

Hybrid Recordkeeping: Bridging Analogue and Digital Recordkeeping at Great-West Life

by

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Abstract

Records are received and generated by organizations in the development of business. They are kept for evidential purposes regarding the activities and policies of organizations and serve as documentation of their day-to-day management. Therefore, they serve as a tool for accountability whereby organizations can ensure that they are following best practices. The efficient storage and retrieval of such information is essential to the success of businesses, organizations, government and society in general. Sound recordkeeping that encompasses the guiding principles of accountability and integrity can ensure good data management and retrieval within a corporate archive. Furthermore, the digital age has brought many changes to businesses and organizations and the programs used to manage their records. Building upon the ideas presented in the research of the current state of digital recordkeeping options, it is important to look more specifically at options currently available and being utilized by large businesses and corporations, such as Share Point. It is necessary to examine the benefits of a collaborative approach to recordkeeping further as this seems to be the trend for businesses and organizations in the future. This is particularly important to the current state of records management for companies like The Great-West Life Assurance Company. The increasing shift to digitize records either by imaging or creating born-digital records has meant a necessary re-evaluation of the way records will be kept in the future.

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Introduction

The state of recordkeeping in Canada has evolved immensely over the twentieth century, and continues to evolve today. Technological advancement has made drastic improvements to the efficiency of record production, as well as the type or medium of records produced. The late nineteenth and early twentieth centuries saw the creation and evolution of the typewriter, the punch card, the photocopier, and the computer, to name a few. Thus, records shifted away from being predominantly paper in the twentieth century to increasingly digital coming into the twenty-first. Archives and records management theories and methodologies were created and amended to keep up with these changes forging new relationships between the two professions and later with the Information Services (IS) community. Situated within the history of recordkeeping in Canada is the evolution of corporate archives and records management. While this history is a lesser known narrative, it provides a window into the private world of records management in Canadian industry. This thesis will examine the evolution of recordkeeping at The Great-West Life Assurance Company in Winnipeg, Manitoba. Great-West Life is one of Winnipeg's oldest insurance companies, and remains a strong presence in the global insurance market today. The Company has witnessed and been a part of the evolution of technology and resulting changes in records and recordkeeping practices over time. Moving more fully into the realm of digital records has once again thrust change upon how records are stored and managed by records professionals at Great-West Life. Understanding this evolution will help ground the decisions made for directions taken in the future.

Beginning in the 1950s and carrying on for the two decades to follow, an archival revolution took place in Canada. According to Terry Cook, archival institutions were transformed during this time as the focus shifted from "a semi-antiquarian enthusiasm for

collecting the personal papers of heroic figures of a distant or pioneering past to a more scholarly, systematic, and professional approach for acquiring the records of contemporary society and especially managing effectively those of their burgeoning governments.”¹ This time period would see the creation of the National Library, and its merger with the Public Archives of Canada, later becoming Library and Archives Canada (LAC). It would see the creation of the first of many federal records centres and the records management policies and tactics that are still in use today, such as records schedules, records retention, appraisal, and destruction. It was a time when the life-cycle concept of the record was coming into its own as initially expressed by T.R. Schellenberg’s interpretation of a clear division between records and archives. He stated that in the past, it had been common for records managers to manage active and semi-active records while archivists have managed records only at the archival phase. This was the vision that W. Kaye Lamb had in mind when he created the aforementioned institutions and set the foundation for archival concepts such as the “total archives” and microfilming for acquisition and records management concepts such as records scheduling including appraisal and disposition of records that have met their retention. As these practices gained traction in government, eventually becoming mandatory for all government records, so they did in the private sector as well. Companies like Great-West Life adopted similar records practices over the years that evolved to a full scale records management program in the 1980s and have continued to evolve to the present day.

Simultaneously during this time, the evolution of technology was taking place that would improve office efficiency and change the volume and type of records produced. Specifically, this thesis will examine the evolution of records and technology at The Great-West Life Assurance

¹ Cook, “An Archival Revolution” pp. 186.

Company. It should also be noted that well before the 1950s, the typewriter was changing the way memos, letters, and other business records had been created since the early 1900s. While this was seen as a major development for office efficiency, it would not be until the 1930s when the photocopy machine became popular that records would proliferate as never before. By the 1940s, more advanced technology such as the IBM 604 would be introduced into offices such as Great-West Life. The IBM 604 performed functions such as addition, subtraction, multiplication, and division hundreds of times faster than any of IBM's earlier electromechanical machines. It was the first IBM product to use modular vacuum-tube based pluggable units, later used in IBM's NORC and 701 computers. The 604 could be programmed using its plugboard and could execute a program of up to about 60 steps. This was just the beginning. After the introduction of these electro mechanical and electronic data processing machines, computers such as the IBM 650 were introduced. It was the first computer purchased and used at Great-West Life in 1958, and one of the first in the province of Manitoba. The Company wanted the installation of the IBM 650 to be "another step in a long range program to utilize the most modern business techniques."² It was asserted that this type of modernization was necessary due to the continuing rapid expansion of the Company and the increase in the complexity of life insurance options. Therefore, it was no surprise that management at Great-West Life would consistently aim to employ new technology not only to increase staff efficiency, but to remain on the cutting edge of office technology. This would be the first of many computers at Great-West Life.

² Unknown author. *The Link*. Vol. 1. No. 7 November, 1954 (Canada: The Great-West Life Insurance Company), p. 4.

Chapter 1 will examine more fully the aforementioned progression of the history of recordkeeping with an emphasis on business archives. It will explore the many reasons corporations keep records during all stages of their lifecycle, including the administrative, business, legal and historical reasons. Both the historical aspects of record keeping and the records management of active and semi-active records will be examined to gain a better understanding of the lifecycle of corporate records from their active use to final disposition. There have been many changes over the past fifty years to methods of corporate record keeping. This has included a shift away from paper towards scanned and born-digital images. Theories and practices regarding how paper and digital records should be stored and organized have changed to reflect the evolution of records media, for example, file classification systems, retention schedules, disposition guidelines and/or other formal lifecycle procedures. As well, electronic document and records management (EDRM) solutions have been developed and implemented to manage the growing number of digital records. EDRMS are automated systems used to manage, protect and preserve information resources from creation to disposition. Along with EDRMS, computer applications such as content management systems (CMS) are needed to allow publishing, editing and modifying content, organizing, deleting as well as maintenance from a central interface. Microsoft SharePoint is an example of a CMS that is used to create and store documents in an easily accessible and controlled site. Further analysis of CMS and EDRMS will be provided in this chapter to determine their effectiveness for managing records.

A sound record keeping strategy is essential for corporations as they make valuable contributions to society for a variety of reasons including enabling businesses to make good decisions by supporting the administration of policy and consistent decision-making, planning, evaluation and reporting. This ensures accountability as the records that are kept according to

schedules are evidence of actions and decisions and provide a means by which to hold people accountable; managing liability, as well-managed records enable a corporation to defend its legal rights and minimize legal liability; and finally, preserve company history. Corporate archives have contributed immensely to society, and more specifically, the history of Winnipeg, evidenced by The Hudson's Bay Company Archives or the Winnipeg Tribune archives (held at the University of Manitoba Archives and Special Collections). Sound record keeping and archival practices have enabled records managers and archivists to maintain the records of companies allowing researchers to contribute to the history of business and society in general. This chapter seeks to elaborate on the history and theory of corporate record keeping. This will set the stage for a case study of The Great-West Life Assurance Company's record keeping practices historically and presently as we move into the age of the paperless office.

Changing technology dictated the need for a sound records management program to be implemented at Great-West Life. Records exist in the archives as early as 1933 documenting the need for more stringent records management beyond staff keeping records in their desk drawers. The Niles' Report in 1933 recommended the classification of management material to aid in the filing of records as well as the centralization of records related to one another and periodic desk cleaning.³ At the time, a senior file clerk was responsible for culling and selecting material to be accessioned to the archives. The report made suggestions that were similar to records management as it is carried out today at Great-West Life. For instance, it suggested retention and destruction processes were to be carried out based on a regularly maintained records schedule, and destruction was to be documented for accountability. Over the next 50 years, guidelines for a mostly informal records program were established at Great-West Life. Departments would be

³ H.E. Niles and M.C.H. Niles. "Miscellaneous Suggestions (continued)," 21 June 1933: 35.

compliant with legal and regulatory requirements, but maintain their own records. Records of archival value would be sent to be managed by staff of the Company Library. In 1984, a formal records management program would be created and the Records Retention Committee, consisting of representatives from Legal, Audit, Compliance, Archives and Records Management, and Taxation, would oversee and approve all policies. The Winnipeg Records Center would be created this decade as well, becoming a central repository for semi-active paper records at Great-West Life. Policies and procedures for records would evolve further from this point on. Functional classification would be used in the late 1990s to create the records retention schedules still used today. In the 2000s, the Corporate Imaging Policy was created to establish guidelines for imaged records. Today policies are being amended once again to reflect the proliferation of born-digital records produced by the Company.

Chapter 2 will explore the history of the insurance industry, including recordkeeping within it over time. As well it will explore the history of Great-West Life including records management practices and technology over the years at the company. The Great-West Life Assurance Company was founded by Jeffry Hall Brock and incorporated by an Act of Parliament on August 28, 1891. By 1897, Great-West was represented in every province and was able to expand to the United States. Through its history, Great-West Life has contributed to the economy and culture of Winnipeg, being one of its oldest companies. In 1999, the Company Records Department was created to oversee all records management and archival records. Schedules were created based on functional analysis to create a sound records management policy that Great-West Life could follow.

The archival practices of Great-West Life include storing and maintaining records of archival value to preserve the corporate history. Both archives and records management fall

under one department. The archivist oversees many records management functions making the transfer of records a more efficient process. Sound records management is crucial to the success of the 144 record producing departments within Great-West Life. These records support Company policies and show transparency of business transactions, compliance with legislation and regulations, and business processes. Fostering the relationship between archives and records management has been key to the success of the organization of Company records in a large corporation connected and responsible for itself and multiple subsidiaries.

Currently, access to information through the use of websites, email, hard drives, shared drives and applications to store and share information has become increasingly popular. All are present in today's environment at The Great-West Life Assurance Company. The increase in electronic records has meant a reduction of paper that is managed and stored by the Archives and Records Management Department. This has introduced new challenges to record keeping that will need to be addressed to ensure sound records management at Great-West Life.

With the rise in electronic records, many creator departments are storing data on their shared drives, desktops, or on department-specific online databases. This poses a problem for sound records management practices as it is now up to the creator department to ensure classification, retention and disposition is followed according to Company policy. It is also their responsibility to transfer records with an archival disposition to the Archives once they have met their retention. Recently, the Company has introduced SharePoint as an alternative to storing information on shared drives, and various applications so that departments have consistency in how they are managing and storing information. SharePoint offers intranet, content and document management and collaboration, all of which Great-West Life is currently using. Electronic documents or images of paper documents can be stored, tracked, and potentially

amended by users as needed. In theory, this sounds like a viable solution for electronic records management for a large company. However, SharePoint for records management has weaknesses that should be considered as well. These limitations need further analysis to determine if SharePoint and its add-ons can satisfy crucial records management requirements.

Just as records management needs to be well organized and adjusted to meet the needs of electronic records, the management of electronic archival records must be considered as well. Great-West Life acquired its first computer in 1958. In the 1980s the company moved to desktop computing and by the early 2000s, handheld devices also influenced the types of records produced. Therefore, the influence of technology means that more records of archival value will be born-digital or transferred to digital format as in the case of scanning or imaging. Thinking about these ongoing changes, the Archives and Records Management Department at Great-West Life will need to decide whether SharePoint can satisfy archival as well as records management needs or if working towards an Open Archival Information System (OAIS) based trusted digital repository to work with SharePoint is a more functional solution. Archivemata is an open source digital preservation system that uses a micro-services design pattern to provide an integrated suite of software tools. Archivemata allows users to process digital objects from ingest to access in compliance with the ISO-OAIS functional model. It provides trustworthy, authentic, reliable and interoperable archival packages for storage in a preferred repository.⁴ This approach is being suggested as it would allow Great-West Life to preserve long-term access to trustworthy, authentic, and reliable digital content. As previously stated with SharePoint, there are weaknesses that should be considered and will be explained and explored in detail in this

⁴ Archivemata. "Main Page" Archivemata wiki accessed on 11 January 2018.
https://wiki.archivemata.org/Main_Page

thesis. Convincing IS and high level management that there is value in two separate systems for archives and records management may be challenging. While Archivemata is free and open-source, there is still a need to pay for a developer, server space, and staff training to use a completely new system. Nevertheless, I will investigate whether SharePoint is sufficient or, if not, whether Archivemata may be a viable option as a digital preservation system for Great-West Life. This is the essential first step towards convincing the organization to pursue a viable long term digital recordkeeping solution that is based on SharePoint, Archivemata or some other solution.

Chapter Three will be a case study examining the aforementioned with the goal of determining a solution for Great-West Life that can be used for a business case going forward to implement these changes. The proliferation of digital records and ever evolving technology today has forced corporations to think about how to manage electronic records according to the same standards that would apply to paper records. This involves having sound records management policies in place, following existing schedules and guides, and most importantly, having a trusted digital repository to store records, providing both security and access to users and administrators. Great-West Life has seen an increase in the last five years of electronic records being produced and has therefore taken the steps to implement a sound record keeping strategy; however, it has yet to be determined what application will be the most viable.

Currently, SharePoint is being used in other ways to manage and store projects, workflows and documents, but there must be further analysis to determine whether or not it should be used for management of all active, semi-active, and potentially archival records produced across the Company. Furthermore, if it is determined that SharePoint will not be a viable option for archival electronic records, other applications such as Archivemata must be explored to ensure there is a

system in place to manage these records as they reach the end of their life-cycle. To measure the viability of SharePoint, specifically, at Great-West Life, a pilot project is underway with the Forms and Design department. This pilot involves creating a test site in SharePoint and using the Records Center function (standard version) to create libraries to manage the increasingly digital volume of records produced by Forms and Design. If this pilot is successful, the test site will be used going forward and will serve as an example for other departments in the Company looking for a digital records management solution.

Continuing to be progressive is of utmost importance to the Company as they have a commitment to staff and the public they serve as clients to ensure their records are assessed, described, and preserved in a manner that is compliant with legislation and applicable standards. Currently, Great-West Lifeco. is the midst of a technological transformation. This will include implementing and leveraging new technology to manage data and therefore, use it to improve customer relations. This includes using Artificial Intelligence (AI) to find value in large datasets. By applying AI in situations where the quantity of data is so great that it overwhelms the human capabilities of analysts, employees will be able to spend time spotting trends, solving problems, and make decisions faster. This puts the onus of managing data on the system itself, freeing staff time to be spent with customers, enhancing their experience. In preparation for this digital transformation, Great-West Life's Digital Services department has undergone a variety of changes to support this shift. They are responsible for everything related to data, including its mining, storage, analytics, trending, and leveraging stored in our data centres. Therefore, data is managed by the Digital Services department and is not within the responsibilities of the Archives and Records Management department and for this reason, will not be examined further in the body of this thesis. Through determining a plan for a sound records management solution, Great-

West Life can be an example to other corporations looking to find similar solutions to their own electronic records. Sound digital record keeping in a corporation such as Great-West Life is vital to its success.

Chapter 1 – History and Theory of Corporate Record Keeping

Records are received and generated by organizations in the development of business. They are kept for evidential purposes regarding the activities and policies of organizations and serve as documentation of their day-to-day management. Therefore, they serve as a tool for accountability whereby organizations can ensure that they are following best practices. The efficient storage and retrieval of such information is essential to the success of businesses, organizations, government and society in general. Sound recordkeeping that encompasses the guiding principles of accountability and integrity can ensure good data management and retrieval within a corporate archive. Over time, corporate recordkeeping has evolved to meet the changing needs of the types and formats of records generated. This is especially the case with the shift from paper to electronic records. This chapter seeks to elaborate on the history and theory of corporate recordkeeping. Understanding this history is important to ensure records managers uphold best practices regardless of medium.

Corporations keep records during all stages of their lifecycle, for administrative, business, legal and historical reasons. Corporate archives serve as a permanent repository of the corporate memory of the company. Many corporate archives are partnered with a records management department that oversees all active and semi-active records and work to ensure a seamless transition of records from their active use to their final disposition. Over the past fifty years, corporate recordkeeping has changed immensely in theory and practice. Corporations have gone from producing solely paper to scanned and born-digital records. Theories have changed from how best to organize and store paper records according to file classification systems, retention schedules, disposition guidelines and/or other formal lifecycle procedures, to developing and implementing electronic document and records management (EDRM) solutions. EDRMs are

automated systems used to manage, protect and preserve information resources from creation to disposition. Similarly, a content management system (CMS) is a computer application that allows publishing, editing and modifying content, organizing, deleting as well as maintenance from a central interface. An example of this is Microsoft SharePoint. It enables corporations to create and store documents in an easily accessible yet controlled site. This is one direction corporate recordkeeping can take in the future; however, theories surrounding the state of both CMS and EDRMs are currently being debated amongst records management professionals and should be further explored before deciding on what is the best route for corporations to take managing their records. This will be explored fully in further chapters.

Over time, organizations have produced, and therefore, had to manage a variety of record types. As technology evolved, records were being created differently, and more rapidly than ever before, as the ease of typing, whether on a typewriter, or a computer, enabled records to be created more efficiently. Organizations continue to produce information because they are required to document their everyday business transactions. Evidence can be seen looking back to the beginning of administrative change in government archives in Canada that would eventually be adopted by the general public as well. According to Terry Cook, “an archival revolution occurred in North America in the two decades after 1950.”⁵ From here, Cook states the profession, archival records and institutions were transformed. He states that the focus shifted from “a semi-antiquarian enthusiasm for collecting the personal papers of heroic figures of a distant or pioneering past to a more scholarly, systematic, and professional approach for acquiring the records of contemporary society and especially managing effectively those of their

⁵ Terry Cook. “An Archival Revolution: W. Kaye Lamb and the Transformation of the Archival Profession.” *Archivaria* 60 (Fall 2005): 186.

burgeoning governments.”⁶ Included in this transformation, was the role of archivist. Prior to this time the archivist was often seen as the keeper of historical documents and interesting artifacts, whose primary function was to catalog records and aid historians in finding the records they needed for their research. Cook describes the post 1950 archivist as a scholar archivist serving a broader range of users. He stated, “the archive was no longer one of passive neglect on the one hand, in terms of government records or of aggressive, but idiosyncratic collecting of private papers on the other. Now the archive would be actively shaped in more balanced fashion, with the vast amount of available documentation being excluded by the archivist.”⁷ Thus, the archive was more about what the archivist decided not to keep, and destruction was at the forefront of the archives profession. The archivist would no longer been seen as merely a gatekeeper to the past, but had a hand in shaping it. The history of archives in Canada cannot be addressed without mentioning the impact of W. Kaye Lamb, the fourth Dominion Archivist of Canada. The archival revolution in Canada “was shaped significantly by his personal vision, expressed through his continual articulation of its main attributes, and made convincingly practical by his innovative direction as the head of the Public Archives of Canada.”⁸ During the twenty years he spent as Dominion Archivist, he navigated the Public Archives through events that would demand a change in administrative processes of the past, such as the Great Depression and the Second World War. During a time that saw shrinking budgets, staff cutbacks and declining morale, Lamb saw the forest through the trees and Lamb created new institutions such as the National Library of Canada, a prestigious headquarters for the National Library and Public Archives of Canada to reside under one roof. He also “built the first of four federal records

⁶ Cook, *An Archival Revolution*, 186.

⁷ Cook, *An Archival Revolution*, 186.

