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ACCELERATING POSITIVE CHANGE IN ELECTRONIC RECRDS MANAGEMENT – AN EMPRICAL TOOLKIT OF SOLUTIONS

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Abstract

The AC⁺erm project aims to investigate and critically explore issues and practical strategies for accelerating positive change in electronic records management. The project's focus is on designing an organisational-centred architecture from three perspectives: people, process and technology. This paper introduces the project, describes the methodology (a systematic literature review, e-Delphi studies and colloquia) and presents solutions for improving ERM developed from the people and process e-Delphi responses. ERM is particularly challenging and the solutions offered by the Delphi participants are numerous, and range in scale and complexity. The only firm conclusion that one can draw is that the majority of the solutions are people-focussed ones. The Cynefin framework is introduced as one approach for providing a conceptual overview to our findings on ERM. The sample solutions presented in this paper provide a toolkit of 'probes' and 'interventions' for practical application in organisations.

Keywords: Electronic records management, Delphi studies

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ACCELERATING POSITIVE CHANGE IN ELECTRONIC RECORDS MANAGEMENT – AN EMPIRICAL TOOLKIT OF SOLUTIONS

Abstract (around 150 words – style ‘Abstract Title’)

The AC⁺erm project aims to investigate and critically explore issues and practical strategies for accelerating positive change in electronic records management. The project’s focus is on designing an organisational-centred architecture from three perspectives: people, process and technology. This paper introduces the project, describes the methodology (a systematic literature review, e-Delphi studies and colloquia) and presents solutions for improving ERM developed from the people and process e-Delphi responses. ERM is particularly challenging and the solutions offered by the Delphi participants are numerous, and range in scale and complexity. The only firm conclusion that one can draw is that the majority of the solutions are people-focussed ones. The Cynefin framework is introduced as one approach for providing a conceptual overview to our findings on ERM. The sample solutions presented in this paper provide a toolkit of ‘probes’ and ‘interventions’ for practical application in organisations.

Keywords: Electronic records management, Delphi studies

1.0 Introduction

1.1 Background

The management of electronic records has been a significant issue for organisations for more than two decades. And, for the last decade records professionals have had access to guidelines, standards and systems developed by national archives, coalitions, professional associations and research groups. But organisations still struggle to manage their e-records effectively, and the introduction of new technologies (e.g. Web 2.0) compounds the problem - the goalposts are continually receding.

In 1995 John McDonald (1995) wrote an article entitled ‘Managing records in the modern office - Taming the wild frontier’. When he revisited that topic 10 years later (McDonald, 2005) he found little change.

“... ten years later. Has the sheriff come to tame the wild frontier? Do we have a realistic view of technology and do we use it effectively? Are authentic and reliable records being generated in the office environment and being captured into recordkeeping systems? Have we reached the holy grail of recordkeeping where the right records are being generated, captured (ideally in a transparent manner), maintained and used in the right form at the right time for the benefit of the ‘right’ people (from program staff to archivists to the general public)? ... while significant steps have been taken, the path out of the wild frontier remains as elusive for most organizations as it was ten years ago. The chaos presented by email and other electronic documents scattered around on the C drives and unorganized shared drives remains as real today as it was ten years ago. And the frustration felt in not being able to find the right version, the critical briefing note, memo, etc., or to establish the complete story on an issue, or to cope with the growing mounds of diverse forms of

information, is just as intense. The frontier of the modern office is still 'wild'. ((McDonald, 2005 p.2)

Progress had been slow and "there are reasons for this" (p.2). McDonald highlighted leadership (and the lack of) as the "single most important factor impacting the ability of organizations to move forward on the management of electronic records" (p.7), also citing "confusion over roles, responsibilities and strategic direction" as well as lack of resources and expertise. However, there are ways out of the wilderness, and McDonald offered some suggestions concerning how the pace of change might be accelerated, and explains why such accelerated change has become an imperative. These were to "focus on establishing a vision, enhancing awareness, assigning accountability, designing an architecture, and building capacity." (p.8)

McDonald's suggestion of 'designing an architecture' was the catalyst for the idea for our AC⁺erm project. To realise change in ERM we need to address two fundamental issues. First, we need to recognise that the world of work has changed radically and we need a better understanding of the way organisations, in all sectors, do 'business'. Successful ERM requires understanding working practices, business processes and organisational drivers. We need standards and practices not only for recordkeeping but also for the way we work today. Second, much recordkeeping theory and practice originates from the paper world and is being imposed onto the electronic world. We need to challenge the relevance of paper practices for the electronic world.

