

DISRUPTIVE TECHNOLOGIES: A NOT-FOR-PROFIT PERSPECTIVE ON ENTERPRISE CONTENT MANAGEMENT DIGITAL TRANSFORMATION

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Abstract

Positioned as a case study for MercyCare, a leading, not-for-profit Western Australian based provider of aged care, family, health and community services based in Perth, with over seven hundred staff members, this paper provides an exploratory examination of a number of challenges with disruptive technologies faced by the organisation. Focusing on contemporary issues such as big data and Digital Darwinism, the paper discusses how the organisation has responded, primarily through the pursuit of a digital transformation project focussing on Enterprise Content Management (ECM), a sub-set of which is a robust and secure enterprise-wide records management (ERM) system. The research thrust of this paper, set against the backdrop of a rapidly changing digital ecosystem and pervasive computing, commences by examining the key challenges identified through literature, and related solutions proposed to addressing them. Then, the MercyCare corporate environment, culture and current state of non-digital and digital artefacts are explored, and these are in turn aligned with a number of solutions. A road map for implementation is lastly developed to chart the organisation's direction towards implementation in both the short and medium term future.

Keywords: *Digital transformation, big data, Digital Darwinism*

1. Contemporary Information Landscape

The advancement of digital technologies and the concomitant assemblage of uncontrolled data presents significant challenges to contemporary organisations, who are required to respond to a call for change under the collective banner of “digital transformation”. So significant an event is the requirement to change, set against the backdrop of “omnipresent digitalisation” and transform in the face of rapidly moving and often disruptive technologies, suggests Kreutzer (2014), that it can be likened to earlier Industrial Revolutions, characterised by the invention of the steam engine and the introduction of electricity. Unlike the former two “Industrial Revolutions” which could be classed as “enhancing” rather than “disrupting”, the “digital revolution” subscribes to the latter in as much as it has occurred largely unseen, and in many instances, undetected in corporate environments. Weiser (2002) proposes such a phenomenon highlights the “hidden” characteristics of technology which supports and drives human practices.

Another influencing factor for consideration as highlighted by contemporary literature, was the issue of “Digital Darwinism”, a phenomenon by which technology and society evolve faster than an organisation can adapt (Solis, 2014). Solis notes that the real threat and opportunity in technology's disruption lies in the evolution of customer and employee behaviour, values, and expectations. Further echoing Kreutzer, Solis outlines the need for digital transformation and the success criteria measured against the intentional efforts to

adapt to the onslaught of disruptive technologies, and how this is affecting customer and employee behaviour.

The rapidly growing and often disparate corporate information, generated continuously by employees within organisations causes further, exponential growth in the size of the existing volume of big data to be addressed. Further pressure is brought to bear through the amassing of parallel streams of both non-digital and digital records by organisations requiring a hybrid assemblage of disconnected information artefacts, maintained in different ways, and accessed through differing mediums in both non-digital and digital environments. Faced with this divergent, complex scenario, organisations may delay the introduction of technological solutions which commence addressing the data management issues facing the organisations, and which also minimise the risks posed to organisation as a result of the incoherent and dispersed data elements which are often difficult to locate, secure and manage.

Once a decision has been taken to pursue a big data solution, typically at a senior level within an organisation, a road map needs to be defined which plots the active stages of the process as it moves towards implementation (Stackowiak et al., 2015). Stackowiak et al. expand on this concept further by noting that the implementation phase of the process, characterised by revisiting available corporate skills and priorities, validating costs and the business case (see figure 1.), is often the most difficult to achieve, based primarily on financial implications associated with the outcomes identified.

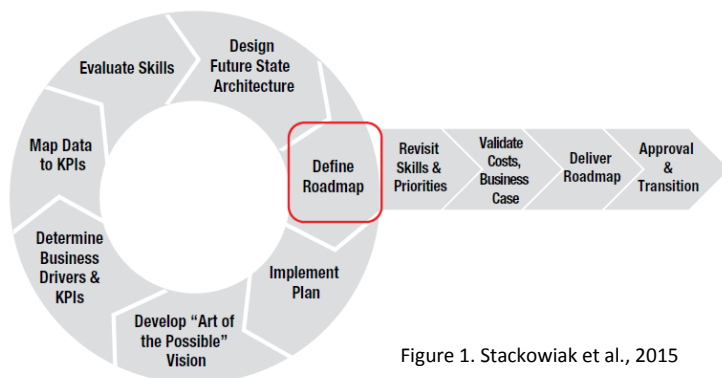


Figure 1. Stackowiak et al., 2015

Stackowiak et al. note further that earlier, exploratory findings should be revisited and reviewed in detail in order to determine the necessary skills required to both better understand overall development costs, as well as the acquisition of additional skills necessary to perform the development activities.