⁸ Cook, *An Archival Revolution*, 187.

centres, two in Ottawa, and two others across the country where concentrations of federal government activity (and thus records) were most intensive.”⁹ From a methodology standpoint, Lamb was responsible for launching microfilming for archival acquisition, as well as “inaugurating systematic records management for government records, creating a legal deposit system for all Canadian publications, and starting the Canadian national union for libraries.”¹⁰ Lamb believed in the accessibility of records and spent his career creating a foundation to make sure they would be. This would include a sound approach to appraisal grounded in historical training and mindset. Lamb introduced the concept of total archives, which would “emphasize a wide range of materials, including architectural drawings, maps, microfilm, and other documentary forms.”¹¹ He also shaped the history of records management in Canada, introducing it to the Government of Canada and making it a core function of the Public Archives. Cook states, “to add the government records half to the total archives concept, and to ensure that archivists indeed were able to exercise that “voice” in the keep—destroy decision-making process, Lamb effectively introduced records management to the Government of Canada, as well as making it a core function of the Public Archives.”¹² Lamb viewed records management as being a part of ‘total archiving,’ viewing it as a way to identify and preserve government records such that the past would be kept up-to-date. This is an example of the intersection between the two professions and how they work as part of the same life cycle to see the record from beginning to end.

⁹Cook, *An Archival Revolution*, 189.

¹⁰ Cook, *An Archival Revolution*, 189.

¹¹ Society of American Archivists. “Total Archives” Society of American Archives website accessed on 15 January 2018. <https://www2.archivists.org/glossary/terms/t/total-archives>

¹² Cook, *An Archival Revolution*, 206.

The first Public Archives Records Centre (PARC) was opened in April, 1956 and within the first two years was busy with requests sending records to and from PARC to government offices. PARC became the cornerstone for how government records were stored, and more importantly, how records were appraised, classified, and scheduled. In 1963 the *General Records Disposal Schedules of the Government of Canada* were created (they were revised in 1968) and “set file classification standards and firm disposal dates for all categories of administrative records (personnel, accounts, buildings and land, vehicles, and so on) that were common to all departments and agencies.”¹³ In 1961, Lamb’s records management initiative was recognized by Order in Council and the Public Records Committee was recognized. In 1966 the Public Records Order articulated an active records management program including control over destruction taken from the Treasury Board and given to the Public Archives. Public records were now defined to include all media regardless of physical form. As well, all Government records were now subjected to mandatory scheduling. With the foundation of archives and records management acts in place and logistics of where records would be stored underway, the next step was to focus on the administrative side of recordkeeping, and an emphasis on lifecycle management.

The examples of Schellenberg, Lamb, and Atherton as archivists within government who created and implemented new models for archives and records management exemplify that the archives community is a community of practice. The types of models or theories that originated in government archives such as the Life Cycle model or the Continuum Theory were first developed in government archives and became standards that were adopted by the broader archival community. Although developed at the federal level, it was communicated to public

¹³ Cook, *An Archival Revolution*, 213.

institutions and organizations as well. These practices are a connecting point between government and private archives and are evidence that though there are many differences between the two, corporate and government archives are not completely different. For instance, archivists in both institutions collect information to preserve cultural heritage such as photos or oral histories, for transparency through keeping financial information such as Annual Reports or meeting minutes to evidence business decisions, and are governed by many of the same legislation and regulatory obligations such as PIPEDA. Within the context of Great-West Life, there have been four archivists who took the Archival Studies Program at the University of Manitoba, that have worked as the company's corporate archivist. This underpins the community of practice that exists in archives and shows how although archivists in government and corporate archives have different mandates and use different aspects of their education and training in their day-to-day work, the root training is the same and overlap can be seen in the models they use to maintain their archives. The records management practices established by Lamb were passed down not only within the context of an archivist's job, but also in their education and training.

Records management is "the field of management responsible for the efficient and systematic control of the creation, receipt, maintenance, use and disposition of records."¹⁴ As Elizabeth Shepherd and Geoffrey Yeo explain, records management has evolved over the course of the twentieth-century from a profession concerned solely with the retention of archival materials for the purpose of historical research, to a multi-dimensional and more active process whereby records managers serve organizational and business goals. As they note, "Records

¹⁴ Elizabeth Shepherd and Geoffrey Yeo. *Managing Records: a handbook of principles and practice*. (London: Facet Publishing, 2003), 1.

management now covers the management of records, regardless of age, to meet the needs of private and public sector organizations and the wider society as well as the community.”¹⁵

Within an organization, records management is an essential part of the work of most employees.

With regards to the history of recordkeeping, it is important to acknowledge both records managers and archivists and their relationship as being a part of the entire records lifecycle. In the past, records managers and archivists have looked to find a middle ground between their interconnected, yet different roles in the records lifecycle. In some cases, this has caused a tension between the two professions. It is possible the perceptions archives and records management have of one another professionally, have stemmed from the “life-cycle” concept. This approach was based on a more rigid division between archives and records, dividing the life cycle of a record into eight distinct and separate stages. The first, or records management phase consists of the four elements: “creation or receipt of information in the form of records; classification of the records or their information in some logical system; maintenance and use of the records; and their disposition through destruction or transfer to an archives.”¹⁶ Subsequently, the second or archival phase consists of four elements: “selection/acquisition of the records by an archives; description of the records in inventories, finding aids, and the like; preservation of the records or, perhaps, the information in the records; and reference and use of the information by researchers and scholars.”¹⁷ Based on the notion that every record has a life, this concept sees the record as any organic being that once generated has an active life in maturity, is less active in old age and dies in the end. The final stage known as disposition, is the point at which the

¹⁵ Shepherd and Yeo. *Managing Records*, 1.

¹⁶ Atherton, Jay. “From Life Cycle to Continuum: Some Thoughts on the Records Management-Archives Relationship. *Archivaria* 21, (Winter 1985-86): 43.

¹⁷ Atherton, *From Life Cycle to Continuum*, 44.

decision to destroy the record or transfer it to an archives is made. Within the life cycle, most records progress from being current, to semi-active/current, to non-active/current.

The lifecycle represents T.R. Schellenberg's interpretation of a clear division between records and archives. In practice, "records managers have traditionally been responsible for managing the current and semi-current records and archivists have taken over responsibility at the archival stage."¹⁸ At the end of the records life cycle, records seen to have enduring value are transferred to an archives where they are subject to a further series of archival processes. This division between records management and archives raises some issues as to whether or not this is the most effective way to manage records, some of which will be transferred to an archive once they are no longer in use. Description for example, is an area of overlap that using the life cycle concept can lead to disjointed practice unnecessarily. For instance, "the records manager describes (through file plans and classification schemes, for example) the current/semi-current records for one set of processes; the archivist then re-describes them when they are transferred to the archives for a different set."¹⁹ By implementing a system of better communication between archivists and records managers, the process of description may only need to be done once.

Another issue arising from the use of the life cycle is that of electronic records. Previously, in a paper environment records were consistently physical items whereby they could be filed, stored, reviewed and conserved until they were no longer of use. In a paper record "the message (writing) is inextricably attached to the medium (paper), but electronic records (e-recs) are virtual – they only exist as binary digits randomly stored in a computer until you call them

¹⁸ Caroline Williams. *Managing Archives: Foundations, Principles and Practice*. (Great Britain: Chandos Publishing Limited, 2006), 11.

¹⁹ Williams, *Managing Archives*, 11.

up.”²⁰ Therefore, with electronic records the storage medium may frequently change, unless at the time of creation and capture the necessary maintenance processes have been planned. With this said, it should be stated that electronic records have material value. For instance, electronic records cannot exist without taking up space on storage media such as a CD, or a flash drive. It is stated as a point to outline the importance of creating processes to capture and maintain electronic records so nothing is lost. These processes include identifying the risk of technological obsolescence, migrating the data to new platforms, ensuring authenticity through updates, and determining the lifespan of the record. Still, the life cycle concept has value. It is a systematic approach that promotes a sense of order to the total management of recorded information. However, “strict adherence to its principles undermines any trend toward greater cooperation and coordination of archivists and records managers.”²¹ Archives and records management operations are interrelated and the life cycle concept does not always support this relationship.

Departing from the life cycle concept, the continuum model was first introduced in Australia as a unified model that would serve as an empirical response to the former’s inadequacies. These included the acknowledgement that records do not flow in only one direction. For instance, records that have been put aside may experience a new phase of business use, taking on a fresh currency when becoming active again. Records creation is not the first step required in a comprehensive model. Instead, system design should be the first and most crucial stage in a recordkeeping system. As previously mentioned, the paper environment did not require thinking about this issue. Some records may have value for cultural and historical

²⁰ Williams, *Managing Archives*, 12.

²¹ Atherton, *From Life Cycle to Continuum*, 47.

purposes while at the same time, are also of value for practical purposes. Therefore, “the passage of time does not necessarily imply that records cease to be of value for business.”²² The continuum model created by Frank Upward is seen as a paradigm shift and created in response to a series of questions regarding accessibility, boundaries, technology and the re-patterning of knowledge.

Upward, working with colleagues, created a model encompassing four dimensions and four axes. The dimensions include: “create, where records are created as a reflection of individual users’ needs; capture, where records are put into a context that makes them comprehensible and useable to immediate colleagues and clients of the creator; organize, where records are further contextualized to make them comprehensible and useable to a larger organization in which the creator works; and pluralize, where records are mediated to the widest possible audiences.”²³ Upward’s continua include: “identity, linking individuals to successively more distant organizational settings; transactionality, reflecting the classic hierarchy of functional analyses; record-keeping containers, linking documents to archives via intermediate stages; evidentiality, linking documentary evidence to concepts of corporate and collective memory.”²⁴ Upward’s ‘dartboard’ has been used to communicate these ideas. His writing supports the notion that unlike the life cycle model, the continuum concept is a non-linear, but rather dynamic and flexible and involves a multitude of variants. This model was “designed to

²² Alistair Tough and Michael Ed Moss. *Record Keeping in a Hybrid Environment: managing the creation, use, preservation and disposal of unpublished information objects in context*. (Great Britain: Chandos Publishing Limited, 2006), 3.

²³ Tough and Moss., *Record Keeping in a Hybrid Environment*, 4.

²⁴ Tough and Moss., *Record Keeping in a Hybrid Environment*, 4.

help build a form of activity theory for archivists out of their concern with the relationship between recordkeeping and accountability.”²⁵

Upward’s continuum suggests that there is value not only in the records themselves, but also in their methods of storage, organization and access. His concern focuses on the ways humans organize knowledge and information, the creation of memory banks including access to them when information within them is no longer directly present, how information is communicated through time and space and the symbols and meanings created to organize this information to provide access. Terry Cook illustrates the benefits by explaining how this approach integrates the public archives and private manuscripts traditions as well as those from Australia, Europe and Canada’s total archives approach. Through the four dimensions and four axes there is movement. For example, there is a movement inward from the fourth dimension to the first dimension. Furthermore, “through the dimensions, looking at the continuum as a plastic sheet, you can think across space and time as well as across the axes.”²⁶ Therefore, using space-time as a way to look at records provides a common approach to put forth various views and perspectives.

To strengthen the relationship between records management and archives and to ensure that records are properly cared for in their active phase through to the final decision to destroy or preserve them in an archive, a proper records management system must be in place. As suggested by Upward and other proponents of the continuum model, communication amongst archivists and records managers is essential. Both archivists and records managers need to view themselves as operating within an overarching record-keeping profession in which they work

²⁵ Sue McKemmish, Michael Piggott, Barbara Reed and Frank Upward. *Archives: Recordkeeping in Society*. (New South Wales: Centre for Information Studies, 2005), 202.

²⁶ McKemmish, et al. *Archives: Recordkeeping in Society*, 203.

alongside one another to manage and design systems that ensure the capture of records of enduring value. An example of this inter-professional cooperation can be seen on Library and Archives Canada's website whereby they outline the basic record management requirements. According to LAC's recordkeeping methodology, "LAC plays a key role to support and advise departments as they move towards compliance to the RK directive; comprehensive and clear disposition coverage is a key pillar of the RK Directive; and there is an opportunity to work collaboratively more closely and efficiently than ever to achieve significant results."²⁷

Information management is recognized as an evolving field that is the foundation of effective information sharing within institutions, outwardly to customers and suppliers, partners or the public.

The Records and Information Life Cycle used by LAC includes seven steps that provide a comprehensive overview of the key inputs, outputs, benefits and resources to improve IM initiatives. The seven stages are as follows:

- Stage 1: Information Management Planning
- Stage 2: Collection, Creation, Receipt & Capture
- Stage 3: Organization
- Stage 4: Use & Dissemination
- Stage 5: Maintenance, Protection & Preservation
- Stage 6: Disposition
- Stage 7: Evaluation.

²⁷ Library and Archives Canada. "Records Information Life Cycle," LAC website accessed on 7 June 2017. <http://www.collectionscanada.gc.ca/obj/007002/f2/007002-6000-e.pdf>

These stages are based on standard ISO 15489 section 7, which outlines records management requirements.

In order to institute and carry out a comprehensive records management program, ISO 15489 states that organizations must “support the continuing conduct of business, comply with the regulatory environment, and provide necessary accountability, organizations should create and maintain authentic, reliable and useable records, and protect the integrity of those records for as long as required.”²⁸ This includes such functions as determining what records should be created in each business process and the type of information that needs to be included; what form and structure records should be created and captured in and what technologies will be used; the type of metadata that should be created with the record and how it will be linked and managed through records processes; the requirements for retrieval and use of records; how to organize records to support use; determining the possible risks of failing to have authoritative records of activity; preserving records and making them accessible over time to meet the needs and expectations of businesses and the community; complying with legal and regulatory requirements, applicable standards and organizational policy; enduring that records are maintained in a secure and safe environment; ensuring records are retained only for how long they are needed or required; and finally “identifying and evaluating opportunities for improving the effectiveness, efficiency or quality of its processes, decisions, and actions that could result from better records creation or management.”²⁹

Essentially, ISO 15489 is a guidance standard to help outline the requirements of records management. It “sets out the characteristics of record-ness in broad terms (authenticity,

²⁸ISO 15489-1: 2016 – Information and documentation – Records management – Part 1: Concepts and Principles

²⁹ ISO 15489-1: 2016 – Information and documentation – Records management – Part 1: Concepts and Principles

reliability, integrity and usability) and provides an approach for creating recordkeeping systems that will deliver these desiderata.”³⁰ According to ISO 15489 an authentic record is one that can be proven “a) to be what it purports to be; b) to have been created or sent by the person purported to have created or sent it; c) to have been created or sent at the time purported.”³¹ The standard suggests that organizations should implement and document policies and procedures that control the creation, receipt, transmission, maintenance and disposition of records to guarantee that the creators of records are authorized and identified and that the records are protected against unauthorized addition, alteration and concealment. According to ISO 15489, this will ensure the authenticity of records.

Reliability is another key requirement of records management as suggested by ISO 15489. It states that a reliable record is one whose contents can be trusted to be a full and accurate representation of the transactions or facts to which they refer, and can be depended upon in the course of ensuing transactions or activities. Records “should be created at the time of the transaction or incident to which they relate or soon afterwards, by individuals who have direct knowledge of the facts or by instruments used within the business to conduct the transaction.”³² Records may be recalled for a variety of purposes. For instance, they may be used to understand what has been done in the past to help complete current or future actions, determine if something was done correctly, answer questions regarding an action or to justify an action, or to provide precedents, among other things. Therefore, records have a dual role. They have to be “able to act

³⁰ Tough and Moss., *Record Keeping in a Hybrid Environment*, 18.

³¹ ISO 15489-2: 2016 – Information and documentation – Records management – Part 2: Guidelines, 7.

³² ISO 15489-2: 2016 – Information and documentation – Records management – Part 2: Guidelines, 7.

as evidence of actions and they have to be able to ‘memorialize’ or stand as a representation of action which can be recalled.”³³

Integrity, another key records management requirement as outlined by ISO 15489, refers to its being complete and unaltered. It states that a record must be protected against unauthorized alteration. Furthermore, “records management policies and procedures should specify what additions or annotations may be made to a record after it is created, under what circumstances additions or annotation may be authorized, and who is authorizing them.”³⁴ Every authorized addition, annotation, or deletion to a record must be explicitly indicated and traceable. Thus, recordkeeping professionals share with the legal profession “an interest in the document as an object that contains evidence and have a special interest in managing it in ways that maintain its integrity.”³⁵ Documents recording personal and organizational activities serve as evidence and are gradually being considered in a recordkeeping sense.

Usability is the final records management requirement defined by ISO 15489. It states that a usable record is one that can be “located, retrieved, presented and interpreted. It should be capable of subsequent presentation as directly connected to the business activity or transaction that produced it. The contextual linkages of records should carry the information needed for an understanding of the transactions that created and used them. It should be possible to identify a record within the context of broader business activities and functions. The links between records that document a sequence of activities should be maintained.”³⁶ To be able to use a record, one must be able to interpret it. Thus, good records management practices will extend the reach of

³³ McKemmish, et al. *Archives: Recordkeeping in Society*, 106.

³⁴ ISO 15489-2: 2016 – Information and documentation – Records management – Part 2: Guidelines, 7.

³⁵ McKemmish, et al. *Archives: Recordkeeping in Society*, 91.

³⁶ ISO 15489-2: 2016 – Information and documentation – Records management – Part 2: Guidelines, 7.

records over time, providing society with “ways of interpreting actions and records relevant to the time at which they were created, but not necessarily apparent or understandable to us today.”³⁷ Therefore, the scope and functions of records should be documented over time where there are many record series from multiple organizations to foster use.

In the past, paper has dominated as a record storage medium. The paper environment has produced records that do not rely on computers or other technologies to be read. With the proper storage and preservation, paper based records offer a longevity that is not found in other records. However, the digital age has seen the production of various new technologies that enable business to proceed more efficiently and without the use of paper. The digital environment and more specifically electronic records, presents the records manager with new challenges “not least in their dependence on computer software, hardware, and operating systems, and in the measures that are needed to ensure their continuing accessibility in a world of rapid technological change.”³⁸ Electronic records can pose problems that complicate their effective management. For instance, information redundancy in machine-readable and human-readable formats is not uncommon when comparing the electronic and non-electronic records of a given organization. Word processing software, database management systems and other computer programs can be used to create diverse paper documents. These records are created from digital information that they either partly or fully replicate. A word processed document for example, may be created by one employee and saved on the hard drive of a computer. At a later date, this document may be retrieved, edited and resaved as a new electronic document replacing the old one. The final version of this document may be printed and used as a paper copy for further revision,

³⁷ McKemmish et al. *Archives: Recordkeeping in Society*, 111.

³⁸ Shepherd and Yeo. *Managing Records*, 20.

circulation or filed. It may be photocopied or scanned to microfilm as well. All of these processes lead to information redundancy. In some cases, redundancy is useful or even necessary. For example, multiple versions of a document both in electronic and paper form might be necessary until a final version is drafted. Each version is part of the document's history. However, information redundancy can pose subtle and obvious problems for records managers. Space consumption in the forms of filing cabinets or floor space for paper records and media space for electronic records, "the difficulty in controlling the multiple human-readable and electronic versions of information and identifying the version required for a given purpose, and the need to establish and coordinate retention periods for all versions" are examples of how information redundancy creates challenges for records management.³⁹

Another problem posed by the digital age for recordkeeping is unstructured electronic records. On one hand, "structured electronic records" is a phrase commonly used to describe the contents of computer databases that have a prescribed, repetitive format. More specifically, an example of this would be large enterprise records database management systems such as the Records Centre in SharePoint. Computer databases need an organized, uniform structure to manage the information produced by an organization. Within a database, the individual units or records are organized into fields. The record structure is determined at the time the database is created. On the other hand, "unstructured electronic records" have no prescribed organization or format. PowerPoint, photographs or audio recordings are all examples of unstructured electronic records. There are some electronic sources such as spreadsheets or Web pages that are harder to determine whether they are structured or unstructured. Although they lack "the uniformity of

³⁹ William Saffady, *Managing Electronic Records 4th Edition*. (New York: Neal-Schuman Publishers Inc., 2009), 11.

database records, spreadsheets, Web pages, and email messages are perhaps more accurately characterized as “semi-structured.”⁴⁰ In practice however, these records are considered to be unstructured as are most records excluding databases. The systematic management of unstructured records poses many challenges for recordkeeping. Unstructured records are numerous and varied. They are created and stored by individual computer users without information technology (IT) involvement or direction to determine how information will be stored, accessed, backed up and archived. Often they are saved on local or network storage. They are often less organized than structured records and rarely transferred to archives, instead they are often retained indefinitely or discarded carelessly.

