by which it’s going to auto delete it so I think it is about 90 days, I’m not sure because we have played about with the time, because 90 days is actually longer than

we need. Probably 60 days would be the maximum but we built in that extra sort of, all that extra system whereby it just holds for that little bit longer just in case.”

[MB1, MM]

The risk in this system was that of being too efficient and deleting files that the business was later asked for. Using an automated retention schedule as a way of treating this risk, 90 days was judged a sufficient period of time to cover any requests for the information. This also included a margin of extra time as a way of mitigating any risk associated from early deletion of quote files.

The other alteration to this version of the diagram was that of a longer period of time for retention of electronic records. In dealing with the issue of storage, MB1 had noted that there theoretically was no need to have a retention schedule overall, commenting on the fax delivery system which had recently stored “about 10,000 faxes”:

“You know we have no reason, we have no reason to delete it.”

[MB1, MM]

Whilst this is an interesting proposal, the risks of such an act of retention may be only revealed by the constant accumulation of records. With the advent of larger and larger storage for electronic documents which is comparatively less expensive and smaller physically than before (MB1 notes the difference between 20 years-worth of hard copy records, and a large amount of e-records) there is more chance that multiple sets of records can be preserved without the main concern of space. However, other costs come into play, especially if the business outsources data storage to another company.

5.6.2 BETA fSSM diagram, version 3

Illustration 6 was constructed relatively early within the case study in an attempt to describe the requirements for the hard copy records for the business. The forms of metadata held by the GM2000 system are described, and the basis for an electronic record’s path through the system was proposed. A path is drawn from manual data capture into the GM2000 system, to the eventual creation, use and storage of the hard copy record. The e-record’s position is not fully described.

Chapter 6: GAMMA, A Retailer

Case Study Three (GAMMA) was carried out between December 2008 and August 2009. GAMMA was chosen as a representative of a 'micro' SME. A series of interviews was completed with three participants, around risk management within the scope of e-records, and the results are explored in annotated vignette form. An analysis of the language of the SME participants was undertaken, and an 8,000-word corpus (approximately) was created and analysed. A glossary was created using the corpus, which is described and evaluated in Chapter 7 and Appendix 8.

6.1 GAMMA: A description of the SME

This case study was the last of the three undertaken for the PhD study. GAMMA was an SME recommended to the researcher by Professor Julie McLeod. They agreed to participate in the case study, and were interviewed between December 2008 and September 2009. This SME deals with the retail and import of art and craft materials. Its specialities are often unique or hard-to-find items and materials, and the business prides itself on being the first to find goods in the American market to bring to the UK. In 2004, they absorbed a smaller sideline business of craft equipment, and incorporated it into their main business. GAMMA are based chiefly around manufacturing and sales, with their most successful approach being online sales of art and craft materials. Though their main site holds both their warehouse and a small shop, the rural location means that there is no steady amount of foot traffic to the business. E-retail has been a way of offering their goods to a larger market, as well as an opportunity to show the artistic talents of the employees and to describe the business's activities. Whilst they have also booked slots of airtime on television channels dedicated to retail, they continue to have a strong following made up of those customers who follow the blogs and emails sent out from the company. GAMMA is a private limited company.

6.1.1 The Site

GAMMA's main warehouse is also their shop area. Based in a large retail park on the outskirts of a town, the unit is mainly reached by road with little pedestrian access. The warehouse unit is large, and packed copiously with stock. Upstairs on the mezzanine floor is an open-plan office. As the distance between desks makes it physically hard to communicate with others in the office, a Skype VoIP network has been installed throughout the office on each PC to enable communication. Phone lines are routed to desks for employees who need

this access. The atmosphere is often quite noisy, as the sounds from the warehouse and shop filter through easily to the upper level. On the lower floor, there are areas for deliveries to be collected and dispatched, and storage bays for products. In one corner, a small shop area has been set up with a till and item racks.

6.1.2 The Workforce

GAMMA employs staff who are involved both in practical crafts and the daily running of the business. Their website is also home to a series of blogs written and updated by the staff. In recent years, GAMMA moved through a period of change, both in staffing and in equipment and some of these are noted in the narratives within the case study.

Their approach to staffing became more cautious, after an incident where an employee was found to be untrustworthy and who stole personal data from the company. As a result, GAMMA became more reluctant to take on employees, especially when they are not willing to sign a contract about how they will use their skills after employment with GAMMA.

6.1.3 The Systems

GAMMA's initial management of their e-records was done by the use and manipulation of the accounting software suite *Sage* (2008), as a temporary measure. This has worked as a form of records management since the formation of the business, but after significant expansion to take in a similar line of craft business, and the approach of a national market, GAMMA has decided to implement a new way of managing their inventory and customer records. After looking at multiple solutions involving different off-the-peg systems, G1 was offered a software system through a targeted email list. They have now purchased the necessary hardware for the implementation of the software, and at the time of the secondary interviews for GAMMA (August 2009), they were ready to implement the software in stages.

6.1.4 Introductory profiles

G1 is a businesswoman and co-owner of GAMMA. She once worked for a major computing firm, and has had several years' experience as an entrepreneur, following her love of arts and crafts. She is highly IT literate and makes use of Web 2.0 to publicise the business. She also makes the major decisions in regards to the business's operating and future directions. G2 is G1's partner and husband. He worked for the same computing firm, and decided to leave in

order to help contribute to GAMMA as an employee. He is highly qualified, holding a recent PhD qualification, and has technical ability to maintain the computers and technical systems of GAMMA, as well as implementing new technology as and when needed.

G3 is a young female employee within GAMMA, whose job it is to manage the web content of their website. She is also a telecommuter, and only travels in once a week. She travels in to work within the company's warehouse and to carry out tasks that cannot be done remotely. She was previously employed within GAMMA, working with ground-floor staff. G4 is a mature lady whose role is senior secretary within GAMMA. She has significant prior experience of customer-oriented roles – in her previous job, she was a customer relations manager, and learned specific management techniques and tools such as UML in order to carry out her job. She has carried this with her to GAMMA and is willing to use her knowledge to help the company.

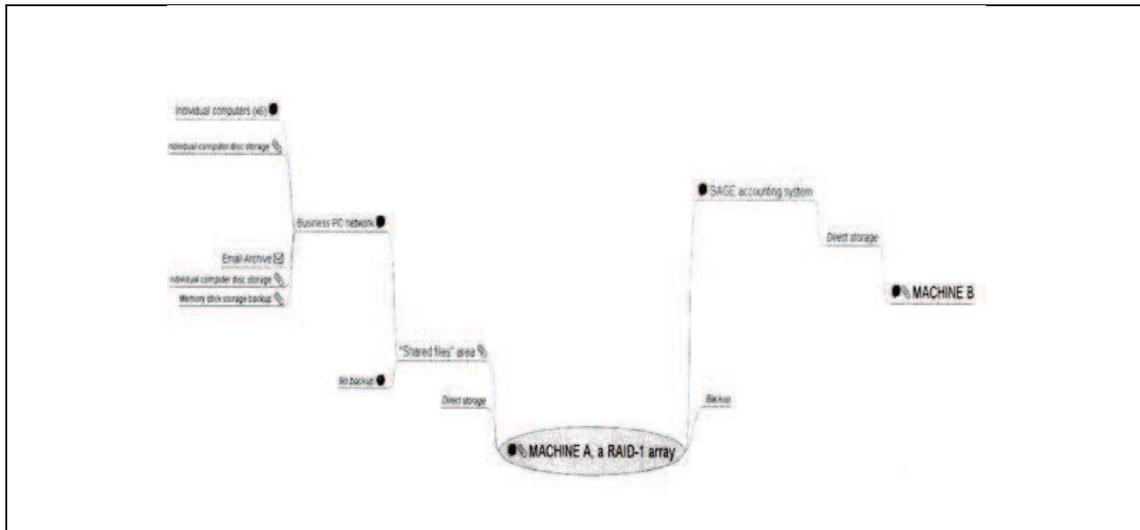
6.1.5 Diagrams and fSSM diagrams

6.1.5.1 The initial computing system

Figure 16 was created from the interviews held with G2 and other employees from GAMMA after the first interview sessions in December 2008. GAMMA's computing system allowed the creation and backup of records and data based on the use of two server computers. Each of these systems was backed up independently through G2, and the needs of the business were taken into account.

The SME has one major machine (represented here as 'A') and another secondary ('B'). The majority of GAMMA's systems are backed up onto A, with records and data stored there. Employees' PCs are linked to this computer by a network, and A provides a shared filespace for them. Whilst there is no backup for A, the *Sage* software is backed up on B.

Figure 16: The initial computing system used by GAMMA

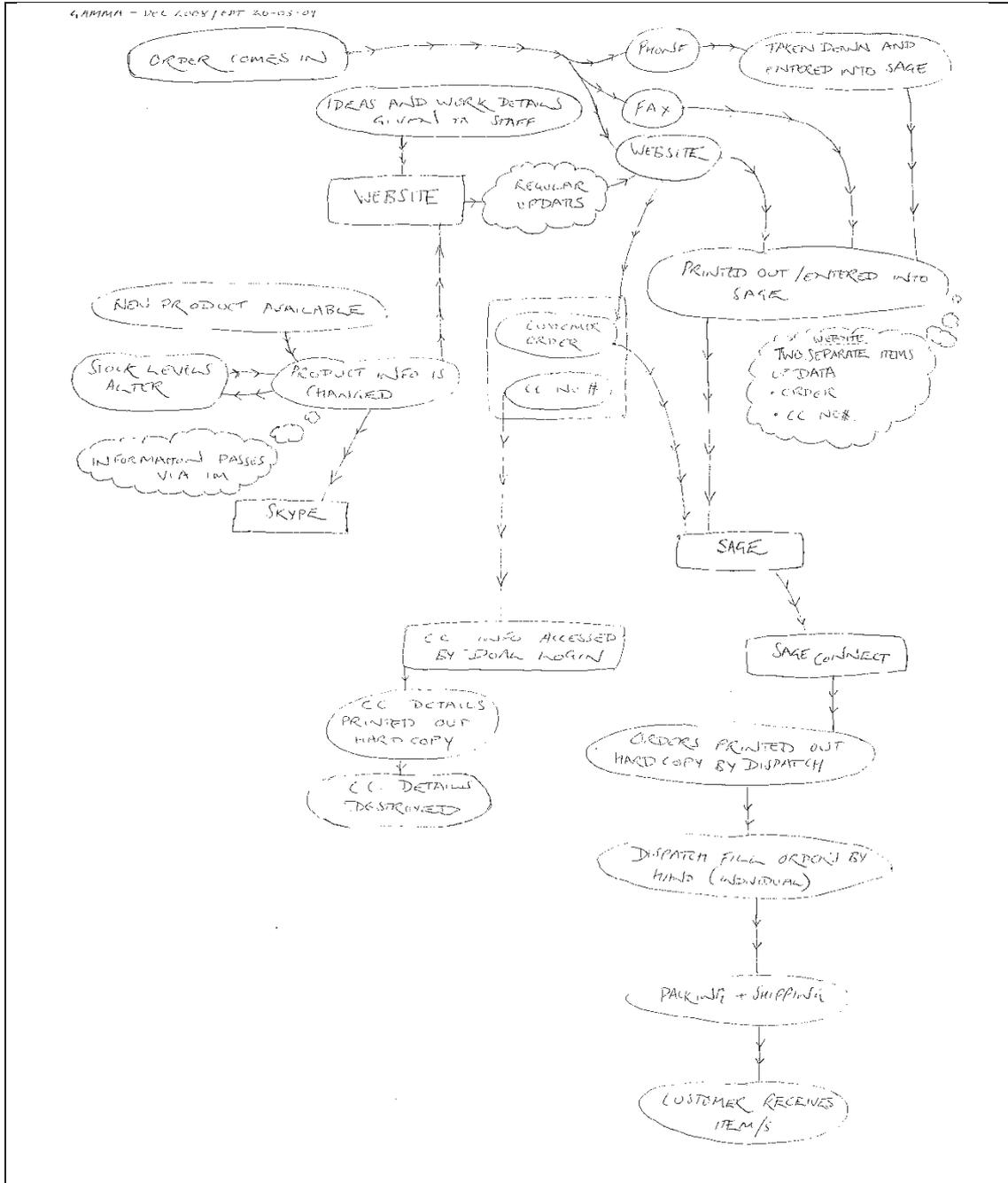


6.1.5.2 fSSM diagram

This fSSM diagram (Illustration 8) was compiled from the data elicited by the interviews of the employees and managers at GAMMA in December 2008. It represents the records creation and management actions for GAMMA, based upon the material they hold and codify into records. A wider topic and theme-based diagram is given in Appendix 7. This diagram shows that the flow of information to be processed within the business was processed through one of three channels: phone, fax or website.

If customer and order data were entered via the website, they were captured and sent to the *Sage* system. Data then were entered in to the *Sage* program, as it controlled customer care and response, and records were made of this, using *Sage*'s own facilities as a program. Some customer data (such as membership number, address, renewal dates for membership) was entered into a separate spreadsheet and then stored as a separate record. Data entered into *Sage* were used to check stock, and to process orders. Packed orders included a hard copy of the order details. The website was updated on a regular basis manually, from within the business. Employees inputted new photographs and product descriptions as and when they were available, removing old stock descriptions as necessary. As stock levels altered, the website was changed manually to reflect product availability. There was at least one noted occasion where this was incorrect.

Illustration 7: fSSM diagram for GAMMA – 1



6.1.5.3 fSSM diagram – 2 (revision)

This fSSM diagram is the codified and neater version of the first fSSM diagram. This was presented to G1 during the second meeting, and the additional notes in the upper left-hand quadrant were made according to G1’s advice. The diagram shows the passage of data and the codification of records within the SME. At this time in the case study, though the initial

fSSM diagram was considered to be accurate for its time of creation (December 2008), G1 and GAMMA had newly implemented a process that eliminated the need for GAMMA to make hard copies of customer credit card numbers. This process was a service called *Protx*, and had been implemented in the SME the day before the researcher's second meeting with G1.

G1 was asked to help amend and verify the fSSM diagram, and she offered observations about what *Protx* would do for the business: it removed the stage of employees having to separately record credit card information, and therefore removed the need for printing it and destroying it after use. Data is 'more automatically' entered into *Sage*, and only postal orders come in with a credit card number to be entered in by employees.

These diagrams show us the possible data and record flows within the business, as well as noting the difference between the earlier and the later systems. We now move to the narratives formed by the participants from their interview sessions.

6.2 G1, the Main Manager

G1 is a businesswoman who has had many experiences of business management before settling to her latest venture. After working in a large company as a database programmer, she and her partner decided to go into business together in a different area: that of art supplies. She notes that the whole of her background has influenced her:

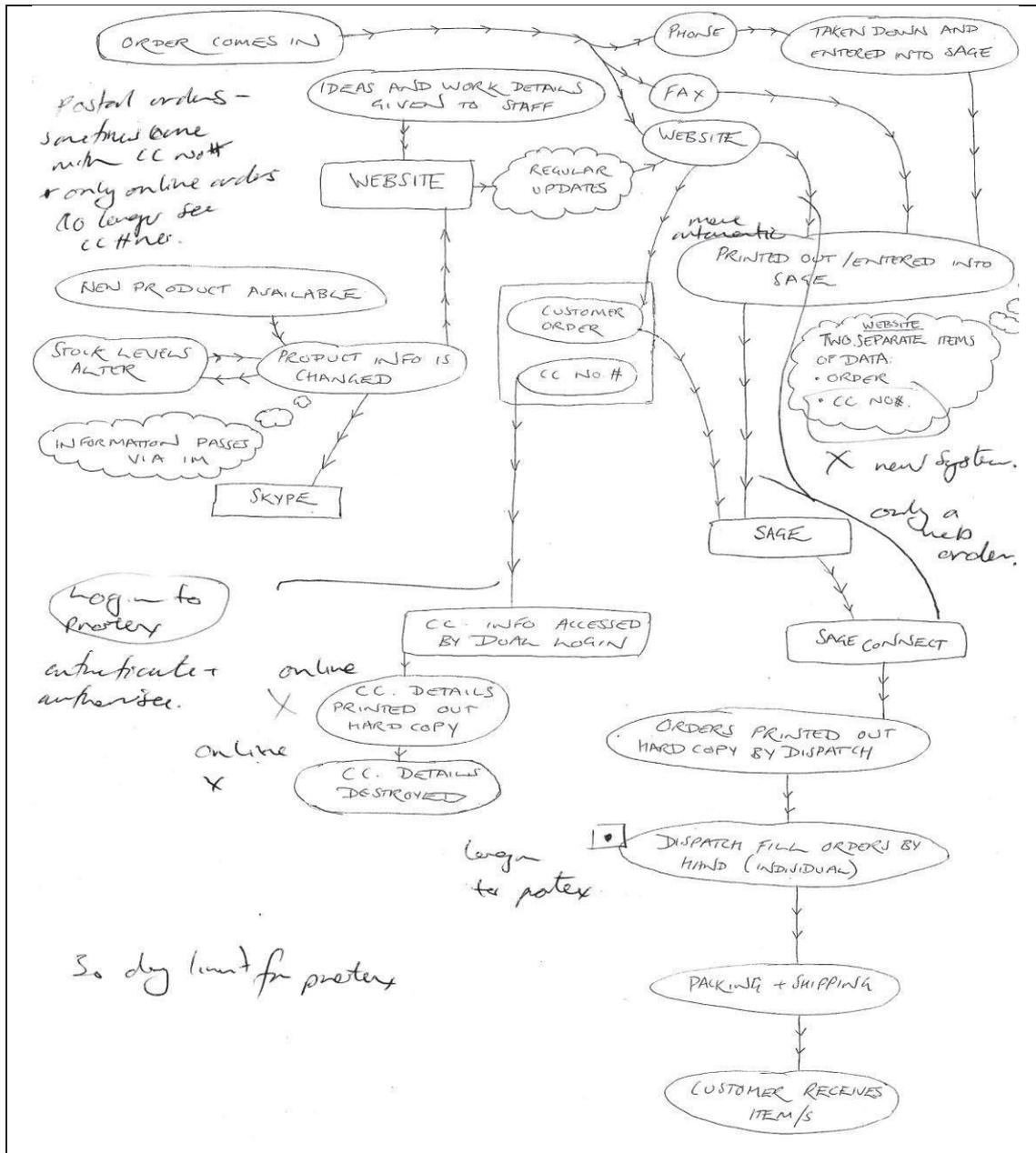
“All of my background is helpful. I've been a secretary, a nanny, a cook, I've run a guesthouse, been an office manager, become a database programmer...I've been a complete gypsy.”

[G1, 2nd M]

However, her own perception of how this has helped her as a business owner has changed. Previously, she had not reflected upon how influential these career changes were to her. But after being asked by a customer about how this had impacted upon both her and her business plan, she now had a cumulative perspective:

“...When I was talking to her, I realized that all these different past experiences, all these different jobs that I'd done, every single one has had some element that has helped. I knew from the age of 18 that I wanted to run my own business; It's just that I didn't know what it would be at the time. So, it's all sort of...it's all led here.”

Illustration 8: fSSM diagram for GAMMA as annotated by G1 and the researcher from G1's final meeting



She does not rule out the usefulness of job-specific skills she learnt previously. Some of her background as a database programmer has allowed her to make informed decisions about what forms of technology can be usefully implemented within the SME. However, recognition of her specific talents does not always mean that there is use of her skills: delegation is a tactic that she needs to use within the SME in order to free herself up for other duties. There is also another consideration; that of the staff's comparative technical abilities:

“Although, to say that my background is actually in Access programming...I avoid Access as much as possible. But that’s mainly because I need to be able to delegate to other people. So if I can make it as minimal-skilled as possible, then I will, so I’ll give someone a spreadsheet rather than a database because most people here can handle a spreadsheet. If I turn it into a database, I then have to spend time with them explaining how I’ve set it up, and what the relationships are, and it overcomplicates things.”

[G1, 2nd M]

6.2.1 Databases and information

Databases, though, are used within the SME, and one is run by G1, handling an aspect of staffing. The emphasis for G1 is on the angle of privacy and control that it gives her over this data:

“I mean, one database that I do run is Personnel. Erm, you know, I set up an HR database. We’ve got obviously all the staff details, the payroll info, er, next of kin info, all that kind of thing, and that’s almost partly done on database because it is harder for people to...to see and look at...so if anyone did come snooping on my computer, which is where it lives, it wouldn’t be as obvious or as easy for them to just have a quick look and see what other people were earning, or something like that.”

[G1, 2nd M]

The concept of information within G1’s view of the business is that whilst they do handle secure information, the amount is small, and the need for it has been reduced greatly by having changed their credit card payment system to an external automated provider, *Protix*:

“There’s not a lot of need for secure information here, erm, obviously there’s all the credit card stuff, but that’s all completely secure and fully encrypted and all that kind of thing, it’s kind of externally managed. Having said that, we’ve just, erm...today, actually...made a change on the website and we’ve switched to using *Protix* as a payment provider.”

[G1, 2nd M]

The concept of securing information is linked now in G1’s view to who is able to hold and view the information.

“So, from now on, we will never ever see a customer’s credit-card details that they hold online. Whereas the previous system, we logged onto a secure encrypted server, and actually downloaded and printed out their credit card number...”

[G1, 2nd M]

However, not all electronic data held by the company is maintained exclusively by them. Some data is held by the web design company which they use to host their current form of trading online, a website which functions as both a shop and a catalogue. Previously, this was run by a web design company who provided their original website design. This has changed:

“We’re no longer paying hosting to the web design company that we use, we’re actually paying a web farm, I think they call them, where they have these racks and racks and racks of servers and one of them is ours, you know, it’s our server.”

[G1, 2nd M]

6.2.2 Stock ordering

G1 is the main person to decide if a product is reordered. The operation of ordering new stock is manual, as opposed to the re-ordering of general stock. G1 leads in deciding how products are ordered. Ordering for the shop is a difficult business because only part of the process is automated, and most updates to processes are performed manually. In particular, there is a great problem with making a decision on how to order in items from America, which may be regular sales but whose ordering is governed manually:

“...The judgment call is, is it going to be so popular that G1’s going to order again and it’ll be in quickly, or, is it ...a product we’re not going to get in quickly, because we haven’t got the money to put another order in[...]I mean, they’d probably come in and ask me.”

[G1, 2nd M]

There is a great deal of searching in order to locate both stock and suppliers, often done in a short amount of time. However, once stock is established within the physical warehouse, it is down to the virtual stock, recorded in a stocktake, which reveals the extent of the stock holdings of the company. But errors can occur, and in the case of human error – such as forgetting to check stock levels and set them as ‘zero’ on a stocktaking exercise – these have ramifications for the whole exercise. In this case, it is the creation of inaccurate records through the lack of expertise of those performing the stocktake.

“...We did a stocktake, year-end stocktake at the end of March, took a whole week, didn’t ship anything for a week, [sotto voce] – dreadful – but we got it all counted, we got it all straight into *Sage*, because in the past, and we’ve learnt from previous years, [...] last year’s stocktake, we didn’t zero the stock before we started. So *Sage* was showing stock of items that we had none of...”

[G1, 2nd M]

6.2.3 Risk attitude

Risk, according to G1, can be both positive and negative. In thinking of a risk incident to illustrate this, she finds a physical example immediately:

“Well I mean I can think of positive risk straightaway. Which is, victim of your own success kind of risk. You know, you do something and you make something so popular, I mean...it happened with an inkpad I had on my last TV show...”

[G1, 2nd M]

However, G1’s attitude to risk is related to the amount of benefit that she can see is linked to the risk. Risks can be worth taking if there is some tangible benefit:

“The positive aspect is, you know, if you can get it, it may be popular and you can make money off it. So...it’s a risk worth taking.”

[G1, 2nd M]

6.2.4 Systems and efficiency

G1, though she herself chooses the new stock to order, has communicated that stock ordering is a specific problem within the SME. *Sage*, a program conventionally used to perform business accounting, has been used as a stock and inventory control program. The elements of the problem are that cost, expediency and suitability are all aspects of the e-records management that helps G1 and her staff manage the stock inventory:

“We looked at several different systems to improve efficiency in general because the big area of inefficiency in the company is lack of accurate stock control... the warehouse and the shop are kind of two separate sets of inventory, and we try to manage the warehouse stock through *Sage*, erm, we use *Sage Line 50* – *Sage* has got the facility to record the stock quantities ...we use their fair sort of processing logic to actually take the orders and from there you can allocate stock to orders and hit the dispatch button and you know it’ll finalise that movement of stock to that order and get an invoice, pick it, pack it and ship it... in practice it never runs that smoothly...”

[G1, 1st M]

Stock control efficiency is impaired, as there is currently no digital copy of a catalogue. Stock-control software can be expensive. Using an already-held program to maintain the data is seen as an acceptable working solution, in some cases:

“...Quite often what happens is that if something is out of stock in the warehouse you might have some on the shelf in the shop, so you have to go to the shop, you find it in the shop, you have to book it into *Sage*, [...] so the procedure is neverending, and complex, and horrendously inefficient...”

[G1, 1st M]

As the stock records are not available for both the warehouse and the shop, new records have to be made for the makeshift inventory system. G1 notes that it is “complex” and “inefficient” – key problems for her business.

The problem of inaccuracy in records carries over from the area of the combined stock management and inventory records management systems to that of shipping and order filling. Without accurate data, customers’ orders cannot be satisfied.

“We have, erm, items on the website and we have no accurate data as to whether it's in stock or not and we've had occasions where customers have ordered things, we've come to process the order, it's not in stock, erm, it may have been in stock when they ordered it, but three people before them just got the last three...”

[G1, 1st M]

G1 has already identified one way to solve the problems caused by the inefficient system, by investing in a new system for inventory records management. However, the crucial part of this plan relied on investment into a suitable product for their business. G1 associates this investment with the opportunity to grow as a business.

“We'd already been investigating different systems at that point but that was the ‘right, you've really gotta put money aside to do it - you can't carry on like this ...you can't grow without scaling up, you can't expand without efficient stock control”

[G1, 1st M]

She acknowledges that finding her final choice of packages amongst many that were offered was serendipitous. She was sent a targeted email by a company which were offering their product, and found that it met all her requirements.

6.2.5 A risk experience

The story that G1 offers of her experiences of risk in records management is that of a former employee who was suspected of having burned to a disc the details of a customer database

which was then taken away and used to start up another business. As well as being the first incident of this type in which G1 had encountered risk for the SME's records, it proved to be both a moral and a legal problem of some consideration. The issues that G1 felt that had to be faced were initially legal:

“The, the first thing that we did, obviously we went to a solicitor to see if there was anything that we could do...stop some of the actions which she's stolen...at the end of the day, there's very little evidence... we knew that she'd taken our customer database because our customers received letters from her [...] and one of them she just, she phoned me up and said, she complained”

[G1, 1st M]

The tension between GAMMA's owners wanting to prosecute the former employee, and wanting to understand their own legal position in terms of liability made this a difficult situation. The indication that the database of records had been used in order to contact customers made it doubly so, for the nature of their own business was called into question by the employee's possession of this personal data. However, though it was known that the former employee had access to the database, they could not conclusively prove that such material was taken from the premises:

“We know that there was a large amount of data copied to a CD because G2 could see that on her computer, erm, but we don't know what the data was because we were unable to track that.”

[G1, 1st M]

“(Of G2) He's not that good at forensics, erm, but certainly he could [...] what he found out is not legally admissible evidence and even if it was, there's not really an awful lot you could do.”

[G1, 1st M]

“Any kind of legal action on my part would have made me into the tyrant and her into the martyr, and it's ...from our point of view, it just wasn't worth doing, even though I desperately wanted to [...] what I did do, however, that I'd never actually done before, was make all of my staff sign employment contracts ...everything had been quite informal up 'till then. They did have contracts, and (employee) X____ had been issued with one, but never actually signed and returned it.”

[G1, 1st M]

6.2.6 G1 – Commentary

G1's perception of the response to the data theft had been was one of concern: legal action, she thought, would have affected the perspective in which she as the head of the company was held. She questioned the value of any legal action against the employee regarding the theft, and consequently didn't take any legal action following the discovery of the incident. However, the incident did prompt a change in the way that G1 recruited staff. Some months prior to the incident, a move had been made to put in place a form of working practices contract amongst GAMMA staff. This was issued to employee 'S____', but tellingly, was never signed or returned. After 'S____'s defection from the company, efforts were increased to manage the working practices and post-employment behaviour of GAMMA staff. Arrangements of working practices contracts were made mandatory – a major difference from the previous form of working, where contracts had been issued and were not agreed to or returned formally. This was chased up by G1, and finally she offered a bonus to the employees in order to ensure that the contracts were signed and returned.

“There's a limit to what any kind of restrictive stuff you can put in any kind of contract to protect yourself against this kind of thing ...the contract we have at the moment has got the maximum kind of protection that can legally be put in a contract but there's some doubt as to whether it would ever stand up in court if it was ever tested and again, this legal precedence”

[G1, 1st M]

6.2.6.1 Use of the inventory system as a form of records management

G1's approach to both business and e-records management is that of innovation when the time is right, and innovation based on their current use of their systems. The limits of *Sage* as a means of creating and storing records are apparent when the premise was first discussed with participants: They were readily aware of such shortcomings as the ability to include only a finite number of records, a difficulty in synchronizing updated stock levels with their records – a difficulty, considering that these are manual upgrades.

G1 indicates that whilst she is happy to change her systems, there is a specific motivation to change: the records management system that had been created from the e-records that were made from inventory, stock and supply were simply not efficient enough to cover the demands being made of the system as a whole. The decision to upgrade the system was made out of the necessity to handle a large volume of e-records that were directly to do with

customers and sales. The *Sage* system is primarily one that focuses on management of financial records.

Within GAMMA, the decision to upgrade the systems specifically governing financial, customer and stock-based records was not one taken lightly. The factors of cost, applicability and suitability were then raised as specific features to look for in an inventory management system that would update the vital inventory e-records, and also attend to customer account management records and issues.

6.2.6.2 History of the Business

G1 describes the SME as being part of the culmination of her experiences in working – her learning experiences have included positions other than management, and employment in a technical career which helped inform choices and use of IT within GAMMA. In constructing a history for the SME based on the experiences of its founder and of its staff, the cumulative concept of the business's efforts to establish a personal identity of its own now comes forward more easily as a narrative. G1's involvement from the start makes this very much a narrative in which she is involved. It is interesting to note that whilst G2 can also recount the history of the business, his narrative refers back to G1. Her experiences are very much a part of the business's history and her narrative reflects this. Her choices have dictated how the business has expanded, how the business is run, and how the records are kept.

G1 is a very good example of how strong a culture of an owner-led business can be for SMEs. In the previous case studies (ALPHA and BETA) we have seen how the managers lead the business in different ways and in different representational aspects. GAMMA, and especially G1, demonstrates how size affects the representational power of the business.

6.2.6.3 Records, Theft and Preventative Actions

“What I did do, however, that I'd never actually done before, was make all of my staff sign employment contracts ...everything had been quite informal up 'till then. They did have contracts, and (employee) X_____ had been issued with one, but never actually signed and returned it.”

[G1, 1st M]

In the context of this interview material, X_____’s behaviour looks significantly suspicious. However, G1 also noted that getting the employees of GAMMA to sign and formalize such contracts was a difficult process.

G1 was aware enough of her legal standing to ask that all employees have a record of the terms that they agreed to on leaving her employment. Her implicit question – if contracts can be binding enough, and what recourse they provide to employers – answers part of the question of what use records have within GAMMA as a business. A contract regarding post-employment working is a record as much as the orders themselves. However, employees were unwilling to formalise them. Why signing and formalization of the contract was not done immediately may be due to multiple factors. Other elements may include employees’ reluctance to sign a binding contract that may limit their future choice of work. As a result, G1 had to offer an incentive in order to have the contracts signed.

G1 also regards the contracts as an effective way of maintaining employer and employee confidentiality in regards to data handling and employer ethics.

Before the incident of data theft, a picture emerges of records management within the business relying on the tacit agreement that records, when needed, would be created. By avoiding or evading record creation, employee X_____ highlighted the weakness of a system that does not hold records that fulfil the requirements as set by ISO 15489. G1 and G2 noted that they were not on sufficiently legally tenable ground in regards to the creation and enforcement of post-employment contracts.

In terms of the ramifications of risk management and records management for GAMMA, the issue of formalizing records has opened up a new problem linked to the use of the records, rather than a risk to them. The arena of risk extends not just to the concept of the record itself, but to the business, customers and the community.

In terms of looking at the holding of personal information (whether stored by the SME in order to be used further or temporarily held as necessary to complete orders) some forethought in security allayed the concerns of both staff and customers. Measures for security included shredding transcribed credit card numbers and information after use, and

requiring two members of staff with password access to download the credit card information from the secure server instead of only one.

These actions have reduced the physical amount of secure data by disposing securely of hard copy temporary records, and reducing the opportunity for employees to gain sole access to private customer data.

With the advent of the *Protx* system, the need for members of staff to have access to customer credit card details disappeared entirely. Instead of creating more hard copy records, the entire process has been abstracted from the company and outsourced to a specialist external company. This has meant that one element of risk – that of the risk of customer data being misused – has been shifted elsewhere. Referring back to chapter 2 (section 5.3.1), we can see that transferral of the risk is a key risk management choice. In choosing not to handle this risk, fewer hard copy records are produced for GAMMA and the corresponding risks with them decrease – making this choice potentially more attractive for a business which experiences significantly high risk in the management of such records.

6.2.6.4 Maintaining Inventory Records - Problems and Solutions

G1 identified that one of the main concerns within the SME is the maintenance of inventory database records. At the time of the first meetings with GAMMA, the researcher noticed that the till was not a computerised model. No records were kept of the stock that was sold from the shop counter, but instead records were kept based on the amounts of inventory received. GAMMA used a complicated system for maintaining records. As GAMMA already used the computer program *Sage Line 50* for their accounting, it was reasoned by both G1 and G2 that the facility for tracking amounts of sales within the program could be used to form a rudimentary inventory tracking facility. However, this system did not synchronize with sales made through the website.

6.2.6.5 The *Sage* system

The most immediate way of tracking inventory and orders is through the *Sage* accounting program that was already in place within the business.

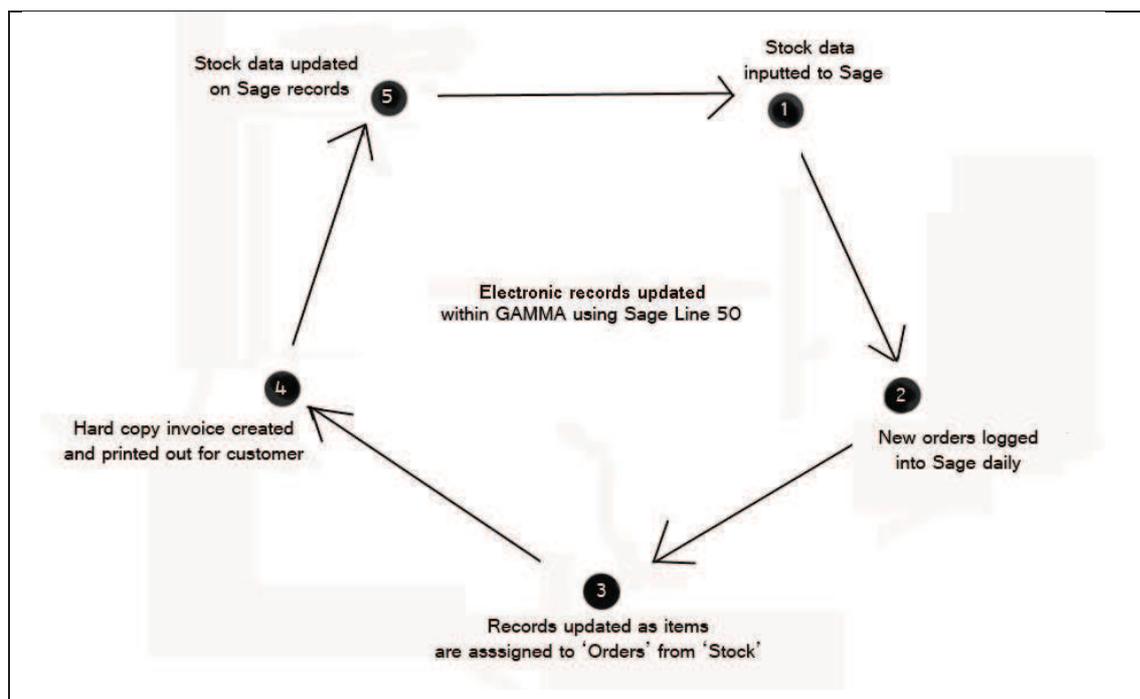
“We looked at several different systems to improve efficiency in general because the big area of inefficiency in the company is lack of accurate stock control... the warehouse and the shop are kind of two separate sets of inventory, and we try to manage the warehouse

stock through *Sage* [...] we use *Sage Line 50*, *Sage* has got the facility to record the stock quantities...” [G2]

The *Sage* system that was used was a modification of the accounting system. By using the accounting system in this way, GAMMA simply used their resources fully. However, the complications from this usage are that the data required to fully maintain the business records was not updated often enough.

Looking at what the *Sage* system provided (see Figure 17), we can see the elements of this records management, and consider why this system was not as efficient as a dedicated records management system. Even with the economical use of a program that they already possessed to keep inventory records, G1 noted that this was not an ideal solution. The main difficulty that G1 notes is between points 5 and 1 on the records updating cycle illustration (see Figure 17), which is that of the potential time lag in updating a record. If too much time is taken before updating the inventory record, there is a possibility that orders may come in from the website (noting that there is still stock available) when in fact the record is incorrect and the product has sold out. The result of this error is that customers do not obtain the orders that they have placed, and there is a considerable decrease in faith between the customer and the business.