1.2 AC⁺erm Project Aims and Objectives

The AC⁺erm project (AC⁺erm - Accelerating positive change in ERM) is investigating and critically exploring issues and practical strategies to support accelerating the pace of positive change in managing electronic records. It is being conducted by staff within the Information Management Innovation Research Group, School of Computing, Engineering and Information Sciences, Northumbria University. It is funded by the Arts and Humanities Research Council (AHRC) from 2007-2009.

The project's focus is on designing an organisational-centred architecture from three perspectives: (i) people, including vision, awareness, culture, drivers and barriers; (ii) working practices including processes, procedures, policies and standards; and (iii) technology in terms of the design principles for delivering effective recordkeeping. Since recordkeeping in the e-environment involves different stakeholder groups (i.e. executives/senior managers, records professionals, IT/systems administrators and recordkeepers) and is trans-disciplinary (involving information management, humanities, social sciences, public policy, history, business management etc), the project is engaging people from multiple disciplines and all stakeholder groups in order to build the professional and academic partnerships necessary to succeed.

The objectives of the project are:

- to develop a critical, global view of ERM
- to gather multi-disciplinary opinion on ERM issues
- to gather knowledge of practical strategies and critical success factors
- to develop an appropriate paradigm for ERM

1.3 Other ERM Research

Other major research projects on ERM have been conducted. Some of these are briefly described below.

The Functional Requirements for Evidence in Recordkeeping Project (<http://web.archive.org/web/19981203042506/www.sis.pitt.edu/~nhprc/>), 1992 to 1996, was conducted at the University of Pittsburgh. It was the first major research project on ERM and developed “a set of well-defined recordkeeping functional requirements - satisfying all the various legal, administrative, and other needs of a particular organization - which can be used in the design and implementation of electronic information systems.”

The Preservation of the Integrity of Electronic Records Project (<http://www.interpares.org/UBCProject/intro.htm>), 1994 to 1997, was conducted at the University of British Columbia (UBC). It defined, within the context of e-records, a record and its reliability and authenticity. It then developed a set of eight templates that identified the necessary and sufficient components of records in both paper and electronic recordkeeping environments. “The findings of the research project fall into two categories: (a) specific methods for ensuring the reliability and authenticity of electronic records; and (b) management issues concerning the maintenance and preservation of reliable and authentic records.” The UBC Research team then worked with the US Department of Defense (DoD) Records Management Task Force, 1995 to 1996, to model the UBC templates. The DoD was aiming to develop requirements for ERMS, and this research and additional activities have resulted in the writing of DoD 5015.02, Electronic records management software applications design criteria standard.

InterPARES, the International Research on Permanent Authentic Records in Electronic Systems Project <http://www.interpares.org/> built on the research (above) by UBC. It “aims at developing the knowledge essential to the long-term preservation of authentic records created and/or maintained in digital form and providing the basis for standards, policies, strategies and plans of action capable of ensuring the longevity of such material and the ability of its users to trust its authenticity.” InterPARES 1, 1999 to 2001, developed theories and methods. InterPARES 2, 2002 to 2007, explored issues of authenticity, reliability and accuracy. InterPARES 3, 2007 to 2012, is putting the theory into practice in archival institutions/units.

The Clever Recordkeeping Metadata Project (<http://www.infotech.monash.edu.au/research/groups/rcrg/crkm/>), 2003 to 2005, was conducted at Monash University, Australia. “The final report of the project details the agile, iterative, rapid prototyping techniques employed in the development of a proof-of-concept Metadata Broker featuring recordkeeping metadata translation and registry services functionality. The prototyping process enabled exploration of issues regarding implementation environments and infrastructures to support recordkeeping metadata re-use and interoperability.”