Another challenge facing recordkeeping in the digital age is system dependency. Electronic records contain machine-readable, or digitally encoded information originating from electronic signals. This type of machine-readable information “is represented by microscopic alterations in the physical or chemical characteristics of magnetic, optical, or solid-state storage media, which are the visible carriers of electronic records.”⁴¹ This results in the substantial challenge that specific devices and software are required to record and read electronic storage media and the information they contain. Video and audio for example, are intended for playback by particular devices. Therefore, records managers must understand both characteristics and capabilities of systems that store and create machine-readable information. The usefulness of electronic records is dependent on the continued availability of compatible hardware and software. As Elizabeth Shepherd and Geoffrey Yeo illustrate, “electronic records present the records manager with new challenges, not least in their dependence on computer

⁴⁰ Saffady, *Managing Electronic Records*, 13.

⁴¹ Saffady, *Managing Electronic Records*, 13.

software, hardware and operating systems, and in the measures that are needed to ensure their continuing accessibility in a world of rapid technological change.”⁴² The ability to read and process electronic records in the future is complicated by technological advances producing product obsolescence or discontinuation, among the other challenges facing recordkeepers in the future.

Media stability problematizes recordkeeping in the digital age, as the useful life of paper and photographic media equals or exceeds the retention periods for information that such media contain. Whereas, the “useful lives of magnetic, optical, and solid-state media that store electronic records are generally shorter than those of paper and photographic films.”⁴³ It has been found that the stable life spans of electronic media are shorter than the retention periods for non-electronic records. For instance, it is often necessary to recopy or migrate electronic records to new media at various scheduled intervals to enable their use over an extended period of time. This process requires staff time and resources and although it might be necessary at some point in a paper record’s lifespan, it is unlikely it will be in as short of time as when an electronic record would need to be migrated. Linked with the problem of physical deterioration is technical obsolescence. Binary code of a digital object is only useful if it can be rendered into an intelligible format. This process “depends on the hardware, used to access a bitstream from a piece of physical media, and software, which decodes the bitstream into an intelligible object, such as a document or video displayed on a screen, a printout or audio output.”⁴⁴ Technological obsolescence “occurs when either the hardware or software needed to render a bitstream useable

⁴² Shepherd and Yeo. *Managing Records*, 20.

⁴³ Saffady, *Managing Electronic Records*, 14.

⁴⁴ Mike Kastellic. “Practical Limits to the Scope of Digital Preservation.” *Information and Technology and Libraries (Online)* 31:2 (2012): 64.

is no longer available.”⁴⁵ Data loss and technological obsolescence are at the core of digital preservation. The risk of physical deterioration is constant. At its most basic level, a digital file is merely binary code written to some form of physical media. Files become partially, or fully unreadable when the physical medium of the digital file decays to the point where one or more bits lose their definition. This, along with computer viruses, human action such as accidental deletion or alteration, and environmental dangers such as flooding are all things that can impact data preservation. Other strategies to overcome obsolescence include pre-emptively converting data to standardized formats (normalization) or avoiding conversion and instead using virtualized formats (emulation). Each strategy has its limitations. For instance: “migration and normalization are intensive processes, in the sense that they normally require some level of human interaction. Any human-mediated process limits the scale of an archival institution’s preservation activities, as trained staff are a limited and expensive resource. Emulation postpones the processing of data until it is later accessed, potentially allowing greater ingest of information.”⁴⁶ These issues must be considered by records keepers going forward to ensure proper digital preservation.

One of the greatest concerns for recordkeeping impacts both electronic and non-electronic records, albeit in different ways. The economical storage of recorded information has been an issue since the 1950’s. Storage space for both paper and electronic records can be problematic to locate and can be costly. The proliferation of electronic records has created an increased need for storage equipment and media. Although the cost of computer storage has been increasingly declining, for instance, in “2008, one terabyte of fault-tolerant disk storage could be purchased for about \$4000....assuming that the cost of hard disk storage falls by 30

⁴⁵ Kastellic, *Practical Limits*, 64.

⁴⁶ Kastellic, *Practical Limits*, 64.

percent per year, which is slightly less than the average annual rate of decline in computer storage costs since the early 1990's, one terabyte of fault-tolerant disk storage will cost less and \$300 within seven years, a widely encountered retention period for many types of business records."⁴⁷ Therefore, in the future the retention guidance for some types of electronic records will be higher than the cost of computer storage. Although storage has become comparatively more affordable in the recent past, organizations must still devote considerable resources to store digital records. As well, the proliferation of digital data is accelerating and will to continue to accelerate with the increased use of digital records. This along with the aforementioned challenges pose a problem for both records managers and archivists as to determining what records should be kept and how in the digital age this will be possible.

Another challenge facing recordkeeping in the digital age is scalability. Currently, the limitations of a classification scheme as a viable records management tool are evident in that developing and applying it requires time and expertise that are hard to come by. Organizations are becoming larger and more complex as is the diversity of information obtained and produced within them. The demands being placed on a core part of records management are not sufficiently scalable. The records manager cannot possibly meet all the challenges of creating, maintaining, and applying the classification scheme. In addition, the breadth and depth of knowledge needed for this task is unrealistic for one person to achieve. "The current centralized model revolving almost solely around the records manager risks creating an unacceptable and unavoidable bottleneck in the future."⁴⁸

⁴⁷ Saffady, *Managing Electronic Records*, 15.

⁴⁸ Steve Bailey. *Managing the Crowd: rethinking records management for the web 2.0 world*. (London: Facet Publishing, 2008), 78.

The aforementioned challenges for recordkeeping in the digital age have set the stage for questions surrounding the profession itself and the methodologies underpinning established recordkeeping functions and structures. Steve Bailey suggests that numerous principles underpinning established records management theory are out of date and not suitable for information created in a digital records environment. For this reason, he states that critical examination of the profession is necessary to “review, reflect and reinvent the way in which procedures are performed...in response to the opportunities offered by new technology.”⁴⁹ Therefore, records managers must determine whether or not managing new media such as email for example, can be done within the existing tenets of records management theory. This also highlights a critical point that challenges records management in a Web 2.0 world: what is now considered a record? Are email, social media or wikis considered within the responsibilities of the records manager? Furthermore, how does legislation such as the Freedom of Information Act (2000) (FOI) impact how we manage records? These questions need to be addressed by current and future records managers to keep pace with the changes that the digital age has presented and continues to present.

Currently, many organizations rely on an EDRM (Electronic Document and Records Management) system to manage their electronic records. EDRM systems enable organizations to manage documents and records throughout the document’s lifecycle from creation to disposition. Once a document has undergone the processes to become a formal record within the organization, best-practice retention policies are enforced to determine the progression of the second half of the record life cycle. EDRM systems offer a means for storage of electronic

⁴⁹ Bailey, *Managing the Crowd*, 54.

records but “when delivered appeared to offer little or no business advantages to end-users, who were waiting eagerly for the arrival of “line of business” workflow applications.”⁵⁰ However, EDRM systems have failed to resolve the issues of media migration and software obsolescence. In response to these issues, David Ryan suggests that record managers need an understanding of current IT trends and business processes beyond the records centre. In his opinion, EDRM systems are products of the moment. He believes this moment has passed for many business processes. If records managers accept this analysis, “it will make it easier to adapt to the new requirements of business in the twenty-first century and the more sophisticated technologies available for supporting the “virtual” or mobile organization.”⁵¹ Similarly, James Lappins argues that post 2010, the records management community has had to realign its expectations of EDRMS models. He states that the dream of corporate EDRMS was built on the foundations of DIRKS (The Design and Implementation of Record Keeping Systems) and the records continuum. While he is not claiming that these theories are invalid, he states that much has been learned in the records management community since 2000 when EDRMS were emerging as a solution for digital records. For instance, “organizations have an information archaeology, not a information architecture.”⁵² Managing all electronic records in an organization may result in new functions and has led to the creation of new job titles developing in a variety of information management specialist roles. This includes virus checking, mobile working security assessments, information governance, and data storage management among others. With regard to the future directions “records management lies at the heart of information-centric data centres,

⁵⁰ David Ryan. “The Future of Managing Electronic Records.” *Records Management Journal*. 15:3 (2005): 128-130, 175-176.

⁵¹ Ryan, *The Future of Managing Electronic Records*, 176.

⁵² James Lappin. “What will be the next records management orthodoxy?.” *Records Management Journal* 20 No.3 (2010): 254.

updating and extending the master data that informs all end-user and infrastructure applications, supported by audit trails and retention schedules.”⁵³ Therefore, the promise that EDRMS would replace shared drives within organizations and provide structure and stability across the board, is not happening in his opinion as shared drives seem to be used frequently despite EDRMS. He also states that employees have a broad selection of options as to how and where they will keep their records. This creates a problem when trying to enforce retention and access rules. Similarly, “organizational boundaries are becoming more porous – the days are gone when an organization’s entire set of information systems were kept on a set of servers within its firewalls. Cloud computing and the era of the Internet as an operating system has made it easier to design and operate information systems that cross-organizational boundaries. The move towards shared services supports this trend.”⁵⁴ Therefore, the confinement of the scope of an EDRMS to that of the business classification is made problematic. Finally, the volume of employee-generated information is rising. Emails that serve as documentation of business function for example are generated at a rapid rate and such records beg the question of whether individuals will be able to follow the records management disciplines required for the EDRMS model to be successful. If records managers are to successfully manage electronic records in the future they will need to follow the lead of IT security personnel that are already taking advantage of the increasingly sophisticated data centre based management tools used to build a controlled information environment. Records management software provides a way to achieve a firmer grip on the increased volume of many kinds of records. However, without “a records management policy in place along with the appropriate retention and destruction rules for the records, the software will

⁵³ Ryan, *The Future of Managing Electronic Records*, 176.

⁵⁴ Lappin. *What will be the next records management orthodoxy?*, 255.

be useless.”⁵⁵ These are some of the issues related to EDRMS that will be considered in the following chapters when determining if one is a viable records keeping solution for Great-West Life.

The rise of Social Media, or Web 2.0, has not only changed our world over the past two decades but has “also demonstrated how many of the techniques and methodologies currently employed by records managers may cease to be relevant, or practical, in this changed world.”⁵⁶ Steve Bailey proposes that in order to meet these challenges a system he calls Records Management 2.0 should exist. This would be a step-by-step practical guide to using records management principles for managing digitally based information and could be adopted by any organization. However, this is a model for an ideal world, as the right tools to make it a reality have not been built. Record keepers need to address the challenges new technologies and digital records have posed for records management and archives. As previously mentioned, they should follow the lead of those within the IT field trying to find solutions to similar challenges. What might serve recordkeeping best is moving away from the rigid methodologies underpinning current records management and archival practices and thinking more conceptually about adaptability, reusability, and extensibility.

Currently, this burden is placed solely on records managers; however as the IT community has discovered, a greater degree of trust can be placed on users themselves through folksonomies and tagging. Tagging information for resource discovery, based on user-defined folksonomies, is infinitely scalable, and becomes more effective as more users participate. For instance, “if only three people have tagged a particular resource as featuring a tree while another

⁵⁵ Priscilla Emery. “Why Records Management?” *Records Management Report*. (CMS Watch: 2005).

⁵⁶ Bailey, *Managing the Crowd*, 123.

two have tagged it as being a bush there may well be doubt as to which it actually is; but if 1400 users have tagged it as a tree and only seven as a bush the chances are that we can place our trust in the wisdom of the crowd.”⁵⁷ Social Media applications such as Flickr or Pinterest have user-based tagging tools, the former being used by some archives already for such purposes. The benefit of tagging is that it relieves the records manager from the overwhelming task of creating and maintaining a metadata schema and file plan qualified to handle hundreds of millions of items ranging between a multitude of systems, offering scalability. These possibilities could help records managers to deal with the high volume of data in the form of various types of media as well as promote usability and further interest in the archives.

In keeping with the theme of the user as a way to keep up with managing records in a Social Media context, harnessing the views of users and aggregating them to address all aspects of the management of information throughout its lifecycle, is another way to ease the overwhelming tasks of records management. A strong policy framework is another aspect needed in past records management and with the proposed Records Management 2.0. Technological solutions “no matter how innovative, must still exist and operate within a comprehensive and cohesive policy framework in order to be effective and fit for purpose.”⁵⁸ Social Media have brought fundamental changes to the relationship between individual users and the organization they work for. Therefore, clearly articulated policy statements that are appropriate to the individual circumstances within organizations will be critically important. Marketability is another aspect that should be incorporated into future recordkeeping practices. Records management solutions in the Social Media age need to ensure they meet the needs of all

⁵⁷ Bailey, *Managing the Crowd*, 130.

⁵⁸ Bailey, *Managing the Crowd*, 147.

stakeholders and potential clients rather than being dependent on a specific group or message. The former includes IT staff, content creators, mobile/flexible workers, and ‘new-media’ developers among others. The future of records management within the digital age is both exciting and overwhelming with the multitude of technology and programs that are being made available. A strong relationship between IT and records managers is a method to ensure the greatest success in harnessing the power of Social Media and the future of digital recordkeeping and archiving.

The benefits of good recordkeeping are endless to organizations and businesses dealing with active records and records of enduring value. Records management crosses numerous disciplines such as knowledge management (categorization and indexing), the legal profession (understanding management policies so companies can avoid potential criminal penalties) and infrastructure management (vital records preservation and the creation of a disaster plan). Recently “dramatic headlines have made it quite apparent that records management (or lack thereof) is an essential activity to ascertain and confirm the credibility of many business transactions and government activities.”⁵⁹ The increase in electronic records within a Social Media environments, in addition to email, has meant that accountability is at the forefront of records management.

Impact of changing technology

As previously mentioned, technological evolution has had a major impact on records and records management in all stages of the records life cycle. Records that were once produced solely on paper, over time, have gone through a digital transformation. Understanding this

⁵⁹ Emery. *Why Records Management?*

transformation in the broader sense of changing technology is important however, the evolution of the computer itself and the types of documents it produced along the way should not be minimized. The evolution of the computer not only changed the way records were produced, but the ease of computing meant that records could be produced faster and in ever larger quantities, thus impacting the maintenance and storage needs of records. The relationship between documents and the history of technology is intertwined, continuously evolving alongside one another, propelling each other forward out of necessity as the demands of innovation grow at a rapid rate.

In his study of the history of the computer, John Agar explains the relationship between files and technology and how it has evolved. He states, “First, files are information technologies: they are material artefacts that store and organize information. A file is part of a technological system: its number refers to its place in a registry. The efficient organization of registries for a particular department at a particular time was never a trivial problem. And the file, as an information technology, would not work without a range of associated devices: ink pens, typewriters, standardized paper, Treasury tags. The civil servant, certainly in this crude sense but also in other ways that are explored in this book, has always been a technophile.”⁶⁰ While Agar’s book has a different purpose, his insight on the relationship between public administration, the material culture of bureaucracy, and the history of technology sheds light on the interconnectedness of recordkeeping and computing. He examines the shift in British government in the early to mid 1800s from manual copying to using copying presses to create documents as departmental growth rate increased administrative paperwork. Once again

⁶⁰ John Agar. *The Government Machine: A Revolutionary History of the Computer*. (Cambridge, Massachusetts: MIT Press, 2003), 1.

technology and a growing demand for documents forced a technological solution to ease administrative burden. The typewriter was the latest answer to this problem. The Remington Factory, in the United States, began producing typewriters in 1874, leading to “the beginning of the typewriter revolution in American offices and increasing interest across the Atlantic,”⁶¹ in the 1880s. This technological efficiency led to more jobs for typists to alleviate the growing pressure of paperwork within government agencies. A driving force behind technological advancement in the office was, and still is, efficiency. In Agar’s example, its national efficiency required by the government to keep up with the bureaucratic demands of running a country, but the desire to produce more of something faster, on a larger scale with increased efficiency is applicable across both private and public organizations.

In the 1870s in the United States, systematic management, “the ideological managerial component to the big corporations that displaced and replaced small, informal family firms”⁶² brought upon new principles within the workplace that would again demand the need for technological advancement. Systematic management was based on two principles: “a reliance on systems mandated by top management rather than on individuals and the need for each level of management to monitor and evaluate performance at lower levels.”⁶³ The shift to systematic management ushered in the introduction of office machinery as well as technological change. Its principles underpinned the growth of reporting and communication between departments and people within organizations that led to the proliferation of recorded information in the form of memos, notes and other forms of documentation produced in the course of business. In turn, the reproduction of these documents was increased by the growth in production technology such as

⁶¹ Agar, *The Government Machine*, 62.

⁶² Agar, *The Government Machine*, 144.

⁶³ Agar, *The Government Machine*, 144.

the typewriter, followed by the computer as well as reproduction technology, such as the rolling copier, carbon paper, and the photocopier. From the perspective of a corporation, whose goal is to make a profit, the speed of processing was of utmost importance. This would be more fully realized with the invention of the stored-program digital electronic computer in the 1940s.

The concept of a stored-program digital electronic computer was the result of the team who built the ENIAC, constructed at the Moore School of Electrical Engineering at the University of Pennsylvania. Ordered by the United States military, the ENIAC was built to alleviate the “massive computational backlog in the calculations of the ballistics tables necessary to operate the armaments rolling out of the munitions factories.”⁶⁴ From here, research on the computer proliferated and mathematicians, electrical engineers and others attempted the concept of creating a stored-program digital electronic computer in both the United States and Britain. Though it would not be realized until F.C. Williams and his colleague Tom Kilburn used a cathode-ray tube known as the “Williams Tube” that created a means of storing, manipulating, and retrieving electronic data. At the University of Manchester in 1948, Williams and his team built and operated the first electronic-stored program. This gave way to the computer manufacturing industry in both the United States and Britain in the late 1940s and early 1950s. In the United States alone, around thirty firms entered the computer business.⁶⁵ It would not be until after the 1970s though, that the computer would be used to its fullest potential with the creation of real-time systems. Responding to external messages in “real-time” meant that the computer would respond within seconds or faster. Up until its creation, “no previous office technology had been able to achieve this speed, and the emergence of real-time computers had the potential for

⁶⁴ Agar, *The Government Machine*, 264.

⁶⁵ William Aspray, Martin Campbell-Kelly, Jeffrey R. Yost, and Nathan Ensmenger. *Computer: A History of the Information Machine*. (New York: Westview Press, 2013), Part 2, Chapter 5.

transforming business practice.”⁶⁶ As with the office technology that came before, the computer enabled administrative efficiency, and proliferation of document production. Currently, the computer has not only increased the amount of records (paper and born-digital) being produced, but has changed the definition of a “record” with things such as emails and electronic signatures among others.

The records that are received and generated by organizations in the development of business are necessary to serve as evidence and document day-to-day procedures. The aforementioned history shows how records management has evolved to accommodate changing policies, procedures, technology, and record media. This has enabled them to continue to serve as a tool for accountability whereby organizations can ensure that they are following best practices. The efficient storage and retrieval of such information is essential to the success of businesses as has been outlined, but also to the success of society in general. Over time, corporate recordkeeping has evolved to meet the changing needs of the types and formats of records generated. This is especially the case with the shift from paper to electronic records. Sound record keeping and archival practices have enabled records managers and archivists to maintain records in a variety of formats for business purposes as well as to preserve corporate memory. The evolution of recordkeeping since the late nineteenth century to the present is exciting and continues to evolve. By remaining aware of best practices and new technology, corporations will meet regulatory needs as well as foster employee engagement and historical interest in their archival collections. This will be explored further in the following chapters.