Figure 17: A cycle of record updating in GAMMA



The error within the maintenance of a record is the problem; the risk is that of a decrease in faith in the SME's ability to fulfil an order. This is one of the drivers for risk management that is implicit from the use and holding of records by an SME.

Other potential problems with this 'cycle' of updating GAMMA's business records is that the cumulative action of orders coming into the system, balanced against the static record, means that the slower the record is to update (and by the same token, the slower the website is to update) the higher the likelihood of this risk of disappointment in the ability of the company to fulfil orders.

“...From [*Sage Line 50*] you can allocate stock to orders and hit the dispatch button and you know it'll finalise that movement of stock to that order and get an invoice, pick it, pack it and ship it; in practice it never runs that smoothly...”

[G2, MM]

The use of *Sage Line 50* as an inventory management system to update sales records combined the facilities of the programs available to GAMMA, in order to calculate what stock had come in, and the availability of stock in the warehouse. As orders were updated only once a day, the availability of stock as listed on the website was not very reliable. This problem was one of the motivations for change in the system that supported the inventory and sales systems within the SME. However, other factors supporting the need for change in the management of the inventory system did emerge. One incident resulted in a disappointed customer, who then continued her grievances on a public online forum. This problem reinforced G1's perception of the need to change the way that sales and stock were recorded (italics added for emphasis).

“We had one lady who bought something in the sale and ...we tried very hard to say, this is the sale and once it's gone, it's gone but unfortunately, once it had gone, it wasn't taken off the website, and we had one irate customer who was on the forums ...dammed the company, it was her first experience with us, she wasn't impressed and she went and told everybody she knew... *so that was the kind of clinching factor*, we'd already been investigating different systems [...] but that was the “right, you've really gotta put money aside to do it - you can't carry on like this ...you can't grow without scaling up, you can't expand without efficient stock control...”

[G1, MM]

This was perceived as being very bad for business, but at the same time, proved a decisive factor in the investment into an overall system or program that would create and maintain inventory records efficiently.

6.3 G2, IT manager and main manager

G2 is the partner of G1, both within their business and in a social sense. He shares a similar work background, having met G1 whilst they were both employees of Sun Microsystems, the specialist computing firm. G2 has a background of tertiary education to PhD level, and has specialist knowledge in the database area of computing. Whilst he does a lot of other tasks within the business – and recently took over a job in the manufacturing area of the business – G2's interests are mainly in setting up and maintaining the technology that GAMMA uses in order to trade as an online business. G2 is primarily employed as the computer maintenance technician and systems administrator for the business. He also takes over some of the manual duties, such as product manufacture. These manual duties were undertaken when a member of staff resigned, and G2 now performs them, as they are yet to fill the vacant position.

6.3.1 G2 and Enterprise Resource Planning

G2 is responsible for some of the decisions to do with the purchase of computing equipment, though a specialist hire-purchase agreement with an Enterprise Resource Planning (ERP) supplier has helped supplement their computing power. He now deals with the new server, and will maintain it in tandem with the ERP company.

However, the decision made by the business to move to an ERP system had meant that the purchasing of new equipment was a certainty. G1 and G2 both looked at several systems in order to facilitate their trade as an online retailer and to manage the stock records within their current system.

Whilst the first system that they had previously used had not required a major change in their computing system, the system they looked at as a next step warranted a new server. G2 has noted that the expansion of their current systems to an ERP will require more work for his technical skills. However, he will also share this with technicians from the ERP system's firm. The ERP will also change the websites of GAMMA, and so GAMMA will no longer use their current website host in that capacity. Plans for future expansion, though, may mean that their current website host will still be used to some capacity.

6.3.2 Working with the computer systems

G2 is also responsible for the scheduling and resetting of backups for the *Sage* system of finance and inventory systems. He notes that specific problems with these systems include the difficulties faced on incorrect storage of the backups, maintenance of the backups when he himself is not present, and the problems that accompany using a backup, through loss of inputted data. Data input is another point for G2. Although he has not been involved in the most recent course of data input for the *Sage* system, he has been made aware that the stocktaking process shows up all the flaws within the current system. One example he gives is that a single product appeared 11 times under slightly differing descriptions and product codes in the same database. His solution was methodical:

“When we come across that kind of thing all that we do is we basically decide which of the sundry stock codes and descriptions is the right one, book all the stock in under that code and then mark all the others as having no stock and we replace the description with a ... big notice saying ‘Do not use’ ... Use X, Y, Z instead’.”

[G2, 2nd MM]

However, the act of performing a stocktake has made G2 more aware of the possible problems and resolutions for the ERP system:

“...The data that we need to hold in the new system is different to what we currently hold anyway so there was a lot of work to be done getting the data into the right form in the first place, so what we ended up doing is we actually ... I suppose we did take original data but we didn’t take data out of our back office, we took the data out of our website.”

[G2, 2nd MM]

G2 has identified that it will take more than his own labour and that of the other employees in order to ensure that the correct and clean data is created and taken over to the new system. They have asked a person in to help whose credentials are suited to the work:

“I haven’t done any of it, but G1’s been involved, various people in the office have been involved, we’ve also got a lady coming in helping us out at the moment who’s very IT literate, but also is a crafter, so she understands the product.”

[G2, 2nd MM]

The reasoning for moving to the ERP, according to G2, is that

“...Hopefully the only other information we’ll need to manage in the case of Guild members for example is subscription dates, renewal dates. So once a week, or every day, or whatever, erm, we just need to have some simple system which tracks the dates upon which ... or we just need to record somewhere the date upon which Guild member subscription expires and then have a way of just, you know, on 17th July saying who’s expiring today.”

[G2, 2nd MM]

For G2, records that are now currently managed by people within the organization could be more efficiently managed and administrated by the ERP system:

“So I mean at the moment G4 manages quite a complex spreadsheet to manage the Guild members because ... I mean we do record people in *Sage* as being Guild members but *Sage* can’t really handle that kind of thing in a sophisticated way”

[G2, MM]

6.3.3 Noticing flaws

G2 can highlight the role of the current enterprise management system, *Sage*, but admits that it has certain specific flaws:

“At the end of the day, *Sage*, [...] *Sage* is an accounting system. It is really designed for doing accounts, it has to have some sort of stock management in there because if you’re doing accounts you’re probably selling something and you need to track what you’re selling. [...]... It’s never really been designed as a sort of multi-channel retail customer contact and sales management system.” [G2, MM]

G2 is a cynic when it comes to describing the engineering of programs, and of data information systems in general. In discussing a government IT project, he humorously noted that:

“G2: It’s an old engineering rule of thumb cheap quick correct, pick two.

G1: Think something about this, but-

G2: Unless it’s a Government IT project, in which case...

G1: ...pick none [laughter]

G2: ...it’s ‘slow, wrong, expensive: pick all three’ [laughter]”

[G1 & 2, IM]

This mnemonic truism is a sideswipe at his previous experiences in software design, and he feels it also holds true to some of his experiences in working with the computing systems in GAMMA.

6.3.4 Data theft

G2 has a growing professional interest in legal matters, and he is knowledgeable about such legislation as the Data Protection Act. He is aware that the data theft that took place was illegal, but is sure that the perpetrator would be prosecuted if they had had enough admissible evidence. However, he ruefully acknowledges that this is a grey area, and has made a decision to let this go unpunished, as he is uncertain what to do with the matter. G2 tends to rely on records that pertain to the mechanics of the business, and is more likely to trust his own memory than records in general:

“NVHG: So how do you keep track of that using your documents? Do you have that primarily as paper or... primarily as e-records-

G2: Erm, brain cells, primarily... erm [laughter] erm, then again... it's a combination of having the information in the accounting system saying who owes you what, erm, and watching the bank account. I mean, the... at the end of the day, the only way...to monitor cashflow ...really... the ultimate arbiter is what's in the bank. You know, that's the only money you can rely on. What you've got there that day, really.”

[G2, IM]

The data theft inspired G2 to a specific course of action:

“My first action was to... basically crawl all over her PC that she'd been using, erm, that was how I actually, I mean, once we knew what was going on, once we heard what was going on, erm, my first job was essentially to look for any kind of evidence on her PC...”

[G2, IM]

G2 was aware that the electronic data needed to be checked in order to try and find evidence that data from their company had been stolen. He notes that he was specifically looking for evidence that there had been specific data taken or copied from their systems. However, as G2 is not a trained computer forensics expert despite his formidable computing background, he could only identify that specific actions had taken place:

“NVHG: What specifically would you have been looking for?

G2: Um, well, like a lot of sort of digital forensics jobs, you don't know until you find it erm, looking through email, for any... sort-of... incriminating's the wrong word...but any

emails which suggested that, you know, she'd been planning what she'd been doing long before, and we found that ...you know, I found a few things, erm, for example, I found an email which she'd received erm, from a potentially big customer ...that information had never been put into the customer database."

[G2, MM]

G2, though identifying that he did not know precisely what he was looking for with his limited forensic skill, was able to find evidence that some data had been looked at with a view to burning it to removable media:

"And that was one of the things that I found, erm, someone, a month before she left, someone logged onto the PC that S_____ used, as S_____, erm, and certainly attempted to burn a huge amount of stuff to CD. About two point something Gigabytes of data to CD."

[G2, MM]

G2 understands that his interpretation of what happened to this data is only conjecture, but he is confident that the data was indeed burnt to disc and taken from the business. G2 can associate the action of data theft with being something that is universally applicable: it not only happens to small businesses, but also large ones.

"Erm, I'm pretty sure it was created, you know, I'm pretty sure that four or five CDs or however many it ended up being, erm, you know, disappeared off, you know, in S_____ 's pocket or handbag or whatever, erm, [pause] yeah, but it's ...it again, it's a common scenario, I mean, people that I know, er, in business, and even in big companies."

[G2, MM]

G2 believes that the act of the data theft was criminal, and that if the business had enough evidence, gathered in a different way from to G2's investigation, they would have been able to prosecute the employee who stole the data. He notes that he considers such an offence to be against the Data Protection Act, and illegal. He splits the concept into two parts – an offence against the company as a theft, and an offence contrary to the Data Protection Act.

"...It wasn't an immense surprise, it was annoying, and as I say, frustrating, because things...the thing is, if...if there'd been a way to prove – absolutely, categorically, evidentially prove - that the CD was written and that she actually took it, there's at least two criminal offences there. One is the general theft-of-information type... you know, it is a theft – pure and simple, erm, but also, even if that doesn't stand up, it's a glaring breach of the Data Protection Act. Which in itself is a criminal offence!"

[G2, MM]

However, G2's perception is that more proof would have been needed in order to launch a successful prosecution of the former employee. But he notes that if there had been a prosecution, the penalty for the former employee could have been very harsh. But despite their actions, G2 and GAMMA took a view that not mentioning the incident in question would be beneficial, as well as more political:

“...If we could have had proof, we could have had a very large book thrown at her. Erm, we didn't have the proof. Or didn't have sufficient evidential proof that we could have done anything with it. I wish we had, 'cos I would have been quite happy to do it. Erm, but, we didn't. So it was better just to let things go, and think right, just make sure that we...we... I mean we were very careful, been very careful, throughout the whole thing...not to say bad things about her to people, erm, not to in fact mention it, unless someone mentioned it to us first...and...and when someone did mention it to us, we would basically give them the plain facts, as we had them.... what happened, and how. When. And we left them to make their own judgments.”

[G2, MM]

G2 looks at this risk as being governable by only one thing: employment contracts that are tailored to ask an employee to behave in specific ways during and in the period after employment. However, he defines them in two ways: they are the company's only defence, and of little practical use.

“...The only thing that we've erm, I mean that the thing that we did, the real outcome, was to tighten up our employment contracts. Now again, employment contracts are a strange area of law in terms of what you can and can't do in them, and how enforceable they are. Erm, but, they are at least the ...you know, they are kind of really the first line of defence...”

[G2, MM]

6.3.5 Data security

In thinking about the other actions he could take to secure data on the company systems, G2 has a specific problem: he cannot lock out specific features which would make it harder for people to do the same things as the data theft employee, as it would interfere with the normal work routine:

“...I could go round and disable CD burning on PCs, I could, you know, I'm sure there's things I could do... but again, one of the problems with Windows, erm, is that sometimes, for certain things, I discovered over time the only way to have things working properly was sometimes people's login IDs had to have admin rights. Just to work properly.”

[G2, MM]

G2 notes that he feels that the “real” aspect of dealing with risk within the company is to do with “soft systems” – in other words, people, rather than electronic or mechanized systems.

“I think really, in terms of managing that risk or dealing with that risk, or that scenario, I think the real erm, ...it...it’s a soft systems problem, it’s a people problem, rather than a technology problem per se... erm, you have to... yes, as much as possible make sure your employment contract is sound and that you have some ... even if it’s just there as an obvious statement within a contract...”

“...You know, if you do XYZ you... you...are being very naughty, and in breach of contract, you know, erm, which at least raises in most people’s minds the thought ‘yeah, if I do that it’s wrong, I might get taken to court, I might get sued’, you know, there’s an implied punishment there... for... for being naughty [laughter] if you see what I mean.”

“...It’s the people, it’s making sure, you know, that you...you have to be able to trust the people that work for you and the people that you work with. And to be fair, you know, most of the time, you can, and if you’re careful in your staff selection, and the kind of people that you do take on all your work with, then yes, you can by and large, you know ... you can mitigate against these kind of problems, and risks”

[G2, MM]

Rather than addressing the problem in terms of the hardware that is used, G2 would prefer to concentrate on the angle of who has access to data and records. However, he notes that within a small business, this can be impractical because of the proliferation of positions with many roles attached to them:

“NVHG: So you don’t think, erm, adjusting anything of the database may help in this case?”

G2: erm, [...] it...it’s possible that there, yeah, may be things you could do, in terms of the data, in terms of how information is stored, held and who has access to it... erm, again, it’s one of those scenarios where from a small business perspective, it’s...can be a difficult thing to do, technically... erm, not necessarily because the technology doesn’t exist, just because you would end up spending so much time and effort erm, trying to get it working right, and to have the right safeguards in place...”

[G2, MM]

6.3.6 The human angle

G2 posits that approaching the human angle is perhaps a more efficient way of dealing with their current problems in regards to records access. If people are approached in order to solve

problems, rather than technology being amended, there is a greater flexibility in the approach that it creates in problem solving:

“I think...[...] ...the thing with contracts and people is almost a more efficient way to deal with the problem than try to do it with technology. In general, my kind of experience over the years is that people are much cleverer than technology. So, deal with the people. Fix the problem there, erm, because even if you fix it with the technology, you'll find that it doesn't actually entirely fix the problem, or it introduces a separate type of problem in terms of day-to-day operations.”

[G2, MM]

Personnel access to the separate computerized systems needs to be spread out across the employees, and G2 notes dryly that if the primary system, *Sage*, were to be disrupted in any way, there would be no other recourse for the SME but to move back onto hard copy or to try other makeshift ways of maintaining records. As the product is updated on a regular basis, even the loss of the business that created the software would be a significant loss:

“...Everybody needs access to the accounts system, because at the moment, we do all of our accountancy, all of our processing... .. pretty much everything...the entire business runs on *Sage* you know, if...if *Sage* suddenly disappeared, and Gosforth was blown from the face of the Earth, apart from you know, cheering Sunderland supporters
[Laughter] ...The net result for us would be, you know, everything would grind to a halt. We'd have to go back to doing pretty much everything on paper. Or, you know, *Word* documents or *Excel* spreadsheets...”

[G2, MM]

6.3.7 Technological solutions

The possibility of restricting specific records or areas of records from staff as a means to prevent data loss or theft has occurred to G2. However, the concern for him is that nearly all employees need access to all areas of the main programs, and few areas can be ‘locked’ away from employees. The areas that can be secured from access are those that are already secure by default within the program. G2 also explains that areas such as banking, VAT and finance are not readily open to abuse or manipulation:

“I could go in and I could say well actually, this person only there are these areas which, erm, only myself and one or two people need access to ...but the thing is, the sensitive data in there in terms of customer data, supplier data, product data obviously everybody needs access to. You know, the bits... the only bits I could really lock people out of would be bits to do with making bank payments, doing VAT returns, things like that and those areas are partly already locked out by default anyway”

[G2, IM]

G2 is reluctant to use technological solutions to problems which he feels could be treated by attending to the human element of the situation. His reasoning is that he now has employees whom he feels he can trust, and whom he feels sure will not go into the areas of the program that could be locked down for security:

“So, in a way, yes, there are things I could lock down, but actually... [pause] by dealing with the people side of things, I don't have to...because, you know, (a) the people who we have working for us now ...I don't feel I need to lock them out of parts of the system, 'cos...I know they won't go there if they don't need to and they don't want to... and they don't need to and they don't want to...”

[G2, MM]

6.3.8 'Security by obscurity'

G2 notes that his knowledge of the computer programs used within GAMMA's system is greater than the other employees'. He thinks this is of great effect in terms of security, as the key parts of the system are quite complex and hard to manipulate without a great deal of knowledge of computing. This is key to his strategy of securing his systems – “security by obscurity”:

“I mean it's...it's...there's almost a bit of 'security by obscurity'... even if they went into that bit of the system, they wouldn't know what to do with it anyway. [laughter] I mean a lot...a lot of it's quite straightforward, but that's kind of straightforward to me who's spent the last twenty years of my life playing with computers... yeah, so, you know, I ...can take some fairly complex and bizarre things and think of them as being straightforward.... ...compared to most folks.”

[G2, MM]

One form of security that G2 implements for the records produced by the business is the system's ability to be 'rolled back' to a point on a previous backup. Backups are made as regularly as possible as part of the system, and the weekly backup has been of use on the occasions where there have been errors in the order system:

“Well, we've kind of... tested the account system on backup occasionally, where we've actually needed to roll back to a previous backup erm, something, I mean we had a case... I mean, a good example, had a case the other week where ...erm, there'd been a little cock-up in processing the orders. First thing in the morning. We needed to roll back to the previous night's backup. And actually on that occasion, we couldn't find it. [...]

I mean, luckily we...can fix it manually, you know, we basically fix it manually by manually rolling back the status of eleven orders or fifteen orders that are wrong, we just,

you know, corrected them manually [...] because we knew that nothing else had been done.”

[G2, MM]

G2 cites that fact that he uses regular backups as a way of ensuring that his systems are organized. However, this is dependent on his availability and presence, as he has a very idiosyncratic form of storage. Though the schema he uses is logical, it is not self-evident to other employees, and he has not codified it in any other form:

“Normally, when I’m here, I’ll do it and I have quite an organised regime that I use erm, I actually have a sort of weekly backup regime that I use whereby, erm, if I’ve been doing it say for the last month, erm, I could potentially roll us back either to last night, or to any night in the previous month...potentially. If I was the one who’d been doing it. Because I know the file structure, and where I store them all.”

[G2, MM]

“It’s ...very simple, but actually I really ought to teach everyone else about it, because the other one or two people who do the backups don’t know about it...”

[G2, MM]

6.3.9 The new system

However, G2 is greatly enthused about the new hardware intended to become part of the purchased ‘MyCommerce’ system. The main hardware purchase is a server capable of maintaining the business records and software of the company:

“I mean, there’s a whole raft of issues there which hopefully, that big black box is going to help me fix...That’s the new server. Ultimately, that’s going to be hosting all of the critical business software. And it will have connected to it, at some point, or connected over the network, to a very, very large storage array.”

[G2, MM]

As it is up to G2 to build the system upon which the SME will be running, he has determined that there is a specific way that he will set up the system in order to ensure that elements of the records can be saved and backed up in a manner that he understands. He notes that implicit in this is the understanding that such a system is prone to specific technological risks which he has known about “for years”:

“I haven’t worked out exactly how I’m going to structure it at the moment, but I’m going to ensure that there’s a way for that server to automatically back up critical parts of itself

not using, not necessarily using *Sage*'s backup facilities although, if there's a way to automate that, I will – erm, but if nothing else, just taking an image of the relevant part of the disc... the *Sage* installation itself and all the *Sage* data files... Just as a disc image squirted across the network onto a network storage device so yes, that's all to come so...it, it's kind of a set of risks which I've known about for years...we do have a whole raft of risks in that area of shared file storage, what's backed up and what isn't..."

[G2, MM]

When asked further about these risks and what he might do in response to them, G2 revealed some of the pressures that he personally felt were impeding him. He notes that he triages the risks he encounters. "Critical" items (such as the basic records and programs for running the day-to-day systems) are highest on the agenda, and other items are gauged for criticality and their "cost" in terms of time, effort, hardware and resources. The problem with this triage, G2 notes, is that there may be a point in the future where this strategy does not pay off, and something "goes wrong". This might only be a small risk or event, but the consequences could be larger and more dramatic.

"...It's the time pressure of 'do I actually have the time to do it' and...or do I just try to put in place enough that the really critical stuff is safe ... and yes, there's other stuff that I'd like to be safe too but if I can make the critical stuff safe enough, for fairly low cost, in terms of time, effort, hardware, resources, whatever it happens to be, erm, then you do that. And you kind of live with the tiny-teeny-tiny fear that ...one day it might go all wrong and if it does it's gonna be a real pain... and, erm, but... you know... touch wood. [laughter]. In, sort-of, you know, eight years, it's never gone dramatically wrong... but, erm, not in terms of failures and that sort, so you keep living with it."

[G2, MM]

6.3.10 Natural growth as a problem

G2 acknowledges that some of the problems of the SME and records management stem from the 'natural' growth of document structures. He notes that unless this is managed from the start, records management of an ordered nature is rarely achieved afterwards:

"...One of the problems is... it's probably an SME problem... erm, it's the whole organic growth thing. Erm, when you first starts up, unless you're very fortunate, you know, or... or incredibly psychotically well organized, erm, you...you don't have the time to do it pretty, so long as you do it right, kind of thing. Or...you have to get stuff done. And the whole... your document management, your document structure, your records management grows organically [...] ... growing... and ... evolving... and so you end up with a very organic sort of document management structure, or way of doing things..."

[G2, MM]

6.3.11 G2 – Commentary

6.3.11.1 Data Theft and Legal Possibilities

G2's awareness of the legality of contracts is informed by his experiences outside the business. However, he does not seem to recognise some of the important aspects of the possible legal ramifications of data theft; as the data that was taken included personal data, tying individuals to contact details, there is every possibility that this incident could have had customer-related repercussions for GAMMA. Data loss action is dependent on the sensitivity of the data involved. Sensitive data has been defined by the Data Protection Act (1998) as that which covers such points as racial or ethnic background, or similar elements.

There are no legal ramifications for data theft or loss from a data handler (Information Commissioner's Office, 2008). Only in larger cases, featuring the data of more than 1,000 individuals, should the ICO be notified. Such notification is vital for the benefit of the people put most at risk (usually the clients of the data handler).

6.3.11.2 System Creation

In creating a temporary system for the GAMMA stock records, G2 has created only a short-term solution: by using the *Sage* system and a set of databases and spreadsheets, the assets of the business are spread out between networked computers and two main computer units. Although backups are made of the company data, this is dependent on whether or not G2 is present to ensure that the backups are taken correctly, and that they are stored in a place where they are retrievable – a key point for any records holdings.

6.3.11.3 The CIA principle in terms of SME records

CIA is an acronym for Confidentiality, Integrity and Availability. This highlights the main factors within the area of information security in terms of dealing with information security risk (Dent, 2009).

These three aspects can vary in proportion according to the nature of the information that must be kept secure, and the circumstances surrounding its accessibility.

- Confidentiality – this may encompass who needs to have access to the item
- Integrity – encompassing the trustworthiness of the item's retrieval

- Availability – the accessibility of the information by users on the most appropriate levels, or ensuring access is granted to information

The balance between these three factors is not always equal, and reactions to these in terms of information security will depend on the situation. The example given by Dent (2009) is that of an individual logging on to online banking. Confidentiality, the first of the factors, is important because the access to financial records should be limited to the bank and the owner of those records. Integrity, the second factor, is vital, as the mechanism by which one obtains the record should be completely trustworthy. Risks at this stage include ‘phishing’ and online frauds. Measures to prevent risk in this area could include checking for a secure web address (e.g. https:// rather than http://, an indication that SSL has provided a secure protocol for the communication – see Walls, 2006).

However, Dent noted on this occasion that it was availability that would be the key factor of concern to those who used online banking. There is little use in making a records or information management system which is so secure that it cannot be accessed by those who are meant to be able to do so.

Within GAMMA there is no impetus for limiting down access to specific systems:

“So, in a way, yes, there are things I could lock down, but actually... [pause] by dealing with the people side of things, I don’t have to...because, you know, (a) the people who we have working for us now ...I don’t feel I need to lock them out of parts of the system, ‘cos...I know they won’t go there if they don’t need to and they don’t want to... and they don’t need to and they don’t want to...”

[G2, MM]

The integrity of the systems is rarely questioned, as it is based on their own machines and external servers that they trust. The factors that take precedence for GAMMA are based on the confidentiality of the data, and the availability of it. No unauthorised personnel or other individuals should be able to access the data within their records systems – especially the systems storing customer records.

However, in dealing with the data theft, where it is assumed that an employee of the business took records from the system, the availability angle is called into question. How suitable is

this level of information security, when it does not prevent records being taken from the system?

G2 shows an incredibly detailed knowledge of how to form secure passwords.

This knowledge is taken from his previous experience as a technical expert in a large corporation. G2's system of password creation encompasses the concept of security being maintained by the complexity of the passwords. The real difficulty that he acknowledges is that of how the passwords themselves are remembered. Inevitably, a paper copy is made by either a user of the system, or by G2 himself. His habit of keeping a book with system passwords means that not only do his electronic records then depend on the safety of that record in itself (the record within the book) but they also depend on the security in which this book is kept and maintained.

How relevant, though, is this process? G2 himself acknowledges that such a process is unlikely to result in a situation where, if the business's security was breached, the system would be protected by the password. This is considered to be secure enough for the business itself, and creates an interesting effect of interdependencies – a central record of passwords could itself negate any security given to a system with an overly complex password. G2 highlighted within interview that the need for anyone as a worker to write down a password was limited, as he himself held a record of all the current passwords. However, in order to gain access to the systems in everyday use, G2 acknowledged that the passwords he created to access the systems were extremely complex, to avoid being cracked – and therefore might well be written down by a worker. The compromise of the situation was given as the idea that a worker might write down a password, but could simply leave the relevant paper in a drawer or locked somewhere in the business's building, rather than being taken home or copied to a source that could be potentially exposed or lost.

6.3.11.4 What purpose has hard copy?

Hard copy records are a reassurance to both G2 and the other employees. Hard copy records of passwords, for instance, can be a backup to passwords for digital systems – and, as G2 notes, are not approved of as such a reminder. But can the concept of digital records be safer? Which is, in fact, regarded as safer in the opinions of GAMMA?

Though hard copy is used throughout the business in many different ways to record details for the RM system, there is evidence that there is a wish for a steady move to systems that mean that less and less use of hard copy. The recent move to *Protx* is one example where having hard copy records of sensitive data (paper copies of credit card numbers, printed out from a secure server) was more risky for both the SME and its customers. However, in moving to *Protx*, they have eliminated the need to use hard copy records of this data, even temporary ones. The real test of the digital state of a record is not just to see if it fulfils the criteria of ISO 15489, but also if it complies with the concepts of information security design as noted by Dent (2009). The CIA principles of accessibility are still valid – and this has caused problems within the *Protx* system. In effect, it has been too efficient, and has disturbed the equilibrium of the older system (pre-*MyCommerce*) by not allowing people to request the special stamps and for the extra amount to be billed to their order. *Protx* is a very literal technology, and so the maintenance of accurate records in order to maintain stock levels will need to be equally literal in future.

Whilst the pre-*Protx* system was flexible as it was person-driven, this form of payment is not person-driven but machine- and system-driven. We cannot blame a machine for its literal interpretation of a system that it is supposed to maintain – it is the inflexibility of the older system to not take into account the use of the older system.

6.3.11.5 Record types held

The concept of the database record is that of data which is either submitted by the customer over the Internet through the website, or inputted by a GAMMA employee over the telephone. This becomes a customer record, one that can be used to formulate part of the orders for a customer. The original concept of ‘record’ for business purposes would be something that qualifies as a record under ISO 15489 for business purposes, e.g. filling an order.

Additional data held for a customer order are the credit card details. This in itself is only data, because unless it can be directly connected to a specific customer along with other data (such as date and time and nature of transaction) which ‘makes’ it a record as described by ISO 15489, then it remains mere data.

6.4 G3, A teleworker and webmaster

G3 is an employee of GAMMA who recently decided to make the move to teleworking. G3 has worked within the company for four years, and has worked in a variety of posts there:

“I actually started off in Production [...] and then when we expanded, I come over onto this side because that’s my background anyway. So, erm, Production. Not only the website, but also I do a lot of items for adverts, and things... like that I also do the graphic design side, so I’ve actually worked in both publishing and I’ve worked the websites previously.”

[G3, MM]

6.4.1 G3 as a remote worker

Her role as a webmaster and an artist for the firm allowed her to cut her time in travel to and from the site in favour of remote working. G3 decided to make the move to teleworking after a move some 70 miles away from GAMMA’s site. She made the decision to ask G1 for permission to do teleworking, and to come in one day a week. This was considered as a suggestion, as she has outlined that her work is mostly digital and can be completed on or offsite.

“We moved house ooh, er... eighteen months ago? And erm, it’s about a seventy-mile round trip. Because I can actually... because all of my work is computer-based, I just put it forward to G1, would it be possible to... you know, to work from home just to cut down on the mileage, really... and er yes, she said fine, there were really no problems, so er, it was purely a physical thing, it wasn’t er, wasn’t anything, anything ... you know, else”

[G3, 2nd M]

G3 can relate that her main problem is with practical data transfer, noting her data storage equipment (her “little box”):

“I have to be very careful because I actually work from home two days a week so everything I do has to be transferred between the two... computers... so this little box... here, I have to guard with my life”

[G3, MM]

6.4.2 G3 and inter-office records management

Later, after the change of systems within GAMMA, this concern grew to more of an awareness of how much she relied on notification from her colleagues in regards to maintenance of the data and records for the SME:

“I’m gonna have to be a lot more organised, in fact I think... we’ve suffered from this problem quite a bit before, in that things will come into the office and ... er... they might be put off the system or... they might not be put on the system... erm, and then, I don’t always find out about them until a couple of weeks later and you know there is a lack of communication there”

[G3, 2nd M]

This communication problem has been identified as a systematic and endemic one:

“I’ve tried to push the communication side a bit more, just to make sure that people keep me informed and that I keep them informed, so I think that’s approved (sic), the communication side, because that is one thing that we do tend to suffer from as a company... just keeping everybody informed about what’s going on, I think because everybody does know their role, you just get on, you know, with their jobs, and sometimes, erm ... yeah sometimes things don’t always get passed on. So [...] that’s something I’m trying to concentrate on just making sure that I was informed, and that other people were informed as well. ”

[G3, 2nd M]

However, the solution may be one that G3 has identified as older technology:

“I personally would like to see some kind of bulletin board system set up, [...] it would just be so much easier, the problem is there’s people like myself who are quite happy using computers, and quite happy updating things, and you know, that’s fine, but there’s other people in the office who don’t feel so comfortable doing that, but if we set up a kind of online bulletin board system...”

[G3, 2nd M]

“NVHG: Where did you get the idea from?”

G3: Well, to say... in the same kind of context but years ago... I’m a member of a few art groups and this particular one... erm, it was kind of an early form of blog, really I should imagine, it was just – you know, you couldn’t put pictures or anything, it was text-based, but it was just a way of... everybody keeping informed and you know, I’ve done this, done that and, erm, when it was... it was more like a bulletin board system where... you know, lots of people could log in and add to the conversation, erm, so that was where I thought of the idea from ‘cos it was just an old thing that I’d used many years ago, and I thought, ‘that would be great if we could, you know, all use something like that, we could just all use it to keep each other informed...’”

[G3, 2nd M]

6.4.3 G3 and technological solutions to records storage

'Older' technology use is a simple solution that G3 has employed before. She is not adverse to using technology in order to solve practical problems.

She also notes that another server would be useful for her in order to provide offsite working access and to synchronise versions of items she has between working machines both offsite and onsite:

"I know the internal... like – Internet server, I don't think that is set up at the moment but I know G2 is working towards that, so... that would make things a whole lot easier as well, especially from my point of view because at the moment I've got everything duplicated, and I have to remember to load things onto my hard – I think I spoke to you about this before, I have to remember to load things onto my hard disc to take it from one... one place to the other... but of course, if we had a server I could just access remotely, that would be fantastic, and everything would just be in one place."

[G3, 2nd M]

G3 can understand that the resultant solution paths from the technology that they plan to adopt will change her ways of working:

"So it is going to be... from the website point of view, yes, my job is going to change, but because we haven't quite seen the entire database yet, I'm not entirely sure what that's going to entail."

[G3, 2nd M]

G3 has also identified that the method of backing up the systems within GAMMA is through the involvement of the whole team, and the supervision and permission of G1 and G2.

"I don't know about other people's... I mean, mine's backed up here and in the office there's meant to be a duplicate of the two machines... erm, I think G4 makes backups of the *Sage* and ... as far as I know, G1 and G2 take copies of those backups home, erm, that's all the accounting software, erm, as for things like office correspondence, etcetera no I don't think that's backed up anywhere, as far as I know."

[G3, 2nd M]

6.4.4 Communication and the company

G3 has identified that communication of information has been a long-term problem for her and the team as a whole. She recognises that this could be changed with the advent of the new enterprise content management and inventory system, *MyCommerce*. Although she does

not know how it will exactly change the systems that are currently in place within the business, G3 has hopes that at least three areas of current systems will be controlled by it. She has indicated that product information entry,

“Everything I do is electronically based. So, er, whether it’s photographs, whether it’s actual document files, whether it’s the website files... you know, everything’s electronically based anyway... Everything needs to be saved and stored as far as I’m concerned... I’m very particular about that...”

[G3, MM]

In using the specific term ‘record’, G3 most readily associates the idea of making copies of her work, regardless of type:

“I mean, if you’re thinking about record... I... just think everything, personally, I need a record, or... you know, everything needs to be saved. So everything that I do, I need to make sure that there is a copy of it somewhere... and that’s... you know, I wouldn’t differentiate it into different kinds of files... it just needs to be... copied somewhere...”

[G3, MM]

When talking about potential kinds of risk, though, G3 lists her own concerns and then those of the company. Whilst she notes that G2 can maintain control over the risks posed by the Internet to the computers used within the business, she also understands that there is ‘potential’ for a risk (in the form of a loss of data):

“Er, just... randomly deleting files, if somebody doesn't know what they're doing, they might just delete a file, er, risk in actually physical machines being stolen, erm, I wouldn't say risk from... there is probably some kind of risk from Internet attack... as far as I’m concerned, all the security's there you know, that G2’s set up, so I wouldn’t call that a big risk, but it’s obviously something... to take into account and also just the loss of data... not as far as we know, not as far as we know. There’s the potential, though.”

[G3, MM]

G3’s own risks through loss would be linked to the role that she plays in maintaining the website. Through photographing actual objects, she creates a record of the card designs made up by the company, and this acts as a unique and irreplaceable catalogue of images for the company:

“I mean, if I lost photographs, or... of... erm... I actually take photographs not only for the website but also for the graphic design part... some photographs are of card samples so that... like we’ve got here, some of those cards might not exist anymore, because there’s...”

we get so many card samples in, and some card samples have to be retired, and things like that... so I actually have the only copy... of some of these, you know..."

[G3, MM]

However, G3 senses that there is a difference in proportion to what could be lost: the files for the website present less of a problem for her because they are externally backed up. However, the database files, if lost, would not be the same:

"I mean, if we lost the database files, I mean... you know... [laughter] catastrophic! Erm, website files, if we lost them on our actual physical computers, that wouldn't be quite so much of a problem, because we have a backup on an external server which is managed by somebody else, so..."

[G3, MM]

6.4.5 Organization of records

G3 describes the sense of needing organization as something which is not always tangible, but necessary nonetheless:

"I think we all try when we're actually putting things into the shared files, we all try to have... that sense... where everything's going to be, but... you know, sometimes people don't always pick up on that... so that needs to... I think that needs to be organised... and laid down"

[G3, MM]

G3's perception of what needs to be done so that the shared file area is more organized centres around the need for order:

"... It's a very big area, and, yes, everything's kind of higgledy-piggledy, so that does need to be sorted out! And put into a logic (sic)."

[G3, MM]

The need for order in the shared file area is linked with a specific problem: G3 thinks that the other employees who use the files linked with the *Sage* system – used for records management as well as finance – do not know where each other store the files. Contrasting this with her own experiences, G3 notes that only she manages the files to do with the website, and she knows where items are stored:

“Everything to do with the website, there’s no-one else who deals with it, so, erm, I store, you know... I know where it's all going to be stored, so nobody else deals with it. I think with things like *Sage*, because different people are accessing it that might be why there was a problem.”

[G3, MM]

G3 posits that her organization stems from a feeling that she needs to be organized in order to maintain management of the two possible areas for file storage – her machine at home, or her machine at work:

“The only problem... I need to be ultra-organised, obviously, in order to make sure I’ve always got a copy of what I’ve done... either at home, or here, in the other place...erm [pause] I can’t see... any other problems. I think because I am pretty much self-contained, I haven’t got any input from anywhere else and there’s nobody else... you know, sort of... accessing my files, so as long as I can... you know, make sure that I’m organised, and there’s not really anything else... she says... that could go wrong.”