In moving towards data management project implementation, Stackowiak et al. proposes that the development of a prototype is a valuable tool as an early test of integration readiness of the information architecture and to ensure that the solution aligns with business expectations. The process, furthermore, tests quality and best practice against standards and specifications, using techniques such as peer reviews, external consultant assessments and a review by key stakeholders both within and outside the organisation (Stackowiak et al., 2015).

The foundational, preparatory steps towards implementation, developed in the road map and built into the project process further provide a framework which underpins the corporate shift towards the management of both big data. Further challenging the status of corporate information management is the preparation to engage with the rapidly evolving “Internet of Things” (IoT), also known as “Connected Intelligence”, which seeks to connect and gather data from a diverse range of hitherto disconnected devices and systems. This networked ecosystem has the ability to provide data to a centrally connected service which may use the acquired data for detailed and contextual analysis (Stackowiak et al., 2015).

Figure 2. Hype Cycle for Emerging Technologies, 2015

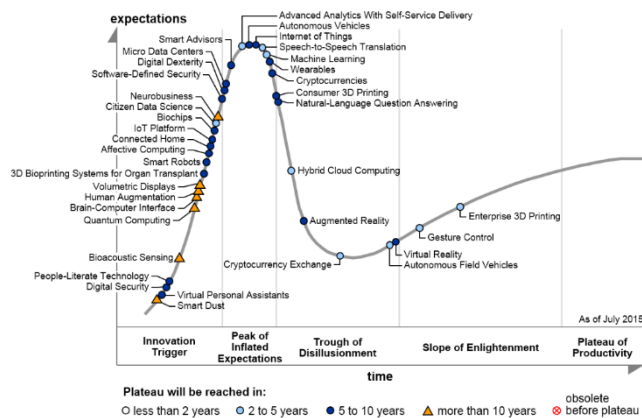


Figure 2. Gartner 2015

The IoT has been identified by Gartner (See Figure 4.) as a future trend, in the short to medium term, of digital transformation (Gartner, 2015). On a cautionary note, Gartner proposes in the 2015 Hype Cycle for Emerging Technologies (2015), that the IoT has reached the “Peak of Inflated Expectations” and in the short to medium term, will be entering the “Trough of Disillusionment” and thus provision should be made to accommodate this change which will impact the organisational context (figure 2.) (Gartner, 2015).

2. Devolving Corporate Digital Landscape

The advancements in digital data practices has also heralded a number of significant changes in the function and roles of organisational staff. Shave (2015) offers a lucid account of the rapidly devolving role of employees within a corporate context. The analogy of the shift from organisational “typing pools” and clerks wherein groups of typist did the typing and clerks prepared, stored and retrieved corporate documents as a central, functioning service unit, highlights the practical outcome of this scenario. Shave proposes that this corporate scenario “...set the first generation blue print for a document and records management system...”. In the contemporary office environment, staff members are frequently required to fulfil the role of both typing pool staff and clerks during the generation of corporate information.

As with the demise of the “typing pool”, as proposed by Shave, the devolution of office functions continued to affect other areas of the organisation, most notably, in the area of document and records management in the digital data arena. Traditionally, the role of creating, maintaining and disposing of corporate records rested with a dedicated records officer, however, in recent times, the advancement of document digitisation has eroded the need to centrally manage records in many organisations, particularly those outside the boundaries of constraints such as the Victorian Electronic Records Strategy (VERS).

In effect, a large proportion of staff in corporate environments have been assigned the additional responsibility of generating records, at a significant rate, and amassing them in disparate, unconnected locations, without rigorous data management governance processes and procedures in effect. In corporate environments with data management mechanisms in place, the document creation process commences with the artefact being “captured at birth” (Shave, 2015) at the beginning of the document lifecycle, and maintaining the integrity of the document throughout its life through to disposal.

This is however not the case with documents in uncontrolled environments, and the issue of big data is magnified and additional complexity introduced, through the incremental assemblage of data, which has, in turn, triggered a call-to-action for organisations wishing to maintain a competitive advantage and operate within legal boundaries (Schmarzo, 2013). The heightened need to implement new technologies and processes to counteract the effects of big data in corporate environments is thus the catalyst and entry point for the road map which will enable organisations to achieve a future state in which data is contextualised, managed and secured, minimising risk and adding to process efficiencies and greater productivity.

3. MercyCare Organisational Context

Rapid advancements in the not-for-profit sector in 2012, triggered significant change in the business and information technology structure of MercyCare, compelling it to adapt significantly in order to best serve the diverse users of its services. In addition, corporate decision making practices required adaptation to accommodate the divergent trajectory pursued by the organisation. Elements such as a reduced reliance on direct government funding, greater competition in the sector, and changes in service offerings, underpinned by an imperative to maximise business growth challenged the *status quo* and thereby, further added to the complexity of the MercyCare corporate environment.