⁶⁶ Aspray et al., *Computer: A History*, Part 3, Chapter 7.

Chapter 2 – An Evolution of Firsts: a History of Great-West Life, its Records, and the Technology that Helped Create Them

The history of the life insurance industry began in the nineteenth century in Britain. Understanding this history helps situate Great-West Life within the Canadian context of the industry. The Great-West Life Assurance Company was incorporated by an Act of Parliament on August 28, 1891, and has remained a pillar of industry in Winnipeg for 125 years. The Company's founder, Jeffry Hall Brock was a 29 year old businessman from Ontario. His vision was to create accessible insurance for farmers and businessmen who at the time were unable to get the money they needed to grow. Thus, Great-West Life became a western-based alternative to Eastern life insurance competitors and has remained a successful company to the present day.⁶⁷ The success of Great-West Life can be attributed to many things, including their progressive nature as a Company, leading to many firsts with regards to records and technology that have brought them to where they are today.

A General History of the Recordkeeping Needs of the Life Insurance Industry

The history of the life insurance industry dates as far back as the early eighteenth century when the Amicable Society for a Perpetual Assurance Office was founded in London in 1706. By the first half of the nineteenth century, “the barriers to entry into the insurance business were low, and small insurance companies proliferated in Britain.”⁶⁸ The speculative booms of the 1820s and 1840s saw the opening of several dozen new life insurance companies, however many of them would not remain open for long. The average insurance company did not have a large

⁶⁷ Richard E. Bennett, *A House of Quality it has Ever Been: The Great-West Life Assurance Company*. (Canada: The Great-West Life Assurance Company, 1992), 27.

⁶⁸ Martin Campbell-Kelly. “Large-Scale data processing in the Prudential, 1850-1930.” *Accounting Business and Financial History* 2, No. 2, (1992): 118.

number of policy holders, Martin Campbell-Kelly projects only around one thousand or two and the largest no more than ten. Furthermore, the “typical head office consisted of a few tens of clerks at most and no office mechanization whatever.”⁶⁹ This would change, however, with the creation of industrial assurance in the 1850s. Between 1780-1830 the country experienced the effects of the industrial revolution, which increased the mobility of labour around the country, but especially in booming industrial towns. For example, Hugh C. Baker, founder of The Canada Life Assurance Company (1847) saw his Company prosper as the economy recovered. Baker’s vision “was vindicated as the public warmed to insurance. In 1850, the board reduced premium rates; by now more than 40% of the policyholders were working class people.”⁷⁰ The labouring class did not have the luxury of a high salary, enabling money to be put away for family members in the event of sickness or death. A great “social fear of the ‘industrial classes’ was that of either going to a pauper’s grave or else dying and leaving dependants to carry the burden of funeral expenses.”⁷¹ ‘Burial Clubs’ were common at this time for the working class. They were planned and funded often by trade unions or friendly societies. However, not all were trustworthy options as many were based on “social rather than actuarial principles and were liable to embezzlement and fraud.”⁷² Therefore, the labouring class had limited options before life insurance. They could take their chances with a ‘burial club’ in the hopes their funeral expenses would be paid for and not be the victims of fraud, or they faced the likely reality that their family would be left with expenses post-mortem that they might not easily recover from.

⁶⁹ Campbell-Kelly, *Large-Scale data processing*, 119.

⁷⁰ Tyrwhitt, Janice. *Small Things Grow Great: The First 150 of The Canada Life Insurance Company Founded in 1847*. (Canada: The Canada Life Assurance Company, 1996), 10.

⁷¹ Campbell-Kelly, *Large-Scale data processing*, 119.

⁷² Campbell-Kelly, *Large-Scale data processing*, 119.

By 1852, the unsatisfactory nature of ‘burial clubs’ were widely recognized, as was the social value of insurance. Therefore, a “parliamentary select committee of 1852 stimulated the extension of life insurance to the ‘humbler classes’.”⁷³ This insurance was written on sound actuarial principles and was subject to government regulation, ensuring the reserves and the liabilities would line up. Thus, the term ‘industrial insurance’ became commonly used, referring to the insurance of the industrial classes, and essentially referring to burial insurance. The legislation that would follow “defined industrial assurance as being life insurance for which premiums were collected by insurance agents directly from the homes of the insured at intervals of less than two months.”⁷⁴ Capitalizing on this new type of insurance offering, The Prudential Assurance Company of London was the first to truly see success. The company was founded in 1848, but did not begin underwriting industrial insurance until 1854. Prudential realized early domination of the market and became a business model for others in the industry.

With Prudential’s growing success, came a growth in the records the company was producing. Between “1857 and 1864 the number of industrial assurance policies issued by the Prudential grew from 6,839 to 109,907.”⁷⁵ By the 1870s the company was issuing approximately 300,000 new policies annually. This dictated the need for a clerical staff of approximately one hundred men, and the company began moving towards hiring their first female employees. As we will see in the Great-West Life example, company secretaries are often a driving force in the insurance industry. In Prudential’s case, Henry Harben “laid great emphasis on reducing expenses by efficient office administration: ‘success lies in the most stringent attention to the

⁷³ Campbell-Kelly, *Large-Scale data processing*, 119.

⁷⁴ Campbell-Kelly, *Large-Scale data processing*, 119.

⁷⁵ Campbell-Kelly, *Large-Scale data processing*, 120.

internal economy and to the method and regularity observed at the chief office.’’⁷⁶ There must have been merit to his outlook, as Prudential was issuing half-a-million policies annually by 1873, had doubled in size and had a large office staff that included two hundred clerks reporting to seven managers, who were organized into several functional groups. As successful as Prudential was, it would not be until the 1920s when large-scale mechanization was introduced that the real growth would happen. As will be seen further in the chapter with the Great-West example, technology improved administrative work, which improved business, which contributed to the growth in records as well as the type of records produced. This is a cycle that continues to repeat itself even today.

Looking back to 1871, it is clear that Prudential was ahead of its time with regards to records management. Already in business for almost twenty years, a records management system would need to be in place given the years of records they had acquired. By this time, the company had left their bound ledgers in the past and opted to record policy details on paper slips and cards for processing convenience. Staff were comparable to human computers, handwriting the details of each policy on to a manila card. They were then processed and sorted by hand. Staff used a colour coding system enabling cards to be found as efficiently as possible. Already by the late 1800s being able to find and access records with ease was of utmost importance. This example is important to business records management history as “the use of cards for record keeping was an innovation that pre-dated the commercial development of card-based and loose-leaf record systems, such as Rand-Kardex and Kalamazoo, by about twenty years.”⁷⁷ Furthermore, Prudential’s correspondence department wrote all letters by hand. This was not

⁷⁶ Campbell-Kelly, *Large-Scale data processing*, 121.

⁷⁷ Campbell-Kelly, *Large-Scale data processing*, 122.

uncommon at the time, especially given the fact that this department pre-dated the typewriter. Consisting of twelve female clerks, a volume of several hundred was produced daily. This created a baseline for human capabilities in producing records versus the technology that would follow.

Another record producing task at Prudential in 1870, and one said to be the most demanding, was the legally required ‘quinquennial valuation of policies in force. This was the first administrative function to use any form of mechanization at the company. The two calculating machines accounted for “more than eight thousand sheets of calculations, and the passing of the cards for each policy in force through the hands of sixteen persons.”⁷⁸ However, these early calculating machines (arithmometers) were unreliable, but nonetheless, show the desire early on to mechanize human functions to improve processes, which in turn, impacted the volume of records produced. By 1877, business had grown to 2.5 million policies in force, which meant that the quinquennial valuation was a much larger undertaking than just seven years before. A card system would be used for the first time to keep up with the volume. Once again an example of evolving records management practices is provided in this new system. To paraphrase Harben’s description of the process in an interview with the *Insurance Guardian* in 1877, the 2.5 million cards were copied and checked. The results were collected in a hundred thousand schedules, each portion checked, with many even double-checked. Of the 3,215,000 separate entries and 916, 412 computations, and almost every one being double checked, there were 4,635,894 calculations in total. Harben states that to complete this work, 24 arithmometers were needed. The sheer volume of cards produced by this machine during this process greatly

⁷⁸ Campbell-Kelly, *Large-Scale data processing*, 122.

emphasizes the need for records management. Without a system in place such as the aforementioned colour coding of the cards, records at this volume would be very hard to find.

In 1879 Prudential moved to their new office building to accommodate a growing staff based on their success in the industry. The new building would be necessary to house a growing number of records and eventually, new office technology. By the 1880s, competitors in the field had rapidly started to emerge not only in Britain, but in the United States and Canada as well. This did not hinder Prudential's business, and they continued to set an example as a model of success in various areas including records production, management, and technology. 1892 would be the last year that the quinquennial valuation would be completed only every five years, making the process more efficient, and spreading out the volume of records to become more manageable.

By the last quarter of the nineteenth century, the calculating machine (arithmometer) and the typewriter were the two most important office machines. While Prudential purchased their first typewriter in 1875, they did not employ them as office machinery, instead opting for female staff and junior clerks to carry out clerical work by hand. As the century was coming to a close, The Prudential in Britain was slowing down with their technological innovation. However, this would not be the case for Prudential's namesake in New York. In 1895, the "American Prudential's J.K. Gore – 'an extra-ordinary innovator as well as an eminent actuary' – developed a complete punched-card system for policy records and valuations."⁷⁹ Around the turn of the century, Metropolitan Life, also in New York, implemented the Hollerith punched-card machines. This modern punched-card machine would become a popular choice for many

⁷⁹ Campbell-Kelly, *Large-Scale data processing*, 129.

insurance companies within ten years. Rivaling the Hollerith machine at the time were the Powers machines including card punches, tabulators and sorters. By 1923, “Prudential had by far the largest punched-card machine installation in the country – 100 punches, twenty-four sorters and thirty five tabulators.”⁸⁰ While it may have taken 60 years for Prudential to move away from the manual data-processing methods of the 1870s, by 1930 they were a fully mechanized office.

This progression of office technology also meant a progression in the types of records produced and a need for a structured records management system. By examining the Prudential example, one can see the progression of insurance records over time based on changes in technology. In 1860, records were produced in the form of ledger entries and by 1870 had moved to handwritten cards. It would not be until 1920 that punched cards would become the new record type followed by a shift to computer records in the 1960s. The concept of a file or database also evolved during this time in conjunction with records and technological evolution. However, it should be noted that while there was a drastic change in form, the function remained the same. For instance, this was a description of the storage card files:

“Still another block of buildings at the rear of all has to be noticed before the entire premises are exhausted. A deep well, 20 ft. wide, and having windows opening upon each floor, separates the middle block from this last one, in which there are rooms corresponding to the floors of the general offices. These rooms, covering in extent a quarter of an acre, are held to be fireproof, being constructed entirely of firebricks and iron. Here are kept the valuation cards, so arranged as to be accessible at a moment’s notice, and there are removals daily for lapsed policy claims. Those actually in the pigeon-holes represent for calculation the risks of the company.”⁸¹

This example is evidence that while the form, or method may change over time, the core functions of records management stay the same. Dedicated space for records organized in rooms

⁸⁰ Campbell-Kelly, *Large-Scale data processing*, 131.

⁸¹ Campbell-Kelly, *Large-Scale data processing*, 135.

by corresponding office floors, fireproofing the space where records are kept as a disaster prevention method, arranging valuation cards to be easily accessible, and finally the removal of lapsed policy claims as a method of disposition are all functions that are present in offices with dedicated records management staff today. By the 1920s, records management had evolved once again. Records were now “held on punched cards that were stored in steel filing trays in fire-proof vaults.”⁸² In the Prudential example, these types of records had grown to 30 million cards by 1948. Once computers were introduced by the 1960s and 1970s, file and database management changed once again as records were increasingly stored on computer disc. Today, records are stored on computers themselves using their hard drives, on external storage both physical and in the cloud, and using ERDMS.

The history of life insurance in Canada can be told from various perspectives as there were multiple companies formed in the mid to late 1800s. A common theme, however, is proximity. As in the case of Jeffry Hall Brock, many of the founders of other prominent Canadian insurance companies started their businesses in response to the lack of agencies in close proximity to the places they resided. Given the lack of transportation options available to those living during that time, it is hard to imagine taking a six day trip just to sign a life insurance policy as in the case of The Canada Life Assurance Company founder, Hugh Baker’s situation. Baker suffered from asthma, and therefore, had to apply in person and undergo a medical examination. Living in Hamilton, Ontario, the closest available option was the Montreal branch of a British insurance Company. However, Baker decided to travel to New York as it was easier to reach and the city had multiple insurance firms. Thus, “Hugh Baker set out on a five-hundred mile, six-day long journey through exceedingly rough country. From Hamilton he rode

⁸² Campbell-Kelly, *Large-Scale data processing*, 135.

horseback along gravel roads to the Niagara frontier. Across upstate New York he travelled by stagecoach, lurching behind a four-horse team between wayside inns. At Albany he boarded a steamboat for the cheaper and more comfortable voyage down the Hudson River to New York City. There he bought \$1,000 of life assurance from the *National Life Assurance Society*, paying 1% more because the Canadian climate was reputed to be hazardous to one's health."⁸³ Upon his return home, Baker was convinced that Canada was ready for its own life assurance company. He quickly immersed himself in the inner workings of the industry, polled citizens to determine their needs, and found potential backers for his proposed business. The Canada Life Assurance Company was established on 21 August, 1847 offering a wide range of services to Canadians that might not have been viable were it not for proximity.

Just ten years later, in 1874, "a small group of enterprising people in London, Ontario, Canada got together and established The London Life Insurance Company."⁸⁴ Similar to Baker before them, and Brock after, Edward Harris, William Woodruff, John Walker, Joseph Jeffery, and James Magee seized the opportunity for this industry in a flourishing country with high living standards for its citizens. Their goal was to provide affordable insurance to Canadians. Proximity, once again, was a deciding factor in their choice to establish their business in London, given its place in the middle of the southwestern part of the Province of Ontario.

In 1887, Sir John. A. Macdonald had a vision to start an insurance company in Canada. He believed that "Canada needed to be a country of manufacturers, not just a supplier of raw materials."⁸⁵ This not only prompted the birth of the Manufacturers Life Insurance Company, but

⁸³ Tyrwhitt, *Small Things Grow Great*, 5-6.

⁸⁴ Blake L. Fewster, *London Life A Look Back*. (Canada: The London Life Insurance Company, 1998), 13.

⁸⁵ Manulife, "Our History" Manulife website accessed on 1 October, 2017. http://www.manulife.com/Our-Story?ocmsLang=en_US#module-6=0

also became the foundation of his political platform on his quest to becoming Canada's first Prime Minister. It should be noted that Macdonald's focus on protecting the manufacturers in the east did not go unnoticed by the farmers in the west. In response to his National Policy and their seemingly ignored existence, they organized the Farmer's Union of Manitoba. This aided Brock in gaining the support he needed for his new business venture. These are examples of the larger, more well-known insurance companies that began in the 1800s, however, there were many small-scale businesses offering insurance as well.

Another aspect of the rise of the insurance industry in Canada, though seen internationally as well, was the increase in human capital through work experience and education. This resulted in higher long-term levels of consumption in North American households, it was also "a riskier consumption stream as household became more reliant on a smaller number of more educated workers."⁸⁶ Therefore, the risk lies solely in the worker as human capital will only provide a return when the individual it is assigned to is alive. For example, for households "that relied on a tangible asset like land to generate income, the death of the household head, while tragic, was not as important an event for the surviving dependents" consumption as it was for surviving dependents in households that relied on the household head's human capital to generate household income."⁸⁷ Between the 1880s and the Great Depression, "government insurance was virtually non-existent and employers generally did not provide insurance to employees."⁸⁸ This left individuals to seek alternatives and puts into perspective why the subjects of the previous examples were so motivated to obtain life insurance

⁸⁶ Di Matteo, Livio Di Matteo and J.C. Herbert Emery, "Wealth and the demand for life insurance: evidence from Ontario, 1892." *Explorations in Economic History* 39 (2002): 447.

⁸⁷ Di Matteo and Emery. Wealth and the demand for life insurance, 447.

⁸⁸ Daniel Gottlieb, "Asymmetric information in the late 19th century cooperative insurance societies." *Explorations in Economic History* 44 (2007): 270.

for their families in the event of sickness or their deaths. With the rise in educated and experienced workers, and the expanding job market offering careers away from trades, insuring a household's investment in human capital through market insurance coverage was a necessity for those who could access and afford it.

The desire to insure the life of the family breadwinner was one piece to the puzzle of the rise of the insurance industry in the nineteenth century that has previously been explored. Another aspect is “that life insurance was an unsought asset due to consumers perceiving the insuring of a life as a suspect or immoral contract. As such, the rise of the life insurance industry and extent of insurance coverage was largely a function of the aggressive sales efforts of life insurance salesmen.”⁸⁹ Another factor is simply changing preferences and availability of products at an affordable rate. Taking these factors into consideration, it is evident that the insurance gained traction as an industry in the late 1800s however, many insurance companies were based in the eastern part of Canada, making it difficult for those in the west to access. Though it was a risk starting his business in the west, it is easy to see Brock's vision for success.

By 1890, the number of life insurance companies in Manitoba was growing to include Manufacturers, Sun Life, North American, Equitable, Lancashire Life, and Confederation Life among others. Though the number of agencies offering life insurance in the province was growing, not one had a western head office. The west was still seen as an appendage to bigger and better markets out east, in South America, Africa, and the United States. Companies knew they needed to have a presence in the west, but none were committed to making it a home base. Furthermore, “Canadian life insurance companies (under Canadian law) were “permitted to hold

⁸⁹ Di Matteo and Emery. *Wealth and the demand for life insurance*, 448.

investments in foreign countries in which they had branches to the extent that they were required by law in those countries to deposit securities as a reserve...however, Canadian companies invested far in excess of the requirements and were actively engaged in the export of long-term capital to the U.S.”⁹⁰ This shows that the interest of other insurance companies was in other areas than setting up a head office in the west. Thus, Brock began to rally a group of wealthy, prominent, influential Winnipeg businessmen and community leaders to establish his insurance company. This group included: James H. Ashdown, charter member of the Board of Trade and Winnipeg’s most successful hardware merchant; J.A.M. Aikins, Q.C., prominent local solicitor, counsel for several firms including the CPR in western Canada since 1881; Daniel H. McMillan of McMillan Brothers, millers and grain dealers, and provincial treasurer since 1889; Alexander Macdonald, President of his own wholesale provisions firm; Robert T. Riley of Sanford and Company, wholesale clothing, and Stephen Nairn, President of Nairn Oatmeal Mills. As well, the entire leadership of the Winnipeg Board of Trade was instrumental in the creation of the firm and its early operations. For instance, “at least nine of the new company’s original directors were on the Board of Trade and, of those, eight had served or would serve as Presidents of the same board.”⁹¹ Brock had the support and was being guided by some of Winnipeg’s most influential business leaders and organizations.

Thus Brock began putting together a competent sales force and office staff. He had made many contacts over the years working with current partner George Frederick Carruthers and was well-liked and respected. It was not hard for him to find people who wanted to take a chance on his proposed company. Not wanting to completely abandon his career with Carruthers, Brock

⁹⁰ Mira Wilkins, *The History of Foreign Investment in the United States to 1914*. (Cambridge, Massachusetts: Harvard University Press, 1989), 535.

