Northumbria Research Link

On being part of the solution, not the problem: taking a proportionate approach to managing records[1]

Abstract

This article provides a perspective on a future pathway for records management that is based on taking a proportionate approach rather striving for perfection. This approach requires a re-interpretation of traditional principles and their application in practice and a recognition of the danger of records managers being part of the problem as well as the solution to successful information and records management in the digital domain. The views are the author's based on the headline findings of a major research project (AC+erm) which investigated issues and practical strategies for accelerating positive change in electronic records management. They incorporate views on contextual developments since the project, in particular the characteristics of today's hybrid and increasingly mobile office environment such as the use of recognition technologies.

The 10 headline findings of the AC+erm project are shared. The article then focuses on some of the findings. The strategic findings, viz. articulating a vision of successful ERM and the approach to applying records management principles in order to realise that vision of success, and some tactical findings. The latter concern the need for information and records professionals to adopt proportionate and risk based approaches and the need to ensure that they are an essential part of the solution not the problem. Post the project, views on these and ways of addressing them are discussed with reference to real examples and potential future research and development. The research that provides the context for the article was qualitative and therefore its findings transferrable rather than generalisable. The views expressed about tactics for moving forward are intended to contribute to the debate about approaches to managing records in the democratic, digital domain.

A proportionate approach to managing records by definition implies a risk-based approach. This may prove challenging in organizational, societal and cultural contexts that are risk averse.The research which underpins this article was the first on the subject to be conducted in the UK and adopted a unique evidence-based approach. Undertaken in the context of the 'promise' of EDRMS its findings are relevant in the broader systems solutions. They provide a context for this perspective on current and potential tactics for addressing strategic issues for managing records in the digital domain. This provides a contribution to knowledge and debate in this field in particular about the role of the records manager and their course of action.

Introduction

'The cloud' is our information and records future; 'the basement' our information and records legacy. Both need to be managed. This article explores how positive progress can be made in our predominantly digital yet ever hybrid environment. Beginning with a view of one type of technology that is impacting today's office environment, the article presents the headline findings from a major research project and highlights some of the strategic findings. Post the project it offers some tactics for moving forward on some of the findings in particular the role and approach of the records manager.

The technology context – today's office

Today's modern office rarely resides within the confines of the building that is our work base. If that is not our home then it may be extended to home, it may be on the move, for some it is mostly on the move, be in other buildings or locations. We communicate, use and create information and records on the move using different devices and technologies – from paper to e-readers, laptops, tablets, mobile and smart phones. This is our hardware. Our software is even more diverse but one of the many interesting software developments that is finding new applications in this mobile world is recognition technology.

RFID (radio frequency identification) and standard barcodes were first developed decades ago. The origins of radio frequency based identification technology can be found in World War II when it was used to distinguish between friendly and enemy aircraft on radar screens, by virtue of the discovery that rolling a plane changed the reflected radio signal (Schulcz and Varga, 2011; Roberti, s.d.). However, it was some 30 years later, following much research and development, that the first patents for RFID devices were issued in the USA (Roberti, s.d.) and not until the 1980s/1990s that RFID technology found widespread applications (Schulcz and Varga, 2011). Similarly, the idea for the standard one-dimensional barcode, first patented by Woodland and Silver in 1949 (Woodland and Silver, 1952), only began to gain widespread application some 25 years later following the development of the standardized 11-digit Uniform Product Code to identify any product. This not only enabled the automation of supermarket checkout systems and revolutionized retail operations (Seideman, 1993) but also revolutionised the handling of information objects such as books and records (e.g. library loans, records storage centres/services, online book purchasing).