[G3, MM]

6.4.6 Record creation

For G3, record creation for the current *Sage*-based business system involves a process of re-creating data that is already in the system to add to the data she has been given to process, in order to create a new record:

“When something comes in, I usually get given the invoice or the delivery note... and then I work...work from that... Go round and take the photographs that I need erm, get the information from *Sage*, that I need, ‘cos I actually need to duplicate that information... just to bring that over...which is unfortunate... and then I enter everything by hand...”

[G3, MM]

However, her work is dependent on others in the company performing their duties. The data that she relies on needs to be entered into the *Sage* system, after which she can fulfil her work quota:

“I need to wait for that to be all sorted first... which is usually done I think by G4. And then, once all that’s entered into *Sage*, and then I’m able to put it on the website...”

[G3, MM]

In order to keep G3 informed of how often she has to update the website based on the *Sage* system, she notes that there are two methods to contacting her: either by phone or by an email:

“G3: Earlier on last week I think it was practically every hour... I was being run up and said ‘there’s something outstocked, there’s something outstocked...’

NVHG: Ah, that’s Christmas for you!

G3: Yeah, exactly! [Laughter] but again, that is all verbal, so... I don’t know... the occasional email to say something’s out of stock, but... usually (they) ring up.”

[G3, MM]

6.4.7 Record transmission

G3 notes how she has used Skype for VoIP, instant messaging, and also file transfer. She thinks it very useful that large files can be conveniently transferred to the business via this form of network.

“G3: We use Skype as well, so we can always keep in touch...

NVHG: Oh, that’s good, so if someone needs to communicate something or pass it along, you just VoIP it along-

G3: either VoIP it along, or just type a little Skype message...”

[G3, MM]

“You can have your normal chat, you can have your face to face chat you can just have voice to voice chat, and [...] in fact, we’ve been sending files for only fifty... up to about fifty meg... and we’ve been... in one case.”

[G3, MM]

In some cases, it can be used in preference to email, because of Skype’s capability to deliver large files well:

“Basically, whenever I’ve finished something, and it needs to be here, so it could be a couple of times a day... just send things over, or if I need something...that I’ve forgotten, and that comes over by

NVHG: So, Skype/...rather than email/

G3: / so yeah, could be... /but yes, it’s a lot easier and also email tends... usually if you’re sending something over ten meg... it doesn’t really tend to get through where at least with Skype... you know... as I say, we’ve used...we’ve gone up about fifty meg and it does go through...”

[G3, MM]

6.4.8 G3 – Commentary

G3's reaction to the phrase 'risk management' is one of being unaware of its use in either GAMMA as a company, or in any of her previous employments:

“NVHG: [...] If I mentioned the phrase 'risk management', have you ever come across that in any... aspects?

G3: No... I wouldn't say so... we haven't really used it here... and in fact, I can't think of it in previous employment, either...”

[G3, MM]

G3 knows that there are specific risks to the business, and describes them in terms of who can access specific data which comprises the website and all its associated data:

“Erm... only there's been... a major problem with, say, BT (British Telecom). I think one of their servers went down, and that affected not only our business, but... but businesses across the board. Erm, but no data was lost, it was just the actual... you know, people weren't able to access the website... for a while erm, which, you can't really do much about it... if BT has gone down... [Laughter] there's not much else you can do about that. But, er, no, they... you know, as I said, they have all the website data actually on their own... external servers, so... all that was saved and I presume they have their own... risk assessment over there, so...”

[G3, MM]

Though G3's narrative at this point is not quite as coherent as others from GAMMA, the elements within it are quite clear: in this context, she is in control of her own files, but as soon as they are hosted by an external agent, risks can occur which affect not only the business, but the customer. This fits into the concept of records management to her as the electronic data handled by her goes into making up the website, in part a working document which is renewed and reshaped by the business and by her as a website designer. The interface of the website itself helps to generate records by allowing customers to enter data to create and pay for an order. In a very real sense, any risk to the website is a risk to some of the record creation of the whole business.

“NVHG: Do you ever have offline backups of the web site? At all?

G3: Yes, I... they're all on my... [G3 gestures to her portable HDD] [Laughter] disc...

NVHG: Useful, isn't it? [Laughter]

G3: They're...in fact they're in three places. On this computer, offline at home... I've got an offline version of it as well...”

[G3, MM]

G3's perception of the drawbacks of her records backup is that it is time-consuming. This, she feels is also connected to the need to transfer over and copy her work to the company's machines. Her ability to transfer files between the two machines is a key point.

"It does make a difference to my work-flow, because I have to... you know, I do have to take time to know that everything's copied from one to the other, it would be nice if everything was on just one server, and I didn't have to you know, move everything about from one place to the other so that's the only thing really, the actual time that it takes to copy everything... and again, that is the problem because if I forget... well

NVHG: Ah...so that could be a bit...

G3: I could be waiting until next year... if it's too big to send over email or Skype, then you know I could be waiting until next week to get something that I need to work on, from home! [Laughter]"

[G3, MM]

6.4.8.1 G3 and her approach to the changing system

"...From the website point of view, yes, my job is going to change, but because we haven't quite seen the entire database yet, I'm not entirely sure what that's going to entail."

[G3, 2nd meeting]

What is G3's attitude to the system change? How does this reflect the concept of the employees helping to change procedure? This response is similar to BETA's B4 when faced with a new system – a degree of uncertainty when faced with new systems seems inevitable. As there was time for a reflective pause between interviews (a gap of c. 4 months) where she was able to consider what was happening within her firm, G3 may have been motivated not by the novelty of the system, but simply by an inability to understand any changes that might yet affect her.

Her concept of the current situation is that things are changing, but that crucially she does not know what forms the changes will take materially – a key element to her job and her responsibility in handling the photographic records of GAMMA's work. It seems as though the decisions that affect employees on her level (clerical, webmastering, order-checking, site maintenance) are taken by a higher level authority – that of G1. G3, in fact, has little actual

power over the decisions that are made which will affect how they use the records management system, how they input records, and how things are developed to make the most efficient use of the system. Her suggestions – though based on good analysis of what the problem is (lack of communication causing things not to be inputted and recorded) may well highlight a developmental step that needs to be taken in order to assist the records management system as a whole.

An efficient use of the records management system can be seen from two angles – that of the mechanism (i.e. machine efficient, system efficient) and that of the workforce, and the operator/s using the mechanisms or machines/computers running the system. Records are being inputted, and they are used – but, as G3 has noted, this efficiency stems mainly from a human check.

6.5 G4, A Senior Secretary

G4 is an older woman who acts as a senior secretary for the business, and who is a craftswoman in her own time. This directly relates to her role in the business, as skills in using the products, which the business manufactures and retails, are prized.

G4 previously worked for a call centre, acting as the team leader, so she is highly experienced in the needs and demands of a phone and Internet-order business.

“I mean, the system is backed up, so [...] you know, on the backups, and you know, you can go into it and restore points... and things like that, but, er... I mean, my last company we worked at, we... I was a member of a, erm... disaster recovery team...

... and, er... we went into everything... like this, so you're conscious of how... important backups are, and keeping separate files”

[G4, MM]

6.5.1 G4's skills

G4 has used her experience and previously learned skills in translating the flowcharts of her employer to UML diagrams, a technique that she was taught in her previous role. She is able to talk people through each step of these UML diagrams. In interview, the specific diagram format that is used to diagram new processes within the company are termed “swim lanes”:

“What... what we tend to do is, when we get up a new... when we get a new procedure, er, I do it as a swim lane [...] some of these (procedures) G1 actually just listed down, but I changed them into swim lanes, so, what we've got is a representation line, who would

deal with it [...] And what is the first thing that would happen, if the answer is yes then it would flow and swim through this lane [...] If it was no, then it would come down to the end, and it would flow and swim through this lane.”

[G4, MM]

6.5.2 Experience with records management

G4's main concerns are to keep the database of the 'Guild Members' up to date. These 'Guild members' are those customers who have bought a club membership for access to exclusive products from GAMMA. It has proved very popular, and G4 and the other secretaries are in charge of amending and updating this spreadsheet.

G4 maintains this spreadsheet by backing up and updating regularly and when needed. She knows the dangers and problems of having a record that is not updated:

“G4: I mean, just the other day, what we do is we have erm, sort of a record of all the product stickers that we do... erm, which is here... and I actually tried to go into something the other day, and I got a corrupt file, and it won't let me open anything-

NVHG: It's just shutting down because it's – it's... it won't open... this corrupt file...

G4: That's it. So, that is a... that's a major concern. But, in saying that, because it's ...erm, because it's shared in our shared files, I can use G3's machine... and it works perfectly well from there...But, if it hadn't been, if it'd been something that I'd kept in my documents, there's a ... you know, high risk you've lost everything...”

[G4, MM]

G4 uses her past experience to inform her records management behaviour. Though she has been advised to take on a specific form of risk management for the Guild membership spreadsheets by G1, she also knows of other ways in which people take action to preserve their records:

“...We went into everything... like this, so you're conscious of how... important backups are, and keeping separate files [...] You know, erm, I mean, it's like discs from the system, you know, should be kept offsite as well as onsite. Erm, you know, and that's sort of the reason I take memory stick home... it's always left in the bag, so I know where it is... and er... but we really should have a recordable disc, it should have a second backup, you know”

[G4, MM]

“Just in case. [Laughter] It's all right in hindsight saying oh well I wish I'd done that...you know.... if you've lost all the data you need to work on.”

[G4, MM]

“Our main concern would be, if we did have a fire, would be getting all the stock back in... You know, because you could have all your systems fine, you could have computers set up, and you know, but if you didn’t have your stock, you couldn’t dispatch.”

[G4, MM]

6.5.3 Emergency routines

G4 notes that in an emergency, the key assets of the business that she considers important are the stock elements, as well as the records. Noting that records are easier to duplicate and maintain offsite,

“We archive the emails... and anything that’s erm, you know, important, would normally be printed and filed or kept on a separate... you know a wherever...you know you keep...onto your shared files or somewhere...you know, really important things, but most of the emails are just the day to day... you know, ‘where’s my order’ a customer emailing, you know, erm, do we... we don’t get that many you know, high priority...”

[G4, MM]

6.5.4 The life of hard copy

E-records, though, are also disposable. G4 notes that she manages the saved emails by keeping them for a specific length of time and then deleting them, in order to avoid keeping redundant information:

“...Know if I need to refer to one, I know where they are... and, er, then they can be archived, so they’re there for you know, for future reference. I mean, after a... after a little while, you can delete them... you know, ‘cos you’re guilty of keeping too much information... Information that you don’t need... you know?”

[G4, MM]

However, printing out hard copies of electronic documents or records is considered a valid way to save items. However, space then becomes a major issue: notably, where to store the items safely, and the length of a life cycle. G4 perceives that a hard copy record is only valuable if it is maintained in a place where it can be successfully retrieved. The length of the life cycle of hard copy relies on how valuable the item is perceived to be.

“I have loads of safe places, and I’ll print something... I’ll say well put that in the safe place and then it...goes out of your mind, you know... and if I ever find this safe place, I’ll find all sorts... But that’s the same at home as well. [Laughter] Yeah, I mean, you keep papers... I think everybody’s guilty of it, you keep it, and you think, well it might come in useful – it doesn’t come in useful, and then you throw it away, and then you go the next day and say well, I could do with that piece of paper now...”

[G4, MM]

Loss is a problem with hard copy, but G4 finds that this is not the case for e-records:

“NVHG: Ah – so do you think that happens more with... papers rather than electronic... records?”

G4: yeah...things that are printed out...

NVHG: But with electronic, it's not so bad?

G4: No, I don't find it so bad, anyway. Whether it's just myself and how I do things... you know, but bits of paper get lost... you know, it's the same as on our system.”

[G4, MM]

6.5.5 Sensitive data

One of the major problems where e-records are concerned is the input of sensitive data from customers in order to complete orders. Using their initial system of *Sage* software and worker data input, mistakes can be made by the customer and not rectified until a much later stage:

“What we do, if we have any queries, er say, they've ordered over the website [...] If they put their own card details in there and sometimes the put the odd digit wrong or they miss a digit out [...] so when we come to take the payment, erm, it doesn't go through. And we have to contact them. Now, erm, this is now going in a few months' time we'll have that server it actually asks them to verify everything so we won't actually get any details through here... they take, you know, they look after the payments.”

[G4, MM]

In terms of the first system used by GAMMA, the record of customer interactions to confirm orders was kept on a large database through the *Sage* software. G4 finds that this method of recording the extra details of the customer records is the most efficient when having to deal with calling customers back and verifying all the forms of customer management:

“But if we have any queries, here we've got them here – ‘9th of the 12th, called customer, card for Guild payment declined, left message on answerphone’. We'll also email. Now it was *EMPLOYEE that actually did that one, and then *EMPLOYEE followed it up on the tenth, left another message... and it just... if... that person rings, *EMPLOYEE works ‘til about two-thirty, so if that person rings at three o'clock you don't know what her call's concerned, but if you can go into her records, and it's all listed down there.”

[G4, MM]

6.5.6 Customer service systems

However, she is sceptical of the extent to which *Sage* can handle customer services, and notes that a specialist package should be used in order to handle this aspect of the business. She feels that she can authoritatively comment on this given her own experience in her past line of work, as a manager in a call centre.

“I mean... what’s best... you know, *Sage* doesn’t work that well for customer services, erm, you really need a CRM package... you know, that you can log everything on, you know, like... each call should be logged...”

[G4, MM]

“I was... actually a team leader in the call centre in my last job, so, you’re conscious of how important these are. To follow things up.”

[G4, MM]

Though she acknowledges that *Sage* is not the best system for managing customer service records, she looks forward to the point where they will be dealing with the new system of *MyCommerce*, where the potential advantages are that more detail can be entered to customer records as a larger customer history:

“A credit control (which) is not the best place for it... but *Sage* isn’t a customer-services friendly package, it’s more for accounts, you know, but erm, you’re going forward, I’m sure that G3’s told you about the new system that we’re putting in, and, er, we will be able to take better detail, and it will be there to form a history”

[G4, MM]

Other innovations with the *MyCommerce* system that differentiate it from the *Sage*-based system include the easier placing of orders. Though at the time of her first interview period G4 did not know many details of the services that would be available, she assumed that, once the system was installed, she would find out its full capabilities.

“I’m not fully au fait with what exactly it does, and... you know, it’s gonna hold the stock better, it’s gonna give us live control over the web, erm, customer services we will be able to... it’s gonna be more customer friendly, you’ll be able to go in and place orders easier, you know, this that and the other, and keep a record... as to how many advantages... you know, I’m not exactly sure. Come back next year. [Laughter] Tell you them all.”

[G4, MM]

6.5.7 Administrative skills

From having worked in an administrative role previously, G4 has used her knowledge of other business management processes within the scope of her work in order to improve the

quality of documents such as training manuals, by adding elements of her competence in UML. The training manual itself is still in development. She notes that it has been a transfer of skills which has enabled her to do this successfully. She describes how she has done this in regards to a document within GAMMA:

“I mean... going forward, what you can do is make quite an effective training manual... if, if you want. It’s an ISO procedure... for all we don’t do the ISO. Again, I left the company that did the ISO, so you bring on the skills...”

[G4, MM]

“I just use the facility. I knew how to do them, I knew what the function was, so I just utilised them”

[G4, MM]

However, the *Sage*-based system is dependent on employees manually typing in the orders and if G4, a main worker, is not available to do it, then a second employee is asked to fill in for her and perform the task, as it cannot be left undone and is not automated. However, no procedures have been formalised in order to do this. Though G4 knows that there should be a form of chart delineation of the procedures for her duties within the business, no such item currently exists. G4 notes that it is not high on a list of priorities for the business:

“If I’m on holiday, *EMPLOYEE looks after it. She knows everything that I do, she does yes, but you’re quite right, yeah, we should have yes, a swim lane... yes, I mean, going forward, every procedure should be on this, you know? It will be on this. But, you know, we’re a small company, and other things take priority.”

[G4, MM]

For G4, part of managing the risk in her management of the records which manifests itself as any time she is absent from supervision of the system, is to trust that the work will be picked up by another employee:

“You can’t walk away from... you know, you can’t walk away from your desk for two weeks and... it be all there when you know, you come back. I mean, it’s like *EMPLOYEE when she goes on holiday, and other people take over the responsibility of posting our invoices, erm, posting cheques for the bank, you know... and posting it all on the system, somebody else does it...”

[G4, MM]

6.5.8 Hard copy and retained data

Hard copy is kept by the company, and the regulation period is observed for the invoices. G4 notes that the business has looked to digitise the invoices, but that prohibitive cost has prevented this from happening. However, G4 believes that there are storage benefits associated with digitization:

“We keep the copy... Now, they’re kept for, you know, the required number of years, erm, we have looked at the possibility of having them scanned, but there again it does cost quite a lot of money, and that’s something, you know, in the future it... it should be done. Because you know, it’s files you have to keep but a dozen discs... boxes and boxes and boxes [laughter] of paper... In the ideal world, yes, it would be done.”

[G4, MM]

G4 notes that the *MyCommerce* system will be more beneficial than the current system for both staff and customers. The mechanism of website orders will be checked through a third-party service, *Protix*, who verify the amount of the order and the value of the order from the card number given. This would save a validation check being made by the employees at GAMMA, and to G4, this would eliminate the need for GAMMA employees to contact customers in order to confirm their details.

“It is gonna be a lot easier once we’ve got into it [...] because if we get people adding card details into the website, well, it doesn’t matter how diligent you are, some people will always make that one mistake and then you have to call them to get the details but with this, they verify everything before it gets to us, so that’s going to be much easier”

[G4, 2nd M]

The system used with *Sage* for this very purpose was more rudimentary: hard copy was used to note down payment details, and was then securely shredded. Instead, the *Protix* system will handle all payments so that GAMMA no longer needs access to customer’s personal financial data, and G4 is relieved. The discontinuance of paper for her means that the business’s system is more secure:

“We will still have it for telephone orders, y’know, but going forward, we will be able to use the *Protix* system I believe to actually take the order and put the payment details into another section of *Protix*? [...] So we can literally type it in, at the same time as talking to the customer... the payment will be verified and go through so we won’t have a piece of paper [...] you know, which is better for us, you know, a better security.”

[G4, 2nd M]

6.5.9 Interactions with the *Sage* system

In terms of backups to the customer records on the system for GAMMA, there are two systems that are copied. The *Sage* system has a backup on the business's main computers, but G4 keeps her own backup copies of files:

“The system is literally backed up every night, and whereas I do have a separate spreadsheet for the Guild members, what we also have on *Sage* which is saved every night”

[G4, 2nd M]

Should the *Sage* system encounter a problem or major error, G4 notes that there are backups that are run constantly. G2 is noted as the manager who can restore the system, in the event of a problem or major incident:

“The system's backed up twenty four seven, you know, so copies are held... just in case something like that should happen then G2 can reload it and save it you know... back to the same position... that's the thing with the disaster recovery...”

[G4, 2nd M]

However, G4 feels that she still relies on her own files or “worksheets” just as much as she relies on the *Sage*-based system to maintain the records needed for the business in terms of customer records:

“But I can't see that... you know, my ...erm, worksheets disappearing. I think I would still want to fill them in. It's my safety net... [laughter] you know what I mean.”

[G4, 2nd M]

6.5.10 *Protx* as a new system

After six months had passed since the first interviews were held with G4, GAMMA moved on to using a payment system called *Protx* to automatically handle the checking of credit and debit card payments to the business, thereby cutting out the need for GAMMA to temporarily hold or record sensitive data as well as their holdings of customer records.

“We just went over to the *Protx* yesterday... we had a lady that joined the Guild earlier this morning with the *Protx*, erm... *EMPLOYEE2 went in, erm, authorised the payment, erm, set a role up on the Guild sheets and she's gone out this afternoon. [...] It's an easy way of doing things, it's less work. You know, you don't have to look after this payment detail and you don't have to shred it when you've used it. And then you don't have to ring the customer back... if she's got a back order in, you know, if you need another payment from her.”

[G4, 2nd M]

Human error was noted as one of the main causes of concern for G4 when processing such data for customer orders:

“It takes out the error. You know, the customer can’t make an error putting a card number into the system or otherwise it won’t accept it, and we can’t make the error punching it into the machine to take the payment.”

[G4, 2nd M]

6.5.11 Risk awareness and sensitive data

G4 believes that people are happier to order over the Internet as long as they believe the data they enter appears to be less at risk because of the use of an official system to manage secure data, such as *Protx*, or bank assured verification systems:

“People are happier – to order over the Internet... if there’s a system going. I mean you tell always people as long as you’ve got your little padlock in the bottom of the screen, then it’s a secure site, but if you have a company that’s actually verifying these payments for you, it’s better again, you know? I mean, myself, if I’m ordering over the Internet, I prefer sites where I’ve got the HSBC verification.”

[G4, 2nd M]

Moreover, G4 notes that risk avoidance appears evident in the motivations of Internet shoppers, directly linked to how they share their data for payment:

“People are more comfortable. With putting the card in. Because there’s a lot of people who think, ‘oh no, I won’t put card details over the Internet because here is this card fraud’...”

[G4, 2nd M]

However, G4 acknowledges that even with a choice of payment method, people’s personal preferences are still dictating how their personal data is entered and used by GAMMA in order to fulfil payment for their orders – even to the point of using the catalogue online, but paying by card via a telephone order. G4 links this to the customer’s personal preferences.

“There’s a lot of people want to order over the Internet, and we have a lot of customers who initially, even if they’ve got the Internet, they’ll go into it, and they’ll write down what they want and then telephone. They’d rather do that. You know, they’re more comfortable with that. So, you know. It comes down to preference.”

[G4, 2nd M]

Overall, G4 is happier with the arrangement made with the use of *Protx* as a service to handle the sensitive customer financial data than GAMMA handling it, transcribing it, and dealing with the burden of disposing of it safely:

“It would be ideal if we could just get to the stage where *Protx* you could just put their card number in whilst they’re speaking to you and this... you know, there’s no card details taken here [...] There’s nothing to shred.”

[G4, 2nd M]

6.5.12 G4 – Commentary

6.5.12.1 The benefits of previous experiences

G4 has had the benefit of having had training in another business where skills such as the use of UML were taught to staff. This skill in this use of training in a subject not commonly used by GAMMA has paid off: GAMMA now have a new planning skill that they can use, and this has helped reconstruct how the models of workflow are supposed to be resolved. G4’s active role in risk mitigation is a physical responsibility for the security of the backup data. However, this was not initially her idea, as we can see from earlier narratives, G1 has acknowledged that she as a manager instructed G4 to maintain a separate copy of the business-critical files on a memory stick for safekeeping.

6.5.12.2 G4 and her recordkeeping

G4 recognises that her spreadsheets are records. In keeping the records of customers, their addresses and the rest of their relevant personal data, how does G4 perceive herself and describe herself? She refers to herself by the role that the records play. She is used more as a records keeper than anything else, yet she is a secretary. Records management is not restricted to one person within GAMMA. Much like Beer’s (1979) conceptual descriptions of systems integral to each other “‘autonomy’ does not stand for separateness, otherwise the system would not be cohesive, and therefore could not be viable.” (Beer, 1979, p. 199) G4’s role in record keeping is not defined by her status as a secretary, but her workflow is: she is the main point of contact when queried about records, much as A1 is within ALPHA. However, the duties for IT management and file retrieval are still kept with G2, which has led to a specific breakdown of roles within GAMMA which resembles that of BETA: the ‘Senior

secretary' and the 'IT manager' are different roles and different responsibilities, with the 'Senior secretary' being the first point of call for inquiries about records, and the IT role only being approached when there are technical difficulties in retrieval.

6.6 Summary of case

The participants and staff at GAMMA have a very clear idea of what they think will help them in the further management of e-records. However, there is a great disparity between the technological abilities of managers and employees, and this can have an effect on how specific technological risks are managed. There is clear evidence that data security is now a priority within the SME after a risk incident, showing that their risk management has been informed and challenged by such an incident. The use of VoIP has presented more opportunities for the teleworkers, and with no noticeable detriment to or impact on their records management. A plethora of technology-specific skills has allowed GAMMA to make a decision about how to use their current records and stock management system, and such skills will also be used to inform the management of the incipient system for stock and record management.

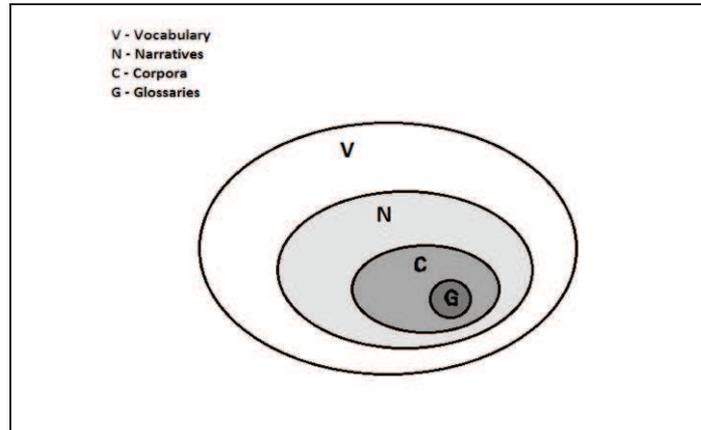
Chapter 7 - Discussion and Exploration of Participant Narratives

This chapter compares all three case studies and notes their emergent themes, and situational variants regarding SMEs. It then moves to a re-examination of the narratives relating to the findings made in terms of the narratives. The glossary element is discussed not only within the formed narratives, but also in terms of the corpus findings within Appendix 8. The contextuality of interview material is considered in relation to its use within the creation of glossaries, and the analysis of formed corpora from participant interview texts.

Ways to synthesize the evidence and understand what it presents thematically are considered, moving towards a third-level analysis. The outcomes from the narratives were a typology and two grounded models. The typology provides a taxonomical breakdown of roles within the SME, whilst the two models provide a higher-level outcome and their relations to previous research are described.

The concept of a glossary is not usually one of a complete range of vocabulary, but of a short explanation of difficult terms (Chambers Publishers, 2010). It is represented in this study by a selection of the high propensity words from the corpora (see Figure 18). In terms of this study, a vocabulary is considered to be the whole range of words which are the extent of the terms used in interview. A narrative is constructed from the interview contributions of the participants which follow a roughly cogent set of themes – Ochs and Capps (2001, p. 59) describe the “human narrative” as “conform[ing] to a conventional structure for gaining attention, delineating events, and assigning positive or negative valences thereto.” Corpora have been defined in detail in Chapter 3.

Figure 18: Set diagram of the relationships and distinctions in the study between vocabulary, narrative, corpora and glossaries



7.1 Comparison of case studies

There were certain commonalities between all three cases, which are addressed first before moving on to points and aspects which are more common to the SME rather than to risk or records management.

All case studies had a negative interpretation of risk. There were no instances in the narratives of a positive use of the term 'risk' which was spontaneous; instead, risk was perceived as a negative force. Most of the participants found it difficult to precisely articulate what these risks were, but as the glossary shows, there was a preponderance of terms which were linked to technology use. This is shown in Table 8.

The case studies varied in size, as has been established at the start of Chapters 4, 5 and 6. Other dissimilarities included the aspect of how each SME was managed, a factor that was significant in attitudes towards records management and risk management. This is investigated further in Chapter 8.

Table 8: Observed characteristics of the case study SMEs in relationships of size of SME and leadership in attitudes to risk and records management

	ALPHA	BETA	GAMMA
<i>Size</i>	Large	Medium	Small
<i>Risk attitudes</i>	<p>Interested in preventing risks of which they are currently aware</p> <p>Interested in learning from previous risks</p> <p>Using computer access permissions to avoid risk to records</p>	<p>Interested in learning from previous risks</p> <p>Using strategies to mitigate risks</p>	<p>Interested in learning from previous risks</p> <p>Using computer access permissions to avoid risk to records</p>
<i>Records attitudes</i>	<p>Interested in making a remainder of hard copy into e-records</p>	<p>Interested in moving from hard copy to e-records</p> <p>Interested in making hard copy into e-record</p> <p>Interested in improving their e-record management by upgrading their technology</p>	<p>Interested in improving their e-record management by upgrading their technology</p>

7.1.1 Records management commonalities

In terms of similarities regarding the area of records management, the case studies all use both hard copy and e-records.

A use of records in dual formats does not necessarily mean that such a state will be stable, or even preferable. In all three case studies, the SMEs held more e-records for business purposes than hard copy. Their management of both e-records and hard copy was usually through a specific program, such as *Sage*. Does this indicate reliance on similar electronic data management programs for e-records management in SMEs? It certainly shows that SMEs prefer to have a program which compiles e-records alongside business data. This may well affect how e-records are managed, especially when they are not related to financial transactions (which are primarily handled by programs such as *Sage*.) Making a decision to move onto a specialist system which could perhaps provide the kind of management hierarchy needed for an SME's total e-records management is both difficult and costly (see Chapter 6, Section 6.3.9 for a participant's perspective on this subject).

7.1.2 Management of e-records within the SMEs

SMEs have fewer regulations or steps to perform in integration and management of an e-record into their current holdings. This frees them to make decisions about what they do as a form of management. Their decisions are simple ones - store, delete, or to back up the records via their chosen system. They are not as bound to do certain records management processes as their chosen system is not primarily an e-records management system (for example, *Sage* is a financial data program whose secondary use has been to manage e-records). A less complex system has its benefits for the SME - it means the staff can make simple decisions about what to do with e-records, and for the majority of decisions which they make, few are accompanied by a negative risk. However, when they do make a 'risky' decision, participants become aware of the negative result of the risk and then are informed of the results - often by a loss of e-records or of data. That loss is the refining process for learning about risk. It is not a predictable factor - little about the risks that the SMEs faced was predictable - but it is a way of becoming aware of risk associated with records, and may subconsciously feed back into the next decision made about records which has an element of risk within it.

Certain variations as to how paper records and e-records were held within the businesses depended on the overall method of management within the SME. It is this link that is now investigated which unites the study areas of SMEs and records management.

7.1.3 SME management

An important point is that leadership within the SME is a pertinent factor in the strength of the SME's culture. From the cases, it appears that the smaller an SME is, the more likely it will have a strong culture. The smallest SME, GAMMA, had a single leader (G1) and a very strong and clear policy about how records were managed: roles within records management were described, but not formally written up. This in turn had an effect on who was responsible for what in the curatorship of records, and their long-term maintenance. In terms of organizational behaviour in regards to records management, roles in records management were taken on from existing posts and responsibilities within the workplace. Records management duties that developed where there was no specific employee to oversee them were absorbed as part of a rolling workload, where it became clear that the task needed to be absorbed, and that there was a validity for its continuance in the area of records management (e.g. the role of G4 as a senior secretary taking on aspects of data backup for the GAMMA system, and the role of A1 as a manager). Whilst this is a valid approach for an

SME, larger organizations may need a specific post of records manager, with whom the duties and responsibilities of records management are based rather than allotted separately to different employees.

The values that a culture places on attitudes towards risk, and towards recordkeeping – in particular, how explicitly records management responsibilities are allocated to employees – can affect how these tasks are carried out. Looking across the case studies, the attitudes about risk and records management appear to be related to the competence in technology that the business possesses, yet also appears unrelated to size. It is an interesting observation that the smallest SME appears to be less interested in digitising records, whilst the largest SME is more interested. This may be a discrepancy which is related to the specific circumstances of the SMEs, given that GAMMA has a strong background in IT and technology usage. Though the form of SME leadership has been observed as being relevant within the case studies taken for this study, it is not placed as a cause and effect common to all SMEs. These observations may not be typical of other similar sized SMEs. Some similarities were emergent in the nature and roles of who handled records, and who handled records management throughout the SMEs. It was from the compilation of the narratives that a framework was generated. This framework was intended to represent a ‘typical’ small business structure and the roles of those who manage records within it. This became the typology seen later within this chapter.

Disparity between narratives in cases included the differences found in roles and forms of management. Those in smaller SMEs (e.g. GAMMA) tended to take on more responsibility for larger numbers of documents, and instead of presiding over a more distributed responsibility for records and data; individual participants took a very singular role of responsibility.

The use of specific computer programs or systems to manage records was also a factor in the disparity between narratives. Differences in approaches to managing e-records often relied on the electronic form of entry and storage of the e-record, and so the amount of involvement between a participant and the technology needed to use, store and work with an electronic record naturally varied between participants.

Having identified overarching emergent themes from the cases and their glossaries within the study shown in Figure 19, further analysis highlighted the connections between the research

questions, themes, overarching themes and the study areas, illustrated in Figure 20. It was also prudent to include the elements of motivators and drivers at this point, so as to fully illustrate what had been found in terms of the study cases' attitudes towards risk and e-records management. This diagram identifies the main research areas, and the corresponding emergent themes. As can be seen in the diagram, some themes are shared between study areas.

Such an analysis of themes and study areas indicates a relationship between study and themes, but to add granularity of detail to such a diagram, we must look at the potential relationships that emergent themes have with attitudes and drivers for risk management within the focus and context of e-records management.

7.1.4 Study questions, study areas, emergent themes and drivers diagrams

Figure 20 was based upon the research questions being present at the beginning of the diagram (layer 1), informing and leading to research being done into both drivers and motivators in regards to the study areas, and into the emergent themes themselves. Elements that were 'drivers and motivators' were represented as either negatives or positives: the negative factors as 'risks and motivators' and the positive factors as 'drivers and motivators' (layer 2). The emergent themes (layer 3) were formed from qualitative analysis of the interview material from the case studies. They collect together strong emergent themes that were observed, from all three case studies.

The emergent themes from all the cases can be seen in terms of their respective study areas (layer 4), which identifies thematic relationship between study areas and themes, something noted in chapter one of this study. This layered diagram establishes a possible relationship between the drivers and positive and negative motivations for risk management in e-records management, in the context of thematic analysis based on the interview material from SMEs, and within the perspective of the study areas.

These diagrams were created to show the relationship between themes, study areas and a glossary of high propensity terms taken from all three corpora.