⁹¹ Bennett. *A House of Quality it has Ever Been*, 16.

decided to establish and support the company, maintain his partnership, and focus on his family and everyday life. Therefore, he would start the company but not take an active role in everyday operations. Brock began meeting with his associates to determine what the proposed company would need to do in order to succeed in an already established market with so many eastern competitors. He knew he'd sell in Manitoba, of course, but would have to extend his reach to all of the Northwest, and eventually get into the eastern market. Therefore, a federal charter would be required. On 15 May 1891, Sir John Macdonald, MP, introduced in Parliament J.H. Ashdown and others of the city of Winnipeg's petition for an act of incorporation of the proposed company, currently named "Western Life Assurance Company." The name however, met resistance as there was already a company of that name operating in Toronto. Bill C-48 passed in the House and was to be sent to the Senate for approval, with a newly suggested name of the "Manitoba Life Insurance Company." This angered Brock, as he felt the name would hinder their business ambitions, as it tied the company too closely with the province. Thus, Brock asked the businessmen of Winnipeg to help decide upon a name more suited to a growing insurance company servicing all of Canada and eventually branching to the United States, Europe, South America and the Caribbean. On 28 August 1891 "Bill C-48 was finally approved by the Senate and given royal assent, it read: "An Act to Incorporate The Great West Life Assurance Company."⁹² The new name was given final approval by Carruthers.

The Act of Incorporation was conditional upon the following:

- A subscription or sale of \$400,000 in stock or company shares of which 25 percent must be paid up and put into "some chartered bank of Canada"

⁹² Alexander MacDonald, *Historical Review of The Great-West Life Assurance Company*. Unpublished Manuscript, 19.

- A provisional board of directors made up of the original petitioners
- A strict adherence to the provisions of the federal Insurance Act including establishing a \$50,000 deposit with the Government, and
- The appointment of a permanent board of directors after at least \$250,000 of capital stock had been subscribed

If they followed these conditions, Great-West would be “authorized to effect contracts of insurance throughout Canada and elsewhere, invest its funds in debentures, bonds, stock or other securities of Canada or of any province thereof, sell mortgages and other loans, and generally carry on the business of life insurance and all its branches.”⁹³ Brock would ensure these conditions were met. On 22 July, 1892, the Office of the Superintendent of insurance granted The Great-West Life Assurance Company its official license to sell, almost one year after its incorporation. After passing the necessary acts and by-laws, the Board hired a full-time staff and decided upon a location for their business. They would rent one room in the Carruthers and Brock Agency building on Main Street. Another noteworthy development was the appointment of Secretary and Office Manager Arbuckle Jardine, a former employee of Carruthers and Brock, who would form both a strong working relationship and friendship throughout the rest of their careers. Jardine would play an active role in the development of records management at Great-West Life, even if it was not apparent to him at the time. It would be an important role as a life insurance company is responsible for the routine creation of records as per everyday business functions. This includes the creation, tracking, maintenance, classification, storage, retention, and disposition of a variety of records including client files, claim information for individuals

⁹³ An Act to Incorporate The Great-West Life Assurance Company, 54 and 55 Vic., Cap. 115 Dom.

and groups, internal and external forms or marketing material for legal purposes over the years, staff patient files for those who have seen one of the nurses the Company employs, or employee files to name a few.

The History of Recordkeeping at Great-West Life

Things were looking up for the new Company in their first year. They were doing so well, it warranted an expansion of their office space, now taking up the entire first floor of the Carruthers and Brock building. At the time of the first annual general meeting, on 27 August 1893, the Company had “sold almost 1,000 policies for over \$2 million in insurance, invested \$40,303.27 in mortgages and paid out only \$1,000 on a single death claim—a man run over by a bicycle—all this in a time of nation-wide financial stringency.”⁹⁴ It was the beginning of many more gains the Company would experience over the years to the present day. These gains also meant an increase in documentation and records produced by the Company, and thus records management was born at GWL.

In her thesis, Martha McLeod introduces the development of records management at Great-West Life. Henry White Herrman, Consultant Office Specialist in 1910, was tasked with studying the Company’s structure and procedures to determine the need for formal records management. He concluded “that the company’s fast growth and increased business presented it with “increasing handicaps” in relation to its “records, manner of filing, routine of work etc.”⁹⁵ Herrman’s list of recordkeeping duties included card writing, policy writing, renewal work, posting of premium payments, typewriting, copying, and stenography. He believed that “the

⁹⁴ The Great-West Life Assurance Company. *Minute Book No. 1 January 15, 1892 – October 31, 1905*. (The Great-West Life Assurance Company: 1892-1905), 2.

⁹⁵ McLeod, *Redrawing the Boundaries*, 110.

proper handling and smooth working of the files of any and all Departments of an Insurance office means REAL ECONOMY because it expedites the work, saves extra clerks, saves the time of the Department Heads.”⁹⁶ This, McLeod concludes is evidence of the first introduction to basic records management at GWL.

Herrman’s study on records management is important to the history of recordkeeping at GWL as he provided a comprehensive report with suggestions to Secretary, Arbuckle Jardine. Included were recommendations regarding forms and letters that he determined would promote efficiency and be more economical. He outlined for Jardine that at the time, they were lacking a sound record keeping strategy, but went on to provide suggestions to achieve one. Notably, he “recommended the keeping of departmental files of Correspondence as opposed to a general correspondence file since there was no general alphabetical or numerical or geographical scheme [which] will apply with equal facility or results to each of the units.”⁹⁷ As well, he referenced the need to appraise the Company’s records and create schedules to manage them. This was the foundation of formal records management at Great-West Life. It was now up to Jardine to determine how to move forward with Herrman’s report.

Arbuckle Jardine had come to Winnipeg in 1882, and started his career at Curruthers and Brock. In “1892 with J.H. Brock, he established the first office of the newly formed Great-West Life Assurance Company. On July 1, 1892 he was appointed Secretary of the Company. Twenty years later on July 2, 1912 he was appointed Assistant General Manager and Secretary, which position he held until his retirement on October 31, 1927.”⁹⁸ Over the ten years Brock and

⁹⁶ McLeod, *Redrawing the Boundaries*, 110.

⁹⁷ McLeod, *Redrawing the Boundaries*, 111.

⁹⁸ Unknown author, *The Bulletin* Vol. XXIII No. 4, April 1932, (Canada: The Great-West Life Assurance Company, 1932), 2.

Jardine worked together prior to the establishment of Great-West, they fostered a strong working relationship and a trusted friendship. It would not have been a surprise to anyone that Brock entrusted Jardine to oversee running the office of his company. His obituary stated “Mr. Jardine was with the Company since its birth and during the strenuous years following incorporation he kept the internal organization running smoothly, looking after the mass of detail incident to the business of life insurance and to the development of the infant Company.”⁹⁹ Jardine’s duties as secretary included overseeing all office matters such as bookkeeping, accounting and banking, and his attention to detail and office skills were apparent early on to Brock. Jardine took Herrman’s report into account, which resulted in an office redesign by function including management, accounting, actuarial, investments, collections, reinstatement, policy, advertising and supply, stenographic, printing, mail and filing, agency, Winnipeg Branch, medical, renewals, exit, card index, tickler, and messengers.¹⁰⁰ This structure remains the same today but has obviously evolved to include many more departments.

A constant though, is the records produced by each department, the need to classify and apply retention rules based on the function of each, and the goal of finding the most efficient way to do so. This was evidenced in a letter from Herrman to Jardine dated 15 September, 1910, regarding a fact finding mission Jardine had sent him on. He begins by saying “My Dear Mr. Jardine; Yesterday I visited the Mutual Life Ins. Co. and solicited the privilege of seeing their photographic equipment – of having a demonstration made of copying applications – and of getting facts and figures of interest to you.”¹⁰¹ His letter goes on to provide a comparison of the photographic machine Jardine originally was asking for, and the newer and improved version

⁹⁹ Unknown author. *The Bulletin*, 2.

¹⁰⁰ Herrman, H.W. *Consultant’s Report* 1910, 5-20.

¹⁰¹ Herrman, H.W. *Letter to Arbuckle Jardine* 15 September, 1910, 1.

used by Mutual Life. Herrman was impressed by the latter's specifications, requiring less staff and time taken for the end result. He provides a detailed description of the photographic copying process used in case Jardine meant to purchase and implement this equipment at Great-West Life. Attached to the letter was a brochure for the F. & S. Record Outfit for Jardine's reference. Both the letter and Brochure provide an example of the evolution of records, the equipment used, and the desire for efficiency.

When reading the brochure, it is quite apparent why Jardine sent Herrman to look further into this equipment for the office of Great-West. It states, "The problem of making accurate and legible copies of Insurance, Real Estate and Legal Documents rapidly, and the same time inexpensively, has been solved by the Folmer & Schwing Record Outfit. This outfit consists of a photographic equipment by means of which the document to be copied is photographed direct on the sensitized paper with absolute accuracy and rapidity impossible in any other kind of transcribing, while the cost of the paper materials is so light that the expense of operation is far below that of making copies by hand. Special Insurance Bromide Paper in rolls 11 inches wide by 100 feet is supplied by the Eastman Kodak Company at \$4.50 per roll net."¹⁰² The insurance industry became quite reliant on the photocopier once it was introduced to the market. This was due to the fact that most client interactions required more than one copy of a document to be filled out and signed for legal reasons. For example, a life insurance policy would be filled out by a client, signed and sent in to Great-West. Once approved, the client would receive an exact copy of the document they agreed to for their own records. Before the invention of the photocopier, copies would be handwritten. This was a time consuming task that once the

¹⁰² Folmer & Schwing, "The F. & S. Record Outfit Eastman Kodak Co. (Rochester, New York: F & S. Record Outfit), 1-2.

photocopier was invented, would free staff to work on other tasks rather than make copies, as the only staff required were those it would take to operate the copy machine. It is no wonder that Jardine would have Herrman make the trip to see this new office machinery for himself.

The brochure goes on to outline the copying process, which from either the contemporary perspective or looking back today, was an exciting development in the timeline of records. The unit consisted of a camera adjusted to the top of the cabinet, and fitted with a shutter, lens and prism that reversed the image so all reading matter read from left to right in the usual way. The back of the camera had a removable bromide paper roll holder, holding 100 feet of paper. Attached to the front of the cabinet is “a stage or platform upon which the document to be copied is placed; this stage may be raised and lowered to suit the size of copy by turning the wheel at the back of the cabinet.”¹⁰³ The two lights suspended on either side of the stage give sufficient illumination to make the exposure in five to six seconds. The brochure states “to make the copy it is only necessary to draw the slide in the roll holder, open the shutter for a few seconds and make the exposure. By turning the key on the roll holder, the exposed paper is drawn out of the way for the next copy, perforated to indicate where it should be cut apart for developing, and the number of exposures made is registered on a dial at the side of holder.”¹⁰⁴ This machine even had the capability to make a copy either larger or smaller by adjusting the roll holder and paper size. The brochure ends by reminding potential customers that this machine is so simple to use, there is no need to hire a photographic expert, and therefore regular staff will suffice. There is no record of correspondence back to Herrman to confirm whether or not Jardine decided to purchase this exact equipment, however, the Great-West Life Archives has photographs containing staff

¹⁰³ Folmer & Schwing *The F. & S. Record Outfit*, 1-2.

¹⁰⁴ Folmer & Schwing *The F. & S. Record Outfit*, 1-2.

operating copy machines fitting the description. This office machinery situates Great-West Life within the history of recordkeeping presented earlier in the case of Prudential. It shows the desire that Great-West had to be on the cutting edge of office technology to improve administrative processes that would in turn contribute to their economic success. The use of the photocopier at Great-West also shows the evolution of records as it changed the type of record produced. As we see in offices today, convenience copies of documents are kept by staff for various reasons, for example, multiple staff needing to reference the same document. While this may seem archaic in the present day with staff having access to computers and shared files, there was a time when paper was the dominant, and in some cases, only form of documentation. Therefore, making photocopies not only meant the proliferation of legally required documents, but of convenience and transitory documents as well.

Jardine's influence on the early and continued success of Great-West Life was incredible. He was "the essential head office force, the backroom power that carefully and efficiently administered the mounting press of paper, and with it the responsibility to run an effective operation."¹⁰⁵ Though there are no records in the archives to confirm whether or not Herrman's suggestions were adopted as laid out in his report, the simple fact that he was asked to write it is indication that records management was on Jardine's agenda. It would not be until 1933 that there is documented proof of a formal records management system would be put in place.

In 1933, H.E. Niles provided Eustace Brock, Company Secretary after Jardine's retirement, with a comprehensive report on the state of records at Great-West and recommended practices going forward. The Company had evolved considerably since 1910 when Herrman

¹⁰⁵ Bennett. *A House of Quality it has Ever Been*, 54.

made his recommendations. When reading the Niles report, current day records management practices are evident in his suggestions. For instance, classification of management materials and the centralization of related records would provide an organized method for filing and in turn, enable searchability. He also recommended periodic desk cleaning procedures that McLeod deemed to be “a rudimentary form of records scheduling and appraisal by which supervisors determined the disposition of accumulated records within the department.”¹⁰⁶ Niles’ suggestions may have seemed odd to some at the time he introduced them, however, many of them are present at Great-West Life today. This includes a department supervisor that is knowledgeable in records management and archives principles, classification of records based on their historical and legal value, and destruction of records including documentation. As McLeod states in her thesis, there are no documents that indicate whether or not Niles’ suggestions were implemented, however, his report shows the intense need for good recordkeeping within the insurance industry.

A formal archives and records management program would not be revisited again until the 1960s, around the time of the Company’s 75th anniversary. Correspondence between Assistant Secretary R.K. Siddall and Secretary R.O.A. Hunter reveal their desire not only to collect and produce a book to document Great-West Life’s history to celebrate the upcoming anniversary at the time. Within this discussion Siddall proposed that historical data should be processed, collected and organized as well as “procedures should also be established which will ensure the retention of pertinent information from now on.”¹⁰⁷ Looking back at this correspondence it emphasizes that the collection and preservation of historical records to support the anniversary, and the desire to create an internal publication for staff based on statistical

¹⁰⁶ McLeod. *Redrawing the Boundaries*, 113.

¹⁰⁷ R.K. Siddall, and R.O.A. Hunter, Memo 18 December 1961. Corporate Archives Correspondence Records. Great-West Life Corporate Archives Collection.

information,¹⁰⁸ was the foundation of an archives program at Great-West Life. It was in this act that collection, classification, retention, and destruction of records was deemed important.

The period of time between the Siddall and Hunter correspondence in the 1960s until the beginning to mid-1970s where there is no mention of archiving or records management at Great-West. It would not be until requests were made by multiple Canadian universities regarding the state of the archives at Great-West. While the Company did employ a librarian, Mary Keelan, at that time, when asked if she was employed to maintain the archives, she stated she was not.¹⁰⁹ Such inquiries prompted further thought on the need for a structured records management and archives program. McLeod describes in her thesis the lengths Keelan, Siddall, and Manager of Communications Control Michael Perring went to engage the archival community, including the historian at Hudson's Bay House, the Provincial Archives and former Provincial Archivist and Archival Studies and History Professor at York University, Hartwell Bowsfield, for advice on setting up a formal archives program at Great-West Life.¹¹⁰

By 1 June 1978, the Company hired Ruth Gordon, Canadian Studies student from Edinburgh University to work with Keelan to collect information that would populate the archives within the Company Library. By the 31st of August that same year an initial inventory was complete. Records were organized in chronological order under various headings then put in file folders and catalogued so they would be searchable.¹¹¹ That same year, it was decided that "the Company will establish an area to be formally designated as the Company archives."¹¹² At

¹⁰⁸ Unknown Author. *The Link* 1963. (Canada: The Great-West Life Assurance Company, 1963), 2.

¹⁰⁹ Correspondence from Mary Keelan to Paul Craven and Tom Traves, 1976. GWL Corporate Archives Correspondence Records.

¹¹⁰ McLeod. *Redrawing the Boundaries*, 120.

¹¹¹ "Ruth Gordon" memo from Mary Keelan to M.G. Sampson, 31 August 1978. GWL Corporate Archives Correspondence Records.

¹¹² Memo from J-C. Simons to R.E. Williams, 1 June 1978. GWL Corporate Archives Correspondence Records.

the time there was no space to house the new archives at 60 Osborne. They would be stored at one of the offsite locations where other Great-West Life departments resided. It would not be until the opening of the new Head Office at 100 Osborne Street, that the archives would find their permanent home. The creation of this department and the historical records that populated it was the foundation of an archives program at Great-West Life. What started with a desire to organize, classify, preserve, and cull historical information laid the foundation for a more structured records management program in the future.

Great-West Life would celebrate many firsts, including the creation of the first “Women’s Department” in 1913, being among one of the first companies to offer group insurance in 1919, their first computer, the IBM 650 in 1958, the key logo in 1963, the acquisition of The London Life Insurance Company in 1997, the acquisition of The Canada Life Assurance Company in 2003, the acquisition of Irish Life in 2013, and most recently, the celebration of Great-West Life’s 125th anniversary.¹¹³ Brock’s legacy remains strong within the walls of Great-West Life and his vision of providing affordable and easily accessible insurance is a commitment upheld in all Head Office companies and subsidiaries. Brock organized the company in 1892, and continued as managing director until 1915. During this period, “the business in force reached a total of \$108,221,932 and the assets a total of \$16,736,444.”¹¹⁴

If he could see his Company today, he would without a doubt be proud. Jeffrey Hall Brock, who was inducted into the Canadian Business Hall of Fame in 1982, died on 27 March 1915. Brock was 65 years old and at the time of his death was in California seeking medical help. As one publication noted, “after three years of a valiant struggle against failing health, J.H.

¹¹³ *Serving Canadians for Over a Century: The Great-West Life Assurance Company*. Internal publication, 2003.

¹¹⁴ *The Founder and Directors*. Internal Publication. (Canada: The Great-West Life Assurance Company, 1925), 5.

Brock, one of the West's outstanding men, has fought his good fight and passed to rest. Behind him he leaves not only an honored name and respected memory, but a Winnipeg institution so peculiarly his in its making that it had come to be spoken for years past as "Brock's Monument"—The Great-West Life Assurance Company."¹¹⁵ To this day, the original Great-West Life Head Office building on Rorie and Lombard is warmly referred to as such, and in the current buildings at 60 and 100 Osborne Street, photos of the Company's founder can be seen on various walls as a reminder of the man who started this great Company.

From its beginning, The Great-West Life Assurance Company has produced copious amounts of records in a variety of media. The Company's archives houses the earliest documents including the Act of Incorporation Document, the first policy held by member of the Board, Robert T. Riley, Minute Books from the Company's inception to the present day, and policy pages to name a few. One thing that has remained consistent is the production of records at Great-West Life. Before the creation of a formal records management program in 1984, most departments managed and housed their own records. Advancements in technology, such as the typewriter, photocopying, and then the computer have changed what a record looks like as well as the rate at which they are produced. The importance of good recordkeeping practices has remained a clear message through the years and changing technologies at Great-West Life.

Early recordkeeping practices at Great-West Life were the responsibility of each department. Since records are generated to provide proof of business transactions and document the Company's history, it is important to ensure records are well documented and made easily accessible. As previously mentioned, during the first year of operation, concerns about keeping

¹¹⁵ Author Unknown. "The Late J.H. Brock" (Canada: The Great-West Life Assurance Company), 1.

operating costs low were of utmost importance. Ledger books documenting financial transactions of money coming in and going out of the Company and managed by Jardine remain in the archives today. As previously mentioned, records policies and procedures from the earliest days of Great-West Life are unfortunately not part of the archival collection today. However, the existing collection of photographs, staff bulletins, and newsletters prior to the 1970s, along with the previously mentioned correspondence between Siddall and Hunter as well as Gordon and Keelan's efforts to collect and file information, are evidence that a filing system was in place for permanent and day-to-day records used by staff. The aforementioned Niles report in 1933 recommended the classification of management material to aid in the filing of records as well as the centralization of records related to one another and periodic desk cleaning.¹¹⁶ It stated that a senior file clerk was responsible for selecting permanent material in a process that would be comparable to the archivist today culling an accessioned carton given to the archives. Niles indicates that the file clerk knew whether or not the material should be kept permanently in part due to the author of the material under review.¹¹⁷ The report also suggested retention and destruction practices to be carried out according to a comprehensive schedule that would be maintained and reviewed periodically to ensure it was current. Destruction was to be documented for accountability. Though there is no written documentation of Niles' recommendations put into effect, there are photographs of file clerks filing documents in rows of filing cabinets going back to the late 1930s onward.