These research projects have focussed on the theoretical side of RM principles and processes in the e-environment and on developing the necessary RM infrastructures. The AC⁺erm project is taking an entirely different focus. We are looking for multiple

stakeholder views on practical solutions that organisations and individuals can use to improve ERM in their context.

2.0 Methodology

The project is using a range of approaches and techniques.

2.1 Systematic literature review

Underpinning the investigative phases of the project is a major literature review on the topic of ERM. The last comprehensive literature review on this topic was published in 1996 (Erlandsson, 1996). The project's review is being conducted using systematic literature review methodology. This is the first time that this methodology has been used in the records management field. The use of this methodology is particularly well developed in the medical field, e.g. <http://www.cochrane.org/>, but is also becoming more and more used in social science disciplines, e.g. <http://www.campbellcollaboration.org/>.

Systematic literature reviews aim for a more objective, rigorous approach to reviewing the literature. The objectivity and rigour comes from establishing elements a priori and following a standard process. The stages of a classic systematic review comprise:

1. framing the question for the review

- questions should be focussed, precise and specific, and set out a priori

2. identifying relevant literature

- searches should be as comprehensive as possible, covering all literature types from online databases, reference lists of selected items, recent journal issues etc, and the grey literature
- selection criteria (e.g. subject coverage, study and publication type, etc.) need to be established a priori. To minimise bias, selection is done independently by different reviewers and their choices compared

3. assessing the quality of the literature

- with criteria established a priori. This enables individual items of evidence to be weighted based on the rigour of the work. This information can be used for selection and/or interpretation.

4. summarising the evidence

- using a data extraction form established a priori. The form is used to extract the data from the literature that will answer the review's question(s)

5. interpreting the findings.

- using analysis methods established a priori. This interpretation aims to give a meaningful and practical answer to the review's questions(s), considering the strengths and weaknesses of the evidence.

4. outputting the findings

- using a narrative report, supported by data tables, a bibliography of the selected items, and a detailed description of the review process itself. Reviews covering quantitative data might also include a meta-analysis.

The nature of the topic and the disciplines we are covering in our review have required some modification of this classic approach and our analysis has been mostly qualitative, identifying themes. The outputs to date can be seen on the project's website

http://www.northumbria.ac.uk/sd/academic/ceis/re/isrc/themes/rmarea/erm/diss/diss_slr/

2.2 Electronic Delphi studies

The investigative phases of the project comprise exploring three facets of designing an organisation-centred architecture for ERM

- people issues
- understanding work processes and systems
- technologies.

The investigations are conducted using a combination of e-Delphi studies and face-to-face colloquia involving an appropriate mix of experts, disciplines and recordkeeping stakeholders. The Delphi studies build upon our findings from the systematic literature review. Using the review findings as a starting point, they gather primary data from selected participants and develop a picture of 'expert opinion' on each facet. The colloquia, held in different parts of the UK, validate and extend the Delphi studies through face-to-face discussions between more participants.

The 'classic' Delphi technique comprises setting up a panel of experts. The members are kept anonymous from each other, although each is known to the researcher. This anonymity is a key factor as it prevents a 'powerful' person from dominating the group and also prevents the pressures for group conformity - people are free to fully express their views. Questionnaires are used, originally paper, and each expert communicates individually with the researcher. The first round is a set of open questions to derive as many views and issues as possible. These are analysed qualitatively by the researcher to develop a set of themes. In the second round these themes are then presented in a structured questionnaire and the experts are asked to rank or rate them using a scoring technique. The results are analysed quantitatively and the themes ordered by their rank value, with the use of dispersion estimates such as standard deviation to show divergence. These results are then presented in a third round for a further set of ranking and reanalysis. Sometimes further rounds are used. The end result is a convergence of the findings to the central tendency, or a 'consensus', with an estimate of the degree of deviation from this central tendency.

