JUST DOING THE SAME WON'T WORK

LETS MAKE THE DIGITAL RECORDKEEPING COMPELLING!

FAZER O MESMO NÃO VAI FUNCIONAR

VAMOS TORNAR A MANUTENÇÃO DOS DOCUMENTOS DIGITAIS INTERESSANTE!

Barbara Reed | Diretora da Recordkeeping Systems Pty Ltd.; pesquisadora associada do Records Continuum Research Group da School of Information Management and Systems (SIMS), da Monash University (Austrália), responsável pelo programa de educação profissional continuada.

RESUMO

Demonstra que os problemas de *recordkeeping* de documentos digitais são bem conhecidos. Vê-los como problemas complexos que exigem soluções e como parte dos grandes desafios sociais é uma forma de inspirar os arquivistas e outros profissionais a tomar essas questões a sério. A transição australiana de *recordkeeping* dos documentos em papel para o *recordkeeping* de documentos totalmente digitais no local de trabalho ilustra a gradual passagem, a dinâmica e a evolução da tecnologia.

Palavras-chave: recordkeeping dos documentos digitais; dados abertos.

ABSTRACT

Argues that the problems of digital recordkeeping are well known. Conceptualising them as wicked problems needing solutions as part of social grand challenges is a way of inspiring the archivists and others to take the issues seriously. The Australian recordkeeping transition from paper based to fully digital recordkeeping in the workplace illustrates the gradual transitions, dynamics and technology evolution.

Keywords: digital recordkeeping; open data.

RESUMEN

Demuestra que los problemas de la conservación de los documentos digitales son bien conocidos. Verlos como problemas difíciles que requieren soluciones, como una parte de los grandes desafíos sociales, es una manera de inspirar los archiveros y otros profesionales a llevar estas cuestiones a serio. La transición australiana de conservación de los documentos en papel para la conservación de los documentos totalmente digitales, en el local de trabajo, ilustra la gradual pasaje, la dinámica y evolución de la tecnología.

Palabras clave: conservación de los documentos digitales; datos abiertos.

INTRODUCTION

In June 2014, a group of irreverent recordkeeping professionals edited our Australian professional journal, *Archives and Manuscripts* and deliberately set out to challenge the norms of recordkeeping. Reflection pieces were invited from international and national colleagues which deliberately sought to challenge the norms of our digital records and archives practices (Recordkeeping Roundtable, 2014). One of these, by Professor Julie McLeod, identified electronic records management as a wicked problem.

> Immediately we view records management in the digital world as a wicked problem we reject the idea that we can precisely formulate and explain it or know when we have found a solution, only that the solution chosen will have consequences. One might say that we already know this; indeed we do but this lens is somehow liberating. It explains why there is no silver bullet and why "keep trying to find a *single* solution for a problem of inherent diversity and complexity" is inappropriate. It also implies that perfection is neither attainable nor necessary (McLeod, 2014).

Proposing electronic records management as a wicked problem also echoes the work of the agenda setting work of the Archival Education and Research Initiative (Aeri) educators group which posed archival challenges in the digital world in the framework of grand social challenges. "The goal of the Aeri initiative is to use this identification and mapping of challenges to identify and promote research and research collaborations capable of making significant and meaningful contributions across this global and societal expanse" (Aeri, 2012).

These two conceptualisations of our discipline, in current records management and in archival research, illustrate in themselves dilemmas of the digital world. A brief statement of the problems and difficulties associated with managing digital records might include:

- digital records exist in ever changing and quite diverse systems;
- information systems do not build recordkeeping notions into their design;
- formats are largely proprietary and open source is still not a concept that most organisations can embrace;
- the quality of data that works within local communities but may not be robust enough for larger reuse environments;
- metadata is paradoxically everywhere, but non-standard and of dubious quality;
- centralised models of 'single sources of truth' are only one option – both within organisations and as archival models for long term storage;
- our professional practices remain largely unchanged and essentially paper oriented;
- recordkeeping approaches are not evolving sufficiently fast to meet the technological demands;

- the attention to the problems of digital records and archives in corporate and government environments is not well communicated and often left unarticulated in the wake of digitisation concerns.

This list is far from complete, and different individuals, organisations and countries will have many more points to add. Rather than dwell on these, this article is going to start with assumption that these propositions are generally known by readers.

The digital world is one of great disruption to established norms. Other profound shifts in operating models have been experienced before and this shift from paper to digital is, arguably, as significant to society's norms as the shift from oral to written records (Clanchy, 2012; Cook, 1997). Individually and collectively we are being urged to embrace the opportunities to be challenged by and learn from the disruptions that the digital world is presenting to us. The Chief Information Officer of Westpac, one of Australia's leading banks, recently stated that if organisations do not start cannibalising themselves, someone else will come along and do it for them (Curran, 2015). The example he provided was his bank actively participating in peer to peer lending – a proposition that is in direct competition and opposition to the traditional retail models of institutional lending which are a mainstay of his banking business. Significant and continuing disruption is to be expected across all industries. Within Australia, Deloitte identified 13 industries comprising 65% of the Australian economy that are facing significant disruption by 2017 (Deloitte, 2014).