Duplicates of permanent or archival records such as Minute Books or Annual Reports were kept separately from originals in the event that an unforeseen incident would occur. Before

¹¹⁶ H.E. Niles and M.C.H. Niles. "Miscellaneous Suggestions (continued)," 21 June 1933: 35.

¹¹⁷ H.E. Niles and M.C.H. Niles. "Miscellaneous Suggestions (continued)," 21 June 1933: 35.

the use of the photocopier, two handwritten or typed copies would be created, bound and stored. Such measures proved to be valuable in 1954, when a fire broke out in the Great-West Life annex building on Lombard Avenue. An early morning fire “threatened the core of Winnipeg’s business district, totally destroying the \$100,000 Great-West Life Assurance Company two-story annex, and sent nearly 900 employees home for a long weekend.”¹¹⁸ Neither of the main buildings suffered any damage; however the basement suffered extensive water damage. A spokesman for the Company stated “no valuable records had been stored in the annex other than copies of permanent records required for daily use.”¹¹⁹ Although this happened before the creation of the formal archives and records management department in 1984, this clipping is evidence that records management procedures similar to the ones employed today, were in place such as keeping originals separate from duplicates, to ensure at least one would survive something unforeseen.

With changing technology came the proliferation of records at an ever-increased rate. This meant that records management policies, procedures and storage options would need to evolve and adapt to ensure compliance with regulatory laws, business efficiency and office space. This began to take shape in the late 1970s with the establishment of the Records Retention Committee, comprised of staff representatives from Office Services, Company Records, Audit, Legal, Controller’s, and Computer departments, most if not all were without experience or training in records management. This Records Retention Committee “had no corporate guidelines and was a job that has been tacked on to the members’ existing responsibilities and therefore has a low priority and only receives attention if and when time permits.”¹²⁰ However,

¹¹⁸ Unknown Author. “Great-West Annex Guttled,” *The Winnipeg Tribune*, February 12, 1954.

¹¹⁹ Unknown Author. *Great-West Annex Guttled*.

¹²⁰ McLeod. *Redrawing Boundaries*, 123.

this would change at the suggestion of Ken Cade, Manager, Office Services and Chairman of the Records Committee.

By 1984, Cade had made recommendations to management that a formal Records Management Program be created and include a representative from all divisions to participate in the investigation, analysis and recommendation of solutions to management. The program would not only focus on records management functions such as retention and disposition, but also include the management of vital and historical or archival records. Cade recommended that records should be appraised based on their administrative, legal, fiscal, and historical/research value. Thus, in the following few months, “R.K. Siddall, presented the major initiatives for the Office Services Division including the introduction of a records management program. According to Siddall, records management was to be defined as “the scientific management of information contained in records from creation through processing and use to active and inactive maintenance until disposition or archival retention.”¹²¹ Within the next 6 months, Cade produced a memo to outline the committee’s mission.

During these initial years of the committee and the newly created Records Management Program, the program focused most of its attention on records in storage as opposed to records being generated by departments. This would be the case until Richard E. Bennett, University of Manitoba Archivist, contacted Great-West Life and offered to organize their records and write and publish the Company’s history. In 1988, the Company hired him to first survey the state of the records at Great-West, and upon his findings, inventory to determine the extent of their archival collection. He discovered that while the Company had many of the records dating back to its creation, “the vast majority of archival records had already been destroyed.”¹²² This

¹²¹ McLeod. *Redrawing Boundaries*, 123.

¹²² McLeod. *Redrawing Boundaries*, 126.

prompted the creation of an “Archive Committee” in 1988, initiated by Dean Murdoch, Vice-President of Corporate Communications and Services. This is important to the history of record keeping at Great-West Life as “until then the records management function had only been responsible for creating schedules for records that were stored and maintained by Company Records.”¹²³ Thus, the Records Retention Committee began their appraisal of archival records, and once records were deemed archival, they would be under the care and control of the Company Library.

Before the creation of the Records Retention Committee, it is important to note that the Company Records Department was responsible for housing semi-active and long term or permanent records. Created shortly after the move to the 60 Osborne Building in 1959, Company Records would become a central repository for departments needing storage for their growing collection of records. Located in the basement of the 60 building, and later utilizing storage space on the third and sixth floor of the 100 building, Company Records maintained records pertaining to Individual Life, health files (Living Benefits), Group files, and microfilm. Eventually, Company Records outgrew their space and opted for an off-site location, as there was nothing that could accommodate their needs at Head Office. On 5 August 1988, the Company newsletter *Key Newsweek* announced to staff that Company Records would now be located at their new off-site records centre. Pat Poirier, Supervisor of Company Records stated in the aforementioned publication that she “is used to looking at row upon row of files, but supervising the move of 12,000 cartons and enough files to fill more than 1,000 shelving units was a monumental task, even for her.”¹²⁴ Both Company Records and Micrographics staff would

¹²³ McLeod. *Redrawing Boundaries*, 126.

¹²⁴ Unknown author. *Key Newsweek* Vol. 8 No. 31 August 1988 (Canada: The Great-West Life Assurance Company), 1.

now be working from the Winnipeg Records Centre, which was fully operational by 15 June 1988. Staff was elated to have all records in one location as opposed to being housed between the two buildings in their previous space. Head office staff looking to retrieve their records from the new location would use the internal courier service, which made on average 7 trips a day, or 1 trip per hour between locations. As for requisitioning of files or cartons, “five departments are hooked up to Company Records’ electronic requisitioning equipment. Company Records receives requests for files from those departments via an on-site printer. Head Office staff key in their file requests, which are printed instantly at the Records Centre.”¹²⁵ Today, the Winnipeg Records Centre remains in the same location and operates in the same fashion. Technological changes have impacted how clients send or request records, as everything is computerized and functions not only include records storage, but scanning of records to be imaged and stored digitally as well. After the acquisition of London Life in 1997, it was apparent there would be a need for a second records centre to house London Life’s many records. The Records and Archives Management (RAM) Centre is the counterpart to the Winnipeg Records Centre and staff at both locations work closely to serve all offices across Canada.

Archival material at Great-West Life existed in the late 1950s, but was under the umbrella of the Corporate Library. It would not be until 1999 that Company Records and the Archives, which had been held under the Corporate Library until the early 1990s and then moved under Training and Education, would merge to form the Archives and Records Management Department. This merger would improve access to information for designated staff and eliminate duplicate and unnecessary information from the system. Martha McLeod, Great-West Life’s first Archivist stated in the article announcing the new department that the perception of archives only

¹²⁵ Unknown author. *Key Newsweek*, 1.

housing old photos and company publications is false, and encouraged departments keeping business records in their own areas to send them to the newly created department to complete their collection and ensure records are being catalogued and stored in their central storage system.¹²⁶ Thus, the department made the proper scheduling of records a priority for 1999. The department initiated a survey for Great-West and London Life to identify all records currently being held in departments, to satisfy OSFI (Office of the Superintendent of Financial Institutions) requirements regarding the retention of records. The survey intended to collect information to enable the process of functional classification to be carried out.

Functional classification is a records classification system that arranges records based on the functions of an institution and the activities that are required to carry out the functions. “This is in contrast to earlier systems that organized records based on the creator or the subject. To create a functional classification scheme, the key functions of an institution are identified and analyzed. During analysis, functions are broken down into sub-functions and activities. Generally, the activity level is where you see the creation of records.”¹²⁷ Based on this records management principle and survey results, all procedures for records retention would be re-evaluated and reviewed for consistency between Great-West Life and London Life in 1999. Departments would “benefit from this process as it will ensure the capture of archival records as well as identify file series currently having no formal retention schedule.”¹²⁸ From then onwards, the Archives and Records Management Department has used functional classification to classify and determine

¹²⁶ Unknown author. *Key Newsweek*, 1.

¹²⁷ The University of Manitoba. “Functional Classification.” The University of Manitoba website – Access and Privacy. Accessed on 10 January 2018 at http://umanitoba.ca/records_management/functional.html

¹²⁸ Unknown author. *Key Newsweek* Vol. 19 No. 5 February 1999 (Canada: The Great-West Life Assurance Company), 1.

records retention schedules and guides for all Company documents of Great-West Life, London Life, and Canada Life.

Though the policies, procedures, schedules, and guides used for records management today at Great-West Life (as well as its sister companies and field offices) have been adapted over the years to reflect legal, regulatory, and changing business needs, the foundation that Jardine, Herrman, Niles, Cade, Murdoch, Siddall, and McLeod among others have laid remains at the heart of their governing documents. The functional classification system used to create the current schedules and guides are those that McLeod initiated with her survey.

Going forward, records management and archiving practices at Great-West Life will evolve once again given the changes in the digital climate over the past decade or so. Online applications and forms, internal newsletters, memos, articles, social media feeds and other records that were once produced in paper are rapidly becoming born-digital. The governing rules have remained the same and policies have been updated to include access, control, protection against accidental alteration/deletion, metadata, and media storage. Changes in technology such as up to date computers, scanners, photocopiers, and multi-functional devices will dictate new records media and where they can be stored. From here, finding the best system to manage digital records in all stages of their lifecycle will be a priority. Chapter three will address the options being considered in a case study on digital records management at Great-West Life.

The History of Great-West Life's Use of Innovative Technology

Over the years, technology has played a large role in the type and volume of records produced at Great-West Life. The introduction of the photocopy machine around 1910 and typewriter to office staff in 1912, meant that records could be produced more efficiently, and at a

faster rate. However, it would not be until the introduction of the computer in 1958 and the electric typewriter in 1962 that Great-West Life records production would be made more efficient and see a dramatic increase. This also meant that records management policies and procedures would need to be adapted to keep up with the proliferation of records new technology was helping create.

The first evidence of major changes at Great-West was the addition of the electronic data-processing machine, or the EDPM. Great-West chose the IBM 604 and introduced the system to employees in 1956, and was heralded as being the result of tremendous development of electronic computers in the past ten years. In the November edition of the internal publication *The Link*, they provided an overview for employees to familiarize them with the new machine. They touted, “these mechanical wonders, which can almost think and decide in themselves, are destined to take the monotonous repetition out of many clerical jobs.”¹²⁹ This is not to say that jobs were eliminated due to this technology. Business at Great-West Life was thriving and enabling clerical staff to improve process efficiency was beneficial to enabling more work to be taken on. Furthermore, the new machine came with a promise of increased responsibility and “greater rewards” in many jobs for staff, due to its speed and capacity of work. The article stated the EDPM was a result of a branch of electrical science that dealt with alternating currents of extremely high velocity. Due to this, the machine can perform work at great speeds in large volume. As well, they acknowledged the advancements in computers post World War II and how they shifted from primarily scientific machines to general purpose machines to aid in business.

¹²⁹ Unknown author. *The Link*. Vol. 1 No. 7 November, 1954 (Canada: The Great-West Life Assurance Company), 4.

According to Columbia University, the IBM 604 Electronic Calculating Punch with Type 521 Card Reader/Punch was created in 1948. The “604 performed addition, subtraction, multiplication, and division hundreds of times faster than any of IBM’s earlier electromechanical machines, and was the first IBM product to use modular vacuum-tube based pluggable units, later used in IBM’s NORC and 701 computers. The 604 was programmable via plugboard and could execute a program of up to about 60 steps.”¹³⁰ Its footprint is 53 by 33 inches; contained 1100 vacuum tubes and 125 relays. Its power consumption was 7.59 Kvas and it weighed 1949 pounds.

Great-West Life also described the IBM 604s capabilities for staff in an article published in *The Link*, an internal newsletter. The author described its capabilities less in technical terms as above, and more in terms of how it would impact staff. For instance, the article pointed out that like a conventional desk calculator, the IBM 604 could perform addition, subtraction, multiplication, and division. As well, it can “under the control of set instructions – technically called a “program” – perform long sequences of operations without human intervention.”¹³¹ Additionally, it can “possess large storage units, or “memory”, in which can be stored quantities of numerical and alphabetic information. This information may include not only the data to be processed but also the instructions which will control the processing of that data.”¹³² The article went on to mention the machine’s “logical” ability, in a limited sense, that it can compare and select which of several alternate sets of instructions to follow. It states that the IBM 604 “possess by far the fastest speed of any processing system ever devised – some of them being capable of

¹³⁰ “The IBM 604 Electronic Calculating Punch,” Columbia University, Accessed on 21 December 2017. <http://www.columbia.edu/cu/computinghistory/604.html>

¹³¹ Unknown author. *The Link* Vol. 1 No. 7 November 1954. (Canada: The Great-West Life Assurance Company), 4.

¹³² Unknown author. *The Link*, 4.

“reading” speeds from 5,000 characters per second to 20,000 characters per second.”¹³³ Finally, the author states that the machine is extremely accurate due to the control of automatic, built-in checks. This article is an enlightening look back, not only to understand the IBM 604s capabilities and to place this technology within the chronology of technological advancement, but to see the choice of language used with regards to a machine preceding a computer. The author uses the terms program, memory, logical ability, and processing speed for example. Users at the time would familiarize themselves with these terms and their capabilities as an introduction to the next phase of technology they would later encounter.

Staff was reminded that although machines were often referred to as “giant brains”, they had no ability to think, reason, and initiate the basic data to be processed or the factors to be applied. The “giant brains” reference for computers was common at this time. For example, Edmund Berkeley’s 1949 book entitled *Giant Brains or Machines that Think* insisted that computers had power similar to the power of the brain. As well, he “launched a thousand confused misappropriations of technological history with his suggestion that it would “take a load off men’s minds as great as the load that printing took off men’s writing.”¹³⁴ While computers and other new technology would do some of the work for people, they were obviously not the brains suggested by Berkeley. Staff needed to tell the computer what to do with the information they were storing or receiving from the functions they asked it to perform. The article in *The Link* also mentioned that most of the 50 largest life insurance companies were already using, or planning to use EDPM machines in the future. This was a common sales technique used by IBM at the time. The greatest use of the IBM 604 was seen as its ability to

¹³³ Unknown author. *The Link* Vol. 1 No. 7 November 1954. (Canada: The Great-West Life Assurance Company), 4.

¹³⁴ Thomas Haigh. “The Chromium-Plated Tabulator: Institutionalizing an Electronic Revolution, 1954-1958,” *IEEE Annals of the History of Computing* October-December Vol. 23, No. 4, 76-77.

provide a consolidated functions system, turning multiple functions into a single one. This meant that files could be consolidated on a single magnetic tape master file, which could contain the complete policy data of a company. In essence, “through the EDPM equipment would enable a company to update simultaneously all its new business and all premium payments, calculate dividends, loan interest, agent’s commissions, select policies for billing, print notices and dividend cheques, and make all accounting entries required.”¹³⁵

The article also outlined what employees could expect in terms of change over time as the IBM 604 was introduced. They explained that it will make possible the consolidation of work done in various departments into one complex operation, enabling greater efficiency and economy. However, this was more of a target state, than one they would realize right away, stating “most companies including our own, believe in a step-by-step evolution into the electronic era and many of the largest companies have already spent years investigating the potentialities of electronic equipment.”¹³⁶ Careful planning and staff training would need to be put in place before the results would be seen to their fullest. This was true not only with regard to learning to use the new machine, but the IBM 604 would produce a new type of record, different in appearance from what staff was used to, and at a much faster rate. This would encourage discussions regarding classification and appraisal of records as well as retention and destruction or storage. With the increase in volume due to the machine’s efficiency, it was essential to keep only what was necessary for legal or compliance purposes. Storage space was hard to come by at the time, and for all of these reasons, a records management system as the Niles report suggested, would be necessary going forward. Thus, the first example of newer, larger

¹³⁵ Unknown author. *The Link*, 4.

¹³⁶ Unknown author. *The Link*, 4.

technology was introduced at Great-West Life, and it would not be long before they would celebrate another technological first.

In 1958, the Company marked another first with the installation of an IBM “650” computer in the Tabulating department, fourth floor, Rorie Street building. This would be the first computer purchased by Great-West Life, making them the second organization in Manitoba to own one, after The University of Manitoba. The new computer weighed 5,300 pounds and was the first of its kind in Western Canada. The weight of the computer was so great, that the floor had to be reinforced before it could be installed in the building. The Company stated that “installation of the “650” is another step in a long range program to utilize the most modern business techniques. Such modernization is necessary because of the continuing rapid expansion of the Company and the general increase in the complexity of life insurance options.”¹³⁷ It only made sense that a successfully growing business would want to employ new technology that would increase efficiency and free staff of monotonous, time-consuming tasks, so they could focus on other things. Great-West Life was not alone as by 1959 “several more organizations joined the modern computing community in Canada, though most had a greater interest in data processing than scientific research.”¹³⁸ Furthermore, “many chose an IBM 650, a popular mid-range magnetic drum-based machine, to enhance or even replace their clerical and accounting operations.”¹³⁹ Planning for the new computer was extensive and began long before its purchase. An Electronics Committee of actuaries, accountants, and planning personnel was created under the direction of J.E. Morrison, Vice-President and Actuary, and George Aitken, Vice-President

¹³⁷ Unknown author. *The Link*. Vol. 1. No. 7 November, 1954 (Canada: The Great-West Life Insurance Company), 4.

¹³⁸ Zbigniew Stachniak and Scott M. Campbell, “Computing in Canada Building a Digital Future.” *Canada Science and Technology Museum Transformation Series 17* (Canada: Canada Science & Technology Museum, 2009): 34.

¹³⁹ Stachniak and Campbell, “Computing in Canada,” 34.

and Comptroller, to determine the best way to utilize electronics equipment and technology. Associate Actuary Henry Bradshaw, and Assistant Comptroller W.P. Latrounerie, who were involved in making the preparations for the new computer for over a year before its arrival, headed the Committee. Staff was told “the machine itself will take over a mountain of detailed calculating work involved in the actuarial operations of the Company: computing dividends, policyholder reserves, premium rates; producing information for government financial statements, and other statistical data.”¹⁴⁰ This hype was not uncommon during this time, especially with regards to corporate computing. Some have argued that “for half a century, enthusiasts have used the dazzle of microseconds and megahertz, joined more recently by the exponential curves of Moore’s law, to argue that the unprecedented power of the latest revolutionary computer technologies is about to dictate a corresponding and almost effortless revolution in business.”¹⁴¹ This would be the case with the 650. The new computer would become a tool of corporate administration, “bringing rhetoric of revolution into the mainstream of managerial discussion along with it,”¹⁴² as seen in the forming of the Committee headed by senior management. In their eyes, the new machine would live up to the hype in the eyes of Committee members. It had the capabilities to do everything they hoped it would.

The IBM 650 was the most popular computer of the 1950s. IBM “originally marketed the 650 as a business machine, as part of a strategy to offer both scientific and business-oriented computers.”¹⁴³ Studies have shown that the 650 was most popular among Canadian universities due to the educational discount of “up to 60 percent for those schools that agreed to introduce

¹⁴⁰ Unknown author. *The Link*. Vol. 11 No. 12 April, 1958 (Canada: The Great-West Life Assurance Company), p. 1.

¹⁴¹ Haigh. *The Chromium-Plated Tabulator*, 77.

¹⁴² Haigh. *The Chromium-Plated Tabulator*, 77.

¹⁴³ Stachniak and Campbell. *Computing in Canada*, 37.

computing courses using the new hardware.”¹⁴⁴ While the price made the IBM 650 an attractive option for universities, the company had little trouble convincing businesses to try their product to increase efficiency among staff. For instance, “Manufacturer’s Life installed the first IBM 650 in Canada in 1956,”¹⁴⁵ as an option to mechanize operations gradually. IBM expected to sell fifty of these machines; they installed over 2000.”¹⁴⁶ Referred to as “the workhorse of modern industry,” IBM’s newest computer, the IBM 650 Magnetic Drum Data Processing Machine had been introduced in 1953. The field of electronic computing was in its early stages, and this new addition brought a level of reliability not previously seen. For example, “whenever a random processing error occurred, the 650 could automatically repeat portions of the processing by restarting the program at one of a number of breaking points and then go on to complete the processing if the error did not reoccur.”¹⁴⁷ This would improve efficiency by saving staff from taking time to manually perform the redirection of the program themselves.