A good discussion of Delphi methodology is provided by Linstone and Turoff (2002) and we have drawn largely upon this work to develop our approach. We have amended the technique for our purposes in a number of ways: (i) collecting data through electronic means; (ii) not seeking to 'force' consensus, but rather to explore both consensus and divergence; (iii) capturing the richness of the discussion through an emphasis on qualitative analysis, though we also use quantitative analysis were

applicable. (See McLeod and Childs (2007) for discussion of our previous use of the technique in RM).

For each Delphi study we are conducting, we have ~25 participants from a range of work and disciplinary backgrounds. The pattern of the Delphi rounds for each study comprises:

- presentation of the issues arising from the literature review for agreement, disagreement, and addition of other issues identified by the participants
- further exploration of key issues, or emergent issues
- presentation of all the issues from the previous round(s), grouped under categories, for ranking of the issues in order of urgency to be addressed
- collection of suggestions for solutions to address these issues, from the participants experiences and perspectives, both solutions to try and solutions to avoid (e.g. ones which have been unsuccessful in the past)
- ranking of these solutions in terms of desirability, feasibility, impact, priority, and immediacy of action
- further exploration of key solutions, or emergent solutions

We have analysed the participants' responses using a range of different approaches (subject themes, numerical ratings, subjective explorations) to provide a 360-degree view of the data. We have also produced outputs in textual, numerical, graphical and diagrammatic forms to support different cognitive styles.

To date, we have conducted the people and the processes phases. Ongoing outputs are available on the project website:

http://www.northumbria.ac.uk/sd/academic/ceis/re/isrc/themes/rmarea/erm/diss/delphi_diss/

2.3 Analytical Techniques

Our data is being analysed using a range of qualitative techniques.

The literature is identified through our searches of bibliographic databases and other resources and is managed using a bibliographic reference tool (Endnote). The content of items included in the systematic literature review is coded into a purpose-designed Access database. We are capturing information about:

- the nature of the literature: for each item we record details such as date, resource type, approach/study type, author (country, sector type), focus (country, sector type)
- subjects: for each item we code the subjects covered by the use of tickboxes, e.g. critical success factors, business processes, model for ERM, functional requirements, change management, partnerships – trans disciplines
- details: a summary of each item
- quality: evaluation of each item into High, Medium, Low on three parameters - resource type, approach/study type, reviewer's opinion

To produce outputs from the database we can select all the items covering a given subject, e.g. critical success factors for the implementation of ERMS. The summaries of these items are then used to identify themes.

The responses of our Delphi participants are being managed with a purpose-designed Access database as a data-capture and analysis tool. The database tracks and links information relating to the participants, the stage of the project, and the responses to questionnaires. We are thematically analysing the Delphi questionnaire responses using faceted classification (See e.g. Denton, 2003). The choice of this method was driven by a number of factors: (i) we wanted the subjects to emerge during the data analysis, rather than use a pre-determined hierarchy of subject terms for coding; (ii) we wanted to capture all the nuances of the data; (iii) we needed a quick turn around, as we only had one week between each round to analyse and synthesis the data and produce the next set of questions; (iv) we needed a method that could be used simultaneously by all three project team members. Faceted classification provides structure by pre-determining a set of facets, organised in a specified order (See Figure 1).

- Thing
- kind
- part
- property
- material
- process
- operation
- patient
- product
- by-product
- agent
- space
- time

Figure 1. Facets used in the Bliss Bibliographic Classification Scheme
<http://www.blissclassification.org.uk/bcclass.htm>

Facets define the aspects or properties of items. However the approach is infinitely flexible because for a specific item you give the specific case of the facet, e.g. Facet Time, specific case annually. So for each item a theme (or string of relevant facets) is produced (note that not all the facets have to be used for a given item). In our case the item (or unit of analysis) is some part of the Delphi participant's written response - it could be a phrase, a sentence, a paragraph. To ensure consistency in approach between the project team members, an ever growing controlled word list is produced from the themes. An example of the process is given in Figure 2.