While it is possible to consider this talk of digital disruption, wicked problems and grand societal challenges as mere hype, it can also be used as a productive means of envisioning futures where radically different ways of doing things are possible. What will recordkeeping look like in 2035? What might it look like? How can we become active participants in shaping the archives and records future, not the passive inheritors of someone else's mess. What is clear is that being passive and not engaging with the digital realities will consign archives and records professionals to the digital equivalent of the undertaker role so profoundly rejected in an earlier time (Acland, 1991). We do not aspire to be the janitors of the digital equivalent of the basement of discarded and unmanaged/unmanageable data.

One observation from those industries actively trying to innovate and participate rather than be those cannibalised, is that posing the issues as really compelling, difficult and complex problems gains the attention of multitudes of clever people to help solve the problems, or at least help innovate along the way to solutions. So let's work out what makes our problems interesting, what our foundations for building answers are and let's make the problems inspiring!

THEORY AND PRACTICE: THE RECORDS CONTINUUM AND RECORDKEEPING INFORMATICS

The digital world invites serious attention to the proposition that just doing more of the same will not serve us going forward. A different perspective is needed to deal with digital records. The loss of fixity of form and the flexibility to apply recordkeeping thinking across

any and all information, means that management models that assumed a single, once off, linear and simplistic statements of professional practice – embodied in the lifecycle notions – will not be capable of transitioning professional practice to new environments. A more nuanced and sophisticated model of professional thinking is needed.

The records continuum model is one such model, representing a far more detailed body of theory (Upward, 1996; Upward, 1997). The model is not the theory. But the model enables practitioners to engage with the realities of different contexts, and sites of potential professional interventions in a more consistent manner. Similarly it allows a coherence of practice to be established between the artificially divided worlds of archives and records management, particularly important for the digital world. No longer can the archives leave records in formation to care for themselves – they won't exist unless appropriate attention has been paid to the articulation of requirements as those records form. The need to pass over a physical threshold to be stored in a separate archives repository is one option, but by no means the only option, in a digital world. We need to open up possibilities for managing differently in the digital world. The records continuum theory and its more familiar representation as the circles model enables such thinking for the digital world.

RECORDKEEPING INFORMATICS

Records are not physical things. Records are not an end product. Records don't come into being like babies in cabbage patches – like magic. Records are an aspect of how data and information are put together – they used to have a particular manifestation in pieces of paper. What is core is not the form, or format, as we have been arguing for years. Rather, we need to take this back to what records are about – evidence of business actions (where business is used in the sense of doing something). As such, we need to be able to argue a case for certain characteristics: those of authenticity, reliability, integrity and useability (ISO, 2001). Records are formed in processes. The processes are what enable assertions to be made about their characteristics. There can be degrees of 'recordness' – the quality of 'recordness' is an assertion of whether the characteristics are there, complete or not. Anything can be managed as a record. 'Recordness' can be ascribed to a data field, or a data set; to a document, or a SharePoint library; to a web transaction or a website. These are differences of aggregation – we choose to apply recordkeeping processes at different levels or layers of aggregation. Perhaps we don't need to have the same degree of recordness ascribed to everything. While our technologies for records are about providing the certainty that the characteristics are present, perhaps not every business process needs the same degree of protection of these characteristics. In the digital world, recordkeeping processes are reflected in metadata elements associated with the thing needing management as a record – content of some kind. And the details of the metadata schema supporting management of records at different layers of aggregation change as we want to manage records at different layers of granularity – some more thoroughly than others perhaps. Records don't live statically in one place – they may have multiple manifestations in multi-

ple locations simultaneously. They are dynamic, with constantly changing contextual links (McKemmish, 1994).

This way of thinking provides a liberating and empowering lens through which to approach the problems of digital records. If what we need is the ability to prove processes of formation and management of records in order to assert the characteristics, then the way we do that is multiple, and can apply at any level of aggregation. In Australia, this thinking is being embodied into an approach we are calling Recordkeeping Informatics (Upward, 2013).

Recordkeeping Informatics is a re-conceptualization and a re-articulation of the practice base of recordkeeping for a digital world. It seeks to jettison the paper constraints of the past, and begin the journey to robust rethinking for the digital future. The premise of this approach is that:

> Without the adequate presence of the single minded concentration on the recordkeeping processes that produce evidence of actions within the framework of broader information management, we will be left with information sludge, and an environment of increasing chaos – an environment that places us all at risk of underhand practices, unwelcome social consequences, and at a professional loss as to how to operate within the reality of increasingly complex digital ecologies. We can search vast document and data bases using modern retrieval componentry, but are we able to assess the worth of the material when we find it? Even if we can do that, can we collectively harness it with other evidence and memories? Is our recordkeeping base adequate for addressing such problems as 'climate change, environmental damage, the spread of terror, corruption, the decline in confidence in our governments, and the perennial problems of poverty, famine, and economic collapse'? (Upward, 2013)

Recordkeeping Informatics is future focused, optimistic and about re-calibrating professional knowledge beyond the application of known routines. It stresses that records are vital infrastructure to the digital present and future. Recordkeeping Informatics consists of two core building blocks – those of continuum thinking and recordkeeping metadata, with three key facets of analysis – organisational culture, business process and access. Using these, the purpose of Recordkeeping Informatics is to enable and explore the role of recordkeeping in the social goals of: spacetime management; opening up life chances; and managing our mutual associations.