We now have 'new' two-dimensional barcodes, such as QR (Quick Response) codes and Microsoft Tags; but QR codes are not in fact new. Invented in 1994 in Japan for tracking parts in the automotive industry the word "QR Code" is a registered trademark of Denso Wave Inc.[2] and the subject of Japanese, US and International standards (Denso Wave Inc, http://www.denso-wave.com/en/about/outline/ and http://www.qrcode.com/en/index.html). But it is only in the last two years that QR codes have been more widely adopted. They featured at the world renowned *Chelsea Flower Show* for the first time this year, not only providing visitors with information about products and the show gardens, but also as the focus of one of the gardens (RHS, 2012a).[3]

One of the latest additions to the recognition technology stable is Near Field Communication (NFC) which has given rise to another tag symbol, reminiscent of a monochrome RSS feed symbol (see for example, Microsoft http://tag.microsoft.com/what-is-tag/home.aspx). NFC tags, as the name suggests, work at a much closer range than RFID, typically only up to 10 centimetres, so are unsuitable for RFID applications such as inventory tracking (Chandler, s.d., Blum, 2011). Designed to be used with NFC systems the tags can be read by Smartphones that contain an NFC chip, making special reading devices unnecessary. Just as an app enables Smartphones to read QR codes, an NFC chip enables them to read NFC tags. Applications are seemingly infinite – from product information to business cards, marketing, ski lift passes and vending machines and it is NFC technology that lies behind the Google Wallet mobile app, turning a Smartphone into a wallet (Google, http://www.google.com/wallet/). 'Chip and pin' may give way to 'tap and pay'.

These few selected examples illustrate not only the time lag between initial invention, through research and development, to real practical impact, but also how technology invented for one purpose or context is adopted elsewhere because of other, sometimes unrelated developments – in this case so-called 'smart' technology.

With today's phone-centric lifestyle, and in particular the advent of the Smartphone, the range of recognition technologies has multiplied as has their use in practice, connecting people to colleagues, clients and suppliers, family and friends, and information about places, events, products etc.

Smartphones, and associated technologies such as recognition technology, are dramatically changing our information world. They are a good example of hardware and software coming together and having a major impact on the way we work and how we create, access, store, share, use and manage information. They have significant information and records management implications.

Today's 'office' is predominantly digital, yet perpetually hybrid. We may become paperless but we will never by totally digital; artefacts of all kinds will remain as records e.g. samples, prototype objects etc. We are tethered, mobile and in the cloud. We are active information creators rather than passive information users. We communicate in and for 'the moment' yet some of the information we communicate may be required for and/or used as evidence. This information is managed (or not) by the many, not the few. Everyone is an information and records manager though they may not recognise themselves as such (McLeod, 2008).

A question is - have we made progress and are we addressing the information and records management challenges of our digital world of work?

Managing records in the modern office – accelerating positive change
In the mid 1990s McDonald likened the modern office to the wild frontier and in 2005 thought that it had not been tamed (McDonald, 1995 and 2005). He felt the pace of change in managing records in the 'modern office' had been relatively slow and suggested some ways out of the wilderness. His views were the inspiration for a research project which investigated issues and practical strategies to support accelerating the pace of positive change in managing electronic records called AC[+]erm (www.northumbria.ac.uk/acerm). It was a major 3-year project at Northumbria University, funded by the UK Arts & Humanities Research Council (AHRC)[4], which challenged existing recordkeeping paradigms to position the development of an appropriate practical paradigm for electronic records management (ERM).

The project focused on one of McDonald's suggestions viz. designing an organisational-centred architecture for managing electronic records. It explored three perspectives - people, processes and systems/technology. It considered what, if any, vision organisations had for their office environment and for recordkeeping in the context of their mission; the drivers and influencers for ERM; barriers to implementing ERM; and what strategies, tactics and practical solutions were working or not working. It was very much concerned with linking multi-disciplinary principles and practice and searching for the evidence base on a more strategic and wider scale than had previously been done. It was a qualitative study, gathering data from people in different roles, with a range of perspectives and experiences, to develop potential solutions that would be transferrable to similar contexts. The aim was not to generalise the findings. Professionals and practitioners from the four stakeholder groups identified in ISO 15489-1 (2001), i.e. executives/senior managers, records professionals, IT/systems administrators and record keepers, were deliberately included in the research design to make it a multi-disciplinary project that brought academics and professionals together. Over 200 people participated across the world. (See McLeod *et al.* (2010) for full details of the research aims, methodology and outputs).