Topic: Records professionals need appropriate knowledge/skills, approaches and relationships for the e-environment.
Response: "Grow a records management team in your priority areas, e.g. records manager, lawyer, IT technical expert, project manager."
Theme: knowledge/skills [Thing] requires [Process] build [Operation] team (RM, multidisciplinary) [Product] records professionals [Agent] other professionals [Agent] organisation [Space]

Figure 1. Example of building a theme from the Delphi data.

These themes are organised within an Excel spreadsheet, and each theme is coded with the respondent's Id and the question Id. Synthesis of the themes by searching for

individual words/phrases or extracting A/Z ordered themes is a relatively quick process.

We are exploring emergent topics from the Delphi data by using a research tool known as 'phenomenological analysis', which allows the researcher (individual team members, or groups of team members independently) to explore the topic (the phenomenon) subjectively, under a number of headings. These headings, taken and adapted from Boeree (1998) are

- pieces and parts in space
- episodes and sequences in time
- qualities and dimensions
- settings and environments
- prerequisites and consequences
- perspectives and approaches
- cores and fringes
- appearances and disappearances
- clarity

2.4 Colloquia

The AC⁺erm Project Team is organising a number of free colloquia during the project period.

These colloquia perform two functions: (i) data collection and (ii) ongoing dissemination of results. The first function is to validate and extend the Delphi studies through face-to-face discussions between a larger audience of participants from a wide range of work. The second function is to update on research progress and share ongoing research findings.

The first colloquium, focused on the outputs of the e-Delphi study on the 'People' issues of ERM, took place in London on 09 October 2008. Just under 50 delegates (from a range of work and disciplinary backgrounds) attended and contributed to a series of discussion forums, adding to and extending the e-Delphi data. Outputs from the colloquium are now available on the project website: http://www.northumbria.ac.uk/sd/academic/ceis/re/isrc/themes/rmarea/erm/diss/coll_diss/

The second colloquium, which is based on the e-Delphi study on the 'Process' aspects of ERM, will be held in Birmingham on 26 March 2009.

2.4 Outputs

In line with its aim to accelerate the pace of positive change in ERM, the project is regularly 'publishing' ongoing findings from the systematic literature review and Delphi studies with the aim that these will encourage widespread discussion and be usable and used by organisations to improve their management of e-records. In addition the project is developing vignettes. The vignettes are a form of output that crystalises aspects of the research findings in the form of tools or exemplars that can be of use to practitioners, users and other stakeholders. Possibilities so far mooted

range from the simplicity of a postcard-sized aide memoire to the sophistication of a video game. One of the outputs from the first colloquium was the suggestion of an RM snakes and ladders game.

3.0 Project Findings

3.1 People Delphi Findings

After Delphi participant responses and discussion of the issues arising from the literature, 12 groups of issues were established (See Table 1). These were ranked by the participants in order of urgency as follows: issues 1 to 8 (which are actually groups/buckets of similar issues) are in order of urgency (most urgent to least urgent) as ranked by the participants; issues 9 and 10 are the most highly ranked single issues selected by the participants from within the buckets of issues. Issue 11 was added in by the project team as an identified gap in coverage and Issue 12 enabled the respondents to add in further ideas.

Issue 1. Executives and management lack understanding of records management and their role within that
Issue 2. Records professionals need appropriate knowledge/skills, approaches and relationships for the e-environment
Issue 3. Records Management and Information Management: principles and practices need to be a valued and integral part of the organisation
Issue 4. Staff, users: lack understanding of records management and their role within that
Issue 5. Implementation of ERM and systems requires change and change management
Issue 6. E-environment: has changed the nature of work and workplace relationships
Issue 7. ERM systems: need to be well designed
Issue 8. Other professionals: lack understanding of records management and their role within that
Issue 8. Other professionals: lack understanding of records management and their role within that
Issue 9. Managers need to commit not just to change in the organisation but lead by example through changing themselves
Issue 10. Records/information management needs to be part of an organisation's culture to the same extent as quality assurance
Issue 11. Integration/interoperability of ERM systems with other systems/processes is needed
Issue 12. Any other solution(s) that should be tried, or avoided, that does not fit in with the above issues