Figure 19: Key research areas, themes and analysis of terms from the glossary

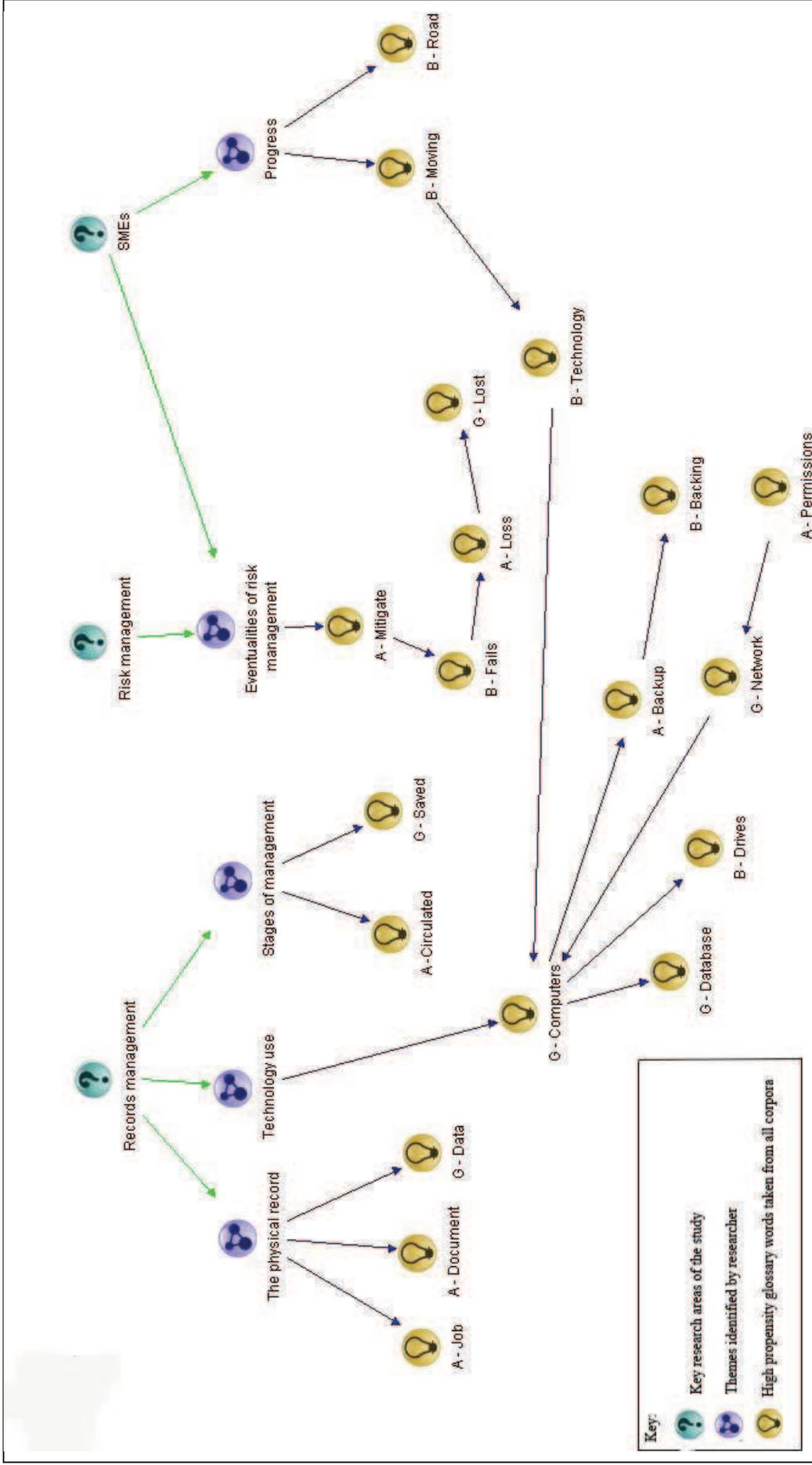


Figure 20: Study areas and emergent themes

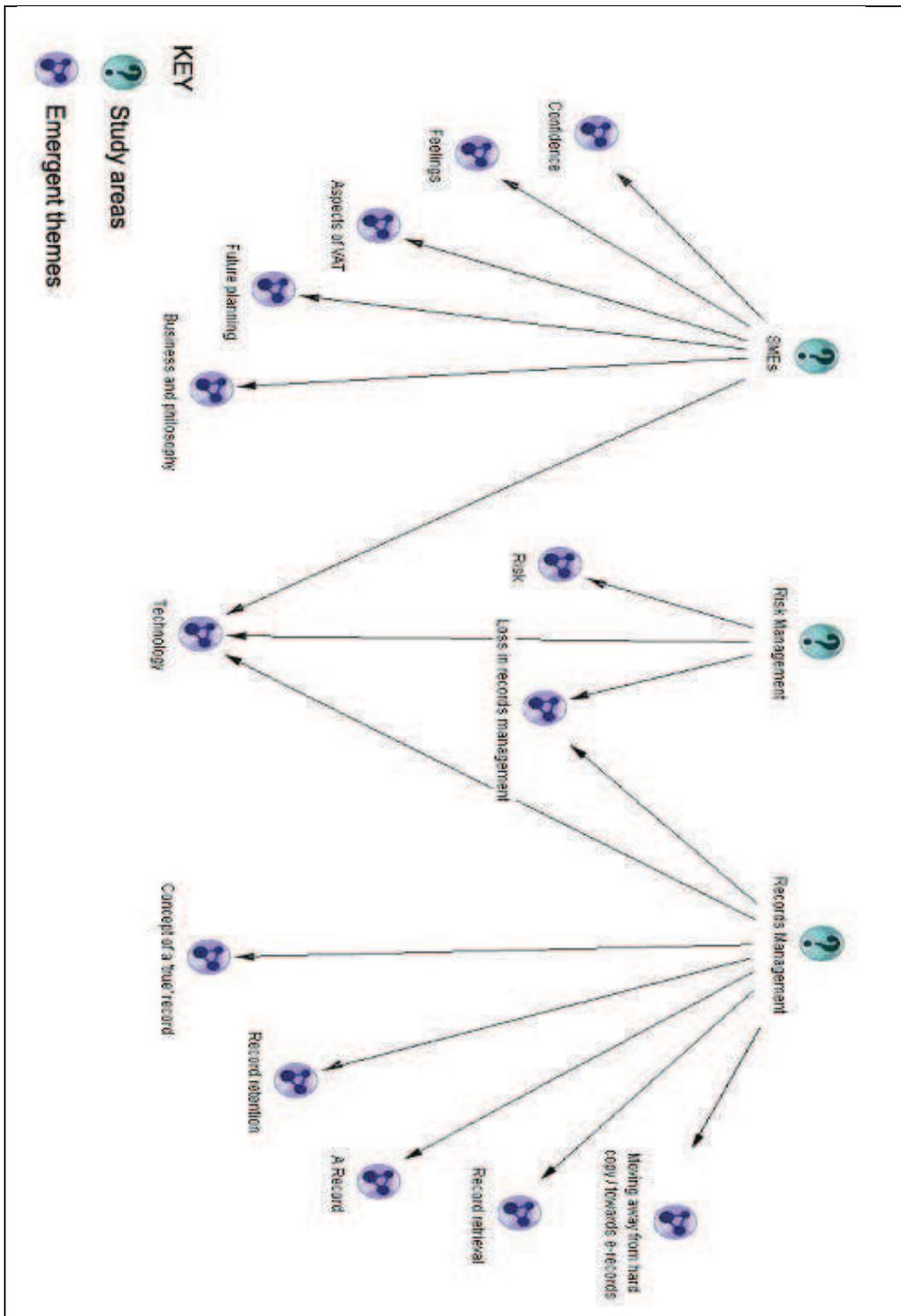


Figure 21 shows the interrelation of themes and the fulfilment of aims and objectives in the study by linking in the research questions and study areas. It also shows how the themes and theme categories are ranked: these are in the correct positions, whereas a spidergram or other form of diagram cannot show this clearly enough. In describing the interrelation of themes and study areas, the figure shows that Layer 1 consists of two pertinent research questions in regards to attitudes, drivers, and risk management. These research questions were chosen from the main set because they dealt with aspects of the study which were evoked through study of the themes and study areas.

Layer 2 identifies two factors – ‘Drivers and motivations’ as well as their negative counterparts, ‘Risks and motivations’. The term ‘Drivers’ has been used in other literature (See HM Treasury, 2004b) to describe positive productivity forces. It is important to note, however, that whilst (as previously noted in Chapter 1) not all risk is negative, that the overall emergence of risk within the narrative made it clear that participant association of risk was as a negative force or demotivational aspect. Figure 20’s description of demotivational factors therefore incorporates this by naming the negative aspect of motivation ‘Risks and motivations’. Items on Layer 3 are the themes from Figure 20. Layer 4 identifies the study areas as described in Chapter 1. Table 9 provides an alternative view of the data in Figure 21, detailing the research questions and factors. In explaining what Figure 21 shows, we move from Layer 1 to Layer 4. The research questions asked about two important factors – attitudes and drivers for risk management, and evidence of risk management and its approaches by the SMEs.

Table 9: Research questions and factors in Figure 21

<p>Attitudes and drivers for risk management – themes from narrative</p>	<p>Incidents in past (Negative risk) External influences (Negative risk) Business needs (Positive driver)</p>
<p>Evidence of risk management and its approaches by SMEs – themes from narrative</p>	<p>Technology A record Record retrieval Moving away from hard-copy / towards e-records Record retention Concept of a true record</p>

Layer 3 deals with themes emergent from the participant narratives. The themes themselves are not connected to each other in the diagram, as this was not noticed during analysis of the data from the cases. However, themes may share the same drivers and risks.

Layer 4 links the themes to the study areas by showing which areas the themes correspond to within the participant narratives. Only one theme – technology – was linked to two study areas (Risk, and SMEs). The theme of technology has a cross-area relationship with both areas which is significant when we look at the research questions again. What does a link to risk and SMEs mean in terms of SME e-record management? Technology is the underpinning of business information management and business activity, as well as we have seen in the narratives, a source of concern in terms of security and utility. Whilst it is explicitly connected with e-records, the risk element is implicit within most of the narratives, and emerges as a theme connected with risk explicitly in the figure.

7.1.5 Relationships between the diagrams

The diagrams can be interpreted on as having certain commonalities. The study areas and themes emerge from the actual data of the study, and also in terms of the illustrations themselves. The diagrams are related to each other in that all of them have research questions at their core ideologically if not physically. They can be seen as part of a triptych which describes the relation of glossary terms to study areas, and those areas to emergent themes. Each complements the other, but all have different foci. One diagram validates another by taking what we know to be verifiable through the narratives, and then adding in what we want to know in regards to the research questions.

7.2 Analysis of the narratives

A simple analysis of the narratives provides evidence of how SMEs behave when encountering risk, but does not reveal their motivations when encountering it. The narratives have provided us with a clearer look at what difficulties the participants have encountered in their businesses. The narratives of the participants provide a view

of specific risks which their records face, or which they face whilst in the course of managing records.

From the narratives, observations were made that through all three cases, some similarities were emergent in the nature and roles of who handled records, and who handled records management throughout the SMEs. It was from the compilation of the narratives that a framework was generated. This framework was intended to represent a 'typical' small business structure and the roles of those who manage records within it (see Figure 20).

The creation of corpora from the narratives explores the way that SMEs engage with risk by looking at their word use. The analysis of these corpora show us the ways in which SMEs describe their own unique viewpoint of risk, and more importantly how they relate this risk to each other and to those outside the business, such as a researcher. The individual narratives gave a sense of the variety that the roles of the participants have within their respective SMEs. The individual narratives can be compiled for an overview of the whole of the SME as represented by its participants.

7.3 Corpora and Glossaries

The corpus is a representation of a selected amount of vocabulary within an SME, and is not a comprehensive glossary of risk. It is an encapsulation of the whole range of narratives that were obtained from the SMEs about business, primarily focusing on business risk.

What does this mean for the overall understanding of the formation of a glossary for case studies? Points elicited from analysis are that:

- It is likely that such terms will always be highly individualistic (individuals will always have their own interpretation of terms)
- It is more than likely that a shared term for records will be perpetuated amongst those who handle records (for instance the terminology 'job sheet' and 'briefing document')

- There may be information technology terms used rather than records management terms when relating a records management cycle for e-records
- Terms that indicate destruction or misplacement of records are recognised throughout all cases (Loss, lost)

This study collected only narratives about risk, and then sampled from within those narratives. Based on this sampling - primarily examples of risk language from narratives about risk - it is necessary to answer the question of bias.

The key point is the merit to be found in being selective in terms of this evidence. In investigating the hypothesis of whether SMEs have their own glossary in terms of risk; we have to look at back to the narratives. What does it reveal to us about the greater scope of the study? The identification of these themes, grounded as they are in the participant evidence, is important because we can therefore evaluate these themes as a source for narrative themes.

7.3.1 Themes within the glossary

Moving from an examination of individual words and narratives (in appendix 8), we now look at some overall themes emergent from these corpus glossaries. The words from the cross-case glossaries were examined for common themes, and it was found that they could be categorised into five themes. These can be further related to the discipline and subject areas of study.

Table 10: Themes within a selection of high propensity terms selected from the corpora

The record	Technology use	Stages of management	Eventualities of risk management	Progress
Job	Permissions	Circulated	Mitigate	Moving
Document	Network	Saved	Fails	Road
Data	Drives		Loss	
	Computers		Lost	
	Database			
	Backup			
	Backing			
	Technology			

This list, consisting of the highest propensity terms taken from each corpus, does not accurately reflect all of the stages of a conventional records management cycle. It is notable that there were only three terms in this list that could be interpreted as storage in a records management cycle sense (“Saved”, “Backup” and “Backing (up)”). The themes which form categories in Table 10 are broader and emerge from the evidence, and we look at them in an interpretation of their use. A cycle of records management, such as that specified in Penn et al. (1989) which has such aspects as storage and distribution, does not seem to be reflected in Table 10.

The more complex e-records model described in the MoReq 1 standard (Cornwell Management Consultants PLC, 2007), for example, has definitive functions for users such as deleting files and capturing records. However, these functions do not appear to have their equivalents in the glossary of Table 10. MoReq1 has instances of records creation and destruction, whereas there are no specific terms to cover these in the table of words. There is a significant disparity, therefore, between typical records management themes, and the themes in the highest propensity words, which are described in detail below.

The record covers descriptions used in the context of electronic record(s) by the participants. It is interesting that all the terms for these are physical, but are in practice all items that are also hard copy. This indicates that the cross-case similarities of terms for ‘record/s’ as used in the interviews with participants centre on terms which are ambiguous – and which could indicate the use either of hard copy or of e-records.

Technology covers the language used by participants’ management and risk either by the application of technology, or describing the technical implementation of e-records management. The terms are both verbs and nouns. The terms describe a hierarchy of elements that form a technological network, from a single unit (a drive, within a computer) to a larger organization of those units (a network of computers). It also describes an activity within the scope of e-records and risk management that is ‘backing up’.

Stages of management covers aspects of records management observed as a theme. Two verbs are used in the specific context of this activity, indicating that the main components of an e-records management activity according to the participants include being able to save and circulate the e-record within the business.

Risk management as a theme covers potential outcomes of risk management. In terms of these potential outcomes, only eventualities were discussed. All of these were negative, leading to the consideration that the participants have identified risk management solely with negative outcomes or their prevention – effectively interpreting risk as a ‘bad’ factor or element within risk management. Whilst the literature of risk and risk philosophy allows for risk to be seen as positive, risk has an overwhelmingly negative connotation in the interviews from participants sampled within the study.

Progress as a theme covers aspects of progression, moving and metaphorical movement. This theme is interesting as it relates towards not only attitudes in risk management, but also in terms of overall improvement in terms of handling e-records within the participant’s own businesses. The concept of needing to progress or having progress when dealing with e-records reiterates the academic concerns highlighted in the literature review of this thesis, in Chapter Two.

7.4 Outcomes

The outcomes from the narratives were a typology of roles within an SME, and a pair of models which drew on the typology to inform about duties performed within SMEs for the purposes of records management, with the behaviour of employees in terms of risk management in regards to records management highlighted. These models emerged from the narrative evidence, drawing upon the behaviour of participants in their reactions to risk, and to records management. The typology and the models draw on different aspects of the research undertaken for the study, and whilst the typology focuses on SMEs, the models concentrate on risk management and records management respectively. These relate to the study areas described in Chapter 1.

In terms of the value of these outcomes, we must look at their potential value to different groups; academics, professionals, and laypersons. These are discussed following each item.

7.5 Typology

The following typology was created in order to visualise a way of describing the major roles within an SME according to their participation in risk management and records management. This typology emerged from analysis of the gathered evidence and analysis of the circumstances within each SME. It looks at the behaviour of case participants, and labels them according to that behaviour, rather than their named role within the business. It was observed that many employees had a formal label which did not equate to the total sum of their duties, or whose work asks them to encompass many roles under a larger title. This model identifies the behaviours displayed by employees in SMEs who deal with records, and assigns those behaviours a category. Figure 22 describes these roles and behaviour in terms of a hierarchy within the SME that is illustrated by a top-down chart, linking the roles from Manager to 'Stage 1 employee'.

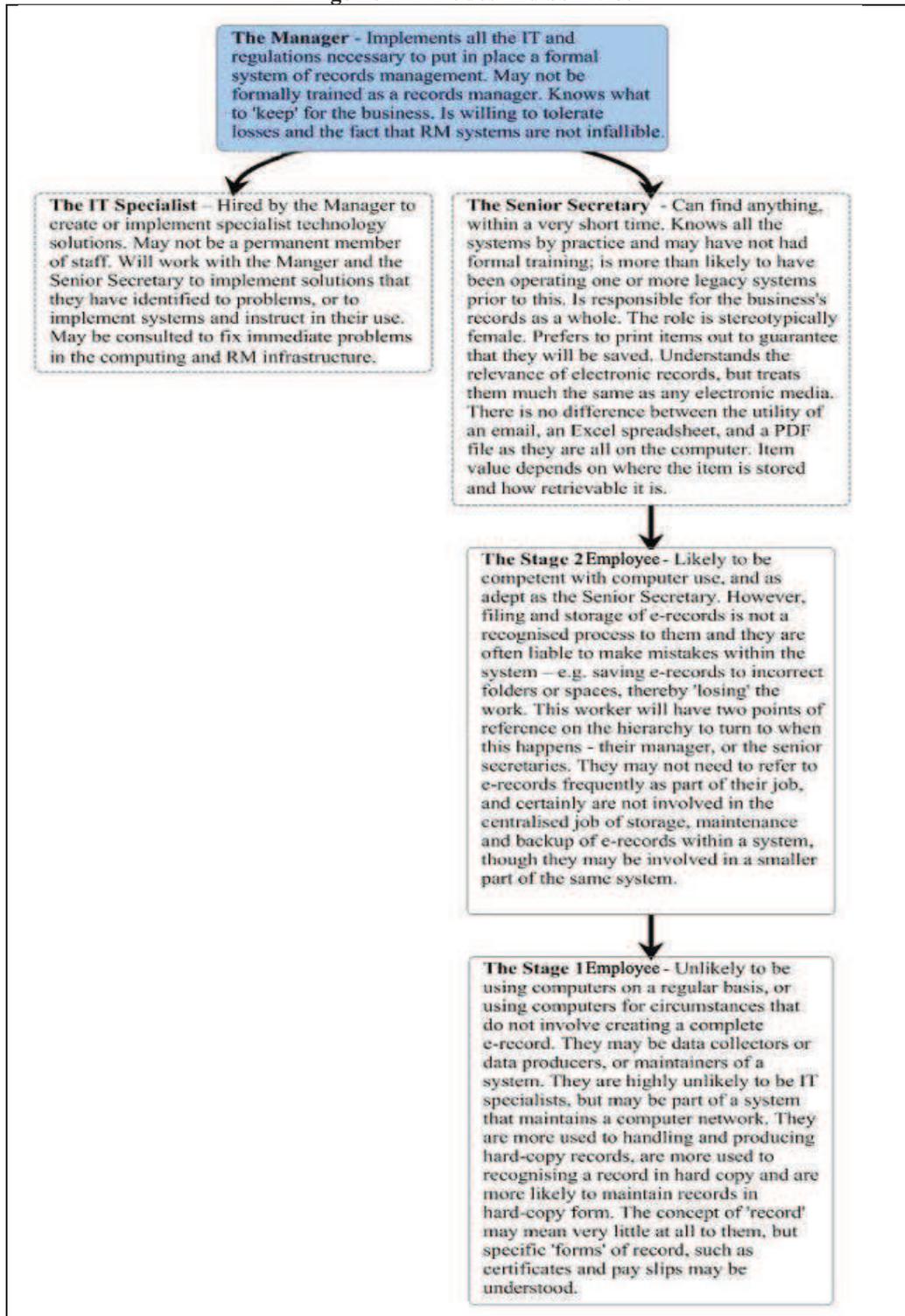
7.5.1 Explanation of the typology's hierarchy

To see the fit between typology and the cases within the study, we move on to an exploration of the typology, looking at each position.

Manager type – All the cases involve managers, and in ALPHA, there is significant part of their own hierarchy composed of managers. They may not have any formal training (as MB 1 in BETA) but they will have had experience of what records should be kept, and implement this as a policy through the business. In GAMMA, G1 acted as main manager, and with her knowledge of computing, was able to specify the choice of systems (such as databases, accounting packages like Sage) that were used in GAMMA to manage their various records. Managers may implement IT to enforce regulations needed for records management, and this is seen with ALPHA where A1 implemented IT management and policy, and both A2 and A3 helped enforce it. In BETA, IT management and policy was implemented in part by managers and in part by the IT specialist. No one had any form of records management training. In

GAMMA, no one had been formally trained as a records manager, but G1, G2 and G4 had worked for larger businesses before and had therefore experienced business use of records.

Figure 22: Typology of a top-down hierarchy of five types of small business employees who interact with records, based on observation within case studies observations on risk and records management attitudes and behaviour



The IT Specialist type – In ALPHA, A1 fulfilled this role, and A2 jokingly referred to it as A1 having to put on his “policemen’s hat” in regards to the need to implement IT management policies. In BETA, a specially hired employee who could be called in to implement the technological solutions that MB1 proposed took the role of IT specialist. In GAMMA, G2 was regarded as the IT specialist, though G1 was equally capable of implementing technological solutions.

Senior Secretary type – In ALPHA, there appeared to be no one who took this role. Instead, managers worked with teams of employees to manage projects and data. However, managers also expected to find data within a short period of time and A1 in particular was approached as IT manager to retrieve records from the system. In BETA, both B2 and B3 had a specific job title of secretary. B3 had worked with legacy systems within the company as well as the current system (as she had been employed there for 19 years). In both BETA and GAMMA, the stereotypes rang true and the secretaries were female, and in an older age bracket compared to the class 1 and class 2 employees. In GAMMA, the senior secretary had also worked with other systems, but not in a legacy perspective. She had been employed in another business and had relevant experience of customer management systems, which she then extended to the use of the databases in GAMMA.

Stage 2 Employee type – In ALPHA, the employees who were managed by A3 represented this type. Only one participant in BETA represented this type – B4, a counterman. In GAMMA, G3 could possibly be said to fit into the typology as she is a part-time employee who is not as centrally involved with records maintenance as the senior secretary, G4. However, G3 regularly looks after and updates the company records in terms of her subject specialism, photographic records for the website. She demonstrates awareness of the importance of e-records, and also maintains all her records in the same way regardless of format. In G3’s case, whilst it is possible to say that she has some characteristics of both classes, the fact that she is a part-time employee who is responsible for a sub-section of the business’s records and not for all of them mean that she is classed as a Stage 2 employee.

7.5.2 Validating the fit of the typology

The typology is intended as a description of the observations of the roles that emerged from the narratives of all the cases. If the typology is fitted on to all cases within the study, a fairly accurate fit emerges, as can be seen in Table 11.

Table 11: The ‘Five Types’ typology proposed and validated with ALPHA, BETA and GAMMA

Role	ALPHA	BETA	GAMMA
Manager	A1, A2, A3	MB1	G1
IT Specialist	A1	Employee hired by MB1	G2
Senior Secretary	No equivalent found	B2, B3	G4
Stage 1 Employee	Employees under A3	B4	G3
Stage 2 Employee	Data collectors, hired as needed	Employees in the main workshop	Employees in Production and shop

In Table 11, it can be seen that BETA and GAMMA have both participant and non-participant elements that fit into the proposed typology. ALPHA is the only case where there is no exact match for the role of ‘Senior Secretary’. This could be due to a combination of factors that set ALPHA apart from the other two cases, namely that ALPHA have a deeper hierarchy of roles within management, and the activities of record and data management are distributed over these, with many people sharing the duties of this role on an individual level. Other factors could include the point that the role of an individual in management is more focused around data and records management within ALPHA because their final product is data, as opposed to cases BETA and GAMMA, where their actual products are units, and not elements of data. Overall, this proposed typology is a good fit with what has been observed within the case studies, and it is proposed that such a typology has accurately reflected the evidence collected from these case studies. It is further suggested that whilst the drawbacks of suggesting that this typology may be able to represent findings for SMEs in general are great and it is not without criticism, such a step may be useful for proposing further research and this typology may be able to form a backbone of observation which can then be built on through additional observation.

7.5.3 Analysis of the typology

The typology is a good fit for the cases presented (ALPHA, BETA and GAMMA) as it emerged from this evidence. In terms of some of the biases seen (such as the gender and age of the senior secretaries), the typology holds true but may not be

representative of a wider number of cases. The typology relies on the presence of a hierarchy – which appears to be a common factor in all cases within the study. In organizations that appear hierarchically ‘flatter’, there might be some variations in how this typology could be interpreted. It is a basic and simple exploration of the need to analyse the structure of the SMEs within the study in terms of how they apportion the roles of risk and records management. Managers and IT Specialists both manage the risks by altering the structures in which risks can occur. However, the Senior Secretaries employ slightly different means within their ability level in order to manage risk. This can include the copying of files to ensure that there are backups (BETA and GAMMA) and refusal to enter risk situations such as opening potential computer viruses in email attachments. Stage 1 and 2 employees’ risk strategies have not included any of those used by the other classes in the typology – usually because these are not available to them.

Moving to the question of who might benefit from the knowledge contained within this typology, an academic audience may find it useful to understand and interpret the often complex hierarchies of a small business, where multiple roles may be taken by a small amount of people. Practitioners in the area of SMEs may well know or understand the descriptions of the roles in the typology intrinsically.

7.6 Models

7.6.1 Definitions of the term ‘model’ for this study

In the perspective of Phelan and Reynolds, models are that which helps their creator “focus on the factors which are considered to be important for an understanding of reality” (Phelan and Reynolds, 1996, p. 91). This agrees with Bates (2005b, p. 3) who terms a model “a kind of proto-theory, a tentative proposed set of relationships which can then be tested for validity”. The emphasis is on the theoretical transference of the potential within the theory one constructs around a certain subject or discipline aspect. In order to form this into something more tangible, and to test the idea out as a viable higher-order transferable mechanism or theory, the model is a helpful tool that allows for further investigation. The construction of a model, therefore, is something that has to be understood in the terms of evaluating the conceptual basis within a diagram or

chart in terms of its theoretical value and import in terms of understanding the reality within a study.

Wilson's 'nesting of models' (Wilson 1999b) refers to the ability of different models to function at different levels of the overall framework. In the same way, the proposed typologies and diagrams presented within this chapter 'nest' together, providing depth in terms of the analysis of the cross-case similarities between the SMEs.

7.6.2 The 'Explanatory Sequence' Model

The 'Explanatory Sequence' model as posited by Ochs and Capps (2001) is based within narrative analysis (Figure 23). The 'Explanatory Sequence' is that which occurs in the transactionary nature of narrative between speakers. A narrative usually posits a situation and in the case of the model, it is a problematic one. This 'problematic' situation in the narrative leads to either a change in state or object of the subject of the narrative, or unplanned actions on the part of the narrating person. The same form of 'problematic' situation can also lead to a 'goal-directed attempt', such as planning as a way of directing oneself out of the problematic situation (Ochs and Capps, 2001, pp. 172 – 175)

The 'Explanatory Sequence' functions as a model for all narratives, and certainly the model is true for the narrative sequences within the transcripts from all three cases within the study. The model describes the patterns that Ochs and Capps (2001) propose are inherent within all narratives. A setting is given, and an 'unexpected problematic event' is related. This then takes the narrative to the next stage – that of a change, either in the state of the person or an object, or the revelation of an unplanned event. This often leads to a 'goal-directed attempt' where an action or similar might take place in order to resolve the situation created by the change.

In terms of the application of this model of narrative to the narratives found within the participants' interviews, there are several good fits. Table 12 shows the stages and identifies elements from all case studies that show that this model works for narratives that were found involving risk and e-records. In ALPHA, for example, A1's relation of the incident of server failure matches at all points

7.6.3 The ‘Narrative Sequence Model’

The ‘Explanatory Sequence’ was used as a starting point for a model that furthered the experience of narrative from the perspective of the SME and risk management in records management. This model was proposed after rearranging the elements of the ‘Explanatory Sequence’ diagram, and identifying stages that were particular to the narratives of risk management in records management. This included overlaying a track of elements that occurred when a narrative from the study was examined. Within all the narratives that were presented by participants, an extra element not described by the Ochs and Capps model emerged: that of reflection. In the model based on Ochs and Capps (2001), posited in this study, this element is rendered into an interpretation of the ‘Explanatory Sequence’. A new stage is noted and added into the model: ‘Reflection on current situation and previous situation’. This was an element present in all of the narratives, as seen in the study (Table 12). Table 12 shows that a similar pattern of incidents occurs for all the SME narratives within the study. The description given of the snippets of narrative highlights their context. The ‘reflection’ stage (shaded) highlights the fact that these narratives contain an extra step as proposed in the ‘Narrative Sequence’ model, as based on Ochs and Capps’s original diagram.

Figure 23: Narrative Analysis model from Ochs & Capps, described as 'Explanatory Sequence model' (Ochs & Capps 2001, p. 174). Reprinted by permission of the published from LIVING NARRATIVE: CREATING LIVES IN EVERYDAY STORYTELLING by Elinor Ochs, p. 174 Cambridge, Mass.: Harvard University Press, Copyright © 2001 by the President and Fellows of Harvard College.

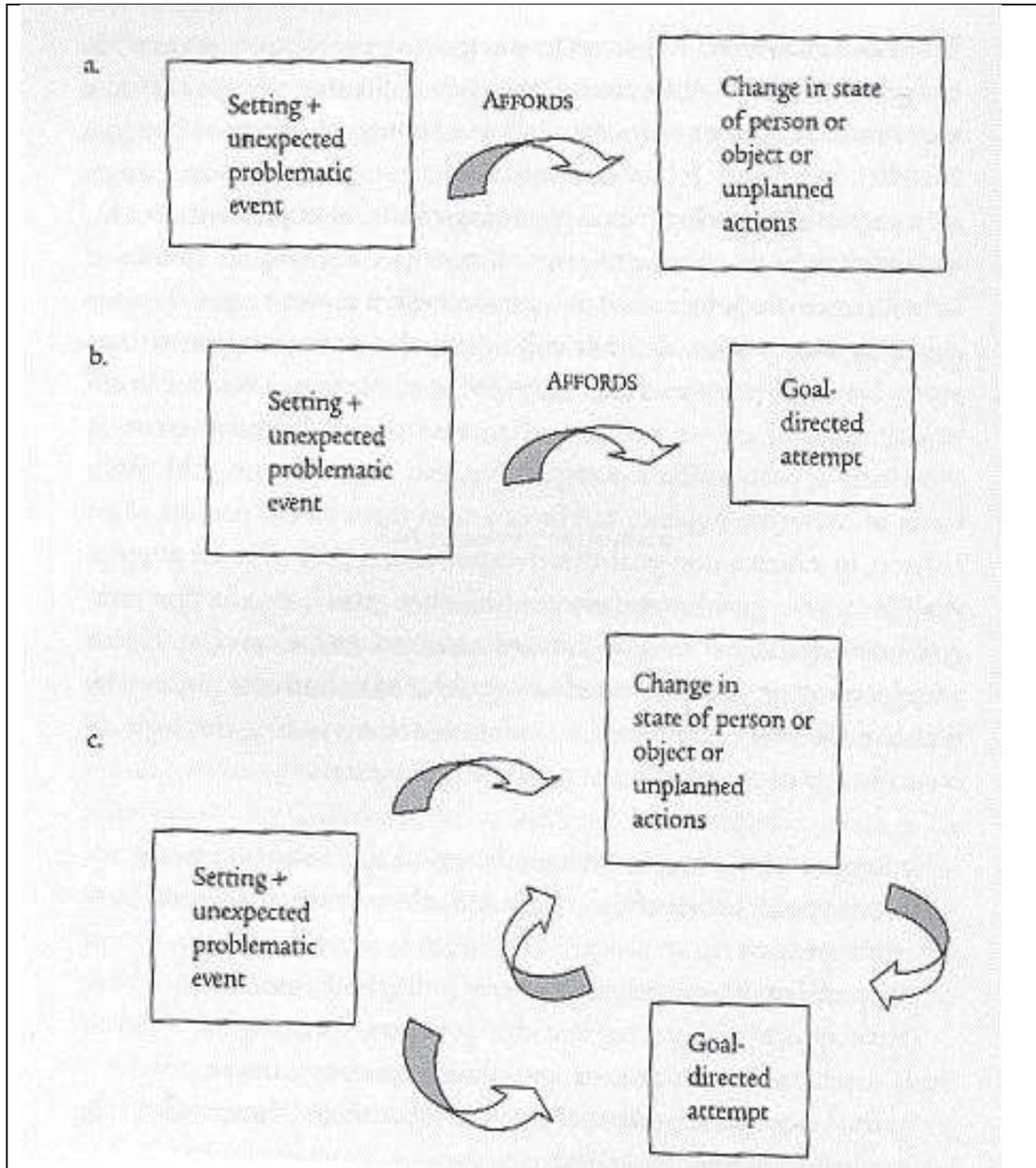
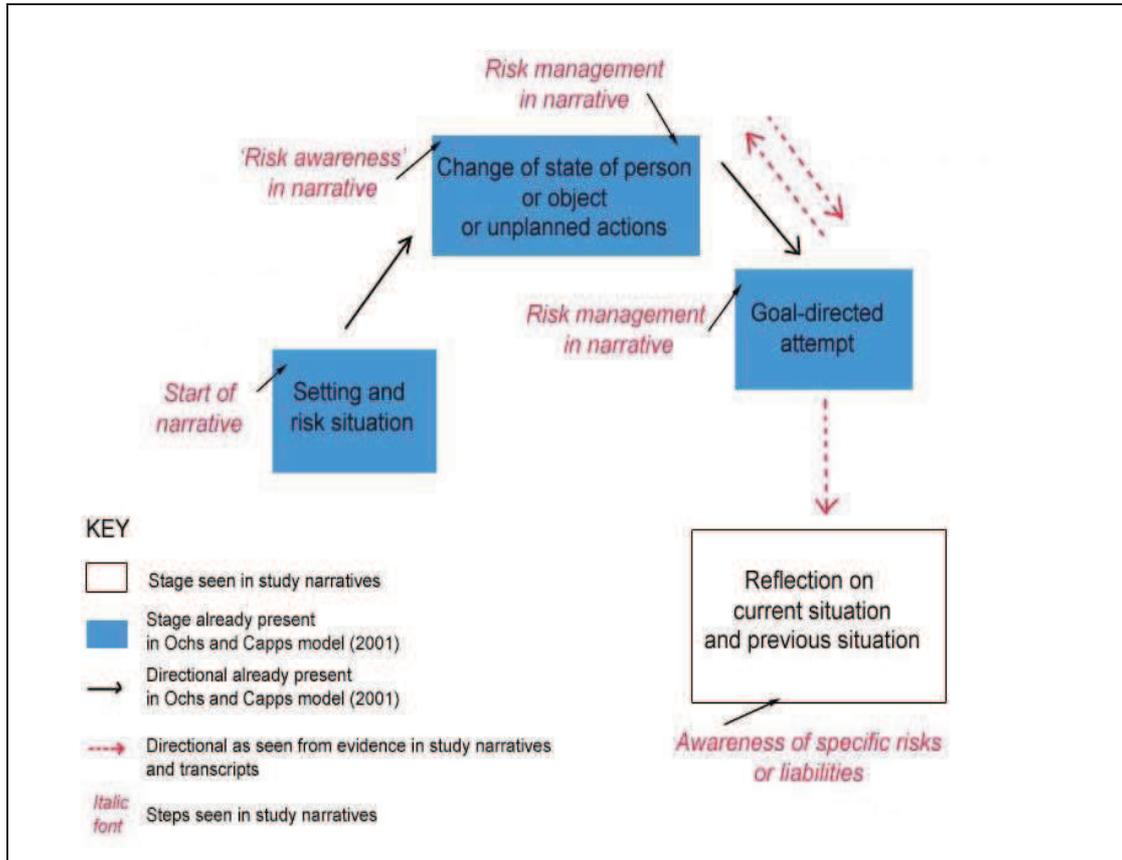


Table 12: Cases within the study and their fit to the ‘narrative model’ of Ochs and Capps (2001) and the researcher’s ‘Narrative Sequence’ model

Case study	ALPHA	BETA	GAMMA
Setting given	<p>“Another instance, where there was a hardware failure”</p> <p><i>Discussing server problems</i></p>	<p>“We had one the other month”</p> <p><i>Discussing server problems</i></p>	<p>“Well, to give you the incident, the story...”</p> <p><i>Discussing incident of data theft</i></p>
Unexpected problematic event	<p>“I had to take the server down for a couple of days.”</p> <p><i>Describing physical solution</i></p>	<p>“It was archiving all the old invoices, but it wasn’t showing any processing.”</p> <p><i>Describing physical problem</i></p>	<p>“We knew that she’d taken our customer database”</p> <p><i>Describing physical problem</i></p>
Change (In state of person or object)	<p>“I did a thirty-five hour shift”</p> <p><i>Describes extent of problem</i></p>	<p>“Sometimes it crashes”</p> <p><i>Describing physical problem</i></p>	<p>“We know that there was a large amount of data copied to a CD”</p> <p><i>Describes extent of problem</i></p>
Goal-directed attempt	<p>“Was on the phone to the U.S. for about five to six hours at a time”</p> <p><i>Describing physical solution</i></p>	<p>“We back up as well as long as we have the tape system”</p> <p><i>Describing physical solution to future risk</i></p>	<p>I still had members of staff that I didn’t trust, people whom I’d lost trust in, and I ...issued the contract”</p> <p><i>Describing physical solution (getting employees to sign a contract to prevent knowledge loss)</i></p>
Reflection on current situation and previous situation	<p>“...the mirroring intention has kind of been given higher priority on the back of that kind of occurrence”</p> <p><i>Describing reflection and considered action</i></p>	<p>“I said look, we’ll copy the files from the data. I just do it as a routine now because I just think if anything goes wrong, as least you’ve got your data there in them two little files”</p> <p><i>Describing physical solution to future risk and reflection on why this works</i></p>	<p>“there was nothing I could do about what she’d already done, so there was no action... in terms of the records there was no action that I could really see that was necessary or/useful.”</p> <p><i>Describing reflection and consideration of action</i></p>

Figure 24: ‘Narrative Sequence’ model, based on the Ochs and Capps model of explanatory sequences 5.1 A – C (2001, p. 174)



The ‘Narrative Sequence’ model (Figure 24) shows that a narrative that describes risk in records or records management, which *explains* things in relation to events or actions, takes the form of three steps. These steps are ‘setting’, ‘problematic situation’ and ‘goal-directed attempt’. The narratives in the cases came from interviews and not conversation, but the circumstances of eliciting a narrative are similar.

From this model, it is possible to evaluate that a narrative can have a logical progression in explaining risk incidents and then describing ‘what happened next’, and relating this to their own solutions or experiences.