Another vast improvement from earlier technologies that set the IBM 650 apart from anything preceding it, was its internal memory, which was magnetic media, and stored digits in decimal codes. This meant that information stored on the computer was re-writable and not permanent. Today, with records management being a prominent field, with professionals well versed in legal, regulatory and compliance requirements would be concerned with how this would impact retention. However, in the 1950s, the field of records management was not yet structured and formal. Therefore, computer developers would not have considered these

¹⁴⁴ Stachniak and Campbell. *Computing in Canada*, 37.

¹⁴⁵ Stachniak and Campbell. *Computing in Canada*, 37.

¹⁴⁶ Baldwin, Betsey Baldwin. *Stepping off the paper trail? Rethinking the mainframe era at the Public Archives of Canada*. (PhD dissertataion, University of Ottawa, 2006), 51.

¹⁴⁷ IBM. “The Workhorse of Modern Industry: The IBM 650.” Accessed on the website of the IMB Archives on January 10, 2018, at: http://www-304.ibm.com/jct03001c/ibm/history/exhibits/650/650_intro.html

concerns at the time. In fact, the fact that information could be written over, not permanent was highly touted by IBM. Since the IBM 650's magnetic drum only had the capacity to hold 20,000 digits of memory, the machine had to be able to write over stored information or it would not function properly.

Data and instructions were stored in the form of magnetized spots on the surface of a drum, whose memory could hold 20,000 digits at 2,000 separate addresses.¹⁴⁸ This data could be entered into the computer's memory either by inputting punch cards, or manually from an operator's console. Therefore, "in the latter option, there was no need for the data or code to be committed to paper at any time in the process. The records only needed to ever exist in magnetic media."¹⁴⁹ The absence of paper for this process was a benefit to the operability and efficiency of the computer, but meant that a record would need to be kept of instructions given to the computer for proper records retention. The punch card remained as the records produced by the IBM 650, therefore, there was no notable difference between these and the records produced by machines such as the IBM 604. Punch cards were "the common media of mechanical data processing operations, continued to be a mainstay of data capture (input and output) throughout the early mainframe era."¹⁵⁰ The IBM 650 produced a high capacity of punch card records. Some of the records produced by the IBM 650 remain preserved in the archives today.¹⁵¹

The IBM 650 would be used extensively throughout the following year in actuarial calculations. Vice-President and Managing Director, D.E. Kilgour stated at the current year's annual meeting that "many other system changes are now being adopted as part of the long-range

¹⁴⁸ IBM. "The Workhorse of Modern Industry: The IBM 650." Accessed on the website of the IMB Archives on January 10, 2018, http://www-304.ibm.com/jct03001c/ibm/history/exhibits/650/650_intro2.html.

¹⁴⁹ Baldwin. *Stepping Off*, 52.

¹⁵⁰ Baldwin. *Stepping Off*, 52.

¹⁵¹ "Punch cards," Item number: D00006797, Great-West Life Archives.

program in electronics... Three important benefits are expected from the wider application of electronic equipment: faster and more accurate service to policyholders; more complete and up-to-the minute reports for the guidance of management; and, an up-grading of clerical jobs due to the elimination of large volume of monotonous, routine work.”¹⁵² It would not be until 1961 that the Company would once again introduce the latest computer on the market to their workplace to improve business processes.

March of 1961 marked another exciting year for Great-West’s technological advancements with regards to computing. The IBM 7070 and 1401 computer system was ordered by the Company and was the latest in high-speed data processing equipment available at the time. The system was “made up of a group of machines, which can vary in the number of component parts and be tailored to the needs of individual companies.”¹⁵³ The installation at Great-West Life consisted of 21 units and included “ten magnetic tape units, the console control unit with a console card reader and the main memory contained in 6 sub-units. The 1401 system consists of a process control unit, a card reader-punch, a high-speed printer. It can be connected to some of the magnetic tape units when they are not in use on the 7070.”¹⁵⁴ There are no existing records to state where the console card reader records were stored, however, before a formal records management program at Great-West Life, records were managed by clerical staff and kept in department in filing cabinets.

To put in perspective the advancements made with this machine, the writer of the article provides a direct comparison of the 7070 and 1401 to the 650. As opposed to the punched card input-output machine of the 650, the 7070 computer used a magnetic tape, storing digits in the

¹⁵² Unknown author. *The Link*. Vol. 11 No. 12 April, 1958 (Canada: The Great-West Life Assurance Company), 1.

¹⁵³ Unknown author. *The Link*. Vol. 5 No. 12 April, 1961 (Canada: The Great-West Life Assurance Company), 4.

¹⁵⁴ Unknown author. *The Link*, 4.

form of magnetized spots. The storage capacity of the 650 was 20,000 characters, as opposed to the 7070s, which was five times as large with a capacity of 100,000. The 650 read information at a rate of 267 characters per second, while the 7070 read at 41, 667 characters per second. The 7070 was fully transistorized, and its internal calculating speed was many times greater than the 650. In fact, “the 7070 was designed to provide a transistorized IBM 650 upgrade path, with the 650’s drum memory replaced with a much faster core memory.”¹⁵⁵ Having a transistorized computer meant one had the latest in computer technology. Invented in 1948 by John Bardeen, Walter Brattain, and William Shockley, three researchers with Bell Laboratories, the transistor was new technology that “not only revolutionized devices such as televisions and radios, but also pushed the computer industry into a new generation.”¹⁵⁶ Transistors consumed less power than vacuum tubes (as were present in the 650), were smaller, and worked more reliably. This enabled the circuitry in computers to become smaller and more reliable as well.

The 7070 was capable of “selecting out information stored on magnetic tape, performing detailed complex operations on the data selected, and recording the result on new magnetic tape. To process the Company’s 450,000 ordinary policies and perform all the necessary operations through the 7070-1401 system on a daily basis, it will take approximately 8 hours.”¹⁵⁷ Used in conjunction with the 7070, the 1401 was an all transistorized data processing system that placed “the features found in electronic data processing systems at the disposal of smaller businesses, previously limited to the use of conventional punched card equipment.”¹⁵⁸ It was primarily used to convert information stored on punched cards to magnetic tape, and would handle all printing

¹⁵⁵ “IBM 7070 7074 Data Processing Systems,” Center for Computer History accessed on 15 December, 2017. <http://www.computinghistory.org.uk/det/15928/IBM-7070-7074-Data-Processing-Systems/>

¹⁵⁶ Linda Null and Julia Lobur, *The Essentials of Computer Organization and Architecture*. (Canada: Jones and Bartlett Publishers, 2006), 22.

¹⁵⁷ Unknown author. *The Link*. Vol. 5 No. 12 April, 1961 (Canada: The Great-West Life Assurance Company), 4.

¹⁵⁸ IBM. “1401 Data Processing System.” Accessed on the website of the IBM Archives on January 10, 2018, https://www-304.ibm.com/jct03001c/ibm/history/exhibits/mainframe/mainframe_PP1401.html

operations for data coming out of the 7070. The 1401 converted “IBM cards to magnetic tape at the rate of 800 cards per minute, from tape to cards at 250 cards per minute, and prints 600 lines per minute—faster than the eye can follow.”¹⁵⁹ As with the records produced by the 650, there is no mention specifically where or how these records were managed but it is likely they were managed by clerical staff within the department using the computer. Needless to say, the Company was very excited to utilize this new technology to its fullest potential, further increasing efficiency and workflow.

The first area of the Company to use the 7070 and 1401 was the ordinary insurance operation, but use would be extended in the future to group investment, and health insurance operations. Before the new computer, there were separate manual and punched card files for the different principal functions in the ordinary insurance operation. However, use of the 7070 and 1401 system meant that many of these files could be combined into one file on magnetic tape, with one inch of tape containing approximately 556 characters of information. Thus, the combined file “will have all the essential data for a particular ordinary insurance policy on one section of the tape. The tape will be in policy number order. The proposed system involves the simultaneous processing of a number of functions rather than separate processing as under our present system.”¹⁶⁰ The processing of the master file would operate on a daily cycle basis. This meant that at the start of the day there would be one tape completely up to date for all 450,000 in force. Subsequently, throughout the day, the second tape would be prepared for transactions taking place that day such as terminations, policy changes, or premium payments, among other things. Nightly, the two files – the in-force file at the beginning of the day, and the transaction file – would be fed through the computer and a new up to date in force file prepared. At the same

¹⁵⁹ Unknown author. *The Link*. Vol. 5 No. 12 April, 1961 (Canada: The Great-West Life Assurance Company), 4.

¹⁶⁰ Unknown author. *The Link*, 4.

time, “the machine will select out all policies on which some activity is to occur on the following day – a premium bill to be prepared, a policy maturing or expiring, policy anniversary calculations etc. This operation will be done simultaneously and the required out-put information, such as premium notices, will be available to the operating departments when they arrive in the morning.”¹⁶¹ The planning and programming of operations that had begun in 1961 carried on for two years with the goal to have the system in operation for ordinary insurance by 1 January 1964. Senior electronics personnel attended a 6 week IBM course in preparation for the new machine. This new technology would have an impact on the type and volume of records produced at Great-West Life. Without a formal records management system in place however, clerical staff within departments would be responsible to maintain records in files and create a filing system to enable organization and the ability to find records. As previously mentioned, the Niles report provided recordkeeping advice including retention, organization, classification, and disposition, however there is no mention whether or not this was put into practice. There is reference made to the “first major recordkeeping system” stored by the 7070 and the 1401 in internal publication, *Key News*. It stated that this major recordkeeping system made was “the Individual Life and Annuity System. They kept records, prepared bills, recorded amounts paid, calculated agents’ commissions and produced all necessary actuarial and statistical reports.”¹⁶² It went on to state that “the other major recordkeeping system operated on these computers was for Group Pension products, and between them, Individual Life and Group Pensions gave the 7070 and 1401 all the work they could handle.”¹⁶³ It is important to understand that the author is not using the term recordkeeping system in a records management context. There is no reference

¹⁶¹ Unknown author. *The Link*. Vol. 5 No. 12 April, 1961 (Canada: The Great-West Life Assurance Company), 4.

¹⁶² Unknown author. *Key News* Vol. 5 No. 2 February, 1978 (Canada: The Great-West Life Assurance Company), 4.

¹⁶³ Unknown author. *Key News* Vol. 5 No. 2 February, 1978 (Canada: The Great-West Life Assurance Company), 4.

made to directly to these records with regards to retention, however, we do know that both Individual and Group Insurance departments utilized Company Records for storage as was explained previously in this chapter.

In the midst of the excitement surrounding the new IBM 7070 and 1401, Great-West Life would add another piece of record producing technology to their collection. In April, 1962 the Company announced that they had “decided to convert Head Office and all Branch Offices from manual typewriters to more efficient electric models.”¹⁶⁴ They stated the transition would be gradual to give all secretaries and stenographers who were unfamiliar with this technology the chance to be trained. The transition would take place over the following 3 years and all manual typewriters would be replaced with Underwood electric typewriters.

By 1978 the IBM 7070 and 1401 had become outdated technology. The February edition of *Key News* in 1978 announced to staff that “Computer Operations personnel gathered round the old, familiar 7070 and 1401 computers for a final farewell salute January 18, the day the computers were officially “retired” and donated to the Manitoba Museum of Man and Nature.”¹⁶⁵ The replacement was IBMs 370/168. The gradual increase in work load led to the purchase of the 360/50, an earlier version of the 370/168 in 1967. The IBM 360/50 was part of the 360 system which combined “microelectronic technology, which makes possible operating speeds measured in billionths of a second, with significant advances in the concepts of computer organization.”¹⁶⁶ IBM Board Chairman Thomas J. Watson Jr. referred to the 360 as the most important product announcement in the Company’s history. At a press conference he stated, “System/360 represents a sharp departure from concepts of the past in designing and building

¹⁶⁴ Unknown author. *The Link*. April 1962 (Canada: The Great-West Life Assurance Company), 3.

¹⁶⁵ Unknown author. *Key News*, 4.

¹⁶⁶ IBM. “System/360 Announcement.” Accessed on the website of the IBM Archives on January 10, 2018. http://www-03.ibm.com/ibm/history/exhibits/mainframe/mainframe_PR360.html

computers. It is the product of an international effort in IBM's laboratories and plants and is the first time IBM has redesigned the basic internal architecture of its computers in a decade. The result will be more computer productivity at a lower cost than ever before. This is the beginning of a new generation – not only of computers – but of their application in business, science, and government.”¹⁶⁷ The system 360 model 50 was an updated version of the original with increased internal power. It was the most powerful unit in the medium price range with communication facilities.”¹⁶⁸ However, even with its improvements over the 7070 and 1401, it would not be enough. The system 370 model 168 was purchased and deployed in 1978. Though personnel in Computer Operations were sad to part with the 7070 and 1401, even referring to this system as “an old friend,” the capabilities of the system 370 model 168 would be welcomed. This model “was designed for high availability, eased application development and operational flexibility, with an emphasis on the needs of large data base and data communications users. A single model 168 could provide up to 8 megabytes of monolithic processor (main) storage.”¹⁶⁹ The introduction and use of this computer coincided with the introduction of the Records Retention Committee at Great-West Life and a formal records management program as was discussed previously in this chapter. There is no direct reference to records retention and storage of the records produced by this computer. The following examples are evidence of Great-West's commitment to staying current and in some cases trailblazing (IBM 650) with the latest in computer technology. This has been carried on to the present day, with both computers and systems that enable efficient records production and workflow.

¹⁶⁷ IBM. *System/360 Announcement*.

¹⁶⁸ IBM. “System/360 Model 50.” Accessed on the website of the IBM Archives on January 10, 2018. https://www-03.ibm.com/ibm/history/exhibits/mainframe/mainframe_PP2050.html

¹⁶⁹ IBM. “System/370 Model 168.” Accessed on the website of the IBM Archives on January 10, 2018. https://www-03.ibm.com/ibm/history/exhibits/mainframe/mainframe_2423PH3168.html

Looking back in history to the early beginnings of recordkeeping in the life insurance industry it is clear to see that not only do insurance companies create a large volume of records in their day-to-day business, but also that recordkeeping practices were established from the onset of the industry. Early insurance businesses such as Britain's The Prudential Assurance Company engaged advanced office machinery such as the arithmometer early on, but waited another 60 years to take advantage of new technology. Though the history of insurance companies begins later than it did in Britain, Canadian companies such as The Great-West Life Assurance Company wasted little time in catching up. However, this would not be enough, as Great-West sought to use advanced technologies to solve the challenges of recordkeeping and archives in a "modern" insurance Company. Great-West built on the foundation that was set by Prudential and other early companies, maintaining organized and accessible records, and always strove to go one step further with regards to evolving office technology. As the volume of records increased, Great-West established a sound archives and records management program to ensure legal responsibility, regulatory compliance, and to serve as evidence of everyday business transactions and their history. The forward-thinking that has brought Great-West to where they are today remains within the company as they move into the next phase of technological evolution and adapt their records management program to reflect these changes.

Chapter 3 – Going Digital: Building Systems for Digital Record Keeping at Great-West Life

In today's digital environment, access to information through the use of websites, email, hard drives, shared drives, and applications to store and share information has become increasingly popular. All are present and being used today at The Great-West Life Assurance Company. The increase in electronic records has meant a reduction of paper that is managed and stored by the Archives and Records Management Department. This has introduced new challenges to record keeping that are being addressed to maintain and ensure going forward, good record keeping at Great-West Life. Furthermore, "while digital technologies make it possible to create and maintain electronic records, changes in organizational structures, processes and communications shape the purpose, content, provenance, and uses of electronic records."¹⁷⁰ With a variety of options for digital records management available, and an ever fluid organizational structure, fleshing out the right fit for the organization will be of utmost importance.

With the rise in electronic records either being born-digital or imaged from the original source paper document, many creator departments are storing data on their shared drives or on content management systems (CMS) such as SharePoint, OmniRim or M-Files, to name a few. Specifically, with regards to records stored on shared or hard drives, but also with application choice, there is a need to find the right solution, and re-think the way records are managed company wide. Furthermore, individual departments are managing their own digital records, and while there are still paper records managed by record centre staff, the volume continues to

¹⁷⁰ ICA Committee on Electronic Records. "Guide for Managing Electronic Records from an Archival Perspective." *ICA Studies* 8. (Paris, France: International Council on Archives, 1997), 17.

decrease as digital records become more prominent. This situation takes us back to the early days of Great-West Life, when there was no Archives and Records Management department, and each department was responsible for the management of their own records. Now, as then, the danger is that important records may be lost. As well, there is a danger that data that should be destroyed is being kept, which could have negative legal implications. Therefore, records management strategies, policies, procedures and guidelines specific to digital records are necessary to ensure these records are maintained only for their lifecycle and destroyed according the Company's records retention policy. Recently, the Company has introduced SharePoint as an alternative to storing information on shared drives, with a goal being more consistency in how they are managing and storing records. As well, the possibility of transferring records of archival value at the end of their lifecycle is another reason SharePoint may be the most viable option. SharePoint offers intranet, content and document management, and collaboration, all of which Great-West Life is currently using. Electronic documents or imaged paper documents can be stored, tracked and with permission, amended by users as needed. In theory, SharePoint seems like a sound solution for electronic records management for a large company, however, further exploration of its strengths and limitations is warranted to determine whether or not SharePoint and its add-ons can satisfy crucial records management requirements. This includes ensuring that SharePoint complies with Canadian Access and Privacy legislation such as the Personal Information Protection and Electronic Document Act (PIPEDA). This act governs how private sector organizations collect, use and disclose personal information in the course of commercial business. For SharePoint to be implemented as a digital records management system, it will have to comply with PIPEDA. This is not a question merely asked by records management

professionals at Great-West Life. It is a popular topic among records management professionals in general.

Scholars, such as James Lappin have suggested that a new records management orthodoxy is needed post 2010, leaving behind the previous Electronic Document and Records Management System model (EDRMS). He states, “the organization-centric EDRM has not been able to win battles against team-centric applications (SharePoint) and individual-centric applications (email).”¹⁷¹ While he does not know what the next records management orthodoxy will be, he suggests it will be built out of practical experience with real problems and solutions, not born out of records management theory. As many organizations have turned to SharePoint for records management, a great deal of attention will go into “trying to make organization-centric records management frameworks such as business classifications work within the team-centric environment of SharePoint.”¹⁷² Therefore, a more in-depth look at how a records management model fits into SharePoint will be discussed in this chapter.

Just as records management needs to be well organized and adjusted to meet the needs of electronic records, the management of electronic archival records must be considered as well. Technology has not only impacted how and where records will be stored, but also, the type of records created. Great-West Life acquired its first computer in 1958. In the 1980s the Company moved to desktop computing and by the early 2000s, handheld devices also contributed to the types of records produced. Therefore, the impact of the digital age means that going forward, more records of archival value will be born-digital or transferred to digital format as in the case of scanning or imaging. To be mindful of these ongoing changes, the Archives and Records

¹⁷¹ James Lappin. “What will be the next records management orthodoxy?.” *Records Management Journal* 20 No.3 (2010): 259.

¹⁷² Lappin. *What will be the next records management orthodoxy?*, 260.

Management Department at Great-West Life must decide whether SharePoint can satisfy both records management and archival needs, or if working towards an Open Archival Information System (OAIS)-based trusted digital repository to work alongside SharePoint is a more viable solution. An OAIS “is an Archive, consisting of an organization which may be part of a larger organization, of people and systems that has accepted the responsibility to preserve information and make it available for a Designated Community. It meets a set of such responsibilities as defined in this document, and this allows an OAIS Archive to be distinguished from other uses of the term ‘archive’. The term ‘Open’ in OAIS is used to imply that this Recommendation, as well as future related Recommendations and standards, are developed in open forums, and it does not imply that access to the Archive is unrestricted.”¹⁷³ For records of archival value for either historical or legal/regulatory requirements such as minute books or policy pages, it is important once they are digital, that an OAIS compliant system is strongly considered to ensure long-term access to authentic, reliable, and useable records.