ELETRONIC RECORDKEEPING: WHERE HAVE WE COME FROM AND WHERE ARE WE NOW

Thinking digitally is a process too. Professionally, recordkeepers (records managers and archivists) are like all other professions and need to transform our thinking. But it isn't a simple thing to do, nor is it linear. Signposts for the transformations that have already been undertaken are needed. One possible way of thinking about what transformations technology

has imposed upon recordkeeping practices in the workplace is to observe changes in how technology is being used for recordkeeping. In Australia, recordkeeping in organisations can be characterised into four waves of technology ranging from an initial wave of locally developed software which automated assistance to paper based practices, through to the current set of disparate software options largely imposed from an overpowering presence of Microsoft in the workplace.

In the first wave of automation, perhaps dominant between 1982 and 1994, Australian organisations were first exposed to locally developed technology applications that largely applied automation to managing paper records. In effect, these systems replaced the manual control tools – the old indexes, registers and location controls. Australian records practice had developed out of registry systems, largely inherited from our colonial past, which were limping along by the early 1980s when the first wave of office automation hit organisations and personal computers began to appear on individual desks. These applications were very much about managing a physical end product, although in Australia, where the registries remained viable, a continuing practice of registering incoming correspondence prior to processing in the business ensured that our practices were somewhat defiantly about pre-action controls. Locally developed products served this first wave of automation in Australia. These technology applications basically provided a registration system for incoming correspondence and paper files which were largely barcoded and their movement throughout the physical organisation tracked via barcode scanners. The technology applications provided additional indexing points to the bare registration details. During this time it was quite common to find workplaces making their own bespoke technology applications to support the records work. All the technology applications were designed to serve the records staff themselves, and records creators/users rarely interacted with the systems without the records staff acting as intermediaries.

A second wave, perhaps dominant between 1994 and 2004, saw Australian recordkeeping technology managing digital content in tandem with paper files. Referred to as hybrid systems, this model of recordkeeping was commonly called ERMS (electronic records management systems) or EDRMS (electronic document and records management systems). Digital content – documents, email, spreadsheets etc. – was brought within (ingested in digital preservation terms) into the digital repository or the storage database provided by the technology application system. Typically in this generation of automation, both paper files and some digital documents were managed using the same controls – providing a level of control across 'parts' of a file segregated because of media. The single conceptual file could well consist of two physical parts – one paper and one digital. This was a transitionary stage, and reflected the reality that paper was still the dominant form of business transaction and the expense of digitisation made conversion of the format to digital not a viable proposition.

The technology applications that dominated in Australia were again local products. Because of this, there was considerable interplay between the system designers and the community of recordkeepers. During this time, the Australian Standard on Records Management was published (Standards Australia, 1995) and the local technology applications

were largely compliant with the professional requirements established in this Standard. A consolidation in the local technology market brought the number of strong local products down to about three.

The third wave of automation actually transformed into digital recordkeeping systems and were perhaps dominant between 2005 and 2015. The technology applications used to this point, with the model of hybrid paper and digital files where both parts were required to ensure a proper reflection of business action, proved quite frustrating to users. While seemingly digital, in that the digital documents could be saved into the software, it none the less carried all the constraints of having to be dependent on the paper. Adoption of the third wave of automation probably also represented a tipping point for workplace acceptance of digital in Australia (Cumming, 2010). It became tedious to manage something in two formats, and easier to manage digitally. In terms of volume, material was arriving into organisations directly in digital form, via web forms or email, and the volume of paper received made it feasible to scan that paper to digital form before action, making the record, the version that the business was done on, the digital copy (ISO, 2009a). Now, the remnant paper was removed, and the technology application was primarily aimed at capturing and managing records as they formed in the workplace. No longer primarily serving the records staff, these technologies were pushed out to the desktops of all knowledge workers. But the design principles used were a direct linear descendant of the requirements for managing records by specialist records management staff. Rather unsurprisingly, the end users increasingly pushed back against the restrictive and seemingly non-intuitive ways of requiring document and file level control.

The local products are still well represented in the Australian market, and have evolved with the requirements to serve all end users. Innovative implementations designed integrations to business systems which automatically created and captured records as the business system drove the work processes. But increasing dissatisfaction with the user interface which exposed perhaps too much of the 'command and control' style of backroom records management requirements. 'Add on' front ends developed, local products were taken over by market leaders from America, and the ability to think laterally while having responsive technology development may have waned.

By 2015 we can see a fourth wave of technology products which do stuff differently. Partly, this is a response to the buy-out of smaller local technical applications and then their absorption into much bigger products suites aimed at 'enterprise content management'. The recordkeeping culture is different in different places. What was unique and strong in Australia was a fairly coherent recordkeeping culture, but in terms of market share and ability to affect products whose key markets are not in Australia, our local demands are not prioritised. Dedicated records management systems continue to serve a legitimate requirement but there are other requirements now being posed in a broader global environment.