Table 1. The people issues relating to ERM

The solutions suggested by the Delphi participants to these solutions numbered 239! To make these more manageable, we have categorised the solutions under each issue as follows:

- Organisational
- Accountability

- Culture
- Assets
- Benefits
- Risk
- Analysis
- Holistic
- Flexibility
- Quality

To give a flavour of the kinds of solutions suggested by the Delphi participants, we list them for a sample of the issues in the following tables (Table 2-4):

Issue 7. ERM systems: need to be well designed
Solutions
Culture <ul style="list-style-type: none"> • Support with sufficient/sustained change management programme • Don't blame product/technology for failures
Analysis <ul style="list-style-type: none"> • Understand that ERMS are different types of system • Capture all requirements in advance • Regular review & enhancement programme
Holistic <ul style="list-style-type: none"> • Support with all embracing policy regime
Less not more <ul style="list-style-type: none"> • Minimise (system) burden on staff
Standards <ul style="list-style-type: none"> • Standards to guide design
Big bang <ul style="list-style-type: none"> • Avoid big bang solutions - don't work, have short lives and are expensive
Relationships <ul style="list-style-type: none"> • Corporate project notification scheme, accessible to all • Make close links with IT dept • Don't assume IT have same ERM knowledge/understanding as records professionals • Involvement all staff from outset; focus on users' processes, challenges, opportunities
Education/development (of non-records professionals) <ul style="list-style-type: none"> • Use 'use cases'
Marketing Don't show users all the functionality - they will want it
Shortcuts <ul style="list-style-type: none"> • Have built-in (not bolt-on) compliance • Avoid 'bolt on' to office tools
Example <ul style="list-style-type: none"> • Online retail systems – reliable

Table 2. Solutions to People Issue 7

Issue 8. Other professionals: lack understanding of records management and their role within that
Solutions
Relationships <ul style="list-style-type: none"> • Build RM team with experts in priority areas, including at least one 'ambassador' with advanced relationship management skills • Define specific limited role for records professionals • Partner records professionals with IT professionals/get IT professionals onside • Partnership working (between records & other professionals) • Records professionals should negotiate place on other professional forums
Education/development (of non-records professionals) <ul style="list-style-type: none"> • Don't neglect problem of lack of understanding • Education & information; training using real examples • Provide learning through experience rather than formalised teaching • Avoid 'death by Powerpoint'
Marketing <ul style="list-style-type: none"> • Use (targeted) marketing campaigns before ERM systems implementation
Shortcuts <ul style="list-style-type: none"> • Don't oversell RM benefits - can't deliver

Table 3. Solutions to People Issue 8

Issue 11. Integration/interoperability of ERM systems with other systems/processes is needed
Solutions
Culture <ul style="list-style-type: none"> • Don't attempt staff behaviour change with solutions built on sociological models
Benefits <ul style="list-style-type: none"> • Maximise business benefits
Analysis <ul style="list-style-type: none"> • Complete pilot project without any procurement activity to define desired state, introduce cultural change, and measure changes in behaviour • Investigate current work practices widely
Holistic <ul style="list-style-type: none"> • Don't overemphasise BPM (business process management) at expense of other issues • Don't overemphasise integration at expense of other issues
Flexibility <ul style="list-style-type: none"> • Build open IT systems • Build openness into IM practices, training, policies • Fully integrate with other systems & processes
Less not more <ul style="list-style-type: none"> • Familiar user interface
Big bang <ul style="list-style-type: none"> • Avoid national, centralised public sector IT systems - over reach themselves, subject to political interference

<ul style="list-style-type: none"> • Don't invest in large content management solutions
Relationships <ul style="list-style-type: none"> • Corporate project notification scheme, accessible to all • Use many stakeholders for specifying integration: reliance only on records professionals will result in idealised view
Planning <ul style="list-style-type: none"> • Top down approach • Integrate ERMS: not integrating risks not realising benefits • Avoid perception that integration/interoperability is too difficult • Avoid systems integration specification: it is costly & market-dictated