Conducted between 2007 and 2010 the context was very much the era of the 'promise' of EDRMS.

Emergent issues and headline findings from the AC[+]erm project
A varying number of issues emerged for each of the three perspectives investigated. 10 'headline' findings emerged from the synthesis of these issues, the priorities and suggested solutions:

1. few organisations and/or individuals have articulated a vision for ERM
2. the people, process and systems/technology aspects of ERM are inextricably linked
3. people issues are predominant, fundamental and challenging
4. there is a wide range of critical success factors for ERM projects, applicable to all/most organisations
5. tactics and solutions for ERM are contextualised and complex
6. the success and/or failure of ERM implementations can be contingent on the presence/absence of small or accidental factors
7. there are few published in-depth critical case studies of success or failure, or post-implementation evaluation
8. proportionate and risk based approaches are needed
9. records management principles appear to be applicable for ERM, however practice needs to be adapted
10. records professionals may be part of the problem as well as part of the solution.

Selecting some of these headlines it is interesting that few organisations had articulated a vision for ERM (Headline 1). At the 2012 iRMS conference when asked if their organisation, or an organisation they worked with, had articulated such a vision the show of hands was less than 10% of the audience (McLeod, 2012). Yet McDonald's first suggestion for accelerating the pace of positive change in managing electronic records is to establish a vision (McDonald, 2005, p8). Visions are articulated either by an individual, for example a great leader, or by a group of people. Does this mean that records managers or the profession have no vision? If so, how will we know if we are succeeding?[5]

At a project level many of the critical success factors are applicable to different organisations; but the research revealed that the tactics and solutions that work for a particular organisation are contextualised , complex and often contingent (Headlines 5 and 6). The challenge then is to choose the right solution for the organisation and the context together with the most appropriate implementation tactics. For example, a project champion may lead to a successful project but can risk dependence on that person; other people will be needed to assure sustainability. That success and/or failure of ERM implementations can be contingent on the presence or absence of small factors, e.g. coincidences, accidents, major events, major change, is difficult to plan for or manage but should be recognised both for the potential opportunities and also the risks. These headlines confirm there is no easy, one-size-fits-all solution that can be articulated, meticulously planned and implemented.

Traditional principles and methods are a good starting point for managing e-records, but need to be reviewed, re-assessed, adjusted and developed for the electronic environment (Headline 9):

> *"principles should (in theory at least) be broad enough to cater to all records and all environments regardless of their formats. Every principle should be interpreted and implemented in the context of the recordkeeping environment into which it is being applied. This does not change due to the environment being electronic. Rather it is the fact that the environment is electronic that becomes part of the context examined when determining how to implement the principles. Australia uses continuum theory for its records management (new theory to cater for a new environment – electronic). However the records management principles that it uses within this framework (eg appraisal, disposal, creation, capture and [etc]) are quite basic and traditional principles – just revised a little for the new context."*
> (AC[+]erm participant, Process Delphi study)

In the context of evolution this is undoubtedly true but perhaps not in the context of revolution. As we have evolved from the paper to the digital world it has become clear that the point at which

records management principles, such as metadata capture and appraisal, are implemented needs to be and can be much earlier in the life of information i.e. before or at creation. However, in the context of the revolutionary digital mobile Smartphone environment, the massive volumes of information and the pivotal role of the individual may call into question some of our fundamental principles; for example, the nature and definition of records and their characteristics.

The final headline above reflects an open recognition by some of the research participants who were records professionals that we may be part of the problem as well as part of the solution. On the positive side, we take a holistic view and have the principles and tools to manage records; however our demands may be unrealistic, too constraining and therefore not adopted. These are a sign of seeking perfection rather than proportion, of idealism rather than realism.

All of the headlines are discussed in McLeod *et al.* (2011). This brief consideration of some of them provides a perspective on the status of ERM and the key challenges that records professionals are addressing. They also highlight the complexity of the ERM challenge, the inter-relationship of people, processes and systems/technology and the predominant and powerful role of people (records management professionals and others) in accelerating positive change, or not.