7.7 Models emergent from the study

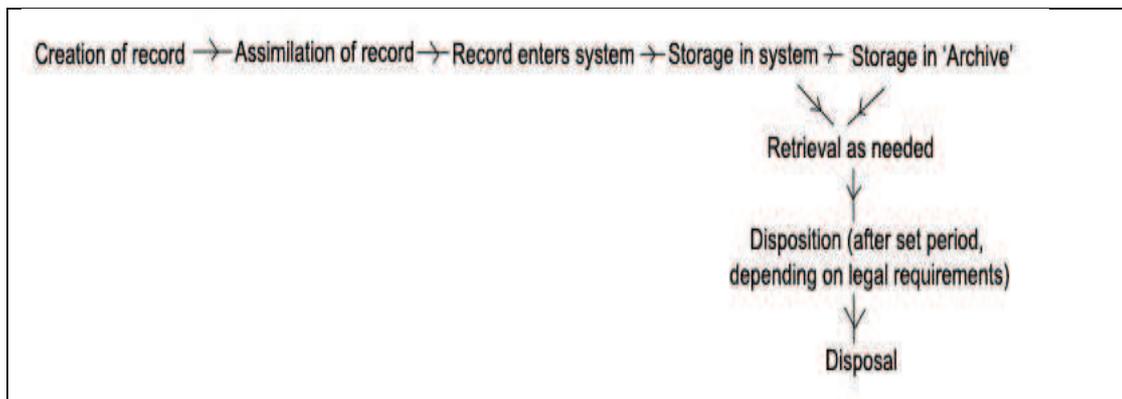
7.7.1 The ‘Participant Records Management Model’

Figure 25 was constructed from the evidence taken from the cases. This model represents the views of the participants as described through the evidence collected in interview and questionnaire. The model created and defined here may be termed the ‘Participant Records Management Model’.

The model emerged from evidence collected through participant narrative analysis and fSSM diagram analysis, when considering an interpretation of the records management use within the cases, and the relationship between such records management and risk management, built up from the narratives of risk within records management given by participants.

It is a model of electronic records management that reflects what was seen within the cases, rather than being based on previous concepts of cycles, as well as acknowledging the contribution of Couture and Rousseau (1987) in terms of the concept of a linear records management model.

Figure 25: The ‘Participant Records Management Model’ – a model depicting records management as perceived by SME participants in the study

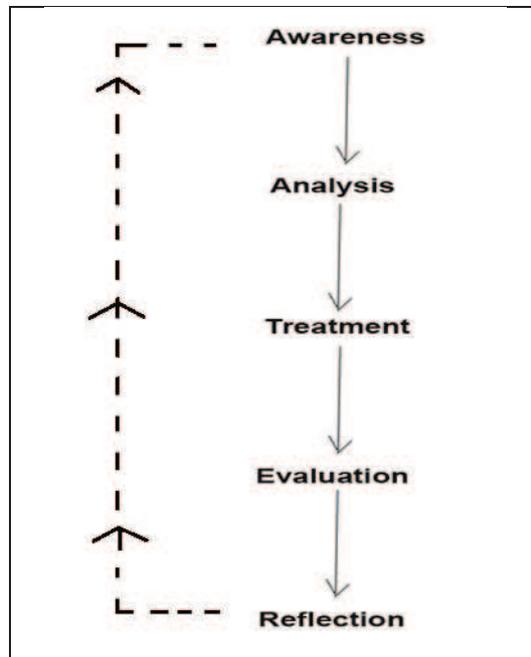


The model shows the form of actions as perceived by SME participants in the records management system and risk management system of their business environments. It consists of a linear diagram of electronic records management, moving from left to right. At any point along the linear aspect of this model, a risk situation may occur – in which case, we refer to Figure 26, which shows the participant view of how risk is managed within the SME cases.

7.7.2 The ‘Participant Risk Management Model’

This risk diagram (Figure 26) is essentially linear, and has five main components: awareness, analysis, treatment, evaluation and reflection. Practical action may need to be taken in order to mitigate or treat a risk. Any learning from this form of risk analysis and management is then fed back after evaluation and reflection upon the situation, in order to manage future risks.

Figure 26: The ‘Participant Risk Management Model’ – a model depicting risk management as perceived by SME participants in the study



This risk model is partially linear in form. Risk is first brought to the awareness of an SME employee, who then analyses what constitutes the risk, and its impact.

In an example from GAMMA, the similar examples of analysis and treatment of risk have occurred in ALPHA, where the failure of a server was identified as a major risk (analysis of the risk) and treatment (a technological fix, and then finally a new server purchase) was applied.

The element of evaluation designates an evaluation of both the analysis and the treatment applied to the risk. The dotted line indicates a recursion which only GAMMA took, in the light of their risk awareness and in an attempt to avert any future risk situations to customer data by asking staff to sign a contract declaring that they would not breach their employers’ terms.

In order to test these models’ plausibility, we can draw upon A1’s narrative to provide an incident where he dealt with risk within the records of ALPHA. The incident he described involved a failure with the storage of records: so at the point of ‘storage in system’, risk occurred. He was obliged to deal with the problem by applying his

understanding and immediately treating it as soon as it was discovered (awareness, analysis, treatment). His practical actions were related back to their records management system in the form of requesting a backup server, to prevent the loss of further data from the system in the event of another server failure. He later noted that experiencing the risk and loss had made him more aware of the need for such a solution (evaluation, reflection).

Table 13: Stages of commonality and dissimilarity between the ‘Participant Model’ and other records management models

Stages of commonality	Stages of dissimilarity
<p><i>Creation of record</i></p> <ul style="list-style-type: none"> - All records have a point of entering the system (e.g. ‘creation’) <p><i>Disposal</i></p> <ul style="list-style-type: none"> - All records have a point where they are no longer needed and are disposed of (e.g. ‘disposal’) <p><i>Assimilation of record</i></p> <ul style="list-style-type: none"> - Specifically an e-record only phase. This takes different forms in the different SMEs. In some forms, this occurs through digitization, and for other situations it is incorporation of data which has been ‘cleansed’ and then formed into a record. 	<p><i>Storage in systems</i></p> <ul style="list-style-type: none"> - Usually there is only one system in which records are stored. In the SME case studies <p><i>Record enters system</i></p> <ul style="list-style-type: none"> - This is usually at the point where a record has been created, but this may also cover the generation or recording of metadata to handle the forwarding and interaction made with an e-record (Bearman and Sochats, 2002). Although the function may appear to be identical with <i>assimilation of record</i>, this stage identifies that there is no dedicated records management system for the record to fit into.

7.7.3 The ‘Participant Records Management Model’ contrasted with others

Tables 13 and 14 describe the qualities of several models in comparison to the ‘Participant Model’ as proposed by the researcher. Table 13 refers to the aspects of commonality and dissimilarity between the ‘Participant Model’ and conventional records management models, and Table 14 extends this to a comparison against specific models.

The ‘Participant Model’ highlights the practical routine used by SMEs to effectively store and retrieve records. It looks only internally to the SMEs’ own needs or the needs of the individual employee. It assesses the movement of the record according to

the participant’s use, and does not place classification as an important step. We can infer that this is because the employees have another way of assessing and classifying the records that is intrinsic to each business and to each type of employee.

Table 14: Comparison of other records management models and the ‘Participant Records Management Model’

Features	Models				
	SME ‘Participant Records Model’	‘Pittsburgh project’ (Bearman and Sochats, 2004)	‘Records continuum’ (Upward, 2000)	InterPARES (‘COP’ and ‘BDR’ Models) (1999-2007)	‘Life cycle’ Model (Penn et al., 1989)
<i>Form of action</i>	Linear	Classificatory	Continuum	Modular	Cyclical
<i>A specific perspective?</i>	Reporting on the findings from the SMEs, from an SME practical perspective	Between business and academia	Multiple perspectives and holistic approach	Academic long-term perspective for digital preservation	Single perspective and aimed at hard copy use
<i>Defines a specific aspect of records management?</i>	No – Describes what participants have encountered as stages or records management	Yes – Describes the different approaches for business record preservation through metadata capture	Yes – Perspective approach in regards to ownership and use of records	Yes – Draws out a schematic for selection and preservation processes	Yes – Defines the activities and ‘life’ of hard copy records

7.7.4 The ‘Participant Risk Management Model’ contrasted with others

In comparing the ‘Participant Model’ to other risk management models, Why are neither model wholly linear diagrams? Firstly, there are no cycles observed (as postulated by other models such as the life cycle). The linear nature of the diagrams points to one thing about the narrated participant behaviour to/with risk – that they do not display any characteristics of immediate learning about their risk experience, or it is deeply implicit within their own narratives that such risk management is understood and then applied to other proto-risk situations. One exception is GAMMA. In looking at an example – their experience of the risk of data loss – the risk had such specific circumstances as to change attitudes and perceptions immediately. In terms of applying the knowledge of this risk to other situations, the difficulty is in isolating occasions where such knowledge would actually be useful. Immediate learning, therefore, may only take place under extreme circumstances which are unlikely to be repeated – thereby lessening the effectiveness of lessons

learned whilst experiencing such risk. Most important is the consideration that the participant risk model does not cycle around from its endpoint to its start ('reflection' – 'awareness').

7.7.5 Comparison of the 'Participant Records Management Model' and other records management models

We now move to the 'Participant Model' for records management, to examine which stages are common and which are dissimilar to other records management models.

Identifying these stages, and their relevance in the 'Participant Model', allows us to evaluate what differences there are between the theoretical models developed in current literature and the emergent, participant-based model from the study.

As can be seen, the differences between the models are those of utility, audience, and application: 'perspective' is an aspect of the utility of each model; the 'audience' for each model is considered in the applicability to 'practical records management' and clarification of a 'specific aspect' of records management. The application of the model is noted in its 'basis', as well as its perspective. From this table of comparisons, it is clearer where the researcher's own 'Participant Model' fits into an understanding of the range of models discussed in this study in terms of records management.

From Table 13, we can see that there are two stages which are dissimilar to other records management models. 'Record enters system' in Table 13 is a stage which reflects that a record has been entered into the SMEs' system of choice for records management – for example, *Sage*. This is linked to the other point of dissimilarity – 'Storage in systems'. To prevent unnecessary duplication of an e-record during its time of use, a single system of management, a record should only exist in one system. Table 13 refers to a narrower view of the elements of records management, but Table 14 looks at the wider picture for comparison against records management models. Table 14 compares the models described in detail in Chapter 3, against the 'Participant Model' in terms of the form of action seen in the model, its perspective, and what form of records management it specifies. The SME 'Participant Model' is the only model which focuses on SMEs. Whilst others (most notably InterPARES, 1999-2009) have drawn from the experience and knowledge of business records, the 'Participant Model' is built from the narratives of participants and so therefore is

developed from highly grounded material. It defines the business records activities of participants in the SMEs.

In looking at whom the models might benefit, academics and records management professionals alike might appreciate a model which reflects an SME perspective. Previously, there have been no attempts to model an SME viewpoint from emergent themes and evidence, and it is notable that all the other models bar InterPARES (1999-2007) are theoretically based. The value of the models is their innovation in this area.

7.7.6 Comparison of the ‘Participant Risk Management Model’ and other risk management models

There was a significant difference between the comparison of the participant records model and the comparison of the risk management model (Table 15), as the risk models which were chosen as exemplars in this study were predominantly graphical in nature, and looked at a prescribed approach to risk assessment and management, rather than at what actually happened within a business.

In relation to the ‘Participant Risk Model’, the stages of the ‘four Ts’ model indicates that there are four ways to treat risk. The ‘Participant Risk Model’ is not a model which identifies ways in which risk can be treated - it shows that risks are treated by a manner which the SME employee has chosen, which is later reviewed alongside the original risk.

Whilst the risk models identified in Table 15 are all represented by diagrams, some are more complex than others. Whilst the ‘four T’s’ diagram (Enterprise Nation, 2007) is the most simple, it lacks the depth of the other models in that it does not show the other elements involved in risk management. Whilst the ‘Participant Risk Model’ is simple, it is not quite linear in form – There was a loop of recursion identified in the case of GAMMA (the dotted line in Figure 26) linking ‘Reflection’ and ‘Awareness’, as they tried to implement a contract and thereby work with the trust of others.

Table 15: Comparison of other risk management models and the ‘Participant Risk Management Model’

Features	Models				
	SME ‘Participant Risk Management Model’	The Orange Book (HM Treasury, 2004a)	The Four T’s (Enterprise Nation, 2007)	‘Drivers of Risk’ (AIRMIC, IRM & ALARM, 2002)	Risk analysis of nanoparticles (Morgan, 2005)
<i>Form of model</i>	Mostly linear – some recursion identified	Graphical layout	Graphical layout	Graphical layout	Graphical layout
<i>A specific perspective?</i>	Details the view of the SME participant	An internal to external view	A general perspective on risk management options	Business-centred	A ‘snapshot’ of opinions from others collated as a diagram
<i>Defines a specific aspect of risk management?</i>	Looks at the process from start to finish and includes reflection	Looks at risk management within the context of Government	Looks at simple range of options	Looks at where risk may emerge in business	Looks at a specific instance of risk awareness

Morgan’s diagram shows the interrelatedness of risk factors in a scientific setting, but the ‘Participant Risk Model’ cannot do this – it only conveys an idea of risk, and does not state specifically what the factors contributing to a risk are. Those have to be identified by the participant.

Both within Morgan (2005) and within the AIRMIC model (2002), specific risks are named (eg. credit rates). There is no specific path as to what the business should then do when these risks occur.

The value of the ‘Participant Risk Model’ is that it shows the actions of an SME employee as taken from their own narratives. It does not dictate what an employee is expected to do, and it is notably a model formed from experience rather than theory.

7.7.7 Interactions between the ‘Participant Risk Model and the Participant Records Model’

Interactions between these two models is not necessarily precluded, but it is important to note that in terms of evidence emergent from the study, that risk management was nearly always detailed separately from records management. Whilst certain risks were identified as being an inherent problem with records, such as loss, there were no

instances noted of specific planning for risk management within e-records in general. All noted instances of risk management for e-records were usually undertaken in response to risks that had been encountered by the SMEs in the course of business. This may be an important factor in the future risk and records management planning for SMEs, and one which could be helped by having the 'Participant Models' to refer to in order to assess current practice.

Chapter 8: Conclusions

8.1 Introduction

In this chapter, achievement of the study's aims and objectives is discussed, and questions regarding issues not fully addressed within the study are answered.

The study itself stemmed from a studentship project, and the study area of SMEs was a personal decision. This helped to focus the work and gave it a particular depth. It also held a personal interest, having experience and knowledge of SMEs for some years as a non-critical outsider, but not formally as a researcher. The study took the opportunity to explore an area that had not been fully investigated before on such a scale, and involved the transdisciplinary aspects of corpus linguistics and narrative analysis. Transdisciplinary use of methodology and techniques for specific methods (such as corpora formation) played a significant role within this study and formed the backbone of its originality, as well as providing a structure for the more traditional elements of analysis such as triangulation of interview and questionnaire data.

The inclusion of such transdisciplinary aspects was a key element for the originality of the PhD study, and contributed to the density of the research conducted. The use of multiple corpora in order to identify specific language use has not been used within any other studies, nor was the concept of multiple 'shoebox' corpora an element of any other study used as evidence. It is a wholly original feature that works in tandem with the traditional elements of a study in the area of records management.

8.2 The study's aims and objectives reviewed

The study explored two main aims:

- To investigate risk in the context of electronic information and records management within small and medium sized enterprises (SMEs)
- To develop a working conceptual model or theory for risk management of electronic information and records

The objectives of the study were:

- To critically evaluate the vocabulary of risk and risk management
- To investigate the history and historiography of risk management and records management

- To identify the use of a common vocabulary of risk in records management within the SME context
- To investigate and analyse attitudes and drivers for risk management of electronic information and records management in SMEs; and
- To characterise the approaches to risk and electronic information and records management taken by SMEs

The objectives of the study were addressed by specific elements of the thesis, and supporting research which was published as a paper. These are now looked at in detail.

The history and historiography of risk management and records management was investigated through an article by Hay-Gibson (2009), which detailed the subject in terms of the historical roots of risk. The use of a common vocabulary of risk in records management within the SME context was investigated through the compilation of corpora from the narratives of participants. As has been explored and discussed in Chapter 7 (section 7.3), there was little support for the idea of a common vocabulary, but there was supportive evidence for a very idiosyncratic vocabulary within each SME, and for a range of ideas common to the concept of risk within all case study SMEs.

Attitudes and drivers for risk management of electronic information and records management in SMEs were investigated and analysed through examination of participant narratives. Terms which identified attitudes towards such risk management which had a high propensity of use were noted (see Appendices 7 and 10) and then arranged into themes. Such grounded themes were drawn out in Figures 20 and 21. Approaches to risk and electronic information and records management taken by SMEs were characterised in a set of diagrams made from the narratives of participants. These diagrams (Illustrations 1-8) helped structure ideas for the formation of models. It was identified that current models for risk management and records management did not accurately reflect the participant experience. Two models were formed from the narratives of the participants ('Participant Model' and

‘Participant Risk Model’, Chapter 7), which reflected the participant experience with records management and risk management.

In terms of the participant experience in narrative format, the models proposed by Ochs and Capps (2001) were examined, but did not quite reflect what had been found in the study. To highlight the aspect of reflection in feedback to risk management within the context of records management, another stage was proposed in a model of narrative emergent from the study (the ‘Narrative Sequence model’, Chapter 7) building on the extant models.

8.3 Vocabulary of Risk

The participants identified several risk incidents, after encouragement to describe their own experiences of risk, risk management and records management within their respective SMEs in interview. This drew from their own understanding and experiences, and their responses were used to form narratives including these incidents (Chapters 4 – 6). These were compared in Chapter 7 to the formations of models of narrative as observed by Ochs and Capps (2001). This exploration of participant responses is important to not only academic study, as it represents a little-researched area, but also to practitioners. Comprehending that SMEs may have an idiosyncratic vocabulary could help those working within businesses to identify their own specific terminologies for risk and records management.

We can conclude that whilst there may not be a conscious development of a vocabulary within SMEs to describe risk management in respect to records management, there is a significant relationship between some elements of language and the description of aspects of SME risk-records management. Whilst there is not enough conclusive data from three cases to make a significant declaration of particular relationships, it can be noted that there is a tendency within SMEs to use their own terms and phrases (see Appendix 10 for examples). This idiosyncratic vocabulary may make it harder for an external person to immediately understand the process of records management or use of records within an SME. Study of the narratives and the vocabulary recorded within each SME may help such an external person to gain access to this, usually internal, knowledge. The identification of a

cohesive shared vocabulary is therefore not possible. However, the overall themes of risk within each SME are reflected by terms (see Figure 19) which are representative of the different aspects of the grounded research.

The holistic framing of the themes and study areas in terms of diagrams is also a key product for this study. This links the original aims of the study with their research questions, and highlights how the themes themselves are linked into the study areas. Whilst these diagrams may be very specific and non-transferable, they amount to an important outcome in terms of answering some of the questions originally posed at its start.

8.4 Attitudes, Perceptions and Drivers

One key emergent theme in terms of drivers is that of technology and the role of computers in records management. There is an implicit concern about electronic media, exemplified by MB1 (BETA). In understanding more about his example, further light may be shed on similar thinking within SMEs.

MB1's natural reluctance to trust electronic media may stem in part from his experiences of the reliability of such items. His solution has been to gradually introduce a hybrid system that has been proven to work for his business. In this way, he exercises a form of risk management by prevention – by not wholly trusting his own electronic systems. This risk awareness is very specific, and can be attributed to a prior loss of records. Past experience has been a strong motivation to decrease his trust in the infallibility of computers – regarding the processing and storage aspects of e-records in particular. This shows the dichotomy between the need to acknowledge past experience within SMEs as a driver towards risk management, and the management of the complex transitory environment that e-records inhabit. Without the ability to learn from their past experiences, SMEs lose the impetus to manage the risks that they have already experienced, and thus lose a chance to instigate deeper control within the e-records environment. It is a reaction to past experiences that fuels future risk measures implemented by the SME, and this may have important consequences for the interaction of records managers and SME employees and managers. In the same area of technology, the concept of the acceptance of a

paperless office is one that is questioned in terms of the drive towards e-records. This driver incorporates the current understanding of the issue (as it is discussed by Sellen and Harper, 2002).

Looking at the patterns in the themes of attitudes towards risk, the commonalities shared by all cases can be approached first by looking at the attitudes they have to risk within records management. All the participants note that they do not like risk when it happens, and none mentions a 'positive' aspect of risk as it happens to them. This is accompanied by the feeling that there is an element of chance to risk, such as an inability to plan for every possible problematic scenario, or the concept that no risk they experience is positive in any way. However, there are diverse reactions to risk, where an emphasis on the need for planning to prevent the next risks (e.g. ALPHA's A1 and BETA's MB1) contrasts with a dramatic scale of preventative measures in order to eradicate specific risks even before they occur (e.g. G2 and his use of password generation due to concern about password vulnerability). This pattern suggests reaction to risk, rather than proactive reaction, and that the reaction is often more important in both the short and long-term. One might theorise from this that SMEs have a reactive negative attitude to incidents of risk that leave them predisposed to future incidents.

8.5 Do multiple roles in an SME confuse the overall purpose of an employee when dealing with risk in the terms of e-records management?

In this situation, it does not appear to do so. Whilst A1 is approached as someone who holds data (within his inbox) and who can search for data which is stored in places other than where they should have been filed, he acts in the manner of a records management professional.

Multiple roles may make risk management within records management specifically difficult in terms of the employee's priorities. If this means that one employee has many aspects of risk management or of records management to oversee, then the difficulties may lie in ensuring that no risk has been left unassessed. Another difficulty may lie in assessing who is the correct authority in cases of both risk and

records management. In the cases investigated by the thesis, every SME had at least one employee who took on several roles within the business. Whilst the division of labour in such a way may be more clear-cut on paper, there were certain confluences of duties noted - such as A1's role as overall records manager and the manager responsible for computer systems, B3's role of counterman in inputting data for records, and workshop employee in chasing the others for data inputs, and G4 as a senior secretary and customer records manager. It is important to note that none of these roles seemed to strongly conflict with another. However, in maintaining these roles, some duties appeared to emerge as specific to neither individual role. Participants who perform records management, such as B3 and A1, often work directly with forms of risk management as seen in the model of records and risk management.

Insurance and financial elements of auditing

In terms of looking towards other risk management models, specific risk models for financial risk, or risk management principles for financing were not covered during this study. The overall concepts of risk and risk management – e.g hedges in hedge funds - are not a comparable form of risk management.

The implications for understanding insurance and financial elements of auditing for SMEs are vitally important, but in terms of the narrative evidence from participants, it does not remain evident at the forefront of the SME business mind.

We may surmise that it is either an occasional consideration that is outside their normal remit, or it is a normal consideration which is within their remit, but it so normal and so much a subconscious part of their routine that they have not noticed its absence not have voiced its presence adequately. As the former is less likely than the latter, we may consider that it could be a mixture of both. It is more likely that they are aware of the fact that accountancy issues of auditing do impinge on their records management responsibilities. Without further study into this specific phenomenon, little can be adequately speculated on it from the evidence already collected.

One further point remains in that it was remarked that the fSSM diagram could (for BETA) be used as a form of aide-memoire for any external risk assessment process (e.g. an audit). If the idea had already been formed that the fSSM diagram was something that actually reinforced the validity of the records creation and records management systems already in place within the business, then the role of the audit artefact should not have been an alien concept.

8.6 Approaches to Risk

In terms of the tripartite set of study areas, that of risk management was rewarding. The need to untangle the sometimes very similar areas of management between ‘risk pertaining to records’ and ‘risk involving records’ was something that was approached through the description within the narratives of the participants. There are no issues within the records management and risk management within SMEs which are wholly novel or have not been already represented in records management literature, but it is hoped that specific factors – such as drivers and motivators – which have been linked to the themes emergent from the cases. It is only in the consideration of these themes that the cases can relate such specific factors. In terms of the objective of looking to the history and historiography of risk management, themes such as the value of ‘risk management’ in general in other areas, and risk management as an actual discipline were investigated. Authors such as Covello and Mumpower (1985), Althaus (2005) and of course, the crucial work by H. Felix Kloman (1999) were used as a springboard towards the reconceptualization of risk (Hay-Gibson 2008). Moving now to two key questions in terms of this study’s results, the participants and their reactions to risk are investigated.

Within the case studies, the positive elements of risk were not fully described, as risk is not viewed as positive – there is too much clouding of the conception of the term ‘risk’ for that to happen within their narrative’s glossaries.

Positive terms for risk, such as ‘Chance’ might be a glossary term for positive risk, but firstly it was not identified explicitly as such by any participant and secondly, it was not identified as a high propensity term. The importance of context in terms of the philosophical idea of risk within SMEs is paramount. Often, awareness of the

singular risk incident prompted a more general awareness of other risks, sometimes not physically or practically related to the original incident. This can be said to be a more philosophically influenced consideration of risk.

The concept of being externally audited by either financial or legal obligations to the business was not one that was overtly brought up in the discussion of systems and issues within the participant narratives. The role of an auditor in the case study businesses tended to be minimised in the descriptions and the diagrams of the participants. This is a reflection not of an absence of official audits from procedures and processes within the case study businesses, but is more likely to be reflecting the point that external audits (from both accountants and other external bodies) are not an internalised business procedure. Their place, therefore, is part of an external awareness for the business.

Legal obligations for the SMEs were not detailed in terms of the study, because this was not an emergent theme or factor in the grounded element of narratives.

8.7 Are heightened reactions to risk rewarding for the SME?

A heightened awareness of information security may not reward the SME. One important example is GAMMA. In terms of the use by GAMMA of large-scale industry methods with which to conceal passwords and to secure systems, this approach was only effective in cancelling out the risk of an external threat. The risk of an internal threat was not adequately managed in terms of records management and protection of records holdings, and this has perceptibly changed their outlook on records management security. This can be seen in the incident which G1 and G2 mention – that of the records which were stolen by a former employee of their business. In terms of the prevention of information loss, the questions in relation to records management were not holistic enough: “How secure are the systems in terms of how the data is held?” can be answered by more complex passwords and systems; “How secure are our systems in terms of how the data is accessed?” is a more profound question, and, in researching this, perhaps a more lasting solution could have been found for the safety and retention of those customer records.

The reapplication of a contract system for employees addressed the basic concern of safety of the records management systems from within the business: If an employee was planning to leave, then a refusal to sign an employee contract between themselves and the SME could be taken as an indication of possible defection or of unreliability. The formality of establishing a contract was thought by G1 to have little legal weight, but just enough to be a corrective step to the current system of trust in its employees. Heightened risk reactions can also mean heightened responses to potential risks.

Digital records are accepted by GAMMA as the way that business is conducted for them. Their concerns are how to maintain their holdings, and not necessarily about the format in which they are held. G4 has identified that there is a difference in how the records are used. E-records are sometimes copied into hard copy in order to be used more widely within the workplace, but these copies are temporary and not part of overall records holdings. This may mean that some SMEs may well choose to continue using both formats to maintain their records whilst acknowledging the difference in medium.

8.8 Is self-awareness of risk an asset to SMEs?

Some specific points were brought up within the study relating to the objective of the analysis of attitudes and drivers for risk management. Again using GAMMA as an example, G4 is used more as a records keeper than anything else, yet she is a secretary. She refers to herself by the role that the records play.

Self-perception of specific roles within the SME can often be an indication of who takes responsibility for records. Though this was in part explored through the typology, the idea of self-perception from a participant's viewpoint is explored by framing it in terms of a single employee. G3's self-perception feeds into the cross-case phenomenon of the self-awareness of the multiple roles of employees within a small business. As the four layer diagram and the typology member-checking table (Figure 21 and Table 11) suggest, the confluence of roles within the business appears to be a phenomenon that occurs in all of the cases within the study. The question of self-awareness of the roles that employees play within the SMEs is slightly different. Whilst the managers in each case understand that each employee may have a specific

role, the employees themselves may not feel as strongly about pigeonholing their roles within specific boundaries. G4 notes that her role may need to be performed by another person whilst she is on holiday, which indicates that roles within the SME (and especially those involving records management) may require more flexibility about who performs them in case of staff absence.

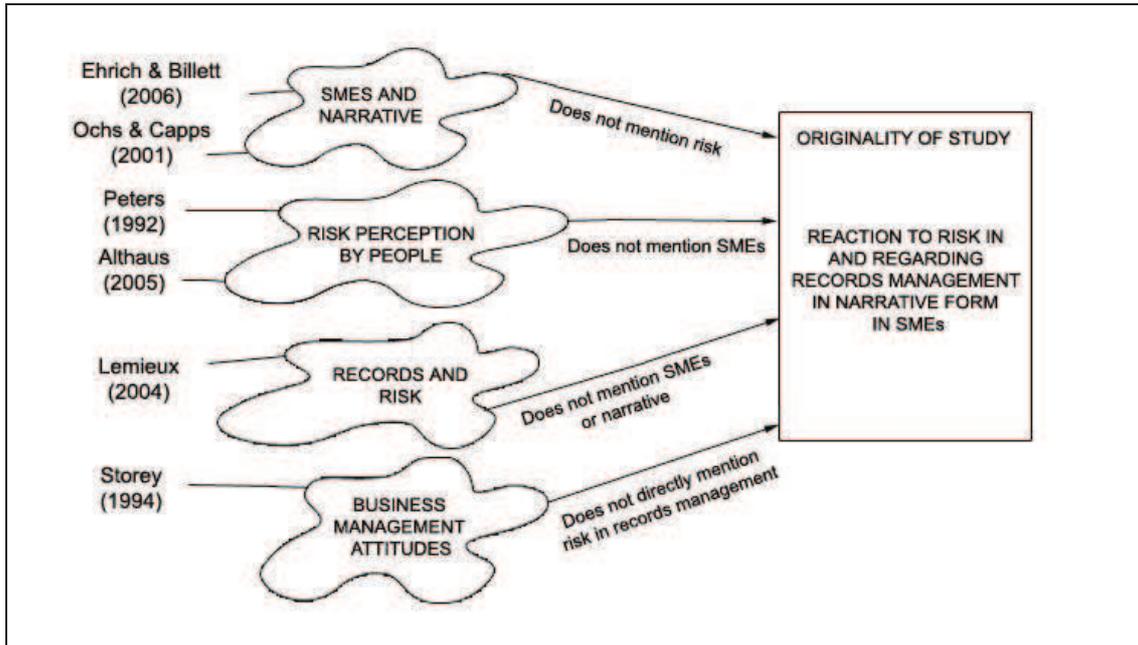
The issue of technology is a concern that was noted as a theme linked to risk and records management, as seen in Chapter 7. More specifically, technology is a concern to some users – exemplified in BETA – when the issue of risk comes about through the concern that the use of technology can put electronic records at risk. Two conflicting views are seen in the commentary to MB1’s own narrative – those of the acceptance of a spectrum of use for e-records, and MB1’s own view that he does not entirely trust the machinery storing and processing e-records.

8.9 Contribution to knowledge

This study researched a participant group that had seldom previously been the subject of transdisciplinary investigations in the area of risk and records management. SMEs have certain specific limitations (see Chapter 3, section 3.6, Data Collection) in regards to their participants’ availability, and so therefore any method – such as diagram making via fSSM – which maximises the potential to collect data from them is relevant and useful. The fSSM diagram technique as detailed earlier in Chapter 3, Section 3.8.5.2, gave a specific advantage to the interpretation of data gathered within SMEs.

Moving to the scope of originality in the subject in comparison with the current key literature, Figure 27 shows this in terms of specific papers. Four themes have been highlighted which feed into the originality of this study. For instance, whilst Erich and Billett (2006) and Ochs and Capps (2001) highlighted the importance of SME narrative, neither of their works mentioned risk. Similar issues have been raised for the other texts and papers cited in the diagram. Figure 27, in order to highlight the originality found within this thesis, shows the gaps within current literature in the disciplines of risk management, records management, and the subject area of business, focusing down onto SMEs.

Figure 27: Illustration of originality in subject in comparison with current key literature



The models offered by the study are a transferable product, and it is hoped that these may be compared with other forms of records management model as a way of verifying the observations made within the cases of the study. They also provide an insight into how records management not only takes place within an SME, but also the self-reflective and self-corrective measures that are taken in terms of the care of records and the records management system overall. The aspects of the narrative approach rear their head once again as the form of narrative communication of an event which was or posed a risk to records can be described as narrative form of a type that has been already described by researchers, with an additional reflective step. What does this mean for risk in terms of records management within SMEs? Firstly, we must reassess what form of support SMEs will need not only in the form of technology, but in their responses and reactions to it. The aims of the PhD study were (as discussed in section 8.2) to investigate SMEs and objectives in order to achieve a better understanding of how risk was perceived in the context of electronic information and records management, based on participant narratives. By collecting those participant narratives and analysing them, this study has investigated a range of expressions, terms and ideas related to risk within records management. However, collection alone is not of ideal use to SMEs because as has been previously noted in this chapter, vocabulary is idiosyncratic and can vary between SMEs. This study has

provided an original contribution to the knowledge of records management by way of description and analysis of some aspects of SME and risk management vocabulary and behaviour, in relation to records management.

What can be deduced from the vocabulary of the SMEs is their perspective on risk management and risk awareness. Specific words may have an intrinsic theme within their meaning (see the corpus in appendices 7 and 10) which have been explored in Figure 19, and linked back to the three elements of risk management, records management and SMEs. Figure 21 goes further and links specific words to these elements.

As there are themes in the narratives that are specific to subjects – such as ‘technology use’, this may help an academic audience approach specific subjects with an eye to identifying key words within participant narrative that signal this theme. For practitioner audiences, a vocabulary of terms in a certain theme such as ‘Eventualities of risk management’ might well be of use in self-identifying risk management in their own processes. Such self-identification has been seen as a help by A1 in his decision to get a new server (section 6.3.1). If further work were to be done on the use of thematic words in participant-based texts, it would be in the expansion of a context-based approach to the use of thematic words. By identifying terms with intrinsic meaning in a specific thematic area, such words can be used in works aimed at practitioners and laypeople in order to make them more meaningful – as this was identified as a discrepancy in comprehension by MBI (section 5.2.4).

This further work could be utilised by either organizations working with SMEs, or by academics exploring further into the meaning of risk for SMEs by asking pertinent and meaningful questions to participants, using a vocabulary to which they can relate.

8.10 Contribution via methodology and study design

Firstly, the research process was a grounded, qualitative approach which guided the methodology and the overall principles of the study. The steps of the research process were guided around making the most of the qualitative evidence and approach, whilst at the same time showing an understanding of the limitations of the study. One main

finding was the usefulness of the fSSM diagrams in evaluating the processes within each SME.

The use of a narrative approach to represent the participants was a transdisciplinary idea which worked in the way that the researcher intended, and allowed the most intricate components of the study - the participants themselves – to be seen as not only intricate but also understandable, and directly pertaining to the aspects of the study areas. Their experiences and behaviour helped the understanding of the researcher, and also of the reader of the study. The themes emergent from their contributions are perhaps more readily understandable in terms of their basis in narrative than in the context of an interpretation of interview material which can be quoted from out of context.

How did the ‘Loeb’-style narratives improve the study?

As originally planned for the study, the idea to emulate the Loeb texts would have meant that for each page of participant narrative, there would have been a corresponding page of annotations on that specific section of text. This would have described nuances within the text and any information which otherwise would have been established within the footnotes of the thesis.

Instead, a compromise was reached by placing a series of analyses of the participant narrative after the text. These interpretations allowed a reader to understand the texts more fully, as well as scrutinising details of the texts themselves. Placing the commentaries after the text allowed for an easier ‘flow’ to the study. Intertextual commentaries work best for translations of material, whereas an adapted ‘Loeb’ method of placing descriptive notes after the narrative itself would allow relevant comments to be made on the text, explaining such points as the relevance of a participant’s attitude or specific approach. In terms of classical texts, the Loeb method placed obscure references into a context that could be immediately referred back to the narrative text. This method would have framed how the evidence from interviews could be put across to readers. With regard to the study, an approach of contextual notes allowed the reader to add a similar dimension of textual comprehension. The difficulty in keeping exactly to the format as shown by the Loeb Classics books was that this study was not offering a direct translation of a text: instead, it added analysis

of specific points within the narrative. Interpretation of events or aspects of information and critique were expanded upon – much like the footnotes of the Loeb texts. This improved both the comprehension of the narratives and their grounding in the time-period of the study.

What were the benefits of the corpus linguistics method to the study?

The benefits to the creation of a corpus, such as the ability to triangulate the evidence and the use of a transdisciplinary frame through which to view the evidence, outweighed the disadvantages, such as the length of time needed to construct it. The creation of a corpus took up a great deal of research time, and investment of research time was spent in learning how to build a corpus, the creation of corpus rules, and the identification and self-training with specialist computer programs. It is not a data analysis technique that can be effectively used for all smaller projects, as it has been evident from both the study and from prior research by other professionals that when more data is incorporated into a corpus, the more statistically reliable it would be. This leads into a related question: can a method of data analysis that can be considered to have qualitative and quantitative characteristics then be judged in terms of a solely qualitative view?

To this end, the quantitative elements of the methodology (the corpus and its word counts) were explored in Appendix 7, where opinions could be formed in regards to the nature of the quantitative evidence and what this meant for the study. The qualitative elements of the corpora were discussed and evaluated in Chapter 3 (methodology) and also within Chapter 7. The qualitative aspects of the corpora represented the area of data collection from which the most significant amount of evidence could be analysed. Whilst several methods of analysis were considered for the study (such as SSM), corpus linguistics was chosen as a method of analysis because it looked specifically at the aim of identifying particular phraseology used by SMEs, and the need to investigate this. Whilst narrative analysis helped to break down some of the analysis of the language, corpus analysis provided an analysis which was more grounded in the overall use of specific phrases within a particular SME.

8.11 Reflection on methodology and study design

In terms of the tripartite set of study areas, the study area of risk management was also rewarding. The need to untangle the sometimes very similar areas of management between 'risk pertaining to records' and 'risk involving records' was something that was approached through the description within the narratives of the participants.

The issue of records management's study area relationship with risk management is still not fully understood in a capacity beyond the cases presented, but it is hoped that specific factors – such as drivers and motivators – have been linked to the themes which were emergent from the cases. It is only in the consideration of these themes that the cases can relate such specific factors.