In this climate Microsoft SharePoint is becoming ubiquitous. Most organisations are largely Microsoft platforms. While this is gradually changing with BYOD (bring your own

device), dominance of Apple iPads at Senior Executive levels and requirements for greater interoperability, Microsoft is still largely the corporate and government software platform for office applications. SharePoint is sold as the answer to a range of problems: intranet, document management, collaboration etc. One critic says the problem with SharePoint is that it does those things, but none of them particularly thoroughly (Bounds, 2013). Cynically, one can suggest that the purchasing power of bundled Microsoft products makes SharePoint look like great value for money for budget strapped IT managers and a single 'easy' solution. Our experience in Australia is diverse, as it will be in all countries. The agreed consensus seems to be that clever implementation of SharePoint can enable it to operate fairly well as a digital recordkeeping system, but most implementations are not clever in that sense. What we see is that to ensure compliance for those organisations required to meet recordkeeping standards, an additional specifically developed plug-ons are required. Commercially available plug-ons for recordkeeping are available. But uncontrolled and not governed SharePoint implementations have been described as 'network drives on steroids'.

But SharePoint is doing something else that is really interesting. It is breaking apart the notion of a document. Here we begin to see that multiple simultaneous views of fragments of what used to be fixed format documents can be identified and managed. The document as a form is being disaggregated. Content is not fixed, and perhaps in a way analogous to data bases, the fragments can be managed differently. What, then, constitutes a 'record of action'? It is the ability to reconstruct, via metadata linkages, what was the available and presented bits to a particular user at a particular time. The record has become the metadata which enables the recreation of a 'state' of content at a point in time.

The other driver of the fourth wave is a trend away from simple document management. As we all know records of business occur in myriad formats – social media, web transactions and managing data as records. Business systems which serve particular purposes are being increasingly designed to provide 'end to end' experiences. So separating documents and records out of the business system becomes less logical. Options exist for different architectural models to supply these types of linked systems. Some are operating as collaborative systems in the cloud. Recordkeeping isn't so much the purpose of such systems.

As individuals deal with each other and services based on internet transactions, they are increasingly frustrated and intolerant of the 'command and control' style embodied in the formalised organisational controls (Bailey, 2008). New tools, using cloud platforms enabling 24/7 access are being used formally or informally, on devices that embrace a diversity of platform in order to provide enabling technology, but with little respect for the need to build the core organisational information asset base.

Working in the fourth wave is challenging traditional practices in recordkeeping to evolve to serve the vibrant and diverse technology environment which are the hallmark of truly digital business.

MAKING OUR PROBLEMS COMPELLING

In this challenging, changing environment, quite unfairly, recordkeeping is perceived by others to conform to a set of expectations that do not match those of the innovative records professional. In Australia recordkeeping concerns are often dismissed as slow, old and out of date – not responsive to the new demands. And there may be some truth in that, where the practice has retreated to a safe place with set boundaries of responsibility around managing a singular technology application. How, then, do recordkeeping professionals make the case for records sufficiently compelling to overcome those perceptions but also to reinvigorate recordkeeping practice? This is where the records and archives problems that are known can be re-presented as compelling and therefore a challenge for all to take on with enthusiasm and innovation. Recordkeeping Informatics provides a way of re-thinking our disciplinary base, but there are also some specific areas where the existing fragile steps to change can be used as practical examples for specific problems. The following areas seem to offer great potential to throw up 'compelling problems' with which to challenge both the recordkeeping professions and any clever collaborators who may help the profession address the issues.

CITIZEN CENTRIC OR CUSTOMER CENTRIC MODELS

As governments and organisations 'do' digital, the rhetoric of digital disruption and organisation change is clearly targeted towards clients or customers. It is about providing services, better. So in this world where the emphasis has shifted to a people centric view, what will recordkeeping look like? It is more than simply assuming a data field containing an identifier which is persistently linked to the person. Core recordkeeping entities are people, activities and records of activities and relationships within and between them, in information structures that will persist over time (ISO, 2009b). These are the concerns of data systems too, but these are key professional touchpoints for all systems which need to sustain traceable and sustainable transactions over time.

People and their interactions and actions are everywhere in recordkeeping. They are what have been called the 'data subjects' of records, they are the agents of business actions and they are linked in all types of ways to services. Organisational views have been the prevailing view for recordkeeping of the past. But if we change the focus and make people active participants in the records about themselves, the whole perspective changes. Recordkeeping is potentially a shared endeavour. Ownership of personal information becomes an asset and something to be actively managed, not carelessly exploited. We can see the beginnings of this thinking in attempts to put a monetary value on personal information (World Economic Forum, 2011). Electronic Health Records are increasingly being shared, not only between multiple health service providers with appropriate permission, but also with the patient themselves to enable contribution of data. While these initiatives are still in their infancy, and the technological barriers of negotiating rules and permissions are significant, the change from records that are solely the possession of the organisation can be seen.

Recordkeeping is being democratised to be a joint exercise – a direct challenge to single organisational perspectives on how to create and manage records.