In response to the change triggers, MercyCare identified the need to automate a number of key manual process through information technology driven automation initiatives. At this stage of the organisation's evolution, it was not culturally ready to deal with a new regime and a review and audit was undertaken spanning the organisation's entire corporate information management practices in order to assess its readiness to adopt new processes and practices. Arising from the assessment several findings emerged which highlighted a number of significant limitations in the matter in which corporate documents were managed. The MercyCare document management landscape, it was determined, was characterised by disparate, uncoordinated data stores, difficult to locate and retrieve documents, limitations in manual document control, including versioning, as well as challenges in information sharing across functional areas.

In January 2013, the Federal Government announced the Royal Commission into Institutional Responses to Child Sexual Abuse. In addition, redress schemes and regulatory requirements highlighted the importance of the adoption of best practice electronic content management. Arising from this process was a pre-audit gap analysis conducted on one of MercyCare's facilities highlighting a need to improve the processes and guidelines for the management of policies and procedures. In particular, document and version control, accessibility, search capabilities, and review processes were the focus of this governance measure. Following this, in October 2015, MercyCare committed to embedding a formal quality management framework which included the implementation of a policy and procedure management system. As an interim measure, manual procedures were developed and mechanisms introduced which mitigated the risk in the short term while a more rigorous, digital system was implemented.

In response to both the Royal Commission and the internal audit of information practices, MercyCare sought to position itself as a community leader as these events highlighted issues that were fundamental to its core values and mission. Appropriate action was necessary to provide a suitable framework to manage corporate data, and thus, MercyCare introduced the following strategic objective: "Implement an organisation-wide information management system that enables efficient service delivery, innovation and development, including a corporate records management system" (MercyCare, 2011).

In addition to the drivers of big data and the need for digital transformation, MercyCare sought to establish the Enterprise Content Management Project (ECM) which included addressing a broad range of information management related initiatives such as email management; document management and records management. The road map for implementation had effectively commenced, and the challenges of the actual trigger and financial implications of such an event, as noted by Stackwoiak et al, had been overcome.

4. Solution Road Map

Like many contemporary organisations, the case-study subject, MercyCare has suffered from "Digital Darwinism" as well as the concurrent advancement of "big data" and concomitant

challenges that it heralded in terms of large-scale information management activities in a corporate context. At the outset of the project it was thus necessary to conduct a detailed and exhaustive audit of the amassed “big data” on the corporate network and in other repositories extended across the organisation and in off-site locations in order to quantify the size and composition of material that would form the basis of the ERM data migration exercise. From this evaluative exercise, the extent, nature and evolution of electronic material could be deduced, thus paving the way for the implementation of suitable mechanisms and frameworks towards implementation.

Chin and Koehler-Kruener (2015) highlight a number of key challenges in developing and implementing a suitable road map for enterprise-wide records management (ERM). According to Chin and Koehler-Kruener, in addition to the development of a sound business case for ERM implementation, three key elements should be addressed in shaping and integrating large, distributed records management systems. They are:

- a) Ensure that the foundational elements – such as an information retention policy and records retention schedule and processes – are in place before considering the technology for the program;
- b) Automate as many records management processes as possible (user-driven records processes have limited success) and utilize technologies such as records management archiving and classification tools; and
- c) Change management and training for users are essential to the successful implementation of records management programs and must not be underestimated.

In the case of the MercyCare ECM implementation, these elements have been considered, and the achievement of which used as critical success factors for the project. The additional complexity associated with the implementation was adapted to align with organisational constraints, including ensuring the privacy of client records, which is a key challenge, in contemporary big data management practices. Most notably, the vulnerability of the electronic material to unauthorised access (Craig & Ludloff, 2011), which may contain sensitive details of children and other “at risk” clients, whose privacy is of the utmost importance. The adoption of an approach that provides the necessary level of security and privacy preservation has thus served to underpin MercyCare’s digital transformation strategy.

As MercyCare does not have a pre-existing ERM system, the implementation of a new, dedicated ERM solution is largely simplified as there is no requirement to transition from a known and familiar environment to one which alters the work processes and practices of employees. There was thus no requirement to realign existing staff skills in preparation for the migration from a legacy system, or to conduct a significant audit of the current corporate information necessary as is typically characterised in contemporary ERM migrations (Shegda & Gilbert, 2014), thereby further reducing the complexity of the MercyCare ERM implementation.

Expanding on the proposal by Stackowiak et al. (2015) to review the existing human resources to determine skill available to the project, MercyCare’s overarching ECM project commenced with a reflective review of the available corporate literature and further validated these elements with contemporary theories and practice to determine the nature, composition and implementation mechanism required to support the organisation’s unique ECM model. The outcome of this process was a high-level road map for an ECM implementation at MercyCare (Figure 3.).