Strategic ERM challenges
Two of the headlines are strategic challenges, viz. the articulation of a vision of successful ERM and the approach to applying records management principles in order to realise that vision of success.

A vision of successful ERM
What would success mean?

> *"success will consist of a situation whereby most organisations have cost-effective and user-friendly capture, management of and access to authentic electronic evidence of their decisions and activities for as long as that evidence is required."*
> AC$^+$erm Expert Panel member)

This vision makes no reference to systems, technologies, programmes or people; they are the mechanisms for achieving success; they may contribute to achieving success, but they are not the same thing as successful ERM/records management. They may not even be requisites for ultimate success. Contextualisation is important as success is measured at the level of the particular organisation, it cannot be 'generic'. However, do we, how do we, visualise success?

Visions of success developed by information and records managers at one of the AC$^+$erm colloquia were articulated as follows:

- *"ERM will be valued by everyone as an essential enabler. It will be automatic, ubiquitous and intrinsic without being a burden"*

- *"Where traditional RM methods are dead and RM re-invents itself and becomes embedded in all business processes"*

- *"Develop and embed information management in human behaviour using easy solutions and simple processes which align with IT and social responsibilities."*
  (Northumbria University, 2010 and McLeod *et al.*, 2011)

My own vision is that everyone is a records manager (with a lower case 'r' and 'm'), not just in principle but in practice, and that the role of the Records Manager (i.e. the professional role) is strategic and enabling, horizon scanning, and focused on our role in solving 'big challenges' (McLeod, 2008). In a similar way to the development of the role of the librarian as facilitator, rather than intermediary, in libraries that are now open spaces to learn, explore, search and read rather than to borrow books etc, records professionals need to expand their role as facilitator, advisor, systems selector, developer and implementer. This will require training and education not just of those who want to be information and records professionals but everyone – i.e. the creators and users of information and records. Librarians have a long history of information literacy initiatives. Line (1980) was one of the first, if not the first, to challenge the library profession to '*consider the users*' rather than 'obsessing' about systems, organising and controlling collections Line. We need the equivalent for the more complex records context, but with an engaging name.

It is vital that information and records professionals have a vision of success in order to influence their organisations and ensure they develop their own information management vision and/or recognise the role that information management plays in delivering the organisation's vision.

The application of records management principles

The second strategic challenge is how records management principles are applied to realise success. For example, how do we apply the quasi-principle that 'records' must be captured or registered in 'records systems' (ISO 15489:1, 2001; ISO 30300, 2011) in the context of corporate IT systems, such as line-of-business applications? They cannot be described as 'recordkeeping systems' capturing records with the characteristics defined in ISO 14589:1 (2001) and ISO 30300 (2011). This is very important when "*line of business applications often contain more significant business records than shared drives which contain massive quantities of "dross" records*" (AC[+]erm participant, Technology Delphi study; McLeod *et al.*, 2011, p. 88).

Unless we revise our approach to implementing principles, then a large part of the data and information central to an organization's business may not be considered to be records at all by records professionals and therefore not managed. As rapid changes in the nature of information and communication technologies change the nature of records, the way they are created and used, so must the tactics for managing them.

Adopting a proportionate not (necessarily) perfect approach

In the 18th century Voltaire (1772) wrote "Le mieux est l'ennemi du bien" usually translated as "the best is the enemy of the good." In the 20th century General George S. Patton is attributed as having said "a good battle plan that you act on today can be better than a perfect one tomorrow", (Patton, s.d.). These quotes can be interpreted as meaning that looking for the best solution can prevent us from accepting a good enough, fit-for-purpose solution. We can compare this to the Pareto Principle or 80/20 rule[6], the unequal relationship between inputs and outputs, which states that 80% of the results are generated by 20% of the causes or, put the other way, 20% of invested input is responsible for 80% of the results. Applying this rule to our approach to managing records means identifying the 80% of issues or problems that can be resolved by 20% of the causes. Focusing our effort on 20% of the work could generate 80% of the results. This can be, for example, focusing on the 20% of very important records for our organisation that impact 80% of the business or staff rather than the 80% of less important records that have only 20% of the impact or significance.