Combining this type of thinking with the contributory or participatory recordkeeping frameworks being explored in the area of community informatics from the archival research world (Ketelaar, 2005), the pluralisation imperative of recordkeeping (Upward, 2011), and the need to enable people in records to both claim and reclaim power inherent in the record (McKemmish, 2011), there is very rich ground to explore in the lens of client centric recordkeeping.

BIG DATA THINKING

Big data is a very popular concept at present with unclear definitions around exactly what is being claimed. One of the more useful definitions is that big data is data whose size forces us to look beyond the tried-and true methods that are prevalent at that time (Jacobs, 2009). Immediately, this is an issue of significant concern to scientific research particularly where vast amounts of data are already being created and stored, and extraordinary amounts projected from a range of instruments enabled to automatic data collection. But on a smaller scale the capacity of instrumentation to automatically create and store data is happening everywhere: from traffic flow, transport usage to communications data. This data is being accumulated almost as a byproduct of the actions of millions of citizens doing their business daily. This type of data is sometimes referred to as inadvertent data, because the people about whom the data is being collected are often not aware of the data collection. The social issues around this seemingly thoughtless collecting of data are being discussed globally with privacy advocates facing off against corporate organisations seeking to mine, exploit and represent this data as products. Where is recordkeeping in this world? Research data curation is one aspect of managing digital data but does not approach the complexity of data retention on this scale. Questions are being asked about whether we really need all this data, what is ethical to reuse and how successfully techniques such as anonymisation of data can be applied.

Regardless of individual views on the subject, big data is forcing innovation as the volumes of data outstrip the ability of the tools to process and manage the data. The advent of data visualisation, and the capacity of machine based tools to undertake predictive analysis based on the sheer quantity of data are challenging notions indeed to a discipline which is evidence based. In this world 'dirty' or messy data is collected in such quantities that, at scale, the trends in behaviour is observable anyway.

As we depend on computing methodologies to create machine based algorithms that learn, interesting new questions about concepts such as agency arise (Data and Society Research Institute, 2014). Interesting areas of recordkeeping are opening up with machine learning algorithms driving actions and decisions for remote equipment. Just where is the recordkeeping associated with being able to interrogate what actual instructions were authorised at any particular time.

Big data is still in the process of working its way through the Gartner hype cycle (Gartner, n.d.) and is probably riding the hype of inflated expectations, with the Internet of Things following closely behind. Increasingly counter propositions modifying the hype are emerging. The notion of keeping everything, on the off chance that analytics will reveal hither to unknown insights enabling exponential increases in services is perhaps a myth, but big data is none the less a reality in the emergence of the internet of things, and the extraordinary capacity of instrumentation to gather data. Recordkeeping is a small and niche player in the big data world. But it does need to be a player. If only to keep track of where the data came from, who owns it, what action was taken based upon the data.

So how does recordkeeping fit with these issues? The capacity of an organisation to demonstrate and retain trust of their customer base, or citizenry in the big data world will be a fundamental value to the organisation. Recordkeeping and the capacity to demonstrate recordkeeping practices that are in themselves trusted and consistently applied should be a starting point for our active engagement in this world. At the very least opportunities exist to incorporate some of the analytic techniques being developed in the big data world into recordkeeping practices. Visualisation of our finding aids or archival systems could be explored. Learning from the way WikiLeaks used third party collaborations to expose (Stray, 2010), analyse and link individual documents as visualisations linked to specific documents may offer inspiration for alternative ways of presenting digital records. Can such visually based front ends be incorporated into digital recordkeeping for the organisation too?

OPEN DATA

Often discussed as an aspect of big data, open data is the fairly recent practice of making datasets available free for public download. Typically an initiative of government, and usually accompanied by hackathons which are aimed at demonstrating the potential reuse value of the data, these initiatives are generally about stimulating a digital economy. In Sweden, the logic of the link between open data and the archival endeavour is being actively explored (Borglund, 2014). In New South Wales (NSW) some attempts have been made to link the State Records Authority of NSW's contextual front end system and the repository back end to government publications data (NSW Opendata, n.d.). In New Zealand, ex archivist Evelyn Wareham has been key in the development of open data agendas and recently asked what is the future of government archives if all government data becomes open and published on the internet by default? (Aranz, 2014).

Currently mainly semi stand-alone datasets are being published as open data, for example survey results, or economic trend reports. These datasets in themselves need elements of recordkeeping metadata to enable their origins, provenance, dependencies and data fields to be understood.

Archives systems data about their holdings have proved one of the most popular resources for hackathons, which are sponsored workshops where interested people get to compete for small prizes to develop apps on top of publicly available data. Archival systems data

is interesting to this community because it is complex, covers periods of time, contains rich linkages and often accessible images.

LONGEVITY OF TRUSTWORTHY DATA, INFORMATION AND RECORDS

The Recordkeeping Informatics notion that all data and information must have some recordkeeping characteristics may be one way of phrasing the positive contribution that recordkeepers can make. We know through past versions of data warehousing that one of the major inhibitors to achieving the much claimed benefits of these approaches is the failure to understand that we need to be able to trace the provenance or the lineage of the data. Thus the really fundamental archival principles are being reinvented in the web world through initiatives such as the W3C 'provenance data model' project (W3C, 2013). Recordkeeping people know the conceptual base of this really well, and are particularly comfortable with a world that needs to understand what has happened to the data – where it comes from, who changed it, who has rights over it, what it links to.