The limitations of the methodology were that whilst the data which emerged was very rich in detail, not all of this was reflected in the high propensity tables of the corpora. Key terms which had a lot of meaning and insight into the nature of risk management within the SMEs, were occasionally not of a high enough propensity to emerge in the data tables (Appendix 7). This was a limitation in the interpretation of data, and if the study were to be duplicated or expanded, this would have to be an element which needed to be addressed. Whilst the use of the corpus precludes the inclusion of words with a lesser propensity, it may benefit the richness of the study to look at specific words which evoke significant themes or meanings. 'Trust', for example, is one of these terms which although not as high propensity within the GAMMA corpus, evokes the dilemma in regards to their reliance on employees' discretion and fidelity in the treatment of customer data.

The holistic framing of the themes and study areas in terms of diagrams is also a key product for this study. It connects the original aims of the study with their research questions, and highlights how the themes themselves are linked into the study areas. Whilst these diagrams may be very specific and non-transferable, they are a key product for the study in terms of answering some of the questions originally posed at its start.

The models offered by the study are a more transferable product, and it is hoped that these may be checked against other forms of records management model as a way of verifying the observations made within the cases of the study. They provide an insight into how risk management not only takes place within an SME, but also the self-reflective and self-corrective measures that are taken in terms of the care of records and the records management system overall. The aspects of the narrative approach rear their head once again as the form of narrative communication of a risk event can be described as narrative form of a type that has been already described by researchers, with an additional reflective step.

Overall, this study has provided an original contribution to the knowledge of records management by way of contributions to knowledge of some aspects of SME and risk management vocabulary and behaviour in relation to records management. There have also been significant side contributions by way of the publication of papers on the history and historiography of risk management, and of the use of VoIP as a method for distance interviewing as a suitable alternative to face-to-face interviewing. It is hoped that the products of this study will be further of use to the academic community, as well as to the community of SME employees and managers.

What challenges were identified in the design phase?

Some issues were identified in terms of the design of the study, which were approached throughout the study and evaluated as to possible solutions. These were:

- Sampling of participants – numbers of participants from each tier
- Participation in questionnaire completion
- Considering remote interviewing as an alternative to direct face-to-face interviews

Was the choice of three cases representative for the study?

Research into the practices of case studies through the literature of Stake (2000), Yin (1993, 1994) and others (see chapter 3 for the exploration of this area of methodology) identified that there was great variation in the number of cases and participants within cases, and that there were no overall standards governing these. The amount of rich evidence that the cases produced in terms of narrative and diagrams was felt to provide a strong analysis of representative behaviour within

SMEs, as the emphasis in this study was on the experiences of both the individual and the SME. Whilst other studies (e.g. Ehrich and Billett, 2006) have incorporated more participants, their work lacked the intrinsic detail of the participant experience that provided a unique angle of originality within this study.

What advantages did the choice of participants have for the study?

The choice of participants in the study was one that was based on the availability of participants from the SME. Not all members of the SME could take part in the study at the same time, and this is a point which is important to note for others attempting study within such businesses. The emphasis of the need to dedicate time to the running of the business – as there are fewer workers – necessitates a paucity of active participants, and the evidence taken from them is still as relevant as evidence taken from a larger group.

Although a view of more varied participant roles might have changed the character of the narratives, it became evident that, through all three SMEs, staff within the SMEs took on multiple roles. This allowed the study to investigate representations of different roles by the same participants, and led to the overall collection of evidence from varied roles. However, if the balance was altered, there would need to be a different system of checks and balances to make sure that people who work with records and more specifically, e-records – those who have a significant part in the document management and creation cycle – would be all represented. The understanding that not all people in the business hierarchy could be represented because of staffing problems must have a place in the selective choice of participants. As it costs significant time and money for the SME to provide access to these people, expansion may not be preferable as an option – and widening the study may alter the base composition of the corpora that are created, but not necessarily with any immediate benefits.

Specific difficulties in using a more varied selection of participants may include direct access to individuals, such as part-time employees or offsite employees. This may be in part remedied by the use of remote interviewing where possible (Hay-Gibson, 2009), but it may also mean that the individual requires remuneration from the SME for providing personal access on that day – such as a part-time employee might

expect. This is an aspect which would have to be countered either with provision for such access, or the understanding that access to such people is limited to what the SME can willingly provide. One specific methodological aspect encountered in the study was that despite alteration using participant response and relating to emergent content, the questionnaire used was not responded to well. This may have altered the amount of material collected.

There is very little that any researcher can do to counter the problem of trying to persuade participants to fill in a questionnaire when they do not want to. It also does not fit with the ethics of the study and, with reluctant participants, one has to seriously doubt the validity of any evidence obtained as a matter of course.

Participation is a matter of encouragement versus achievability – there may be some participants who are only reluctant to complete questionnaires without conditions – such as BETA’s participants who found the labour of understanding and debating the questionnaire without other contextual aids difficult and unrewarding. Their attitude, encompassed within such comments as ‘If you read it to me, I would do it’, describes the need for such context against what may seem to be acontextual questions. There may also be others who will refuse to take on any such questionnaires.

Questionnaire reluctance can be due to time constraints as a specific employee for an SME, the wording of the questions, or a perceptible ‘general dislike’ for the process (i.e. a bad experience in the past, difficulty in reading text, dislike for paperwork). Within this, there may be a ‘learned dislike’ of the questionnaire. This can emerge from a bad experience of lengthy or difficult questionnaires, or an anticipation of lengthy time demands.

Alternatives to the questionnaires were suggested, and met with acceptance. Led questionnaires, where the questionnaire was administered to the participant by the researcher, was in effect taking a different method approach in order to capture the same information. As the participant could stop the researcher and ask for explanations of the issues of questions, this lessened the difficulty of seemingly acontextual questions.

One aspect of questionnaire use is that questionnaire return is not guaranteed, and can take a great deal of time to analyse and transcribe when they are returned. They may not be returned as fully completed. Time needed to be factored into the study for the analysis of such material. Companies that have more experience with questionnaires often have an easier time in dealing with questionnaires, and this was reflected within the study as ALPHA's ease of questionnaire use. It is therefore advisable not to be overly reliant on questionnaires as the singular source of evidence.

Overall, the solution chosen in regards to questionnaires was one that tried to make the best of the dilemma presented by two of the three cases, and which made most use of the led questionnaire approach whilst also utilising a more typical questionnaire issue and return for one case. As triangulation of evidential sources can theoretically make a case study more rigorous in appearance, it would be more sensible to also use another method of evidence gathering in such a study in order to develop more of a holistic understanding of the field.

The concept of being able to relate to the researcher by assessing both voice and face is important both in VoIP and face-to-face interviewing (Hay-Gibson, 2009). In terms of interviewing technique, it reflects that VoIP may have an edge over telephone interviews by virtue of being able to see the other participant where there are video facilities enabled

8.11.1 Shared aspects of theme confluence of 'technology', 'loss' and the physical record'

MB1's natural reluctance to trust electronic media may stem in part from his experiences of the reliability of such items. His solution has been to gradually introduce a hybrid system that has been proven to work for his business: during the introduction of a machine which scans and digitizes his customer records, he maintains both a digital copy and a hard copy of specific records so that he can continue to access records in both formats. In this way, he exercises a form of risk management by prevention – by not wholly trusting his own electronic systems. This risk awareness is very specific, and can be said to be a direct result of the loss of records through a server failure, and the loss of records through the actions of a computer virus. The driver behind his attitude to this particular risk has been past

experience, and it has been a strong motivation to limit his trust in the infallibility of computers – regarding the processing and storage aspects of e-records in particular. This example shows the dichotomy between the need to acknowledge past experience within SMEs as a driver towards risk management, and the management of the complex transitory environment that e-records inhabit. Without the ability to learn from their past experiences, SMEs lose the impetus to manage the risks that they have already experienced, and thus lose a chance to instigate deeper control within the e-records environment. It is a reaction to past experiences that fuels future risk measures implemented by the SME, and this may have important consequences for the interaction of records managers and SME employees and managers.

In the same area of technology, the concept of the acceptance of a paperless office is one that is questioned in terms of BETA's drive towards moving towards e-records. This drive incorporates the current understanding of the issue (and as it is discussed by Sellen and Harper 2002) and discusses BETA's concepts regarding this.

MB1's idea of the paperless office is more borne out by his experiences than a specific conceptual belief. Having had experience of both hard copy and electronic records, his ideas of the benefits of e-records have been shaped by instances where paper records have been hard to locate, or where storage has become an issue. As MB1 is head of his SME, it is far easier to implement aspects of e-record processing and management from a higher level down to other levels of the business. His attitude towards computers, as described in his narrative, is a cautious one: he has a desire to further e-record usage from the utility of the concept, and not from an enjoyment of the use of progressive technology.

8.11.2 Disparity between the views of academia and of SMEs in perception and self-perception

The seeming disparity between the views of academia in regards to SMEs and their own self-perception is something which was not fully explored by the study due to the fact that it is a phenomenon entirely separate from risk management and records management within SMEs. It is vital, however, to understand that the academic perception of SMEs may well be strikingly different in terms of the observed and experienced sociology of the small business. The difficulties experienced in the study

by both the investigator-researcher and the participant were mainly in terms of the way that a question is asked between the register of the researcher-academic, and how it is interpreted by the participant-listener. There may be a significant gap.

Becker (1998, pp. 58-59) notes that “part of the process of constructing a narrative is a continuous redefinition of what the theory is, of what the dependent variable actually is.” The theory of narrative construction outside the limits of this study, but the concept of how participants construct a narrative around their own perceptions of what was, is and has been happening in their SME, is relevant. The participant experience is indeed one of continuous redefinition within the telling of their narrative. The ways in which questions are asked from the researcher-academic perspective may alter the structure of the story depending on how the questions are asked. Asking ‘why’, for instance, may produce a defensive answer, but asking ‘how’ may produce a lengthy explanation of the reasoning behind an activity (Becker, 1998 p. 58-59).

8.12 Summary

To summarise, the study has explored several qualitative aspects of the interactions of records management, risk management, and the importance of SMEs. Whilst the investigation has found that there is no glossary of terms unique to all SMEs which shows a language of risk, there are some terms which have provided an insight into the forms and styles of risk management in records management within the three case study SMEs. In developing a greater understanding of SMEs as an entity, this study has explored the hypothesis that it is possible to construct a glossary of vocabulary with SMEs that deals with risk. It has been conjectured that, whilst this is the case, the terms used in the glossary are by no means exclusively linked to risk management or to records management, and are inherently idiosyncratic. In terms of the findings within the study areas of SMEs and risk management, it was discovered that SMEs tended to view risk as a wholly negative factor. Positive aspects of risk were not introduced in any participant narratives without researcher prompting (as described in Chapter 3, section 3.6.2 – 3.6.2.1. In terms of findings within the study areas of SMEs and records management, it emerged that records management proposed by Penn et

al. (1989) was similar to the life-cycle of e-records as seen in the 'Participant Records Management Model'.

Bibliography

- Acland, G. and Reed, B. (1999) *Documenting Business: The Australian Recordkeeping Metadata System*. [Online]. Available at: <http://www.infotech.monash.edu.au/research/groups/terg/publications/adcs.html> (Accessed: 24/05/10).
- Adamson, S. (2004) *Youth Crime - A Case Study of Intensive Supervision in a Neighborhood Context*. Hull: University of Hull/Sheffield Hallam University.
- Aitchison, J. (1992) *Teach Yourself Linguistics*. 4th edn. Abingdon: Hodder and Stoughton Teach Yourself.
- AIRMIC, ALARM, IRM (2002) *A Risk Management Standard*. [Online]. Available at: http://www.airmic.com/en/other/document_summary.cfm/docid/285D292B-C593-4CA2-8D605B2A79D7744E (Accessed: 07/06/10)
- Althaus, C. E. (2005) 'A Disciplinary Perspective on the Epistemological Status of Risk', *Risk Analysis*, 25 (3), pp. 567 - 588.
- Antaki, C. (2011) *Conversation Analysis Tutorial*. Available at: <http://www-staff.lboro.ac.uk/~ssca1/notation.htm> (Accessed: 26/02/11).
- Arrow, K. J. (1965) *Aspects of the Theory of Risk-bearing*. Helsinki: Yrjö Jahnssoonin Säätiö.
- Baker, P., Hardie, A. and McEnery, T. (2006) *A glossary of corpus linguistics*. Finland: Edinburgh University Press.
- Bates, M.J. (2005) "An introduction to Metatheories, Theories and Models" in Fisher, K.E., Erdelez, S. and Mckechnie, L. (eds.) *Theories of Information Behavior*. Medford: Information Today. pp. 1-24.
- Baxter, J. and Eyles, J. (1999) The Utility of In-Depth Interviews for Studying the Meaning of Environmental Risk, *Professional Geographer*, 51 (2), pp. 307-332.
- Beal, J. C., Corrigan, K. P. and Moisl, H. L. (eds.) (2007a) *Creating and Digitising Language Corpora, Vol. 1: Synchronic Databases*. Basingstoke: Palgrave Macmillan.
- Beal, J. C., Corrigan, K. P. and Moisl, H. L. (eds.) (2007b) *Creating and Digitising Language Corpora, Vol. 2: Diachronic Databases*. Basingstoke: Palgrave Macmillan.
- Bearman, D. (2006) 'Moments of Risk: Identifying Threats to Electronic Records', *Archivaria*, 62 (Fall), pp. 15-46.
- Bearman, D. and Sochats, K. (2002) *Functional Requirements for Electronic Evidence* [Online]. Available at: <http://www.archimuse.com/papers/nhprc/BACartic.html> (Accessed: 24/05/10).

- Bearman, D. (1993). "Archival Data Management to Achieve Organizational Accountability for Electronic Records." *Archives and Manuscripts* 21(1). pp. 14-28.
- Beaulieu, M. (2003) 'Approaches to User-based Studies in Information Seeking and Retrieval: A Sheffield Perspective', *Journal of Information Science*, 29 (4), pp. pp. 239-248.
- Beck, U. (1992) *Risk Society: Towards a new modernity*. London: Sage.
- Becker, H.S. (1998) *Tricks of the Trade: How to Think about Your Research While You're Doing It*. University of Chicago Press: USA.
- Beer, S. (1979) *The Heart of Enterprise*. Chichester: John Wiley and Sons.
- Belbin, M., Forsyth, P., Hindle, T., Landsberg, M., McDonald, M., Ries, A., Ries, L. and Sadler, P. (eds.) (2008) *Good Small Business Guide: How to Start and Grow your own Business*. London: A & C Black.
- Bentley, P. and Sparrow, J. (1998) 'Risk Categorization by Small Business Owner-managers', *Journal of the Society of Fellows*, 12 (2), pp. 48-65.
- Berg, B. L. (2007) *Qualitative Research Methods for the Social Sciences*. 2nd edn. London: Pearson.
- Bernstein, P. L. (1996) *Against the Gods: The Remarkable Story of Risk*. USA: John Wiley and sons inc.
- Biber, D., Conrad, S. and Reppen, R. (1998) *Corpus Linguistics: Investigating Language Structure and Use*. Cambridge: CUP.
- Boyce, F. C. (2008) 'Our Children Won't Succeed if They Don't Read Books', *Times Online*, 08/02/2009 [Online]. Available at: http://entertainment.timesonline.co.uk/tol/arts_and_entertainment/books/article5682895.ece (Accessed: 08/02/09).
- Boyd, R. (2006) 'You Got Nailed by Roddy Boyd – New York Post Online Edition: Business', *New York Post Online*, 14/03/2006 [Online]. Available at: <http://web.archive.org/web/20060823001400/http://www.nypost.com/business/65190.htm> (Accessed: 12/02/09).
- Boyne, R. (2003) *Risk*. Bury St Edmunds: OUP.
- Brier, S. (2008) *Cybersemiotics: why information is not enough!* University of Toronto Press.
- British Standards Institute (2001). ISO 15489-1 *Information and Documentation – Records Management*. London, British Standards Institute.
- British Standards Institute (2002) *Guide 73: Risk Management – Vocabulary – Guidelines for Use in Standards*. London, British Standards Institute.

Brockhaus, R. H. (2000) 'Risk Taking Propensity of Entrepreneurs', in Storey, D. J. (ed.) *Small business : critical perspectives on business and management*. London: Routledge, pp. 1247 - 1259.

Brockington, G. (2008) 'The Tipping Point – Records Management in the Hannigan Era', *Records Management Bulletin*, 144, pp. 3 - 4.

Burnard, L. (1999) *Is Humanities Computing an Academic Discipline? or, Why Humanities Computing Matters* [Online]. Available at: <http://users.ox.ac.uk/~lou/wip/hc.html> (Accessed: 14/07/09).

Business Link (2011) "Keeping Company Records and Documents | Business Link". Available at: <http://www.businesslink.gov.uk/bdotg/action/detail?itemId=1073791051&lang=en&type=RESOURCES> (Accessed: 21/01/11).

Cauchi, J. (2000) "Access and Security: A Risk Management Approach" *ARCHIFACTS* October pp. 14-23.

Chambers Harrap Publishers Ltd. (2009) 'Chambers | Free English Dictionary' [Online]. Available at: <http://www.chambersharrap.co.uk/chambers/features/chref/chref.py/main?query=glosary&title=21st> (Accessed: 31/12/09).

Charmaz, K. (2006) *Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis*. London: Sage.

Checkland, P. and Scholes, J. (1990) *Soft Systems Methodology in Action*. Chichester: John Wiley and Sons.

Cho, H.-K., Trier, M. and Kim, E. (2006) 'The Use of Instant Messaging in Working Relationship Development: A Case Study', *Journal of Computer-Mediated Communication*, 10 (4) [Online]. Available at: <http://onlinelibrary.wiley.com/doi/10.1111/j.1083-6101.2005.tb00280.x/full>

Conklin, E. J. (1992) *Capturing Organizational Memory: Groupware '92*. San Jose: Morgan Kaufmann.

Consultative Committee for Space Data Systems (2002) *Reference Model for an Open Archival System (OAIS): Blue Book 1*, Washington DC USA, CCSDS [Online]. Available at: <http://public.ccsds.org/publications/archive/650x0b1.pdf> (Accessed: 31/05/10)

Cornwell Management Consultants Plc. (2007) "Model Requirements for the Management of Electronic Records (MoReq)." Available at: <http://www.cornwell.co.uk/edrm/moreq.asp> (Accessed: 04/01/2010).

Cortazzi, M. (2001) *Narrative Analysis*. London: Routledge Falmer.

- Couture, C and Rousseau, J-Y. (1987) *The Life of a Document*. Vehicule Press: Montreal.
- Covello, V. T. and Mumpower, J. (1985) "Risk analysis and risk management: an historical perspective", *Risk Analysis*, 5 (2), pp.103 - 120.
- Crotty, M, (1998) *The Foundations of Social Research: Meaning and Perspective in the Research Process*. London: Sage.
- Darlington, J., A. Finney, et al. (2003) 'Domesday Redux: The rescue of the BBC Domesday Project videodiscs', *Ariadne* 36 [Online]. Available at : <http://www.ariadne.ac.uk/issue36/tna/intro.html> (Accessed: 09/07/07).
- De Becker, G. (1997) *The Gift of Fear: And other Survival Signs That Protect Us From Violence*. New York: Dell.
- Dearstyne, B. W. (ed.) (2002) *Effective Approaches for Managing Electronic Records and Archives*. London: Scarecrow Press.
- Dent, A. (2009). *The Theory of Practice: Information Security*. London: Royal Holloway University.
- Guba, E.G. and Lincoln, Y. S. (eds.) (1994) *Handbook of Qualitative Research*. London: Sage.
- Guba, E. G., and Lincoln, Y. S. (1994). "Competing Paradigms in Qualitative Research". Denzin, N. K. and Lincoln, Y.S (Eds.), *Handbook of Qualitative Research*, Thousand Oaks, CA: Sage, pp. 105-117.
- Department for Business Enterprise and Regulatory Reform (2008) *Statistical Press Release: Business Start-ups and Closures: VAT Registrations and De-registrations in 2007*. Available at: <http://stats.berr.gov.uk/ed/vat/VATStatsPressReleaseNov2008.pdf> (Accessed: 11/01/11).
- Department for Business Enterprise and Regulatory Reform (2008) *Statistical Press Release URN 08/92*. [Online] Available at: <http://stats.berr.gov.uk/ed/sme/smestats2007-ukspr.pdf> (Accessed: 16/03/11).
- Department for Business Innovation and Skills (2009a) *Small and Medium Enterprise Statistics for the UK and Regions*. [Online] Available at: <http://stats.berr.gov.uk/ed/sme/> (Accessed: 31/05/10).
- Department for Business Innovation and Skills (2009b) *UK Department for Business Innovation and Skills (BIS)* [Online] Available at: <http://www.berr.gov.uk/> (Accessed: 30/06/09).
- Derrida, J. (1996) *Archive Fever: A Freudian Interpretation*. USA: University of Chicago Press.

DGA (1998-2008) *Transcriber* (1.4.4) [Computer Program]. [Online]. Available at: <http://trans.sourceforge.net/en/presentation.php> (Accessed:01/01/09).

Doyle, L., Brady, A. and Byrne, G. (2009) "An Overview of Mixed Methods Research." *Journal of Research in Nursing*, 14, pp. 175-185.

Drew, S. (2003) "Strategic Uses of E-commerce by SMEs in the East of England", *European Management Journal*, 21 (1), pp. 79-88.

Dryden, J. E. (1995) "Archival Description of Electronic Records: An Examination of Current Practices", *Archivaria*, 40 (Fall), pp. 99-108.

Eastwood, T., Hofman, H. and Preston, R. (2007) "Modeling Digital Record Creation, Maintenance and Preservation: Modeling Cross-domain Task Force Report"
Available at:
http://www.interpares.org/ip2/display_file.cfm?doc=ip2_book_part_5_modeling_task_force.pdf (Accessed: 24/05/10).

Ehrich, L. C. and Billett, S. (2006) "How Australian Small Business Operators Learned About the Goods and Services Tax", *Small Enterprise Research: The Journal of SEAAANZ*, 14 (2), pp. 59-73.

Enterprise Nation (2007) *Enterprise Nation - Facts and Figures about Home Businesses* [Online]. Available at:
http://www.enterprisenation.com/detail/Facts_and_figures_about_home_businesses/1285/43.aspx (Accessed: 19/10/08).

Ericson, R. V. and Haggerty, K. D. (1997) *Policing the Risk Society*. Oxford: Clarendon Press.

European Commission's Directorate General for Enterprise and Industry (2009) *SME Definition - Small and Medium-sized Enterprises (SME) Enterprise and Industry*. Available at: http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/sme-definition/index_en.htm (Accessed: 16/02/2010)

Farber, B. (1970) "Studying family and kinship," in Habenstein, R.W. (ed.) *Pathways to data: craft and methods for studying social organizations*. New Brunswick: Aldine Transaction 1998.

Felix Kloman, H. (1999) "Milestones: 1900 to 1999", *Risk Management Reports*, 26 (12) [Online]. Available at: <http://www.riskinfo.com/rmr/rmrdec99.htm> (Accessed: 24/05/10).

Fink, D. (1998) "Guidelines for the successful adoption of information technology in small and medium enterprises", *International Journal of Information Management*, 18 (4), pp. 243-253.

Flynn, N. (2004a) "How to Implement Strategic Email Management: The 37 Rules", *Records Management Bulletin*, 118 (February), pp.17-24.

Flynn, N. (2004b) *Instant Messaging Rules: A Business Guide to Managing Policies, Security, and Legal Issues for Safe IM Communication*. USA: Amacom.

Flynn, N. and Kahn, R. (2003) *E-Mail Rules: A Business Guide to Managing Policies, Security, and Legal Issues for E-Mail and Digital Communication*. USA: AMACOM.

Fontana, A. and Frey, J.H (1998) "Interviewing: The Art of Science" in Denzin, N.K. and Lincoln, Y.S. *Collecting and Interpreting Qualitative Materials*. London: Sage. pp. 47-78.

Federation of Small Businesses (2011) "The Federation of Small Businesses – FSB – The UK's Leading Business Organization". Available at: <http://www.fsb.org.uk/> (Accessed: 21/01/11).

Gable, G. G. (1994) 'Integrating case study and survey research methods: an example in information systems', *European Journal of Information Systems*, 3 (2), pp. 112-126.

Gibb, F. and Buchanan, S. (2006) "A framework for business continuity management", *International Journal of Information Management*, 26, pp.128 - 141.

Giddens, A. (1998) 'The politics of risk society', in Giddens, A. and Pierson, C. (eds.) *Conversations with Anthony Giddens: making sense of modernity*. Polity Press, pp. 204 - 217.

Giddings, L.S. (2006) "Mixed - methods research: Positivism dressed in drag?" *Journal of Research in Nursing* 11 (3), pp. 195-203.

Gigerenzer, G. (2002) *Reckoning with Risk: Learning to Live with Uncertainty*. London: Penguin.

Glaser, B. and Strauss, A. (1967) *The Discovery of Grounded Theory: Strategies for Qualitative Research*. New York: Aldine de Gruyter.

Glasscalc Ltd. (2005) *Glass Software UK*. [Online]. Available at: <http://www.glasscalc.co.uk/index.html> (Accessed: 09/02/09).

Gouanou, M. and Marsh, M. (2004) 'Imploding technologies – driven by the records management requirements?', *Records Management Journal*, 14 (2), pp. 62-64.

Government Centre for Information Systems (1993) *Appraisal and Evaluation Library: CASE Tools Volume*. London: HMSO.

Green, A. and Sanderson, I. (2004) *Employment Strategies: NDC Case Studies*. Sheffield: Sheffield Hallam University.

Hall, C. and Lee, D. S. (2006) 'Creating quick and dirty corpora with search engines', *Essential Teacher*, 3 (2), pp. 38-41.

Harvard University Press (2010) "Loeb Classical Library". Available at: <http://www.hup.harvard.edu/loeb/> (Accessed: 04/02/10).

Haugh, H. and McKee, L. (2004) 'The Cultural Paradigm of the Smaller Firm', *Journal of Small Business Management*, 42 (4), pp. 377-394.

Hay-Gibson, N. V. (2008) 'A River of Risk: A diagram of the history and historiography of risk management', *Northumbria Working papers Journal Series*, 2 (1), pp. 148-158.

Hay-Gibson, N. V. (2009) 'Interviews via VoIP- Benefits and Disadvantages within a PhD study of SMEs ', *Library and Information Group*, 33 (105) [Online]. Available at: <http://www.lirg.org.uk/lir/ojs/index.php/lir/article/view/111> (Accessed: 24/05/10).

Health and Safety Executive (2001) *Reducing Risks, Protecting People: HSE's decision - making process*. Norwich: HMSO.

Hedstrom, M. and Wallace, D. (1999) 'And the Last Shall Be First: Recordkeeping Policies and the NII', *Journal of the American Society for Information Science*, 50 (4), pp. 331-339.

HM Treasury (2004a) *The Orange Book Management of Risk - Principles and Concepts*. TSO. [Online]. Available at: http://www.hm-treasury.gov.uk/d/orange_book.pdf (Accessed: 31/05/10).

HM Treasury (2004b) *Productivity in the UK 5: Benchmarking UK Productivity Performance*. [Online]. Available at: <http://webarchive.nationalarchives.gov.uk/+http://www.hm-treasury.gov.uk/d/productivitychs.pdf> (Accessed: 17/03/2011)

Hertz, D.B. and Thomas, H. (1983) *Risk Analysis and its Applications*. New York: John Wiley and Sons.

Hodge, G. and Frangakis, E. (2004) *Digital Preservation and Permanent Access to Scientific Information: The State of The Practice*. The International Council for Scientific and Technical Information (ICSTI)/CENDI-US Federal Information Managers Group, (CENDI – 2004-3: Rev. 05/04) [Online]. Available at: <http://www.icsti.org/documents/preservationrpt.pdf> (Accessed: 18/05/10).

Hoey, M. (2001) *Textual Interaction: An Introduction to Written Discourse Analysis*. Abingdon: Routledge.

Hofman, H. (2004). "A Unified Model for Managing Records". Available at: http://www.wien2004.ica.org/imagesUpload/pres_420_HOFMAN_ISO_model.pdf (Accessed: 20/02/2008).

Holmes, A. (2002) *Risk Management*. Oxford: Capstone Publishing.

- Igbaria, M., Zinatelli, M. and Cavaye, A. L. M. (1998) "Analysis of Information Technology Success in Small Firms in New Zealand", *International Journal of Information Management*, 18 (2), pp. 103-119.
- InterPARES Project. (1999 - 2009) "The InterPARES Project." Available at: <http://www.interpares.org> (Accessed: 04/01/2010).
- Jasanoff, S. (1993). "Bridging the two cultures of risk analysis." *Risk Analysis* 13 (2), pp. 123-129.
- Jensen, J. L. and Rodgers, R. (2001) "Cumulating the intellectual gold of case study research", *Public Administration Review* 61, pp. 235-246.
- Jeynes, J. (2002) *Risk management: 10 Principles*. Oxford: Butterworth / Heinmann.
- Johnson, M. and Reed, H. (2008) *Entrepreneurship and innovation in the North: Paper 3 from the Northern Economic Agenda Project* [Online]. Available at: <http://www.ippr.org.uk/publicationsandreports/publication.asp?id=584> (Accessed: 17/05/10).
- Johnson, B and Turner, L.A. (2003) "Data Collection Strategies in Mixed Methods Research" in Tashakkori, A. and Teddlie, C. (2003) *Handbook of Mixed Methods in Social and Behavioral Research*. London: Sage, pp. 297-320.
- Jones, A. (2007). "A framework for the management of information security risks." *BT Technology Journal* 25(1), pp. 30-36.
- Karaev, A., Koh, S. C. L. and Szamosi, L. T. (2007) "The cluster approach and SME competitiveness: a review", *Journal of Manufacturing Technology Management*, 18 (7), pp. 818-835.
- Katundu, D. R. M. (2001)"Preservation challenges for Africa's Information Systems: the case of electronic records.", *Information Development*, 17 (3), pp.179-182.
- Kendall, R. A. H. (1998) *Risk Management for Executives: A Practical Approach to Controlling Business*. London: FT Pitman.
- Kennedy, G. (1998) *An Introduction to Corpus Linguistics*. London: Longman.
- Ketelaar, E. (2001) "Tacit Narratives: The Meanings of Archives", *Archival Science*, 1, pp. 131-141.
- King, N. (1994). "The Qualitative Research Interview" in (eds.) Cassell, C. and Symon, G. *Qualitative Methods in Organizational Research: A Practical Guide*. London, Sage: pp. 14 - 36.
- Kleindorfer, P. R., Kunreuther, H. C. and Shoemaker, P. H. J. (1993) *Decision Sciences: An Integrative Perspective*. CUP: Cambridge.

- Knowles, G., Wichmann, A. and Alderson, P. (eds.) (1996) *Working with Speech: Perspectives on Research into the Lancaster IBM spoken English Corpus*. New York: Addison Wesley Longman.
- Koller, G. (1999) *Risk Assessment and Decisionmaking in Business and Industry: A Practical Guide*. London: CRC Press.
- Koubatis, A. and Schönberger, Y. (2005) "Risk management of complex critical systems." *International Journal of Critical Infrastructure* 1 (2/3), pp. 195-215.
- Kretzchmar, W. A., Darwin, C., Brown, C., Rubin, D. L. and Biber, D. (2004) "Looking for the Smoking Gun: Principled Sampling in creating the Tobacco Industry Documents Corpus", *Journal of English Linguistics*, 32 (1), pp.31-47.
- Lam, R. and Burton, S. (2005) "SME Banking Loyalty (and Disloyalty): Qualitative Study in Hong Kong", *International Journal of Bank Marketing*, 24 (1), pp. 37-52.
- Lemieux, V. (2004) *Managing Risks for Records and Information*. Kansas: ARMA International.
- Lattuca, L.R. (2003) "Creating Interdisciplinarity: Grounded Definitions from College and University Faculty". *History of Intellectual Culture* 3 (1). Available at: <http://www.ucalgary.ca/hic/issues/vol3/5> (Accessed: 22/02/11)
- Lewis, H. W. (1990) *Technological Risk*. London: W.W. Norton.
- Lewis, P.J. (1993) "Identifying cognitive categories: The basis for interpretive data analysis within soct systems methodology". *International Journal of Information Management* (13), pp. 373 – 368.
- Lewins, A and Silver, C. (2007) *Using Software in Qualitative Research: A step-by-step guide*. Sage, London.
- Lincoln, Y. S. and Guba, E. (1985) *Naturalistic Inquiry*. London: Sage.
- Löfste, R. E. (1998) *The Earthscan Reader in Risk and Modern Society*. London: Earthscan.
- Lotter, D. (2009) "The Internet-Telephone as a classroom teaching tool", *Journal of College Science Teaching* (Jan-Feb) pp. 52 – 53.
- Luhmann, N. (1993) *Risk: A Sociological Theory*. New York: Walter de Gruyter.
- Mars, G. and Weir, D. (eds.) (2000) *Risk management: Vol. 1: Theories, cases, policies and politics*. Aldershot: Ashgate.
- Mason, J. (2002) *Qualitative researching*. 2nd edn. London: Sage.
- Maxwell, J. A. (1996) *Qualitative Research Design*. London: Sage.

McLeod, J et al. (2010) “*ACerm - Accelerating Positive Change in Electronic Records Management.*” Available at: <http://acerm.blogspot.co.uk> (Accessed: 31/05/10).

McCoyde, J. L. M. and Kerson, T. S. (2006) “Conducting intensive interviews using email: a serendipitous comparative opportunity” *Qualitative Social Work* 5(3), pp. 389–406.

McDonald, J. (1995a) “Managing Information in an Office Systems Environment: The IMOSA Project”, *American Archivist*, 58 (Spring), pp. 142-153.

McDonald, J. (1995b) “Managing records in the modern office: Taming the wild frontier”, *Archivaria*, 39, pp. pp. 70-79.

McDonald, J. (2005) “The wild frontier ten years on”, in McLeod, J. and Hare, C. (eds.) *Managing Electronic Records*. London: Facet, pp. 1-17.

McEnery, T. and Wilson, A. (1996) *Corpus Linguistics*. Edinburgh: Edinburgh University Press, Edinburgh Textbooks in Empirical Linguistics.

McEnery, T., Xiao, R. and Tono, Y. (2006) *Corpus-Based Language Studies: An Advanced Resource book*. Abingdon: Routledge.

McKemmish, S. (2001) “Placing Records Continuum Theory and Practice”, *Archival Science*, 1, pp.333-359.

McKemmish, S., Acland, G., Ward, N. and Reed, B. (1999) “Describing Records in Context in the Continuum: The Australian Recordkeeping Metadata Schema”, *Archivaria*, 48.

McKemmish, S., Piggott, M., Upward, F. and Reed, B. (2005) *Archives: Recordskeeping in Society*. Australia Centre for Information Studies, Charles Stuart University, New South Wales.

Mehrtens, J., Cragg, P. B. and Mills, A. M. (2001) “A Model of Internet Adoption by SMEs”, *Information and Management*, 39, pp. 165-176.

Miles, M. B. and Huberman, A. M. (1994) *Qualitative Data Analysis : An Expanded Sourcebook*. 2nd ed. London: Sage.

Mingers, J. (1995) “Using Soft Systems Methodology in the Design of Information Systems Information” in (eds.) Stowell, F.A. and West, D. (1995) *Information Systems Provision: The Contribution of Soft Systems Methodology*. London: McGraw-Hill.

Moore, P. (1996) "Safeguarding Your Company's Records", *Risk Management Reports*, pp.47-50.

Moretti, F. (2005) *Graphs, Maps, Trees: Abstract Models for a Literary History*. London: Verso.

DML Forum (2009) *MoREQ Home*. Available at:
http://www.dmlforum.eu/index.php?option=com_content&view=category&layout=blog&id=901&Itemid=78&lang=en (Accessed: 06/12/10).

Morgan, K. (2005) 'Development of a Preliminary Framework for Informing the Risk Analysis and Risk Management of Nanoparticles', *Risk Analysis*, 25 (6), pp. 1621-1635.

Moss, M. (2007) "Panel Discussion: Moving Forward - Futurewatch 1.30 - 3pm" in Childs, S., Hardiman, R., Hay-Gibson, N., Lomas, E and McLeod, J. (2007) *Examining the issues and challenges of email and e-communications: Exploring strategies with experts*. Newcastle upon Tyne, 24th – 25th October. Newcastle: University of Northumbria. pp. 147 - 190, pp. 180-181.

Moss, M and Tough, A. (2003) "Metadata, controlled vocabularies and directories: electronic document management and standards for records management." *Records Management Journal* 13 (1), pp. 24 - 31.

National Archives of Australia (2003) *National Archives of Australia - Recordkeeping - DIRKS - The DIRKS Manual*. [Online]. Available at:
<http://www.naa.gov.au/recordkeeping/dirks/dirksman/dirks.html> (Accessed: 24/05/10).

Nickson, D. (2007) *IT Procurement Handbook for SMEs*. Swindon: British Computer Society.

Northumbria University (2007) *Examining the Issues and Challenges of Email and E-communications: Exploring Strategies with Experts: 2nd Northumbria International Witness Seminar Conference*. Newcastle upon Tyne: Northumbria University.

Oakley, A. (1999) "Paradigm wars: some thoughts on a personal and public trajectory" *International Journal of Social Research Methodology* (2) 3, pp. 247-254.