So, do we need to manage all records to a 'gold standard'? Is perfection always necessary? Is it achievable? We have lived with imperfection in the paper world (McLeod and Hare, 2005, p192), yet

there is a sense, perhaps because of the nature of Electronic Document and Records Management Systems (EDRMS) and their impact on users, that perfection is a goal in the digital environment. But the digital world is getting noisier. Estimates of a 10-fold increase in the volume of information every five years[7] call for a different approach to addressing the challenges in a timely manner within the resources available. To what extent should we adopt a risk management mindset to managing electronic records? What does this mean for developing suitable processes to ensure records are appropriately managed? Are there any examples of tactics being used that might be described as proportionate?

A brief survey of a few colleagues asking for their views on the meaning and reality of intelligent information control, in both work-related and personal contexts, for a presentation at the 2011 DLM Conference on that theme, revealed the following example:

> *"[a] new case management system for legal has adequate rm controls, two years ago we would have built [an] interface to [the] EDRMS system and bypassed application functionality for managing records, last week I agreed that we should not integrate because of time and cost as [the] product met minimum requirements. Not text book but real life."* (McLeod, 2011)

This tactic was shared in the context of a belief that intelligent information control is about achieving the minimum necessary information outcomes (e.g. compliance, data quality, retrieval) at the right price. It illustrates a change of organisational culture in the current economic climate; one where average and inexpensive, rather than excellent and more costly and time consuming, may be sufficient or quite simply necessary. It is an example of a less than perfect but fit-for-purpose, proportionate approach to information and records management, systems and technology investment.

Should we, can we, always accept less than perfect 'recordkeeping systems'? By default we already do. But can we deliberately say 'perfection' isn't always necessary? No. Adopting a proportionate approach therefore implies a risk-based approach founded on sound analysis and risk assessment. This may prove challenging in organizational, societal and cultural contexts that are risk averse and may prove challenging in practice for information and records professionals.

Risk assessment is not a new concept for the profession (Lemieux, 2010); it has been practised in the context of records retention management for some time. For example, in the financial services sector some banks have adopted a risk-assessed approach to the retention of processed cheques, storing them for less time than might be required under limitations legislation. Their decisions have been based on sound analysis of the frequency of retrieval, based on the age or the value of the cheque. Balancing this, and the cost of processing and storage against the implications of not being able to retrieve the cheque, results in a risk-assessed retention period – i.e. a proportionate approach. Similarly, the UK NHS (National Health Service) has introduced the concept of a proportionate review in their National Research Ethics Service (NRES) "for studies which present minimal risk or burden for participants" i.e. those which have "no material ethical issues" (NHS, 2011).

Extending the retention example, the 'big bucket' approach can be viewed as a proportionate approach to developing retention schedules. A big bucket schedule consists of broad retention categories covering multiple record series, the buckets based on a choice of characteristics (Cisco, 2007; Montaña, 2010). It simplifies and shortens the usual lengthy, detailed and complicated retention schedules with the aims of making them easier for a user to implement and reducing schedule maintenance costs. Managing on a record-by-record or granular record series basis is

increasingly unrealistic, even though in theory the digital world offers the opportunity for automated retention management at a granular level. The big bucket approach does have drawbacks, the most obvious being that some buckets may lead to records being kept for shorter or longer periods than is ideal. It therefore requires decisions to be based on sound risk assessment. As well as being a proportionate approach big bucket theory is also an example of applying principles but adapting practice.

On being part of the solution not the problem
In the AC[+]erm project people issues emerged throughout the investigation phase. They are predominant, fundamental and challenging because they concern cultural and philosophical perspectives, awareness of records management, preferences, knowledge and skills. There are, of course, two sides to the people equation - records professionals and non-records professionals i.e. everyone else. The focus here is the records professional.