Table 4. Solutions to People Issue 11

3.2 Process Delphi Findings

From the first stages of the Process Delphi 20 issues were identified which were ranked by the participants in order of urgency (most urgent to least urgent). These were then grouped by the Project Team into 12 issues (by combining similar issues together) closely retaining the rank order. Issue 13 was added to enable the respondents to add in further ideas. The Delphi participants suggested solutions to address these issues. After analysis of the solution data a further issue category was created, Issue 14, which gathered together solutions that cut across a number of issues.

Issue 1. Organisation-level RM policies & infrastructure need to be established for e-records management
Issue 2. The need for non-IT processes to conduct business in the e-environment should be recognised
Issue 3. E-records management needs to be seen in the context of business risk & risk management
Issue 4. E-records are created in different business processes and maintained in multiple systems. Organisations need to manage this records environment in an integrated way
Issue 5. Ways of improving recordkeeping processes for e-records
Issue 6. Organisations need to develop and implement a preservation strategy for e-records
Issue 7. The relationship between privacy, security and access needs to be understood and managed
Issue 8. Organisations need to recognise where the e-environment creates new processes / affects existing processes, and need to manage this
Issue 9. RM principles and/or methods need defining or developing for e-records management
Issue 10. Organisations need to recognise which business processes need analysing and/or re-engineering for e-records management and implement the outcome
Issue 11. The nature, development and/or organisational use of standards and national strategies needs to be effective
Issue 12. Organisations need a strategic approach to the use of new technologies and need to manage the associated recordkeeping implications
Issue 13. Any other solution(s) that should be tried, or avoided, that does not fit in

with the above issues but should be included at this stage
Issue 14. Cross cutting solutions applicable to many different issues

Table 5. The process issues relating to ERM

To give a flavour of the kinds of solutions suggested by the Delphi participants, we list them for a sample of the issues in the following tables (Table 6-8):

Issue 4. E-records are created in different business processes and maintained in multiple systems. Organisations need to manage this records environment in an integrated way
Process solutions
<ul style="list-style-type: none"> • Embed RM in line-of-business and desktop systems • Restrict use of new media/technology within the business environment • Adopt centralised recordkeeping policies and procedures • Use a sophisticated search engine across all different systems • Adopt a centralised recordkeeping system • Clarify record status of information within new technologies
People solutions
<ul style="list-style-type: none"> • Undertake planning and systems analysis by a person outside of the systems, but in close collaboration with stakeholder groups • Involve fully all stakeholder groups • Manage departmental politics and bias, and obtain departmental buy in • Raise staff awareness about records in multiple formats

Table 6. Solutions to Process Issue 4

Issue 8. Organisations need to recognise where the e-environment creates new processes / affects existing processes, and need to manage this

Process solutions

- Incorporate/Include RM analysis at design/development phase
- Educate staff calmly rather than being alarmist about impacts on processes

People solutions

- Establish partnership working between records, IT and business professionals in process analysis
- Involve staff in process analysis
- Educate staff calmly, rather than being alarmist about impacts on processes

Table 7. Solutions to Process Issue 8

Issue 10. Organisations need to recognise which business processes need analysing and/or re-engineering for e-records management and implement the outcome
Process solutions
<ul style="list-style-type: none"> • Examine business processes to identify need for re-engineering using information governance as the starting point • Examine business processes to identify need for re-engineering using information applications audit • Assess business processes before ERMS/systems implementation

<ul style="list-style-type: none"> • Avoid just automating existing processes • Design file-plan to be practical and user focussed
People solutions
<ul style="list-style-type: none"> • Establish partnership working between records, IT and business professionals in business process analysis • Consult with staff on business process re-engineering at all phases (analysis, piloting, testing) • Raise staff awareness about the need for new processes • Train staff on the new processes when implementing re-engineered business processes • Consider the human element in business processes - be realistic