The other area that recordkeepers can excel is that of sustainability. The requirement to maintain information in forms that make sense and are reusable into the future builds on traditional competence of recordkeepers and archivists. Increasingly organisations are finding that the information/data locked into proprietary systems needs to last longer than the technology application themselves. This resonates with Sir Tim Berners Lee's much quoted phrase that "Data is a precious thing and will last longer than the systems themselves".

Digital preservation is largely still at the stage of managing a suite of handcrafted tools working on individual record objects. But transforming this stage into industrial strength, robust and reliable routines that work beyond the confines of designated preservation repositories will find resonance with those who want to ensure sustainable information for the long term.

As problems with legacy data begin to attract the attention of auditors, where paying expensive licence fees for systems rarely if ever used, or where the expertise to access semi-abandoned data resides in diminishing numbers of long serving staff, the realities of migration become a serious organisational issue (National Audit Office, 2013). And recordkeepers need to ensure that it is not simply the content bits that are migrated, but all the related metadata that provide the process detail needed to assert 'recordness' of the information. The inadequacy of the simplistic audit trail approach is revealed as more and more inadequate.

The data is the thing of core value in providing opportunity to deploy flexible, agile technology based solutions. Without adequate thinking and consideration of data, information and records management components, organisations risk losing their ongoing core information asset to proprietary systems, into technology silos, and locked into formats that cannot provide the interoperability required to continuously build value on the core asset. The trail of accountability for decisions, and the capability to build evidence based decision making is also quite significantly at risk.

Given the reality that there is no 'final' answer to these issues and no single 'correct' approach, Australian recordkeeping professionals are experimenting with different approaches

to the issues of data sustainability. National Archives of Australia, for example, has designated specific government agencies with responsibilities for holding their data for the nation in the long term. Meteorological data has been designated as having the status of national archive, but it will be managed and remain in the custody of the creating agency, who have the specialised systems and subject expertise to preserve and manage it. Distributed custody is being implemented. At the same time, another approach being pursued by National Archives is to transform digital records into a neutral open format, which is able to be read and manipulated by a variety of query tools over time, using the Xena protocol (National Archives of Australia, 2015). The Public Record Office of Victoria has pioneered the format based transformation of office documents using the Vers standards, but is also piloting the use of the Swiss Siard protocols for database preservation (Public Record Office of Victoria, 2014). State Records of NSW have taken a different approach using the techniques of migration and metadata mapping to apply appraisal criteria tailored to specific instances of business systems requiring transfer to archives (usually when an agency ceases, and has no logical successor) (State Records NSW, 2014). The diversity of approaches is extremely healthy and experimentation as well as communication will reveal how viable each approach is over time.

AGILE SOLUTIONS AND EXPERIMENTATION

At last organisations are actually beginning to implement the promise of service oriented architectures. As governments and organisations all encounter the problems of creating large and monolithic systems which take years to develop, inevitably run over budget and quite often fail to deliver, the trend is clearly towards much smarter, more agile technology development. To enable this requires organisations to have a much better understanding of their existing data, where it is, how it can be used and how to access it. The role of information governance is crucial to enabling new approaches to developing and designing technology. This approach is not new (Reed, 2008), but it now seems to be gaining significant traction within organisations who are seeking to redesign systems in responsive ways without abandoning the notion that the value of many organisations is increasingly to be found in the accumulated information stores that they own and manage.

This emerging approach to technology is far more responsive, and agile. Services can be replaced and superseded quickly. The technology itself is transient. The emphasis is upon providing the best of breed application services already available, not building full functionality in one technology application, but constructed by using smaller technology building blocks. These components can provide significant flexibility in how they can be deployed to meet smart and agile orchestration of process steps information flows to meet specific business needs.

Huge opportunities for innovation exist in redeveloping and rethinking recordkeeping delivery mechanisms using service oriented approaches. We have some initial models. Nara undertook some ground breaking work in the 1990s (Nara, 2005). But now the approaches should perhaps diverge from those definitions to tag records with contextual metadata in some way, rather than seek to replicate the paper practices of the past. Similarly the Europe-

an MoReq2010 (DLM Forum Foundation, 2011) applied a design model which was oriented towards services. In a market dominated by technology applications focussed on embedding products within organisations, and reflecting a consensus industry approach, the uptake of the MoReq2010 specifications is disappointing, but it remains a valiant attempt which can be built upon for the office style records management environment.

BOLD CHALLENGES

Within Australian government, an approach which has found success is the setting of bold targets. Bold targets must be backed by appropriate enforcement mechanisms and seriously focussed senior attention but they appear to spur innovation and change.

The Australian Minister for Communications has set some very challenging targets. Firstly that, from 2015 the great majority of Government information and records will be created, stored and managed digitally and, where possible, incoming paper records will be scanned so that new paper files are not created. Records created digitally from that date that are eligible for transfer to the National Archives will be accepted only in digital formats. The second target is that all major government transactions will be digital end to end by 2017 (National Archives of Australia, 2011). Learning from the proactive approaches coming from the UK and the US, the Digital Transformation Office at the federal level and similar initiatives working collaboratively at state and local government level are actually getting things moving.