During the AC[+]erm project, when SharePoint was not highly visible on the radar screen and EDRMS were seen as a solution for managing electronic records, change management was a prominent feature in discussion and the literature. EDRMS required users to change habits and 'declare' records etc. In the mobile office described earlier, however, we need to think more about what change is happening, what change is necessary and what changes the records profession needs to make in its approach. This is about records professionals being part of the solution not the problem.

There are many ways records professionals can be part of the solution. Examples were collated from the AC[+]erm project, for instance:

- by demonstrating leadership "rather than adopting a passive victim mentality. Our knowledge and expertise can enhance the roles and outputs of other professions, as theirs can ours."
- taking a proactive in the electronic environment
- "designing and implementing RM practices that mesh with work practices and are not overly intrusive is one of the most important and I think most often neglected aspects of records management."
- recognising allies and forming constructive partnerships.
  (McLeod *et al.*, 2011)

This resonates with other research, for example by Oliver *et al.* (2009) who suggest that *recordkeeping informatics* is a better approach to managing records today. Recordkeeping informatics comprises five components for managing records, viz. evaluating and establishing the settings (the organisation's internal and external environment); business analysis (understanding the organisation's work, its functions and activities); access (to records across diverse systems and space); electronic document management and recordkeeping systems (the currently predominant solution for ERM); and service oriented architectures (systems that are more appropriate for networked environments).

Post the AC[+]erm project, external drivers are providing new examples of making and taking opportunities. For instance, the negative publicity and major fines for poor practice in the financial services sector provide opportunities for records managers. Reacting to this situation Wilkinson (2011) spoke of seeing an opportunity to take a *proactive* approach to ensuring records management adds value at the Royal Bank of Scotland. Focusing on processes and assessing the process risks is enabling their records management team to embed records management into high risk processes as they are reviewed and 'fixed' (i.e. improved). As a result records management is

protecting the bank's high risk business processes by ensuring its high risk records are appropriately managed. This is an example not only of being part of the solution but also of an approach that is proportionate and risk-assessed, applying principles but adapting practice.

In the UK higher education sector the increasing importance of managing research data provides an opportunity for records professionals to be part of the solution. For example, Northumbria University's DATUM projects (Northumbria University, 2010-12 www.northumbria.ac.uk/datum) have raised awareness and provided guidance for postgraduate research students and academic research staff to manage their research data. The approach to managing research records has been to mesh it with work practices so that the benefits of implementing good research data management practice are tangible and relevant. An important element of the DATUM projects has been the strategic involvement of relevant stakeholders - recognising allies, forming constructive partnerships, engaging others. As a result the project team was invited to advise the university in terms of developing its research data management strategy.

David Nicholas, renowned for his CIBER research (http://ciber-research.eu), has written about the essentially negative impact of the digital revolution on the library and information profession, stating:

> *"the vast majority of people do most of their searching, using, sharing and reading of content in the digital space…and, despite the doomsayers (information literacy advocates), on the whole they (have) managed extremely well."* (Nicholas, 2012 p.30)

People are 'doing it for themselves' without the intermediary. As a result librarians, the "information middlemen", are being removed – a process Nicholas (2012, p.29) calls 'disintermediation'.

We are all librarians now, just as we are all records managers, but Nicholas suggests library professionals are ignoring the consequences – the elephant in the room analogy. Will records professionals do the same? Information and records management is not the same as library management; managing records is, in my opinion, more challenging for a number of reasons. However, some of Nicholas' points resonate with the records profession in the broadest sense – i.e. records management, information governance and security, archives etc. What is our 'elephant in the room'? Is it the same i.e. users managing records for themselves and side-lining us? Is it technology, the systems and platforms? Some think records managers are only interested in the content and not the platform; they are "old fashioned" (Lappin, 2012). But records managers are interested in both they are the antithesis of 'old fashioned'.