Figure 3. MercyCare ECM Road Map

Following the examination and review of corporate and environmental literature, the information gleaned from the reviewed material was collated and segmented according to specific corporate functions. The consolidated document produced from this exercise was used as the underpinning tool for corporate validation from key stakeholders (PMI, 2013) in the organisation. The outcome of that process was an understanding of the key elements of the MercyCare ECM product and the areas on which to focus in the staged rollout of features and functionality in the supporting project rollout. Thus, the consolidation of the first three steps of the MercyCare road map served as both a mechanism for understanding, contextualising and shaping the ECM, as well as aligning it with contemporary best practice and industry standards.

Thereafter, an environmental scan was conducted of available products and aligned with Gartner’s magic quadrant for ECM products (Gilbert et al., 2014), followed by the identification of VERS compliant ERM software systems available from the Public Record Office of Victoria (Public Record Office Victoria, 2015b). The former provided an overview of possible candidate ERM products for further examination and evaluation as it included both benefits and cautionary material, which served as a reference point for further investigation and alignment with the latter, as an antecedent for vendor engagement.

5. Future State Alignment

Gartner’s ECM “future state” Strategic Road Map for Enterprise Content Management (Chin & MacComascaigh, 2015), is a useful reference point to test alignment with MercyCare’s attainment of key objectives for ECM implementation (figure 4.). The inclusion of a reference to ECM implementation in MercyCare’s 2011-2014 strategic plan formalised the road map of ECM implementation and funds were committed to the selection and implementation of suitable key components to fulfil that vision. The project to embark upon and implement a broad range of tools and services under the umbrella of ECM further demonstrated organisational commitment to addressing big data, in what was identified as MercyCare’s most significant project.

Further alignment with Gartner’s “future state” model, was the readiness of MercyCare’s application portfolio to accommodate a corporate records management system. Having earlier implemented Microsoft SharePoint as a platform in the organisation’s technology stack, which has offered services and features such as: intranet site hosting, search capability

and workflow management, the addition of a dedicated ERM system would further complement this systems architecture.

Lastly, the governance by which the ERM system was defined using such tools as records policies, procedures and standards, together with additional supporting literature was

Future State	Current State	
<ul style="list-style-type: none"> The ECM strategy reflects key business objectives and adapts to meet emerging business needs with agility. The current fitness of the application portfolio and options to improve are well understood. Information governance policies and processes are in place. The ECM architecture supports a rapid and efficient deployment of applications. The business is engaged and jointly responsible with IT for ECM projects and applications. 	<ul style="list-style-type: none"> Many discrete ECM products and applications serving different departments within the enterprise. IT realizes some ECM platforms are aging, but struggles to convince the business of the risk. No clear connection between business goals and ECM investments. Information governance is lacking, resulting in significant risks. Business demand is outstripping IT’s ability to deliver new ECM applications and capabilities in a timely fashion. 	<p>Gap</p> <ul style="list-style-type: none"> Comprehensive information governance. Cohesive enterprise ECM architecture. Improved business engagement and accountability. <p>Migration Plan</p> <ul style="list-style-type: none"> Assess the current ECM product and application portfolio. Establish information governance to effectively manage the content. Adopt emerging ECM technologies to support new requirements.

Research (APIAR)

ECM = enterprise content management

Figure 4. Gartner 2015: Enterprise Content Management Future State

also implemented, thereby providing a sound foundation for managing the existing data assemblages in the future. Australian industry standards for record keeping, such as VERS (Public Record Office Victoria, 2015a) compliance was also considered, as well as internally developed standards for business practices at MercyCare were also used as reference points for the overarching governance framework.

6. Conclusion

Whilst a number of challenges are presented in the addressing the issue of big data in organisational environments, particularly those in the not-for-profit sector who deal with client records of a highly sensitive nature, the key to embarking on the process of counteracting the incrementally increasing assemblage of corporate information artefacts is to develop a structured and methodical road map to drive the project to fruition. At the outset, a detailed examination of both contemporary big data challenges and supporting technology systems should be examined to ensure alignment with the implementation strategy in the often, unique corporate information ecosystem, as this is pursued as the framework of a broad ECM project strategy.

The critical success factors of the overall initiative to curtail the amassing of corporate information should be implemented as an incremental process which identifies core elements, such as an ERM, which will enable organisations to empower employees to convert from creators of uncontrolled and unmanaged digital artefacts, to contributors of useful corporate information, that can be secured, retrieved and disposed of in compliance with regulatory constraints. The implementation of such a system should thus be treated as a digital transformation imperative and enshrined in the organisation's strategic plan to ensure executive support, and the implementation process proceeds as a well-resourced project which would increase its likelihood of success.

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