The first of these initiatives is having a profound influence on the way recordkeeping is done in Commonwealth government agencies. If at some level this is seen as digitisation, the flick of the switch to change the emphasis away from paper to truly digital will occur in time. The second initiative is actively seeking to disrupt established norms for service delivery using the compelling rhetoric of 'customer centred services'.

CONCLUSION

Vivek Kundra, the first Chief Information Officer to the US government, speaking recently in Australia spoke of the need to transform from 'systems of record' to 'systems of intelligence' (Kundra, 2015). Perhaps reflecting an American notion of records, none the less this absolute and total disregard for what records do and should do and advocating records as a symbol of old and un-useful is very disturbing. These views coming forward in the rhetoric of reinventing government for the digital world must be countered by clear statements of the value propositions recordkeeping bring to the digital world. Digital services are based on authoritative information; information is the new oil; information drives innovation etc. The relationship of digital recordkeeping and robust means of assuring the recordkeeping components of all information resources is our future.

We must reach out to other communities – across national and jurisdictional boundaries, but also across disciplinary boundaries. To do this, a strong base in the recordkeeping theory is needed, but with such a basis, there are many opportunities available. Securely grounded

in the building blocks of the recordkeeping informatics discourse, these new professionals should be inspired to look broadly at information spaces and activities, and to reimagine records and archives practices.

Recordkeeping professionals know many of the problems, but we need to inspire and challenge our colleagues and our organisations to assist with the transformation of recordkeeping for the digital environment. Making records a compelling and vital part of the future digital landscape of organisations and ensuring that the social demands for a vital ongoing and sustainable archive of action is the challenge for this generation of recordkeepers.

Bibliographical references

ACLAND, Glenda. Archivist: Keeper, Undertaker or Auditor? *Archives and Manuscripts*, v. 19, n. 1, May 1991.

ARANZ. *Open Data, Archival Access and Public Access*: What is the difference? Panel discussion facilitated by Barbara Reed, Recordkeeping Roundtable at Joint Aranz/ASA Conference Christchurch, Sept. 2014.

ARCHIVAL EDUCATION AND RESEARCH INITIATIVE (Aeri). *Grand Challenges in the Archival Field*. July 2012. Available at: <https://aeri2012.wordpress.com/conference-schedule/grand-challenges-in-the-archival-field/>. Accessed: Mar. 2015.

BAILEY, Steve. *Managing the Crowd*: Rethinking Records Management for the Web 2.0 World. Facet Publishing, 2008.

BORGLUND, Erik; ENGVALL, Tove. Open data? Data, information, document or record? *Records Management Journal*, v. 24, iss. 2, 2014.

BOUNDS, Stephen. Sharepoint You're Using it Wrong. *Image and Data Manager*, dec. 2013. Available at: <http://idm.net.au/article/009887-sharepoint-you-re-using-it-wrong>. Accessed: Mar. 2015.

CLANCHY, Michael. *From Memory to Written Record in England, 1066-1307*. 3. ed. Wiley-Blackwell, 2012.

COOK, Terry. What is past is prologue: A history of Archival Ideas since 1898, and Future Paradigm Shift. *Archivaria*, n. 43, Spring 1997.

CUMMING, Kate; FINDLAY, Cassie. Digital recordkeeping: are we at a tipping point? *Records Management Journal*, v. 20, iss. 3, 2010.

CURRAN, David. Digital Innovation Forum, University of Technology Sydney, March 27, 2015. Available at: <http://www.communications.gov.au/digital_economy/digital_innovation_forum>. Accessed: Mar. 2015.

DATA AND SOCIETY RESEARCH INSTITUTE. Workshop Primer: Algorithmic Accountability: The Social, Cultural and Ethical Dimensions of Big Data. New York (NY), Mar. 2014. Available at: <http://www.datasociety.net/pubs/2014-0317/AlgorithmicAccountabilityPrimer.pdf>. Accessed: Mar. 2015.

DELOITTE AUSTRALIA. Harnessing the Bang. 2014. Available at: <http://www2.deloitte.com/au/en/pages/building-lucky-country/articles/digital-disruption-harnessing-the-bang.html>. Accessed: Mar. 2015.

DLM FORUM FOUNDATION. Modular Requirements for Records Systems, 2011. Available at: <http://moreq2010.eu>. Accessed: Mar. 2015.

GARTNER. 'Gartner Hype Cycle'. Available at: <http://www.gartner.com/technology/research/methodologies/hype-cycle.jsp>. Accessed: Mar. 2015.

KETELAAR, Eric; McKEMMISH, Sue; GILLILAND-SWETLAND, Anne. 'Communities of memory': pluralising archival research and education agendas. *Archives and Manuscripts*, v. 33, n. 1, May 2005.

KUNDRA, Vivek. Digital Innovation Forum, University of Technology Sydney, March 27, 2015. Available at: <http://www.communications.gov.au/digital_economy/digital_innovation_forum>. Accessed: Mar. 2015.