O'Donnell, M. (2007) *UAM Corpus Tool* (1.33) [Computer Program]. Distributor: Wagsoft, Madrid[Online]. Available at: <http://www.wagsoft.com/CorpusTool/> (Accessed: 24/05/10).

O'Donnell, M. (2008) "The UAM CorpusTool: software for corpus annotation and exploration", *XXVI Congreso de AESLA*. 3-5 April 2008. Almeria, Spain. [Online]. Available at: <http://www.wagsoft.com/Papers/AESLA08.pdf> (Accessed: 24/05/10).

Ochs, E. and Capps, L. (2001) *Living Narrative: Creating Lives in Everyday Storytelling*. Cambridge, Mass.: Harvard University Press.

Oppenheim, A. N. (1992) *Questionnaire Design, Interviewing and Attitude Measurement*. London: Pinter Publishers.

- Osborne, H. (2007) "HMRC: A catalogue of data losses", *guardian.co.uk*, 23/06/09 [Online]. Available at: <http://www.guardian.co.uk/money/2007/nov/20/scamsandfraud.economicpolicy> (Accessed: 24/05/10).
- Pasquinucci, A. (2007) "Inside the mind of a spammer", *Computer Fraud and Security*, February, pp. 7-8.
- Patton, M. Q. (2002) *Qualitative Research and Evaluation Methods*. 3rd edn. London: Sage.
- Penn, I. A., Morddel, A., Pennix, G. and Smith, K. (1989) *Records Management Handbook*. Aldershot: Gower.
- Peters, H. P. (1992) "The credibility of information sources in West Germany after the Chernobyl disaster", *Public Understanding of Science*, (1) pp. 325-343.
- Peters, J., Ellis, E., Goyder, E. and Blank, L. (2004) *Physical Exercise Initiative Case Studies*. Sheffield: University of Sheffield/Sheffield Hallam University.
- Phelan, P. and Reynolds, P. (1996) *Argument and Evidence: Critical Analysis for the Social Sciences*. Routledge: London.
- Piranfar, H. and Matthews, R. (2008) 'A Complexity View of Organizational Reputation', *International Journal of Environmental Technology and Management*, 8 (1), pp. 87-102.
- Pitts, J. M. (1994) *Personal understanding and mental models of information: a qualitative study of factors associated with the information-seeking and use of adolescents*. PhD thesis. Florida State University.
- Poynter, K. (2008) *Review of information security at HM Revenue and Customs: Final report*. Norwich: HMSO.
- Prensky, M. (2001) "Digital Natives, Digital Immigrants." *On The Horizon* 9 (5) [Online]. Available at: <http://www.marcprensky.com/writing/prensky%20-%20digital%20natives,%20digital%20immigrants%20-%20part1.pdf> (Accessed: 26/02/11).
- Projection Point (2009) *Risk Intelligence Testing*. Available at: <http://www.projectionpoint.com/> (Accessed: 07/06/10).
- Reichel, A. (2007) "Building The Sustainable Firm", *Systemist*, 29 (3) pp. 113-127.
- Repko, A. F. (2008) *Interdisciplinary Research*. London: Sage.
- Rescher, N. (1983) *Risk: A Philosophical Introduction to the Theory of Risk Evaluation and Management*. Washington D.C.: University Press of America.

- Richards, L. and Richards, T. (1994) 'From Filing Cabinet to Computer', in Bryman, A. and Burgess, R. G. (eds.) *Analysing Qualitative Data*. London: Routledge, pp. 146 - 172.
- Robinson, T. (2005). "Data Security in the Age of Compliance", *netWorker*, 9 (3), pp. 24–30
- Rolfe, G. (2004) "Validity, trustworthiness and rigour: quality and the idea of qualitative research", *Journal of Advanced Nursing*, 53 (3), pp. 304-310.
- Ryan, D. (1995) 'The Future of Managing Electronic Records', *Records Management Journal*, 15 (3), pp. 128-130.
- Sadgrove, K. (2005) *The Complete Guide to Business Risk Management*. 2nd edn. Aldershot: Gower.
- Sage (UK) Limited (2008) *Sage (UK) Limited: Business Software and Services*. [Online]. Available at: <http://www.sage.co.uk/>.
- Sarosa, S. and Zowghi, D. (2003) "Strategy for Adopting Information Technology for SMEs: Experience in Adopting Email within an Indonesian Furniture Company", *Electronic Journal of Information Systems Evaluation*, 6 (2), pp. 165-176.
- Scheepers, R. (2003) "Key roles in Intranet Implementation: the conquest and the aftermath", *Journal of Information Technology*, 18, pp.103-119.
- Schwandt, T. A. (1994) "Constructive, Interpretivist Approaches to Human Inquiry", in Denzin, N. K. and Lincoln, Y. S. (eds.) *Handbook of Qualitative Research*. London: Sage, pp. pp. 118-137.
- Sellen, A. J. and Harper, R. H. R. (2002) *The myth of the paperless office*. London: MIT Press.
- Sert, C. (2009) *CORSIS (Tenka-Text) (0.1.3.3 "Naomi")* [Computer Program]. Distributor: Sourceforge, Heidelberg [Online]. Available at: <http://corsis.sf.net/naomi/> (Accessed:05/02/09).
- Shaw, K., Frazer, S., Robbins, C., Smith, I., Fuller, C., Geddes, M., Johnstone, C. and Nunn, A. (2004) *Liveability in NDC Areas: Findings from Six Case Studies*. Sheffield Sheffield Hallam University.
- Shenton, A. K. (2006) "Models of Information Behaviour: What are They and How Can We Construct Them from Qualitative Data?" *Information Research Watch International*, pp. 2-3.
- Shepherd, E. and Yeo, G. (2003) *Managing Records: A Handbook of Principles and Practice*. London: Facet Publishing.
- Shimell, P. (2002) *The Universe of Risk: How Top Business Leaders Control Risk and Achieve Success*. London: Financial Times Prentice Hall.

Silver, B. (2004). "Look Beyond Records for SOX Compliance." *Transform* 13(3), pp. 14-15.

Slade, P. and Van Akkeren, J. (2002) "Business On-Line? An Empirical Study of Factors Leading to the Adoption of Internet Technologies by Australian SMEs" *AJIS*, 10 (1), pp. pp.50-64.

Slovic, P. (ed.) (2000) *The Perception of Risk*. London: Earthscan.

Small Business Service (2006) *SME Definitions* | *Small Business Service*. [Online]. Available at:
<http://www.sbs.gov.uk/sbsgov/action/layer?TopicId=7000000237&r.s=sl>.
(Accessed: 16/03/2007).

Sparrow, J. (1999) "Using qualitative research to establish SME support needs" *Qualitative Market Research: An International Journal* 2(2) pp.121-134.

Stake, R. E. (2000) *The Art of Case Study Research*. 7th edn. London: Sage.

Stokes, D and Wilson, N. (2002) *Small Business Management and Entrepreneurship*. 5th Ed. Thompson Learning.

State of Victoria (2009) *Victorian Electronic Records Strategy - Forever Digital*. [Online]. Available at: <http://www.prov.vic.gov.au/vers/vers/default.htm> (Accessed: 27/07/09)

Steamson, M. (2002) "DigiCULT experts search for e-archive permanence", *DigiCULT: Integrity and Authenticity of Digital Culture Heritage Objects*, (Thematic Issue 1) pp. 10-18 [Online]. Available at: <http://www.digicult.info/pages/themiss.php> (Accessed: 30/09/08).

Stoker, B. (1897) *Dracula*. London: Penguin.

Stokes, D. and Wilson, N. (2002) *Small Business Management and Entrepreneurship*. 5th edn. China : South-Western Cengage Learning.

Storey, D. J. (1994) *Understanding The Small Business Sector*. London: Routledge.

Strother, D. (ed.) (1991) *Learning To Fail: Case Studies of Students at Risk*. Bloomington, IN: Phi Delta Kappa.

Tannen, D. (1995) *Talking from 9 to 5: How Women and Men's Conversational Styles Affect Who Gets Heard, Who Gets Credit, And What Gets Done At Work*. London: Virago.

Taylor-Gooby, P. and Zinn, J. O. (2006) "Current Directions in Risk Research: New Developments in Psychology and Sociology", *Risk Analysis*, 26 (2), pp. 397- 411.

- Teddlie, C and Tashakkori, A. (2009) *Foundations of Mixed Methods Research*. London: Sage.
- TEI Consortium (2007) *TEI P5: Guidelines for Electronic Text Encoding and Interchange [5]*. TEI Consortium [Online]. Available at: <http://www.tei-c.org/Guidelines/P5/> (Accessed: 24/09/08)
- Thelwall, M. (2008) 'Fk yea I swear: Cursing and gender in a corpus of MySpace pages', *Corpora*, 3 (1).
- Thomas, J. and Short, M. (eds.) (1996) *Using Corpora for Language Research*. London: Longman.
- Thompson, P. B. (1986) 'The Philosophical Foundations of Risk', *Southern Journal of Philosophy*, 24 (2), pp. pp. 273 - 286.
- Tobin, G.A. and Begley, C.M. (2004) "Methodological rigour within a qualitative framework", *Journal of Advanced Nursing* 48 (4) pp. 388-396.
- Tognini-Bonelli, E. (2001) *Corpus Linguistics at Work*. Amsterdam: John Benjamins, Studies in Corpus Linguistics.
- Tonge, J. (2001) "A Review of Small Business Literature Part 1: Defining the Small Business." *Manchester Metropolitan University Business School Working Paper Series*, November 2001 [Online]. Available at: <http://www.ribm.mmu.ac.uk/wps/papers/01-18.pdf> (Accessed: 17/03/11)
- Trochim, W. M. K. (2006) *Qualitative Validity* [Online]. Available at: <http://www.socialresearchmethods.net/kb/qualval.php> (Accessed on: 02/08/09).
- Twiddla (2008) *Team Whiteboarding with Twiddla - Painless Team Collaboration for the Web*. [Online]. Available at: <http://www.twiddla.com/> (Accessed: 02/06/09).
- UKOLN (2010) *UKOLN | Metadata*. Available at: <http://www.ukoln.ac.uk/metadata/> (Accessed: 02/06/10).
- U.S. Government Printing Office (2010) Entire CGP Catalog – Full View of Record. Available at: <http://purl.access.gpo.gov/GPO/LPS22934> (Accessed: 31/05/10).
- Upward, F. (1996) "Structuring the Records Continuum: Part One: Post-custodial principles and properties", *Archives and Manuscripts*, 24 (2), pp. 268-285.
- van Beveren, J. and Thomson, H. (2002) "The Use of Electronic Commerce by SMEs in Victoria, Australia", *Journal of Small Business Management*, 40 (3), pp. 250-253.
- Walls, C. (2006) *Embedded Software: The Works*. London: Elsevier.

Webb, J. (2007) *Risk Management Report and Tool Kit*. Middlesex: FreePint Limited.

Webb, P. and Webb, S. (2001) *The Small Business Handbook: The Entrepreneur's Guide To Starting and Growing a Business*. London: Prentice – Hall.

Wilson, B. (1984) *Systems: Concepts, Methodologies and Applications*. Chichester: John Wiley and Sons.

Wilson, T. D. (1999b). “Models in information behaviour research”. *Journal of Documentation*, 55 (3), pp. 249-270.

Worth, A and Tierney, A,J. (1993) “Conducting research interviews with elderly people by telephone.” *Journal of Advanced Nursing* (18) pp. 1077-1084.

Yin, R. K. (1993) *Applications of case study research*. London: Sage.

Yin, R. K. (1994) *Case study research: design and methods*. 2nd ed. London: Sage.

Appendix 1: Ethics policy considerations

This is a summary of the use of the Northumbria University's Research Ethics policy, and how the researcher's PhD project will be affected by it, as well as noting its influence on aspects of research which are vital to the study.

1. As per regulation 2.3, the concept of “principles of **beneficence** and **non-maleficence**” will apply. [1] The work done within this study is intended to help SMEs either in principle or in practice, and any work, assistance or other effort which is contributed by those SMEs under study is done so freely and of their own volition.
2. The consent of all those both directly and indirectly concerned with the object of the study will be asked for before embarking upon practical research in any form.
3. The right to privacy of both individuals and companies will be respected and all possible attempts made to anonymise the data collected. Pseudonyms will be used in order to conceal identity, but not to obfuscate roles, positions or tasks. No attempt will be made to collect, collate or to use personal data.
4. Data will only be used in the study if it has been given freely by an authorised member representative of the SME in question, or if it is already in the public domain.
5. There are currently no ethically-different values to observe within this project, but should these circumstances arise, they will be discussed and brought forward with the researcher's PhD supervisor, and secondary supervisor.
6. All possible elements of risk to SMEs and businesspeople will be assessed as far as possible by the researcher, and will be written up before fieldwork. This risk assessment will be shown to all participating SMEs so that they will be able to choose whether to accept the risk, or ask to limit the risk by a specified mechanism. If the SME prefers not to take the risks associated with this research, they will be released from the study with no obligation to complete further tasks or research on their part.
7. All participating SMEs are to be appraised of potential risk before becoming officially involved with the PhD research project.
8. Participating SMEs are granted the choice to opt out of any stage of research at any time, with no obligations towards the university or towards the researcher providing that they have not already entered into a contract with the University which overrides this.
9. All research will take into account the Data Protection Act (1988), the Computer Misuse Act (1990) and the Freedom of Information Act (2004)
10. Care will be taken in building research relationships and maintaining these relationships amongst the team.
11. As a part of an official research contract, the researcher will maintain contact with her supervisors and will continue to maintain this contact throughout the 3-year time period of the PhD. Research processes as well as any suitable ethical issues will have been discussed before, during and after the fieldwork undertaken by the researcher and the project team.
12. The researcher will contact her school's Research Committee and will endeavour to keep in contact with them at an appropriate level, e.g as per the recommendations made by the Ethics in Research and Consultancy document , “frequently as required, but at least three times per year” [2]

References

1. Northumbria University (2006) *Ethics in Research and Consultancy – Policy statement*. Section 2.3.
From *Ethics and Governance – Northumbria University, Newcastle, UK*.
Available at:
http://northumbria.ac.uk/researchandconsultancy/sa/eth_gov/?view=Standard
(Accessed: 25/06/07).
2. Ibid. Section 5.3.

Ethical Principles for the use of data in the study

Table A1: Treatment of personal data from the collected evidence of the study based on the principles of data handling in the Data Protection Act 1998

Principle 1: Personal data shall be processed fairly and lawfully.	All participants are asked for permission to use their data, and are advised at the start of the study as to their rights to their information.
Principle 2: Personal data shall be obtained and processed only for specified and lawful purposes.	The evidence collected is only being used for academic study, and this is detailed on the consent form.
Principle 3: Personal data shall be adequate, relevant and not excessive in relation to the purpose for which they are processed, and will not be further processed in any manner incompatible with that purpose or those purposes.	The evidence collected is only being used for academic study, and this is detailed on the consent form.
Principle 4: Personal data shall be accurate and, where necessary, kept up-to-date.	Contact details are kept up-to-date as needed.
Principle 5: Personal data processed for any purpose shall not be kept for longer than is necessary.	Retention of the evidence collected will last until 12 months after the end of the study, or as long as is further required by the University.
Principle 6: Personal data shall be processed in accordance with the rights of data subjects under the Act.	Participants are advised about their rights in terms of their evidence at the beginning of the study through the consent form, and the researcher has given contact details to participants.
Principle 7: Appropriate technical and organizational measures shall be taken against unauthorised or unlawful processing of personal data and against accidental loss, destruction or damage to personal data.	Data is held on a password-protected server inside the University, or if being used, held on password-protected drives.
Principle 8: Personal data shall not be transferred outside the EEA, unless that country ensures an adequate level of protection of the data subjects in relation to the processing of the data.	Data is being processed only in the UK.

Bibliography

Great Britain. Data Protection Act 1998: Elizabeth II. Chapter 29. London: The Stationary Office.

Northumbria University (2006) *Ethics and Governance – Northumbria University, Newcastle, UK*. Available at:
http://northumbria.ac.uk/researchandconsultancy/sa/eth_gov/?view=Standard
(Accessed: 25/06/07)

Appendix 2: Case study risk assessment framework and ethics policy

Based on an assessment for the study itself, this risk assessment policy establishes the needs for the proper and correct ethical points for the study, for its participants and for those who may be involved in the periphery of the study, especially the members of the public. It highlights points from the ethics policy of Northumbria University, and notes sets of 'rights' that the study highlights for the treatment of participants and related entities involved in the study.

It highlights areas of specific potential risk in the study, describes some aspects of the potential impact of these risks and outlines how these risks will be treated.

Risk assessment in these terms deals with the research aspects of working with and studying small to medium enterprises or businesses, security, confidentiality, the need for protection and anonymity for the participants (as defined by Patton, 2002 pp. 408 - 9), business dealing, business clients and the dealings with client-business relationships in particular, as well as employees past and present. This confidentiality forms a big part of the risk assessment and needs to be treated thoroughly, as well as it can be. The established requirements for the confidentiality for businesses should be that they would be unable to be identified by either description of action, or description of purpose. This confidentiality will also be extended to the business' clients.

Research Ethics:

The research ethics noted here are those of the researcher but are based on the recommendations made by the University of Northumbria for its researchers.

Key principles of the University of Northumbria's Research Ethics (2008) guidance:

- "...researchers at Northumbria are obliged to take into account the wider direct and indirect anticipated consequences of their work."
- "It is important that risks in carrying out a piece of research are clearly articulated and weighed against the potential value of it so that those involved (researchers and researched) proceed with informed consent."
- "The principles of **beneficence** and **non-maleficence** are fundamental to all research activity. **Beneficence** is the requirement to promote the interests and wellbeing of others. It is the ethical principle of 'doing good' in the widest sense. **Non-maleficence** is the principle of 'not doing harm'. Both principles must be applied to all entities directly or indirectly affected by the research."
- "Ethical conduct in research and consultancy demands **respect for the rights of others** who are directly or indirectly affected by the work."

In the light of these precepts, the study will be carried out in line with the University of Northumbria's research ethics policy, and additional simple outlines have been made on the theme of the rights of the researcher and the participant for this ethics framework. In working with the knowledge that SMEs have specific liabilities and include a possible involvement with the general public in the form of clients, the rights of the participant have been added as a separate aspect from that of the participant.

The concepts of research ethics are dealt with by three headings according to group involvement. This outlines the rights and the considerations made with dealings in the activities of all three groups within this study, and with the resultant material and other elements of study, such as collection, retention and disposal of evidence.

Definitions

“Confidentiality means you know but won’t tell. Anonymity means you don’t know, as in a survey returned anonymously.” (Patton 2002, p. 408)

Patton’s ethical checklist has an important point on the use of these specific terms: in order to provide the best possible ethical coverage for the participants, confidentiality has been established as a right for both participants and clients of participants.

‘Participants’ are defined as those who have volunteered to take part in the case study, and who have agreed to being interviewed and to be sent questionnaires.

‘Clients’ can be defined to be those people or entities that have business with the participants in the SME.

The ‘rights’ – ethical rights - of all those involved with the study should be considered from the point of these considerations. These subsections detail those rights within the limits of the study and describe points put in place to ensure that these rights are upheld.

Dealing with the rights of the participants

The rights of the participant within the study are manifest in that the participant has the right to refuse to participate in the study when asked. If the participant agrees to participate, they are to be informed of what participation will entail, with a list of requirements for the study or an information sheet detailing the requirements of the researcher or a detailed breakdown of work showing the intended layout of the study and a reasonable description of the participation requirements.

The participant has a right to remove or rescind any or all of their participation in any aspect of the research, and has a right to correct or amend any details that they give.

The participants have a right to anonymity, and confidentiality. Anonymity in this case refers to the fact that real names will not be used within publications to identify or otherwise represent participants. Confidentiality refers to the fact that some changes may be made to the names, dates and times of events or projects in the case that these would render the participant or company identifiable. All possible effort will be made to establish both anonymity and confidentiality to all participants.

The participant has a right to be kept informed of the progress of their case study, and of the case study in general. This can be obtained from the researcher at any time, and provision has been made for the participants to have recourse to the researcher at any time, as contact details have been provided.

Dealing with the rights of the clients and the public in this work

The rights of the clients within this study are covered primarily by the rights to anonymity and confidentiality. Anonymity in this case refers to the fact that real names will not be used within publications to identify or otherwise represent clients of participants, or the projects of those clients. Confidentiality refers to the fact that some changes may be made to the names, dates and times of events or projects in the case that these would render the client, project or company identifiable. All possible effort will be made to establish both anonymity and confidentiality to all clients of participants.

Dealing with the rights of the researcher and of the University

The rights of the researcher and of the University in particular within this study are based on the right of the researcher to have a safe and secure environment in which to work, study and observe.

The right of the University to have an ethical researcher is confirmed within this document. Steps have been taken and courses have been attended to make the researcher aware of the potential ethical problems as raised by the activities of a researcher creating and actively carrying out research. Further information on what the University can expect from a researcher is available from the University's own website³.

Assessment of risks within the study:

Four main areas were identified in the study where risk could be encountered in the course of the case study by any of those involved within the case study:

- Entering the case study
Risks seen on entering the case study and any preparatory work
- Within the case study's chosen environment
Risks that could either be experienced by the researcher or the participants whilst the researcher is involved in case study research with them
- Exiting the case study and follow-ups
Risks that could either be experienced by the researcher or by the participants after research has been carried out. This also includes long-term risks.
- At the University
Risks that could involve the researcher, the SME or the participants in regards to the case study whilst the researcher works or is based at the University. It may apply to any risk undertaken by the university itself.

These risks were then evaluated to find what possible impact they might have, where these events might happen, and what likely actions could be taken to mitigate these

³ *Policies and procedures – Northumbria University, Newcastle UK. (2008)* Available at: <http://www.northumbria.ac.uk/researchandconsultancy/sa/ethgov/policies/?view=Standard> (Accessed: 01/11/08)

risks or terminate them, based on a form of assessment as seen in Webb (2007), the 'Four T's'.

Risks <i>Name or type of risk</i>	Assessment <i>Assessment method used</i>	Likelihood <i>According to scale – Low, Medium or High</i>	Actions taken <i>Based on previous categories</i>
Exposure of a participant's name	Application of the 4 T's (transfer, treat, tolerate or terminate)	Low – few references are made in transcripts, no names given on questionnaires, all participants are given a code number rather than a name	Treat - Maintenance of code number system Treat - Editing of all transcript work to ensure that no names are mentioned within published work.
Exposure of a client's name	Application of the 4 T's	Low – Where client names are mentioned, they are edited out or replaced with obvious placeholders.	Treat – editing and replacement in all published texts
Physical harm to the researcher	Application of the 4 T's	Low – The researcher has followed procedure about safety within research situations and has attended courses on safety within research. They will comply with all on-site guidance as given by the SME.	Treat – Any safety guidelines to be followed by the researcher.
Physical harm to the SME or research area	Application of the 4 T's	Low – The researcher has followed procedure about safety within research situations and has attended courses on safety within research. They will comply with all on-site guidance as given by the SME.	Treat – Any safety guidelines to be followed by the researcher.
Harm done to the image of the University	Application of the 4 T's	Low – The researcher has followed procedure on ethical behaviour and will seek advice following any potential incidents.	Treat – Any safety guidelines to be followed by the researcher.

The points of this policy will be reviewed as and when necessary, and will form part of the ethics policy governing the running of the study.

Bibliography:

Patton, M.Q. (2002) *Qualitative Research and Evaluation Methods (3rd ed.)* Sage: London.

“ETHICS IN RESEARCH AND CONSULTANCY - POLICY STATEMENT”
[online] from *Policies and procedures – Northumbria University, Newcastle UK*.
(2008) Available at:
<http://www.northumbria.ac.uk/researchandconsultancy/sa/ethgov/policies/?view=Standard>
(Accessed: 01/11/08)

Webb, J. (2007) *Risk Management Report and Tool Kit*. Middlesex: FreePint Limited.

Appendix 3: E-tool part 2 questions

Risk Management:

A.1 What does the term 'risk' mean to you?

A.2 When you think of risk in business, what types of risk come to mind?

A.3 What internal and external risks affect your business the most?

Internal	External
----------	----------

A.4 What do you think 'risk management' consists of?

A.5 Have you ever taken part in any risk management exercises?

If so, what were they? What context were they set in?

A.6 Have you encountered risk management in a different field to records?

If any, which? What form did this take, and when was this?

A.7 Place an X against the term you feel is appropriate for you at the moment.

Do you feel that the risk management skills you have now are:

- (a) Good
- (b) Adequate
- (c) Possible to improve (if so, describe how below)
- (d) Not measured (not sure of how to assess my skills in this area)

A.8 How do you implement an understanding of risk with employees and others?

A.9 What are your strategies for assessing risk?

E-records:

B.1 How do you define an e-record?

B.2 What makes those records produced by Glass Manager 2000 or other databases different from the other items that you call e-records?

B.3 What are the main types of e-records within your business?

B.4 What makes you keep e-records, and manage them? What influences you to keep them?

If you can think of any factors - please describe them in your own words in the mind-map diagram below.

B.5 Do any of the terms that you use when working with database files apply to when you work with other e-records? What are they?

B.6 What are your concerns over inaccessibility of records?

B.7 What are your concerns over incompleteness of records and information within your business?

B.8 What do you do to minimise your risks (in terms of your e-records)?

B.9 What maximises your risks (in terms of your e-records)?

B.10 What are your responsibilities for your business's e-records? What tasks do you have to do?

B.11 Please describe the steps you take to retrieve the type of e-records that you work with most often. Are there any delays?

B.12 Place an X against the term you feel is appropriate for you at the moment. Do you feel that the records management skills you have now are:

- (a) Good
- (b) Adequate
- (c) Possible to improve (if so, describe how)
- (d) Not measured (not sure of how to assess my skills in this area)

Other Comments:

C.1 Do you have any other comments about the topics mentioned above? :

Appendix 4: *Computerised corpus creation from spoken-word sources: Rules and semantics, v 1.0 December 2008 - January 2009*

Corpus Creation – Basic Rules

RULE 1 – Rule of fidelity

In transcribing, every effort will be made for the transcriber to faithfully put down as text what they hear on the recording. This may result in errors, but is an act of received evidence, as the transcriber is placing their own interpretation of the recording into text. *In cases of clashes between rule 1 and rule 3, rule 1 overrides.*

RULE 2 – Rule of accuracy

In transcribing, English spelling will be used. Even if a participant uses a word incorrectly, or uses poor grammar, this will be preserved as closely as possible to recreate the recording into text. *In cases of clashes between rule 1 and rule 2, rule 2 overrides*

In cases of clashes between rule 2 and rule 3, rule 3 overrides.

RULE 3 – Rule of natural speech

In transcribing, every effort will be made to recreate what the participant said accurately. This includes colloquialisms, slang, swearing and dialect words.

Textual Selection for Corpus – Selection Limits

BASIC EXCLUSION:

- No inclusion of textual interjections, e.g. [laughter], [pause]
- No inclusion of noises or fillers, e.g. “um, “ah” or “mmnh”
- No inclusion of the researcher’s own words, or those of people working with the researcher (i.e. participant text only)

PUNCTUATION RULES:

- All product names, people’s names and proper nouns are to be noted as nouns and given the class „proper” e.g. “Excel”, “Mary”
- No inclusion of punctuation within a tag, to ensure that specific words can be found correctly e.g. “before” rather than “before,”
- No inclusion of substituted signs for words, e.g. “£££”
- Each single-character word to be tagged, e.g. “I”, “a”

- Signs or marks inserted to give emphasis to a speaker's words are to be omitted (see Inclusion of punctuation rule)
- Apostrophe-S is to be treated as part of a whole word, not as a separate word e.g. "something's"

SPECIALIST RULES:

(1) Hyphenated words to be treated as separate words e.g. "mid-September" = "mid" "September" UNLESS

(1a) Proper names, and words that are hyphenated in the dictionary are to be treated as one word e.g. "half-nelson"

Corpus creation – Supplemental rules 1

Contractions of speech

- 1.1 Contracted forms used in speech which involve verbs (usually a pronoun and verb) will be treated as verbs for the purpose of lexical/grammatical tagging, e.g. "they've" = "They have"
- 1.2 Colloquialisms that are not in the dictionary will be given a grammatical tag reflecting on their place in the text and their sense at that point in the text e.g. "It's reet cold, today": "reet"= ajd.
- 1.3 Colloquialisms which form a contracted form in speech will be given a grammatical tag reflecting on their place in the text and their sense at that point in the text **AND** will be treated as their main constituent part for the purpose of lexical/grammatical tagging, e.g. "It's good, aint it?" = negative, interrogative contraction, hence "Isn't" = "Is not", "is" = vb.
- 1.4 **EXCEPT** in the case of the grammatical construct "In't", in which case the negative is ignored, and it is deconstructed and tagged thus: e.g. "In't it" = "Is it not"; "is" = vb.

Corpus Creation – Supplemental Rules 2

BASIC EXCLUSION:

In the case of an obvious typographical error, the word should be omitted and not counted in the corpus, marked or tagged; e.g. "the record I the file" where "I" = "in" = will not tag the "I". A note may be made indicating this omission.

If a word is jumbled, the same rule applies; e.g. "fomr" in place of "from"

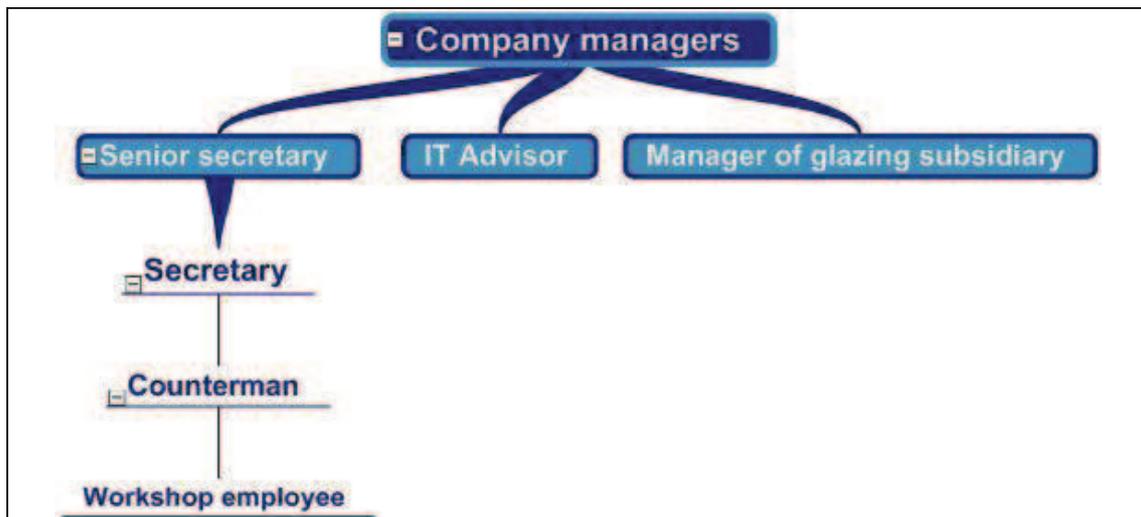
EVALUATION:

In the case of evaluating who the speaker is in a text (e.g. if the text of the transcript does not clearly mention who was speaking or is ambiguous) then arbitration is by the original recordings and not by the constructed transcript.

INTERPRETATION:

In the case where the transcript has filled in parts of speech omitted by participant accents, these will be rendered in round brackets and treated as a whole word (follows the rule of fidelity) e.g. “waiti(ng)”

Appendix 5: Organizational chart for BETA, drawn by the researcher



Appendix 6: Spidergram style diagram

KEY:

- (?) Research questions
- (Lightbulb) Emergent themes
- (Triangle) Theme categories
- (+) Positive motivators
- (-) Negative motivators

Appendix 7: Statistics and the representative corpus

Table i: Statistical contribution to the corpus

Corpus	Contributors	Narratives	Narrative contributions (Word count)	Word count (of contributions incorporated into corpus)	% (of contributions incorporated into corpus)
ALPHA	A1	A1/A2 first	9897	3299	23.7 %
		A1 main	8996	2999	21.5 %
		A1 Q pt 1	275	92	0.7 %
		A1 Q pt 2	1087	362	2.6 %
	A2	A1/A2 first	9897	----	----
		A2 Q pt 1	309	103	0.7 %
		A2 Q pt 2	733	244	1.7 %
	A3	A3 first	8898	2966	21.3 %
		A3 main	10637	3546	25.5 %
A3 Q pt 1		322	107	0.8 %	
A3 Q pt 2		627	209	1.5 %	
Total ALPHA			13927	100.00 %	
BETA	B1	B1 main	8521	2840	15.81 %
		B1 pt 1	5771	1924	10.71 %
	B2	B2 pt 1	2625	875	4.87 %
		B2 pt 2	1934	645	3.60 %
	B3	B3 first	5361	1787	9.95 %
		B3 main	8976	2992	16.67 %
	B4	B4 first	5363	1788	9.95 %
		B4 main	14994	4998	27.84 %
	ALL	e-tool	732	106	0.60 %
Total BETA			17955	100.00 %	
GAMMA	G1	G1 first	12202	4067	14.6 %
		G1 main	14609	4870	17.8 %
		G1 final	9362	3121	11.1 %
	G2	G2 first	7317	2439	8.7 %
		G2 main	19557	6519	23.3 %
	G3	G3 first	4350	1450	5.1 %
		G3 main	7915	2638	9.4 %
	G4	G4 first	4390	1463	5.2 %
	G4* main	4065	1355	4.8 %	
Total GAMMA			27922	100.00 %	

KEY:

Q pt – Questionnaire part (number)

First – First interview

Main – Main interview

Final – Final interview

Pt – part (number)

* - Interview via Skype (remote interview)

Contextualization of Corpora Statistics

The context of the statistics of the case study corpora (ALPHA, BETA & GAMMA) is that whilst the corpora themselves are too small to analyse for accurate statistical inference, a breakdown of the corpora in statistical terms for description can assist in a greater understanding of the evidence. Statistics were obtained from the corpus program itself (Figure a) as word counts, as it was felt that the other statistics provided by Corpus Tool were lacking in sufficient relevance to small corpora.

In terms of the analysis of the corpora, the statistics provided by Table i can be used to show elements of corpus composition, representative amounts of material from each participant, and to provide an overall view of a corpus's proportions.

In terms of the relative sizes of the individual contributions to the corpora, the contributions are calculated by dividing the participant's contribution and annotating a third for corpus use. This was done to facilitate the creation of the corpus in terms of speed, but also assisted in making sure that the corpora remained of 'shoebox' size.

In looking at the possibility of bias in the corpus, two things must be considered. The corpus's bias is due to the fact that it is a 'shoebox' corpus and therefore not really intended for meaningful quantitative statistical analysis. This is not an issue when the evidence within the corpus is looked at qualitatively, as it has been in appendix 8.

The other aspect of bias is that the narrative contributions were only analysed for nouns and verbs. This was a deliberate choice, again serving to facilitate the speed of corpus creation, but also assisting in the identification of terms identifying e-records (nouns) and records management as an act (verbs).

What is revealed by this awareness of bias? The first issue is that bias within a corpus makes it a very difficult source to justify as a representative of SMEs in general.

However, as the main aim of the corpus was to collate narratives from SMEs and to then assess their language, there is no need to justify the corpus as anything else but a collection of SME narratives. Bias in this sense is tolerated within the corpus as its primary interpretation is through

The creation of a larger corpus by merging the three corpora is a possibility, but would not have benefited this particular study, as there was more to be gained by assessing individual cases. The likelihood of more than one SME using a term which had a high propensity but which could be interpreted in a wholly different way would be a hindrance to a thorough analysis.

Figure a: Corpus Tool screenshot showing general statistics per document for the corpus

	G1 - GA	G1 - ma	G2 - ma	G2 - ma	G3 - ma	G3-seco	G4 - ma	G4 - GA
Length:								
- Number of segments:	1266	893	0	478	346	0	391	372
- Words in segments:	1266	960	0	513	378	0	423	372
Text Complexity:								
- Av. Word Length:	4.70	4.40	0.00	4.23	4.36	0.00	4.07	4.40
- Av. Segment Length:	1.00	1.08	0.00	1.07	1.09	0.00	1.08	1.00
Lexical Density:								
- Lexemes per segment:	0.75	0.66	0.00	0.60	0.61	0.00	0.65	0.65
- Lexemes % of text:	75.04%	61.15%	0.00%	56.14%	55.56%	0.00%	60.52%	64.78%
Reference Density:								
- 1p Reference:	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
- 2p Reference:	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
- 3p Reference:	0.237%	3.750%	0.000%	4.288%	2.381%	0.000%	4.255%	0.000%

The relative length of narratives, related to the nature and status of the participant
 In terms of the relative length of the narratives by participant status, the initial contact in all three case studies was the largest contributor. This has been attributed to the fact that the initial contact was more likely to be responsive to requests for further information than other participants. They were also the most likely to be the ones with whom the final interview was conducted.

In terms of compiling a corpus of participant narratives, proportionality in the amount of narrative processed (see col. ‘Word count (of contributions incorporated into corpus)’ in table i) is important to note as a measure of how representative that corpus is. If one participant’s narrative contribution is significantly larger than all other contributions, this will affect word propensity in the corpus and will often be seen in

the nature of the contextual extracts from that corpus (i.e. all contributions for a certain term will be from one participant only). Whilst such a corpus is still qualitatively valid, statistically it is biased, which affects that view of the trustworthiness of the evidence.