Table 8. Solutions to Process Issue 10

4.0 Discussion

The solutions are the results of empirical research using a qualitative methodology. They are therefore not generalisable, although they are applicable to people and organisations trying to improve ERM. ERM is a particularly difficult topic for organisations to tackle, for a number of reasons including the following: though all organisations are using e-records they vary widely in their context (e.g. sector, size, nature of their ‘business’, organisational history and culture); the tools and systems to manage e-records are numerous, variable and often incompatible; the pace of technological change is so rapid it feels like trying to manage flowing water. It is therefore not surprising that we have found no one, simple solution for improving ERM. The solutions offered are numerous, and range in scale and complexity from the need for systems analysis and change management prior to implementing ERM / ERMS to running tailored training courses for staff about RM. The only firm conclusions that one can draw from the research findings to date are: (i) the majority of the solutions are people-focussed ones; (ii) solutions are very context specific - the project can e.g. recommend that senior executive commitment is a critical success factor for ERMS implementation, and suggest a number of techniques that could be used to obtain this commitment. However, the degree of commitment required, the techniques that are applicable/feasible and the degree of success in using them will depend on the organisation in question and the skills and personal characteristics of the staff involved.

Because of this complexity and the huge number and range of issues and solutions arising from the research, producing a conceptual overview of the findings is challenging. One of our RM PhD students at Northumbria University, Elizabeth Lomas, is using the Cynefin framework (see Figure 3, Kurtz and Snowden (2003) and <http://www.cognitive-edge.com/> for further information) within a co-operative action research project entitled ‘Continued Communication’ (Lomas, 2009), studying the challenges of managing records/data held within information communication systems, and involving 80 co-researchers. The project’s use of this framework has inspired us to consider its applicability to the AC⁺erm project. However, at this stage, we are considering it only from an analytical viewpoint, not as a problem-solving technique. The Cynefin framework seems to provide a possible approach to dealing with the nature of ERM and the quantity of disparate solutions with which we are presented to assist in improving ERM practice.

COMPLEX Cause and effect are only coherent in retrospect and do not repeat Probe-sense-Respond Sense emergent practice	DISORDER Varying views on state of causality Act based on personal preferences and 'comfort zone'	KNOWABLE (Complicated) Cause and effect separated over time and space Sense-analyze-Respond Use Expert opinion/knowledge Apply good practice
CHAOS No cause and effect relationships perceivable Act-Sense-Respond Discover novel practice		KNOWN (Simple) Cause and effect relations repeatable, perceivable and predictable Sense-Categorize-Respond Apply legitimate best practice

Figure 3. Cynefin framework based on Figure one from Kutz and Snowden (2003) and Wikipedia entry (<http://en.wikipedia.org/wiki/Cynefin>).

Where could ERM reside in this framework? It is not within the 'Known' or 'Knowable' domains, but there could be cases argued for placing it within either the 'Complex', 'Chaos' or 'Disorder' domains. The way to deal with a 'Complex' domain is to use multiple perspectives to probe for patterns, and to select and try to stabilise preferred patterns. For a 'Chaotic' domain the approach is to act and intervene quickly and then respond to the result, with the aim of moving the situation into the 'Complex' domain. The solutions we have identified in the project, along with the vignettes we are developing, provide a toolkit of 'probes' and 'interventions' that could be used by individual organisations as applicable and preferred in their local context.

The individual solutions themselves can also be analysed by using the same Cynefin framework. Some solutions (change management and systems analysis for example) reside within the 'Knowable (complicated)' domain, others (training for example) reside within the 'Known (simple)' domain. We are planning to further explore the analytical use of this framework in the context of our research.

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- Lomas, E. (2009) *Continued communication*. PhD study. http://www.northumbria.ac.uk/sd/academic/ceis/re/isrc/phd/e_lomas/. The Cynefin framework techniques are being used in the research by the project's User Group both as a problem solving and an analytical tool. This phase of the Group's research has been led by Ron Donaldson (<http://rondon.wordpress.com>). The project's outputs are due to be disseminated through a web site at <http://www.continuedcommunication.org>
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