ISO 15489:2001. Information and documentation: Records management. Part 1: General. International Standards Organisation, 2001.

ISO TR 13028. Information and documentation: Implementation guidelines for digitisation of records. International Standards Organisation, 2009a.

ISO 23081. Information and documentation: Metadata for Records. Part 2: Conceptual and implementation issues. International Standards Organisation, 2009b.

JACOBS, Adam. The Pathology of Big Data. *Databases*, v. 7, n. 6, July 2009. Available at: <https://queue.acm.org/detail.cfm?id=1563874>.

McKEMMISH, Sue. Are records ever actual. In: McKEMMISH, Sue; PIGGOTT Michael (ed.). *The Records Continuum*: Ian Maclean and Australian Archives First Fifty Years. Ancora Press in association with Australian Archives, 1994.

McKEMMISH, Sue; FAULKHEAD, Shannon; RUSSELL, Lynette. Dis-trust in the archive: Reconciling records. *Archival Science*, v. 11, issue 3-4, Nov. 2011.

McLEOD, Julie. Reinventing archival methods: reconceptualising electronic records management as a wicked problem. *Archives and Manuscripts*, v. 42, n. 2, July 2014.

NATIONAL ARCHIVES OF AUSTRALIA. Xena Protocol. Available at: <http://www.naa.gov.au/records-management/agency/preserve/e-preservation/at-naa/software/xena.aspx>. Accessed: Mar. 2015.

NATIONAL ARCHIVES OF AUSTRALIA. Australian Government Digital Transition Policy, 2011. Available at: <http://www.naa.gov.au/records-management/digital-transition-and-digital-continuity/digital-transition-policy/index.aspx>. Accessed: Mar. 2015.

NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (Nara), OMB. Architecture and Infrastructure Committee, Federal Chief Information Officers Council. Federal Enterprise Architecture Records Management Profile, version 1.0, Dec. 15, 2005. Available at: <http://www.archives.gov/era/rms/rms-documents.html>. Accessed: Mar. 2015.

NATIONAL AUDIT OFFICE (UK). Managing the risks of legacy ICT to public service delivery. Sept. 2013. Available at: <http://www.nao.org.uk/wp-content/uploads/2013/09/10154-001-Managing-the-risk-of-legacy-ICT-Book-Copy2.pdf>. Accessed: Mar. 2015.

NSW GOVERNMENT. Open Gov website. Available at: <https://www.opengov.nsw.gov.au/main>. Accessed: Mar. 2015.

PUBLIC RECORD OFFICE OF VICTORIA. Structured data. Blog post, Feb. 2014. Available at: <http://prov.vic.gov.au/government-recordkeeping/structured-data>. Accessed: Mar. 2015.

RECORDKEEPING ROUNDTABLE. *Archives and Manuscripts*, v. 42, n. 2, July 2014.

REED, Barbara. Service-oriented architectures and recordkeeping. *Records Management Journal*, v. 18, n. 1, 2008.

STANDARDS AUSTRALIA. AS 4390, Australian Standard on Records Management, Parts 1-6, 1995.

STATE RECORDS NSW. Digital Archives Migration Methodology, July 2014. Available at: <http://www.records.nsw.gov.au/digitalarchives/digital-archives-migration-methodology>. Accessed: Mar. 2015.

STRAY, Jonathan. WikiLeaks Iraq: How to visualise the text. *The Guardian*, Dec. 10, 2010. Available at: <http://www.theguardian.com/news/datablog/2010/dec/16/wikileaks-iraq-visualisation>. Accessed: Mar. 2015.

UPWARD, Frank. Structuring the Records Continuum Part One: Post-custodial Principles and Properties. *Archives and Manuscripts*, v. 24, n. 2, 1996. Available at: <www.infotech.monash.edu.au/research/groups/rcrg/publications/recordscontinuum-fupp1.html>. Accessed: Mar. 2015.

_____. Structuring the Records Continuum Part Two: Structuration Theory and Recordkeeping. *Archives and Manuscripts*, v. 25, n. 1, May 1997. Available at: <http://www.infotech.monash.edu.au/research/groups/rcrg/publications/recordscontinuum-fupp2.html>. Accessed: Mar. 2015.

UPWARD, Frank; McKEMMISH, Sue; REED, Barbara. Archivists and Changing Social and Information Spaces: A Continuum Approach to Recordkeeping and Archiving in Online Cultures. *Archivaria*, n. 72, Fall 2011.

UPWARD, Frank; REED, Barbara; OLIVER, Gillian; EVANS, Joanne. Recordkeeping informatics re-figuring a discipline in crisis with a single minded approach. *Records Management Journal*, v. 23, iss. 1, 2013.

WORLD ECONOMIC FORUM. Personal Data: The Emergence of a New Asset Class, 2011. Available at: <http://www3.weforum.org/docs/WEF_ITTC_PersonalDataNewAsset_Report_2011.pdf>. Accessed: Mar. 2015.

W3C. Provenance Data Model, 2013. Available at: <http://www.w3.org/TR/prov-dm/>. Accessed: Mar. 2015.