A related issue is how much more managers often have to say about their businesses within narratives. We can question whether this is proportionally representative given that managers were always the contact points: it is not quantitatively representative given that such points of contact were all managers. Table ii illustrates how two of the three corpora have the main contact as the major contributor.

Table ii: Corpus and Contribution Analysis

Corpus	Contributor	Composition
ALPHA	A2	26.1 % (23.7 % shared with A1)
	A1	48.5 % (23.7 % shared with A2)
	A3	49.1 %
BETA	B2	8.47 %
	B3	26.62 %
	B1	26.52 % (with an additional 0.6 % shared with B4)
	B4	37.79 % (with an additional 0.6 % shared with B1)
GAMMA	G4	10 %
	G3	14.5 %
	G2	32 %
	G1	43.5 %

‘Propensity’ in the corpus

‘Propensity’ and its use in developing a picture about the specific concerns of the individual participants, and this placed against the values found for word searching with a text concordancer such as CORSIS. Due to the phenomenon described by O’Donnell (2008) as ‘propensity’, the composition of the corpora changed over time as more data was added into it. The composition of the individual corpora developed over time and a more idiosyncratic usage of specific terms built up. This can be seen in appendix 8. The technical details of the definition of ‘propensity’ as understood by O’Donnell in his creation of Corpus Tool are established in Figure b.

Figure b: Email to Naomi Hay-Gibson from Dr M. O'Donnell, dated 29-8-10, in response to a query of how exactly word propensity was worked out and established within corpora

Propensity of a word for a subcorpus is basically:

$$\frac{\text{Relative Frequency of the term in the subcorpus}}{\text{Relative frequency of the term in the rest of the corpus}}$$

Relative frequency = count(word) / total number of words

For instance, if a word "cat" occurs as 2% of the tokens in a text, and as only 1% of the tokens in other texts, then the ration would be:

$$0.2 / 0.1 = 2.0$$

And this can be interpreted as meaning the word appears twice as often in the text as it does in a more general corpus.

CorpusTool basically counts the occurrence of terms in the class you specify and then compares that with the occurrence in the rest of the corpus it has.

It then prints out the 50 words with highest frequency.

This description of how overall word propensity is defined in a corpus via the mechanisms of Corpus Tool has not been described by its author in any publications, and therefore gives an important insight as to how the ‘propensity’ of a corpus is calculated.

This is linked to the concept that corpora are compositionally representative and that shoebox corpora are statistically challenging to interpret but give us a sense of context in place of that statistical certainty.

Concept of the ‘Representative’ or ‘Specialised’ Corpus’

The ‘representative corpus’ is one that is best described as a ‘specialized corpus’. McEnery et al (2006, p. 60) defined a specialized corpus as a one which can be

domain or genre-specific, and in this case the corpus represents the language of SME participants when discussing e-records, risk management and records management. The benefits of having a specialised corpus are that it represents a variety of language within that specified domain or genre. There is emphasis on the balance of the selective corpus balance by inclusion of a wide range of material representative of that genre or domain (McEnery et al., 2006 p. 15).

Corpus Rules

Rules for corpus creation and annotation were considered during the forming of the study, and were formulated after or in consideration of the evidence that had been collected already for ALPHA. Whilst the rules were being formulated for the creation of the first corpus, they remained uncodified. However, the researcher realised the potential of having a permanent written guide as a touchstone for the creation of a representative corpus. As there are few guides to the creation of a corpus that can be universally applied, the researcher decided to write rules that could act as a framework for the creation of a specialised corpus. In order to understand why these rules for corpus creation were necessary, these rules are briefly explained, as well as their application in corpus creation and annotation.

The rules themselves were not intended as a universal corpus creation system. The rules themselves were written in order to create a faithful transcript that used English spelling, and made sense. The rules for the corpus take into account the need for accuracy and decisiveness in the interpretation of the material. As the material taken from the audio recordings of the interviews represented a view of the audio material, it was vital that there were rules on how this audio material was represented for analysis.

Speech between a participant and an interviewer is naturally very rich in granularity, but can have problems. These include strong accents that alter words, referencing back in the conversation to other topics, reiteration or repetition of certain elements, or points where the inclusion of the interviewer's comments is needed to make the sense of a single person's contribution.

A list of basic exclusions was created in order to deal with the words or items that would not be made into a part of the representative corpus. These basic exclusions covered what would not be incorporated into the corpus, and listed exceptions. The main basic exclusions were the vocalizations ‘um’ and ‘er’, and variations on these. These were excluded from the representative corpus, as they have no value in terms of sense or meaning.

Punctuation rules were developed so that words could be tagged despite differences in punctuation such as apostrophes, and proper nouns. This enabled more sense to be made of overall meaning in composite words. Hyphenation, and the treatment of hyphenated words, was dealt with using an extra rule added to the punctuation rules in order to manage this word form.

Supplemental rules dealt with further topics that emerged from the handling of the corpus material. These included contractions of words, and dialect words, and also the occasional problem of misspellings or unclear words. The corpus handbook is given in Appendix 4.

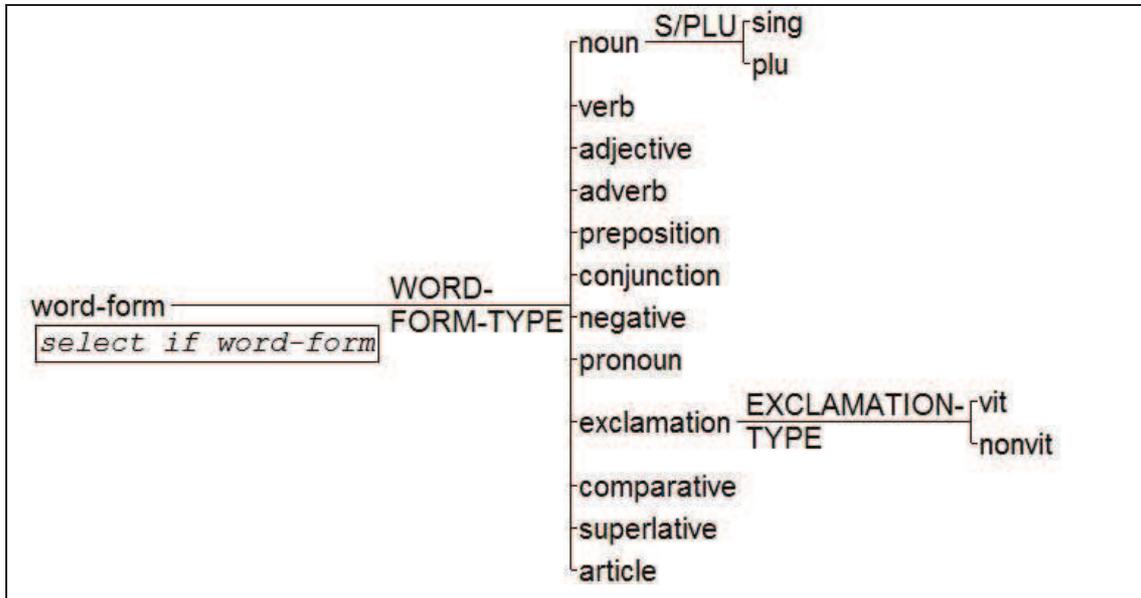
The Corpus Schema

The next process was that of designing a schema for the corpus. A schema outlines the unique elements of the corpus by allowing the researcher to create a tree diagram of various values, which can then be applied to the text (Figure c). In this case, the schema was based on grammar. It allowed for discernment between verbs and nouns, which was an important requirement that arose in a grounded sense from the evidence (from reading the transcripts and questionnaires). Nouns and verbs were looked at because it enabled the researcher to pick out subjects and objects, and what they were doing or was being done to them.

From this point, the act of ‘tagging’ each word in the corpus occurs (Figure d). Corpus Tool allows the user to underline a chosen element of text and to describe it using the schema that they have chosen. In the case of the study, this feature of Corpus Tool was used to underline the words within the texts of the representative corpus. These underlined words were then sorted by grammar – nouns and verbs were respectively

marked (Figure d). Marking up the text in this way enabled the ‘propensity’ of the text to be discerned.

Figure iii: Grammar schema for the 'Corpus Tool' program



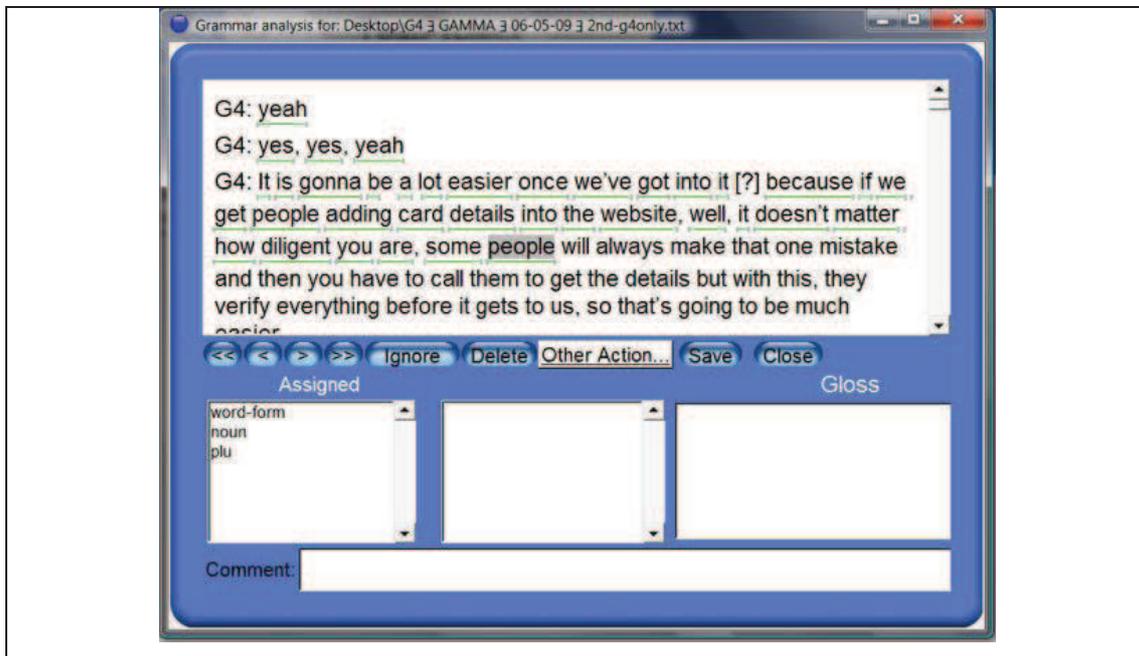
After every paragraph or so (approx. 100 words) of grammatical sorting, a reading was taken of how the word propensity was changing: as more words were sorted, the propensity changed.

In order to sample the text, the chosen ‘representative’ word count for an interview text was taken from sections throughout the interview and not from one section only, to reduce the possibility of bias in the propensity of words: One example might be that if a ‘representative’ portion was taken solely from a text in a passage which discussed nothing but file transfers, it would then bias that text’s overall propensity to reflect that language – giving the false perception that the text was wholly concerned with file transfers.

After the final readings had been taken across the corpus for the most propensate nouns and verbs in each individual text, the lists of the most highly propensate verbs and nouns for each text in the corpus were reduced to the top fifteen words in each, to create a manageable and meaningful dataset. This dataset of the most propensate verbs and an equivalent with nouns, for each corpus, was then set out in chart form

using the program MS Excel. The contents of the MS Excel spreadsheet were then inputted into the CORSIS program (Sert, 2009).

Figure iv: Corpus Tool's main annotation window, showing markup detail



Challenges in corpus creation

Some specific challenges were encountered during the creation of the corpora. These were overcome as they were encountered, and the lessons learnt from either creating work-arounds or approaching the challenge in a different manner were incorporated back into the work.

Transcription

Transcription was undertaken from the digital recordings made at interview. Specific skills were learnt to try and speed up the process, but quality checking and the intensity of the process meant that on average, a typical hour of conversation could take days to transcribe. High noise levels also affected this at the time of the recording by making voices harder to distinguish. This was usually circumvented with a lot of patience in transcription, and by trying to select before commencing an interview, a place where ambient noise would not affect the recording too much. In some circumstances (e.g. a warehouse or factory floor) ambient noise on the recording was inevitable. In order to transcribe more quickly, a software called 'Transcriber' (DGA, 1998 – 2008) was utilised.

Codification

In preparing the interview texts for insertion into the corpus, the texts had to be readable by the software chosen to form the retrieval basis of the corpus. The texts were transferred into text files from MS Word documents, and loaded into the programs. This transfer was not difficult, but care had to be taken that the formatting in MS Word documents was not detrimental to the final text files' interpretation.

Appendix 8: Sampling and emergent design in regards to data collection

The sampling of a range of SMEs was carried out by purposive sampling of SMEs dependent on accessibility, scale, and scope. Another aspect – that of the degree of approachability of the SME – was also vital to SME engagement with the study. In terms of accessibility, it was decided that SMEs that were within the North-East of England would be targeted, to facilitate site visits. The scale of the SMEs was also a deciding factor, with representative sampling for the study being a selection from ‘small’ to ‘large’ SMEs (as defined in section 1.4.3). The scope of the SMEs was also purposively selected, as those which held sensitive data or records could not be ethically approached, and this was noted in the case study risk assessment and ethics policy (Appendix 2) as part of the confidentiality for businesses, and terms of ethical conduct. The degree of approachability of the SME to a researcher was an influential factor in SME choice. This was helpful to the study in general, as it was found that the manager of the SME would offer a range of employees as study participants. Willingness to participate in the study became a useful discerning factor.

Sampling within the SMEs was carried out through purposive sampling of the individual workforces, based on voluntary selection through employer and employee. The primary contact for each SME usually volunteered potential participants from the workforce, based on the availability of employees. The researcher asked if a representative sample of the workforce could be obtained, with one participant from every level of work that dealt with handling or creating records. In terms of the actual participants gathered, this was found to be a positive form of purposive sampling, as a good amount of evidence was generated from these participants. However, not every level of the workforce was sampled from in every case study. Employees who were either not on duty whilst research visits were being conducted, or who were unable to be spared from their duties for interviews, were discounted from the study.

E-tool questionnaire

The e-tool questionnaire was designed to ask questions about risk management and records management. Questions were generated to identify themes, ascertaining specific information about the records management and risk management awareness of the case study SMEs. The e-tool questionnaire was developed in two parts. The first part was a shorter questionnaire, planned to be given before meeting and interviewing within the SME, so that a led interview would be more informed as to what types of records were held by the business, what specific problems they had, and what risks they had specifically experienced in the context of records management. Table 1 describes the themes in e-tool 1 and the corresponding questions. Using prompts from the questions in e-tool part 1, there was leeway for alteration to the questions of part 2. The second part of the e-tool was designed to be given to the participants to complete themselves after an initial meeting between researcher and SME.

Table iii: E-tool questionnaire part 1 themes and questions

E-tool part 1	
Themes	Questions
Ascertaining records types	What e-records do you use on a regular basis?
Awareness of risks	Which of the following types of risk to your records do you think are encountered by your business? Losing your e-records?
Records management awareness	Being unable to store e-records? Being unable to read e-records? Being unable to amend e-records?
	Inability to access your email? Inability to search your email account Inability to archive your email? Inability to send email? Inability to contact clients Loss of email?
	Inability to store IM conversations? Inability to read IM conversations? Inability to send IM messages?
Risk management awareness	Could you describe three or four other risk examples that you see within your business to do with e-records? Please draw upon any experiences you have had, or situations that you could visualise.

Part 2 of the e-tool was less specific in its questions, and followed a pattern of asking about the themes that were explored basically in e-tool part 1. These themes were expanded upon with more open questions, in order to prompt the participants' recall of their own experience with risk incidents.

A sample of the questions in part 2 are given in appendix 3. Their themes were similar to those seen in part 1 of the e-tool questionnaire, and expanded upon these with broader exploratory questions.

Design development

The differences between the first e-tool questionnaire and the second were:

- Inclusion of a scale of how badly affected the participant would be if there were no chance to store specific record types, with a Likert scale from 1 – 5
- A section asking the participant for details of how and why the impact was so great

These clarifications were relatively small in terms of changing the e-tool questionnaire, but were significant – when the new version of the tool was evaluated with A3, there was a change in the granularity of the evidence that could be noticed significantly. The Likert scale showed the level of concern that the participant experienced in terms of risk to specific record types, which in turn provided an opening to further questions within the later semi-structured interview.

Challenges in data collection from study design

Questionnaire data (Table iii) was collected from ALPHA, and with limited success from BETA, but not GAMMA. The data that was collected by the researcher from case study BETA was again qualitative. It consisted of a larger amount of interviews that had been transcribed. This data was put into plain text files ready for assessment. Questionnaires (the e-tool, parts 1 and 2) were distributed to the SME, but the participants were very unwilling to fill them in. It was not precisely described why this was the case, but a number of possibilities have been identified for possible factors that could contribute to the participants' non-completion of the questionnaires:

- The questions were too complex for participants to attempt

- The questions did not apply to the participants
- The questions were not worded correctly to elicit a response from the participants
- The participants did not wish to be embarrassed by the possibility that they may fill the questionnaire in incorrectly

The questions are too complex for participants to attempt

This could be a significant factor in the completion rate for the questionnaires. The approachability of the questions is a fundamental aspect of the design of the questionnaire. Question wording was kept simple to avoid sounding complicated. If a participant is unable to follow a question, then they are unlikely to fill in an answer, or to offer an appropriate response. A way to avoid this is to test variants of questions before offering to the SME. A balance needs to be achieved between the information-requesting nature of the specific question, and clear language to avoid ambiguity or over complexity, or towards the other end of the scale and patronisingly simplistic language or slang.

The questions do not apply to the participants

This may be a minor factor in the problems encountered by BETA and also by ALPHA. Using ALPHA's example, though, e-tool 1 was revised after entries came back unchecked because 'instant messaging use' was not a valid criterion for the company – they did not use IM for any business purpose and so it was not a used and supported format. There was no box to select to indicate this, though, and so the question went unanswered. This behaviour indicated the presence of another: that on being faced with a question that they felt they could not answer, the participants skipped the question or looked for a segment or box that was the equivalent value to 'I don't know'.

The questions are not worded correctly to elicit a response from the participants

Incorrect wording in a questionnaire can lead to confusion from the participants as to how to answer, uncertainty as to whether the question has been answered fully, or may result in the question not being attempted. In order to mitigate the possibility of this, a form of risk assessment for this event was carried out (where the 'risk' is that of the question not being answered because it was not understood).

A diagram of risk analysis generated from this situation (see appendix) shows that in terms of the risk, its occurrence and impact, that an interview-style question with an explanation is the least risky option. An open question is the most likely to go unanswered, or be answered incompletely. This leaves a range of options when preparing to research in an SME – either to follow the pattern set by the previous SME in their response rate and preferences, or to try and adapt the techniques of questioning.

As a response to this, the questioning techniques were adapted in the light of the final SME, GAMMA. GAMMA refused to complete any questionnaires during their fieldwork, and there was therefore a heavy reliance on the data gathered from interviews. Instead of wholly abandoning the questionnaires and their thematic questions, the interviews held were used to try and gather as much rich data as possible, as opposed to the delivery of an oral version of the questionnaire. This was met with success, as the interviews were clearly in the case of this SME a preferred format. With careful planning, the questions selected for use in the interview in order to guide participants to the key topic areas of the study were aligned with the themes within the questionnaire. The questions were made more readily understandable to SME participants by changing the language of the questionnaire questions whilst maintaining the connection with the key themes, identifying what had already been answered or was not relevant to each participant.

The participants do not wish to be embarrassed by the possibility that they may fill the questionnaire in incorrectly

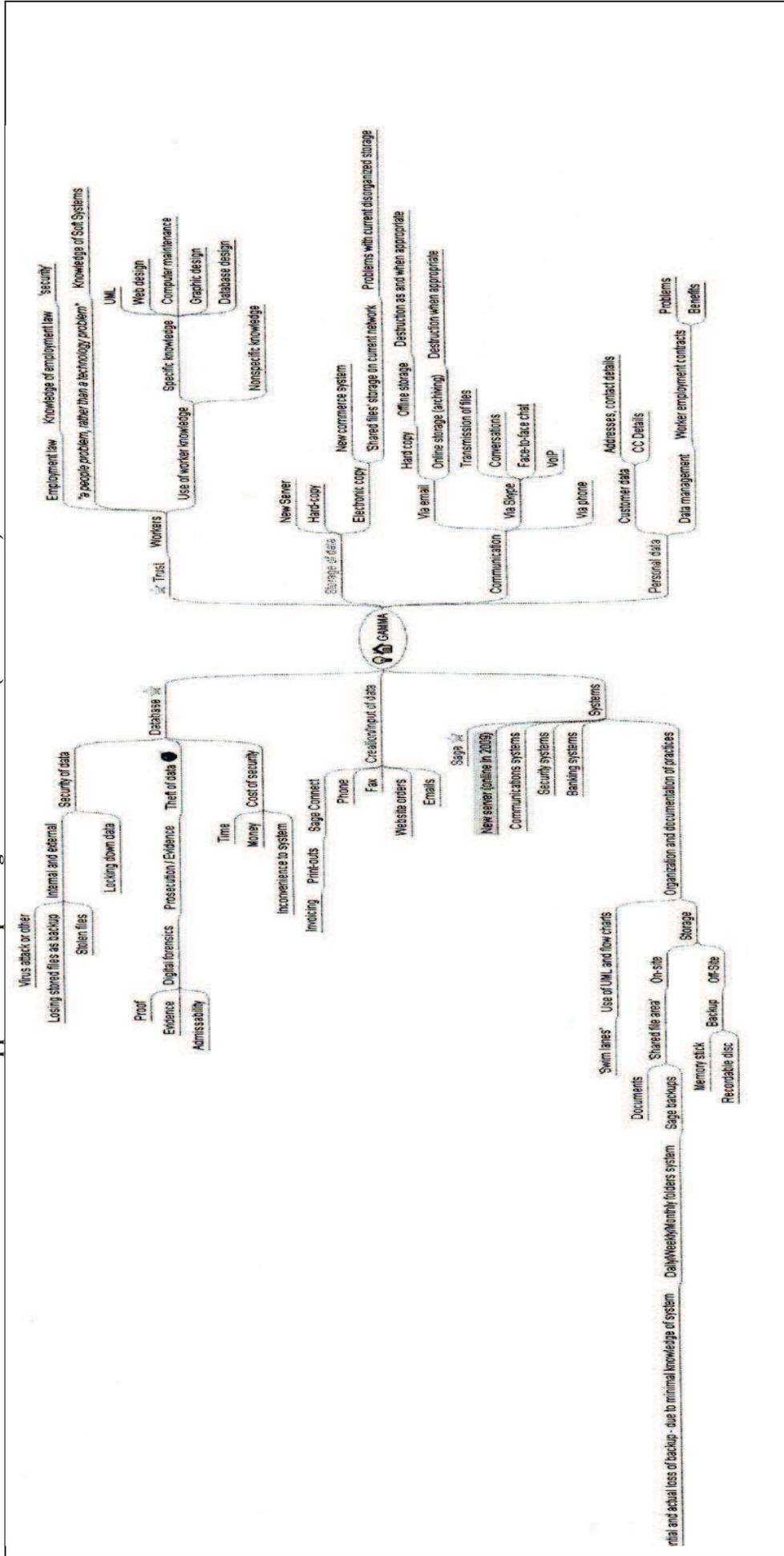
This was an aspect of the research that the researcher had not originally envisaged, but which seemed to play a main part in the reluctance of the participants from BETA to respond using questionnaires. Whilst all were more than happy to interrupt a daily business routine to see the researcher for a period of time usually in excess of 25 minutes, and could make themselves available for repeated interviews, none were particularly happy to attempt a questionnaire (the e-tool developed for the project). One questionnaire was, according to the participant, passed from SME member to SME member, and was taken to the head of the SME for advice on completion, and finally when nearly completed, was accidentally deleted.

This extreme reluctance to complete or interact with the questionnaire became a dilemma. Without a range of evidence, it was hard to evaluate SME behaviour, but there is no ethical way of forcing the participants to undertake a questionnaire. It seemed more appropriate to encourage them to participate using researcher-led interviews, which they initially suggested as an alternative, and expressed a preference for. After the first two interviews within BETA, it became clear that open questions were approached with more ease, especially when background reasoning was given at the same time. Case background was also helpful for both the researcher and the participant.

In theory, an abstracted question and answer session such as that provided by a single question in a questionnaire could provide basic information about records management. However, placing the same question in an interview can mean the obtaining of background information from the participant and the situation. This gives more depth and granularity to the evidence obtained.

It was found that participants became more relaxed and willing to talk about their own experiences when the interview was conducted informally, and were less likely to feel threatened by questions about their work and risk situations. Surprisingly, many participants did not appear to show that they thought answering questions about levels of risk was critical of their own risk management abilities. None hesitated when describing risk situations.

Appendix 9: Topic Diagram for GAMMA (December 2008)



Appendix 9: Topic Diagram for GAMMA (December 2008)

This diagram represents the topics and concerns of GAMMA from interview, based on work from the first interviews held in December 2008. It highlights the way that the topics emerged and were pieced together by the researcher. Whilst most of these are discussed in the profiles, some topics were not fully explored and are reproduced here as an appendix.

Appendix 10: Glossaries

Introduction

This appendix gives descriptions of the glossary terms that emerged from the case studies in the investigation of language use in SMEs. The glossary descriptions given here are evaluations of how the terms have been used by the case study participants.

The glossary terms are emergent data from the case study participants extracted with the use of the CorpusTool and CORSIS programs. These glossary terms are given in the contexts in which they were extracted from participant interviews and questionnaire material in order to provide a grounded perspective of the evidence.

Glossary Descriptions

ALPHA

‘Permissions’

In discussing records management, both A1 and A2 have used the phrase ‘network permissions’. This refers to the physical measures that can be put in place to ensure that data is secure, usually by the network manager (A1). This might indicate a link between the idea of the e-record as a virtual object which can be managed by access to the system/s in which it resides, with part of the e-records management involving controlling who has access to the records via the use of permissions.

‘Loss’

The phrases that have emerged from ALPHA through A1 and A2 are used to describe a physical risk – ‘loss’ in a physical sense. ‘Data loss’ was not a commonly used phrase, but had been used to describe a perception of risk. Whilst there is never any definition of ‘data’ given, it appears in ALPHA in several forms in the interviews –it can be figures and opinions

taken in by a data collector as shown on the fSSM diagrams, which are then cleaned and compiled by employees and managers within the SME. However once data has been processed, it is referred to in ALPHA by other names – ‘jobs’ or ‘documents’ or ‘files’. Data may or may not be part of a record.

‘Circulated’

From the context seen in ALPHA, circulation is a part of the records management cycle within the SME. Records are created, put within their computer network, with an option to either store the record immediately, or to distribute it to those who are involved (such as A2’s description of being copied in on documents). Circulation for ALPHA is the act of sending round multiple copies of a specific document or record to ensure that all who are involved have a copy. Again, as noted in the narratives, this circulation is mainly done by managers, with the ‘briefing document’.

‘Backup’

Here, the term ‘backup’ can either be a noun or a verb. In ALPHA, the use is more commonly as a descriptive noun – e.g. a copy is a ‘backup’, meaning a copy of a record or of data intended to be used as a failsafe. However, this noun is also used as a verb – to ‘back up’ is a verb used to indicate the act of creating another copy of a record or data. There is awareness that backups can be relied on as a form of safety for the SME, and as opined by A1, proper management of records should ensure that they are used only as failsafes.

‘Job’

The work that ALPHA does they term as assigned in ‘jobs’ – so part of their records management is to assign each project a ‘job number’. This job number acts as a form of record identification as noted by A2.

‘Mitigate’

A1 uses the term ‘mitigate’ as part of his explanation of his perspective of risk management. However, this ranges from an understanding of the dictionary form of the word (explain). A1’s use of the term ranges from prevention of risk ‘I was able to mitigate that before...’ to negation of an instance of risk ‘mitigate that from having an impact’.

‘Document’

In ALPHA, the term ‘document’ can be used interchangeably for the concept of ‘record’. Documents can become records, but there is no specific stage at which a document is recognised as a record. Some documents are held to have record-like qualities (i.e. should be retained for business purposes, document a transaction) but are not overtly described as records. The ‘briefing document’ is described as ‘a very simple document’ – in reference to its physical status when printed out and used in hard copy. However, some documents are not records – for instance, the ‘documents’ that A1 uses to inform him of possible approaches to risk policy are not retained as records.

BETA

‘Drives’

The use of the physical storage on a computer network is a key part of the e-records management of BETA. The term ‘drives’ occurs in context of the phrase ‘hard drives’. Storage of digital items or e-records is identified with items being stored within the ‘drives’ and identification of the concept that a backup of all digital information entering the system is being taken on a continuous cycle. The elements of digital storage are identified in terms of their hard copy equivalent, where items are said to be stored within the drives. The other usage of ‘drives’ shown is a verb – in the colloquial phrasing of B2, showing exasperation

‘Fails’

One sense in which the term ‘fails’ is used is to indicate mechanical failure of a part or all of the e-records management system, e.g. ‘if the server fails’ and ‘if the network fails’. Mechanical failure may or may not mean the breakdown of the records management system as a whole for BETA, as they do use a hybrid system of records.

‘Road’

This term is used in a phrase that relates not to a physical concept, but to the metaphor of being made to take a decision. The use of the metaphor indicates plan, with specified goal and path – particularly in light of the actions, such as planning to achieve ISO standard, or adoption of new technology. It is the only sustained metaphor that is used within BETA.

‘Backing’

‘Backing up’ is a process that is directly related to BETA’s records management. It is a process in which all e-records in the system are copied and stored within their storage units (cf. the ‘drives’) in their system. This process is regular and understood to be a process which keeps records management constant and current e.g. ‘if you are backing something up, then that’s it backed up’.

‘Technology’

‘Technology’ can mean either the physical elements necessary for the creation or completion of an e-records management system, or the ideas and philosophies of science as a whole. Physical elements may be new machinery or computer programs (e.g. ‘I think the technology is already there for a paperless office’ and ‘I think it’s a technology thing’). The theoretical sense of this term might embrace any new technological development, such as B3’s appreciation that his father has already overtaken him in an understanding of computer systems ‘He’s never been a whiz-kid in technology’.

‘Moving’

‘Moving’ as a term again is a directional concept of achieving progress, highlights the perceptions of BETA in terms of their records management plans. A similar concept was noted in overall themes with case GAMMA. The notion of moving from one kind of record to another, indicating an understanding of a transition taking place between the two concepts within their records management.

GAMMA

‘Computers’

Computers are not only individual units for GAMMA, but also part of the network which forms the records management systems. As G2 has described, the shared file space’ is used by all computers, and therefore these computers act at parts of the records management system whereby data and records are entered. Individual computers are joined to become part of the overarching data architecture as part of the ‘network’ (q.v. ‘network’) in GAMMA.

‘Database’

The concept of a database is important in GAMMA’s records management as they are used alongside other records management systems to augment the system of e-records

management as a whole. Databases are sets of information or data that can make up a record, such as G1's personnel records e.g. 'the HR Database'.

'Data'

The term 'data' is used by GAMMA to indicate information that can make up a record stored within a set of similar or related records (q.v. 'database'). It is notable that data is separated from records by being information alone which is not retained by the business until made into a record – e.g. the difference between 'secure credit card data' and 'sales data'.

'Network'

GAMMA uses this term to refer to their system of computers that comprises data storage units, terminals, and servers. It is separate and distinct in idea from the 'shared file space' that it supports, which is in essence their e-records management system's storage for active records. The 'network' is therefore the architecture of their e-records management system. Devices that are connected to this architecture therefore belong to the network, e.g. 'network printer' and 'network storage device'.

'Lost'

The concept of 'lost' lends a physical aspect to e-records. Hard copy records can be lost as easily as e-records ('bits of paper get lost/no data was lost'). It implies a form of destruction within e-records (cf. 'data loss' in ALPHA) and physical misplacing of hard copy records. It also implies that something is irretrievable within a system.

'Saved'

In GAMMA's form of e-records management the onus is placed on records entering the system and being stored so that they are retained. This is known as 'saving' and anything that is 'saved' is presumed to be retained safely for the business. Items of varying electronic form (from photographic images to email messages) can be saved internally and externally from the central management system of SAGE and the backup system maintained by G1. The status of a record being 'saved' does not imply that it is a unique record, and may be used to indicate that it was important enough as a record to be entered into the records management system.

Glossary Data

ALPHA

To hard copy. Um, and when it comes to permissions and who can see what, the locked cabinet	A1, IM
It's just not appropriate. So, you know, permissions of network and access level have helped	A1, FM
Network permissions allowing users to delete or move data	A2, Ept1
Gatekeeper of data security, network permissions and backup operations.	A1, Ept2

Loss /damage of data	A2, Ep2
Loss of accuracy leading to delays	A2, Ep2
Loss or damage to assets or information	A2, Ep2
Fundamental to minimising the risk of data loss	A1, Ep2

Work, in a project folder and then it's circulated so it resides in the data store and the	A1, MM
Something is created, put into a system, circulated , stored and then dispersed or disposed	A1, IM
In a project folder as well as being circulated . So it's stored there, and it's brought	A1, IM

Data that for some reason I don't have a backup of, so there may be other occurrences	A1, MM
Because those secondary and tertiary backups are more accessible so within that cat	A1, MM
We start and obviously you've got the backup but also the process of multiple files	A3, MM
Which kind of are written down as a backup so you can go Oh, this was a previous	A3, MM
Am now more diligent about ensuring backups are never more than a couple of days	A1, IM
Backup, backup, and backup! Secondary and tertiary copies of data Risk involved with mishandling of data. Backups should NOT be relied upon as a safety	A1, Ep2

Field force out there aren't doing their job properly, and they're falsifying data or	A1, MM
The menu that we use for a particular job , so it will tell you everything you need	A1, IM
Everything you need to know about that job it's like a quick, a quick scan of who	A1, IM
The new rule is, every one should have a job number at the beginning of that file	A3, MM

They hadn't yet failed, so I was able to mitigate that before I went away for my holiday	A1, FM
Be aware of any potential, you know, and mitigate it while I can.	A1, IM
...Of processes which would help me er, mitigate that from having an impact erm, and...	Ept2, A1

There are some documents I use as clear reference tools	A1, MM
...Triggers the production of the proposal document , which is stored in the data store	A1, MM
That's the first document that comes around	A3, MM
It's a very simple document , you know it's just the one page	A1, IM

BETA

Problem is that computers can fail, hard drives can fail	MB1, MM
A problem because we have got multiple drives in there so that if one drive fails	MB1, MM
Down but that has dunno how many hard drives and it's this computer,	B4, MM
A shaped ...piece of glass...it just drives me mental because you have to shape	B2, IMpt2

...Drives in there so that if one drive fails the other drives will take over, a bit	MB1, MM
Record for our accounts, so if it all fails , another month, we can see you owe us	B3, IM
To the server, really...if the server fails , then everything fails, but as for that	B4, MM
Where the network...if the network fails , B3 won't get it, it throws the	B4, MM

Way to people before we go down the road of kind of ordering online	MB1, IM
Idea long before we went down the ISO road. First of all, I had a lot of systems	MB1, IM
Sort of trying to be forced down that road , we are actually moving it for our own	MB1, MM

...More thank god but you have like the backing up of the computers, you have the till	B4, MM
Yeah...it's quite a safe thing, as it's backing up...as it's posting, it does a temporary	B4, MM
In industry in general that if you are backing something up then that's it backed up	MB1, MM

Well I think the technology is there already for a paperless office	MB1, MM
Suppose, we have certainly adopted new technology that is for sure and we know that that	MB1, MM
He's never been a whizz-kid in technology , but he's overtaken me now	B3, IM
Because I think it is a technology thing...	B3, MM

We're kinda moving forward, trying to move forward	MB1, IM
We are moving away from paper areas to paperless area	MB1, MM
Forced down that road, we are actually moving it for our own benefit	MB1, MM

GAMMA

Like myself who are quite happy using computers , and quite happy updating things,	G3, MM
We lost them on our actual physical computers , that wouldn't be quite so much of a problem	G3, MM
Has to be transferred between the two... computers ...so this little box...	G3, IM
You've got your individual computers you've got your network formed	G1, MM

Rather than populating the website database	G3, MM
Because we haven't quite seen the entire database yet, I'm not entirely sure what that's	G3, MM
And because it's on the database I'm then told about it	G3, MM
You know, I set up an HR database	G1, MM

The downside is it doesn't take the data from a database. Or a spreadsheet.	G1, MM
The records that it keeps, all the sales data , it will know what's fast moving	G1, MM
We have no accurate data as to whether it's in stock or not	G1, MM
We don't download secure credit card data when the girls go online	G1, MM

And you want to be able to look up that network printer by name	G2, MM
Obviously there'll be space on the network storage device which is for shared file	G2, MM
Just as a disc image squirted across the network onto a network storage device	G2, MM

But bits of paper get lost you know	G4, MM
If that's sat there for a week, we've lost a huge amount of sales.	G1, MM
If I lost my machine at home, G3's got the backup	G1, MM
There's a ... you know, high risk you've lost everything	G4, MM
But no data was lost , it was just the actual, you know, people	G3, MM

Everything needs to be saved and stored as far as I'm concerned...	G3, MM
You know, everything needs to be saved	G3, MM
It gets emailed to G1, and it gets saved externally.	G4, MM
I have everything saved on a stick that I take offsite.	G4, MM