If there is an elephant in the room for the records profession then it is the way people and organisations are using these platforms to create, access, use and share information and the extent to which they manage that information and understand the implications of their actions. To address this 'elephant' we need to *engage* people. In the era of iPods and iPads we need to make the 'i' in information and records management mean iManage. Apps for managing personal information and records or for teaching/educating people how to manage their information in fun, engaging ways from an early age offers a huge opportunity for records professionals to become central, rather than "disintermediated, decoupled and down" as Nicholas (2012) suggests has happened to librarians. This is an example of being part of the solution rather than the problem and applying principles whilst adapting practice.

Conclusions

This article provides a perspective on a future pathway for records management grounded in the findings of a research project that investigated issues and practical strategies for accelerating positive change in electronic records management. The focus is the role of records managers and the concept of taking appropriate action based on proportion not necessarily perfection. Such an approach to managing records requires a re-interpretation of traditional principles and their application in practice and, by definition, implies a risk-based approach. This may prove challenging in organizational, societal and cultural contexts that are risk averse. It also requires recognition of the danger that records managers may be part of the problem as well as the solution to successful information and records management in the digital domain.

The views expressed about tactics for moving forward are intended to contribute to the debate about approaches to managing records in the democratic, digital domain and about the role of the records manager and their course of action.

In the context of the constantly changing virtual and mobile, yet ever hybrid modern office, faced with technology choices, new situations, doors behind which we know not what lies, avenues and roads leading we know not where, then as one AC⁺erm project participant said.... "It's hard to be sure you are doing the right thing" (McLeod *et al.*, 2011 p.90). We cannot be sure we are doing the right thing, only the best thing at the time, and doing it right with our extant knowledge and experience.

However, addressing the strategic issues that emerged from the AC⁺erm project, and adopting a proportionate (i.e. fit-for-purpose) risk-based approach offers a progressive path. It positions records management professionals, academics as well as practitioners, to be less a part of the problem and more a part of the solution to accelerating positive change in electronic records management.

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Notes:

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[1] This article is based on a presentation given at the iRMS (Information and Records Management Society) Conference 27-29 May 2012, Brighton. http://www.irmsconference.org.uk/. Julie McLeod, Keynote Presentation *'Proportion not (necessarily) perfection: progressing practice for positive progress'*

[2] Denso Wave Inc. is a member of the Toyota group

[3] The bronze medal winning 'QR Code Garden', described as a groundbreaking garden uniting "cutting-edge technology and horticulture", contained a large vertical QR code created from a wall of planting which could also be scanned by a Smartphone or iPad with an appropriate app (RHS, 2012b)

[4] Arts and Humanities Research Council www.ahrc.ac.uk. The author would like to acknowledge the support provided by the AHRC to help fund this research.

[5] Interestingly Dave Snowden, Cognitive Edge stated in his keynote presentation at the same conference that it wasn't necessary to decide what success is. Snowden, D (2012). Messy coherence. iRMS (Information and Records Management Society) Conference 27-29 May 2012, Brighton. http://www.irmsconference.org.uk/

[6] The Pareto Principle is "named after the Italian economist Vilfredo Pareto, who in 1906 observed that 80% of property in Italy was owned by 20% of the Italian population." In the 1930s Joseph Juran, renowned quality control and management guru, adopted the concept and generalized it to help managers and organisations distinguish between the "vital few" (20%) and the "useful many" (80%) coining the phrase the 'Pareto Principle'. http://www.gassner.co.il/pareto/.

[7] Figures from technology consultancy company IDC's regular data growth studies have estimated the volume of information in our digital universe created and replicated was 281 exabytes in 2007, would be nearly 1,800 exabytes in 2011(*The Diverse and Exploding Digital Universe*, March 2008, http://www.emc.com/collateral/analyst-reports/diverse-exploding-digital-universe.pdf), and will have grown to 35 zettabytes by 2020 (one zettabyte equals one trillion gigabytes). (*The Digital Universe Decade – Are You Ready?*, May 2010, http://www.emc.com/collateral/analyst-reports/idc-digital-universe-are-you-ready.pdf) Accessed 1 Aug 2012.