Archivematica is “an integrated suite of open-source software tools that allows users to process digital objects from ingest to access in compliance with the ISO-OAIS functional model. Users monitor and control ingest and preservation micro-services via a web-based dashboard. Archivematica uses METS, PREMIS, Dublin Core, the Library of Congress Bagit specification and other recognized standards to generate trustworthy, authentic, reliable and system-independent Archival Information Packages (AIPs) for storage in your preferred repository.”¹⁷⁴ Archivematica would allow Great-West Life to preserve long-term access to authentic, reliable, and trustworthy digital content. As stated with SharePoint, Archivematica will need further

¹⁷³ CCSDS, Reference Model for an Open Archival Information System (OAIS), June 2012, section 1, 1-1.

¹⁷⁴ Archivematica website accessed on 11 January 2018. <https://www.archivematica.org/en/>

analysis of its strengths and limitations to determine if this system is right for the archives. Other considerations include gaining executive and IS support for two separate systems, one for archives and one for records management. While Archivemata is free and open-source, there is still a cost for a developer, server space and staff training of a new system. Furthermore, if SharePoint can be used for both archives and records management, there would likely be no value add to having both. This will be evaluated further to determine the best system to suit Great-West Life's needs as this is the first step to convincing the organization to pursue a long-term digital record keeping solution.

Current literature regarding digital records management and archiving resoundingly states, "the future of managing electronic records is complex, and goes beyond the procurement of an EDRM system."¹⁷⁵ There have been significant developments in the past two decades both professionally and academically, however, as organizations continue to struggle with managing electronic records. This is "partly due to technology democratizing, decentralizing, and individualizing the way people create, use and manage information and records in the workplace."¹⁷⁶ With regards to the technical problems associated to EDRM systems, it is likely their age that is a contributing factor as they were "first conceived in the late 1980s and early 1990s, before the impact of the web allowed specialist roles, such as virus checking, mobile security assessments, information governance, data storage management, and others."¹⁷⁷ One suggestion for future directions is that "records management lies at the heart of information centric data centers, updating and extending the master data that informs all end-user and

¹⁷⁵ David Ryan. "The Future of Managing Electronic Records." *Records Management Journal* 15 No. 3, (2005): 128.

¹⁷⁶ Julie McLeod and Sue Childs. "A strategic approach to making sense of the "wicked" problem of ERM," *Records Management Journal* 23 No. 2, (2013): 104.

¹⁷⁷ David Ryan. *The Future of Managing Electronic Records*, 128-129.

infrastructure applications, supported by audit trails and retention schedules.”¹⁷⁸ An example of this is already taking place at Great-West Life as evidenced in their Corporate Imaging Policy. When paper originals are imaged to make the digital copy the source document, the digitized “original” must conform to the same rules as the paper copy. Therefore, departments are required to follow an Image Management Program (IMP) when converting paper copies to digital format. This is “an authorized program following strict control guidelines to achieve specific objectives in the capture, storage, and retrieval of images in the ordinary course of business.”¹⁷⁹ The IMP includes control guidelines departments must follow if they want to make an imaged record their source document and destroy the paper copy. This includes “the creation of policies and procedures outlining creation and maintenance and final disposition of images, creation of operational manuals for the systems used within the IMP, adherence to appropriate Information Security measures for the information, ability to recover from backups, and periodic audits of the program to ensure compliance with relevant standards and legislation.”¹⁸⁰ Therefore, if a litigious matter presents itself, the imaged document will hold up in court. The Imaging Policy is a valuable point of reference for future digital records management program considerations. Can the traditional method of managing records be applied to electronic records, or is a new paradigm required? This question will be fleshed out with a case study of electronic records management possibilities for the Great-West Life Assurance Company.

Currently, electronic records are stored and managed on departmental shared drives, various databases, and applications such as SharePoint. Due to the widespread use of SharePoint

¹⁷⁸ David Ryan. *The Future of Managing Electronic Records*, 129.

¹⁷⁹ The Great-West Life Assurance Company. “Corporate Imaging Policy.” Cybrary.com. Accessed on 1/11/2018. http://mycybrary.com/corporat/records/Corporate%20Imaging%20Policy%20Effective%20April%209_2013.pdf

¹⁸⁰ The Great-West Life Assurance Company. *Corporate Imaging Policy*.

in some capacity by departments across the organization, it is a front-runner to be implemented as a records management system. The Company currently pays for the license and has already begun moving some current applications over to SharePoint. In an organization the size of Great-West Life, with copious inter-related departments, SharePoint's use as a tool for collaborative workflow, document and information sharing, and general communication have made it an attractive option. While these are all checkmarks for overall usage, what remains to be seen is SharePoint's viability as a records repository.

To fully understand the preceding question, it is necessary to examine how SharePoint fits into a records management orthodoxy in an increasingly digital world. As previously mentioned, the EDRMS model is no longer sufficient for records management because “an application with generic record keeping functionality and a corporate business classification will not be able to compete for the attention and adoption by colleagues with applications that are either: specifically tailored to a particular area of work (line of business systems), specifically customizable by a particular team or local area (collaborative systems such as SharePoint), customizable by an individual (such as email and perhaps externally hosted applications such as Google Docs and Facebook).”¹⁸¹ These are all relevant to the work climate at Great-West Life today, and therefore need to be taken into account when amending the current records management policy to include digital forms of information.

To successfully implement SharePoint as a records management tool, creating organization-centric records management frameworks like business classifications that fit within a collaborative tool will be necessary. This will come with obstacles that should also be

¹⁸¹ Lappin. *What will be the next records management orthodoxy?*, 259.

considered. These can be viewed as some of the limitations to using SharePoint as a records management system. For instance, using SharePoint will require many compromises and adaptations to conditional features of a particular application at a particular time. As well, it will be difficult to link records management theory when engaging with SharePoint specific concepts that have no grounding in records management. For example, SharePoint uses “content types” as a “reusable collection of metadata (columns), workflow, behavior, and other settings for a category of items or documents in a Microsoft SharePoint Foundation 2010 list or document library.”¹⁸² Content types were created to enable the user to manage the setting for a category of information in a centralized and useable way. While this concept enables similar documents to be grouped by category, for instance purchase orders, invoices, or expense reports, the documents in each category might not share the same classification and retention rules and therefore should not be grouped together. However, SharePoint offers an add-on called The Records Centre that has a solution for these issues outside of the basic SharePoint application. This will be discussed further in this chapter.

The challenge to manage electronic data has multiple facets that require consideration. There is unstructured data such as documents, spreadsheets, and scanned images, as well as structured data held in databases. Another aspect requiring attention, that Andrew Chapman suggests is often overlooked, is social data. He states that “this type of data lies between unstructured and structured data and is a result of the explosion in Web 2.0 technologies (e.g., blogs, wikis, web pages, activity feeds).”¹⁸³ This is an important aspect that should be considered by archives and records management and IS staff at GWL, as the Company has public facing and

¹⁸² SharePoint. “Introduction to Content Types.” SharePoint website accessed on 12 January, 2018. [https://msdn.microsoft.com/en-us/library/office/ms472236\(v=office.14\).aspx](https://msdn.microsoft.com/en-us/library/office/ms472236(v=office.14).aspx)

¹⁸³ Andrew Chapman. “Managing Social Data: Is SharePoint the Answer?” *Information Management* 44 No. 2, (2010): 22.

private webpages, social media tools such as Facebook and Twitter and Company cell phones, all containing social data.

Chapman points out “in the world of enterprise content management and records management, you can think of social data as being data that looks like unstructured data to the end user, but the underlying content follows a pre-determined structure.”¹⁸⁴ Therefore, underlying data will most likely be stored in relational databases, or in some cases it is encapsulated in the object itself. For instance, a client filling out an online insurance form will input their data that will be stored in the format of the form as well as in XML or HTML format. Therefore, records management staff need to determine the difference between information that is a record and that which is just data, and classify and keep the former appropriately. Chapman states, “from a records management perspective, this means you either need to retain both the data and the presentation layer, or a standalone rendered copy of the data that encapsulates both the data and the view.”¹⁸⁵ This is within the scope of records that will be considered for SharePoint, if it is determined to be an appropriate repository. Once information is separated into what is data, and therefore transitory, and what is a record, this information can be stored in libraries on SharePoint as structured data in an SQL server. For instance, from a records management perspective, social media tools such as Facebook are being used to perform critical business applications such as customer questions or complaints. Alternatively, from an archival perspective these same tools are used for advertising or to showcase events that in the future will be considered part of the Company’s social history. In a changing world that once relied solely on paper to document anniversaries, communicate with customers regarding complaints, or

¹⁸⁴ Chapman. *Managing Social Data*, 22.

¹⁸⁵ Chapman. *Managing Social Data*, 22.

collect information for services, storing these records in a digital repository that will provide secure access, storage, and disposition or long-term storage is necessary. SharePoint offers these critical tools such as version and access control to preserve the integrity of digital records. Social data is just one type of record to be considered. The Company produces various records such as client facing and internal forms, advertising, investment, taxation, legal, and audit records, as well as public facing information such as annual general reports, among others. The Corporate Secretaries Department once provided the archives with bound minute books that would be microfilmed for preservation and backup, but are now being produced in a bound original, duplicate and digital copy for long-term preservation and searchability. Photographs documenting staff events or company culture are no longer taken on cameras using film. This is a snapshot of the records being produced on a daily basis at GWL to outline why a digital repository is necessary.

To Digitize or Not to Digitize

That is the question! From a forward facing perspective, most records are now born-digital, but what about records already in the archives in paper format, or semi-active records that are being transitioned to digital? The ease of finding information using searchable metadata is much more appealing from the perspective of the person searching and the company paying the employee to conduct the search, and therefore digitization of paper is an appealing option. While the benefits of digitization might seem obvious (effective means for preserving, recreating, and providing access to diverse archival records), there are also challenges that must be considered. Many organizations are still trying to navigate the complexities of digital preservation. In 2016, Christopher Zaste pointed out in his thesis that Library and Archives Canada is an example of an institution faced with many challenges regarding digital

preservation. He states, “despite declaring that digital records will be the “format of choice” for the government by 2017, LAC does not have a digital strategy in place. As a result, it is unable to effectively and efficiently handle large quantities of digital records.”¹⁸⁶ After spending \$15.4 million on a trusted digital repository (TDR) between 2006 and 2011 it was deemed operational by July of 2011, however, “it was shut down without official documentation of the reasoning in November 2012.”¹⁸⁷ This can be seen as a cautionary tale of ensuring the program an organization is choosing to implement is sustainable and the right fit for business needs to avoid time and money lost on unsuccessful results. Library and Archives Canada is a much larger institution with vastly different needs than Great-West Life, but it is an important example nonetheless.

In the article, “Digitizing Archival Records: Benefits and Challenges for a Large Professional Accounting Association,” by Monica Keneley et al., a case study provides examples of things to be considered. This case study is particularly relevant as it is an exploration of the challenges related to a prominent professional accounting association, CPA Australia. The organization has “more than 150,000 members spread across 120 countries and with origins reaching back to 1886, this organization is significant in size, history, and influence, and these circumstances are reflected in its extensive archives.”¹⁸⁸ The challenges this organization is facing is comparable to those experienced by a business entity such as Great-West Life.

¹⁸⁶ Christopher Zaste. *Another Bit Bytes the Dust: The Technological and Human Challenges of Digital Preservation*. (Canada: The University of Manitoba, 2016), 46.

¹⁸⁷ Greg Bak. “Trusted by whom? TDRs, standards, culture and the nature of trust.” *Archival Science* 16 no. 4 (2016): 373-402.

¹⁸⁸ Monica Keneley, Brad Potter, Brian West, Phillip Cobbin, and Steven Chang. “Digitizing Archival Records: Benefits and Challenges for a Large Professional Accounting Association,” *Archivaria* 81 (Spring 2016): 76.

Just as every paper record generated by an organization is not kept, this is true for digital records as well. Keneley et al., state, “retention and disposal policies are therefore required and the selection of items for digitization becomes a key variable in shaping the accessibility of the existing archival collection.”¹⁸⁹ This can present challenges in creating procedures and protocols or amending those already existing to reflect the new technology being utilized. To combat this challenge, Great-West Life uses Corporate Imaging Policy that guides staff through the process of documenting imaging procedures so that the digital copy becomes the original source document and the paper can be destroyed without risk. This policy will be amended to include procedures for the safe storage, access and disposition of born-digital records.¹⁹⁰

The authors raise another issue to be considered, the digitization process itself. This includes determining how records will be catalogued and how the technology will be managed. Digital records need to be managed as carefully as paper records to preserve metadata and ensure the value and provenance of the record. Mike Kastellec points out the technical aspects of digital preservation stating that “there are two purely technical issues at the core of digital preservation: data loss and technical obsolescence.”¹⁹¹ Therefore, understanding the technology and how it will be managed is imperative to ensure digital media is not subject to degradation determined by the inherent properties of the medium and environment where the record is stored. Consideration of archival and long-term digital records and the need for a system that offers migration will be examined further with regards to Archivematica. With regards to semi-active records at Great-West Life, libraries created in SharePoint organize and catalogue records.

¹⁸⁹ Keneley et al. *Digitizing Archival Records*, 77.

¹⁹⁰ “Corporate Imaging Policy.” Great-West Life Internal Document.

¹⁹¹ Kastellec. *Practical Limits*, 63.

Keneley et al., suggest that “the most profound impacts of digital technology has been to challenge the existing frameworks of thinking about records and archives.”¹⁹² The accounting association had the challenge of integrating their collection with other digital collections. This is currently outside the scope of the Great-West Life archives, as it is strictly private, however, if their collection is digitized, recognition of their longstanding history in Winnipeg could be of interest to all levels of government archives. The authors cite the challenge of upholding the principle of respect des fonds, which “advocates that the individual records of a person or organization should be kept together and in their original order and not combined with other records.”¹⁹³ Provenance and original order are the foundation of this approach. When the records of an individual or organization are preserved as one fonds, the evidential value of the records is protected. Furthermore, when original order and structure of records is maintained, evidence of their original use is provided. The benefits of this approach is obvious with regards to archival records and preserving the history of an organization, however, it can also be applied to semi-active records with long-term value that are not necessarily archival, as provenance and original order can be useful in matters of litigation. Furthermore, the “archival inheritance spoke for the principle of provenience as one of the stone corners in long-term digital preservation, because this principle supports authenticity and trustworthiness of any kind of digitally recorded information.”¹⁹⁴ SharePoint offers an opportunity to keep records together, accessible, and metadata preserved. Records can be ordered by various metadata fields such as year, subject, author, or organization. If multiple fields are filled out, records can be searched by each one for a more encompassing result. This could be useful for both semi-active and archival records for

¹⁹² Keneley et al. *Digitizing Archival Records*, 79.

¹⁹³ Keneley et al. *Digitizing Archival Records*, 80..

¹⁹⁴ Angela Dappert, Rebecca Squire Guenther and Sebastien Peyrard. *Digital Preservation Metadata for Practitioners Implementing PREMIS*. (Switzerland: Springer International Publishing Switzerland, 2016): 13.

GWL. For instance, multiple departments have copies of annual reports and eventually, these are sent to the archives for permanent storage. A SharePoint library with metadata fields organized by record type, title, year, and company could be set up and access given to all departments with permission to use those records. Furthermore, “in addition to these search, discovery, access, rights, management, provenance, or technical metadata, we need to ask ourselves what metadata we need in order to keep digital information objects accessible over a long time – that is, to ensure their digital preservation.”¹⁹⁵ If the SharePoint site was owned by the Archives & Records Management department, once the records had met their retention, they could be transferred into a new library for archives only, or to Archivematica if that is the direction the Company chooses to move forward with.

Another important aspect for records management is the ability to find documents once they have been entered into a database. In a company the size of GWL, with hundreds of record producing departments and many staff who change positions or leave the company, it is inevitable that record names will change based on their departmental custodians. By SharePoint offering multiple metadata fields, it enables the user to narrow down their search and have more accuracy when looking for records. Alfred de Weerd points out that “SharePoint will let you find your item in the dynamic, semi-dynamic and static phase. If you want results from only one phase, add status metadata and refine your search results based on managed metadata.”¹⁹⁶ In an organization such as Great-West Life, having the option to populate metadata fields for findability is a useful tool. The Corporate Secretaries department, for example, has multiple staff members serving various executives and functions across the Company. Many of their records

¹⁹⁵ Angela Dappert,, Guenther, and Peyrard, “Digital Preservation,” 2.

¹⁹⁶ CMS WiRE. “How to Get Started with SharePoint Records Management.” CME WiRE website accessed on 15 November 2017. <https://www.cmswire.com/information-management/how-to-get-started-with-sharepoint-records-management/>

have an archival disposition and are called in for reference, especially during the annual general meeting time. Currently, there is a standard in place for naming conventions of permanent files for searchability. However, in the past, before this was put into effect, staff were using various titles to describe the same records. This was problematic in the event of staff turnover, or even just staff forgetting what they had named specific records that were in archival storage. Meeting minutes are an example of records that are often called in after they've been sent for semi-active or archival storage. Before the naming convention it was common for these records to have variations of the same title. This was problematic as the database for records is not intuitive and exact titles needed to be put into a search to call up the records. This meant that the search for records took more time as multiple variations of a record title would need to be tried and therefore, more boxes called in to physically look for a record. With the metadata fields in SharePoint, this could be avoided as it would enable cross-referencing and go beyond title naming as a primary search tool.

Another feature offered by SharePoint that aids in maintaining metadata and access of records is the ability to relate records to one another. This can be done by “referring to other documents by their DocumentID, a uniquely defined and centrally managed field.”¹⁹⁷ This element as well as using document sets relates documents to one another which makes them easier to search for and access. As long as you define a relationship between documents, SharePoint will relate them to one another. This is another feature that GWL records management could benefit from. As previously mentioned, it is common for different departments to maintain and use the same records. If records were imaged, or born-digital and stored on a common SharePoint site managed by Archives & Records Management, libraries

¹⁹⁷ CMS WiRE. *How to Get Started with SharePoint Records Management*.

could be set up based on cost centre and who owns the records. Permission could be granted to other departments, or specific people, who need access to such records. This would eliminate redundancy of paper records and as well, enable quick access to those who might otherwise have to request paper records stored off-site. Setting up document sets, or using DocumentID would be an easy way to relate records to one another even if multiple cost centres are accessing these documents. For instance, the Taxation, Financial Reporting, and Corporate Secretaries departments all use the annual reports. Each department stores both a paper and electronic version in their department. Once these records have reached their on-site retention, each sends a copy to the archives for storage. Therefore, physical space is taken up by multiple copies of the same record in different departments. Furthermore, the archives receives a copy from each and has to take the time to search the accession log and database to ensure we have a copy before disposing of extras. This is time consuming and redundant. With a SharePoint site and library set up for these types of records, efficiency, access, secure storage and version control would be possible in all stages of the records life cycle.

There are many benefits to using SharePoint for records management. This is not to say it is a solution that will work for everyone, but the framework of what the platform offers can be tailored to suit various needs. Using the lifecycle of the record as a starting point and breaking down SharePoint's capabilities from there will ultimately provide the foundation for a business case for SharePoint. In the active phase, records are created, edited and used on a regular basis. In this phase, a team site can be created and document libraries populated with records produced by individual departments. The active phase is likely where one would see the most collaboration, as records are newly created and potentially edited by one or more people. The semi-active phase can have collaborative functions, but for the most part, documents are mostly

read and not edited as frequently, if at all. Retention rules can be set up at this stage to prepare for disposition. The archival/permanent phase means records are not actively used for business purposes but are kept for business continuity, legal, or historical reasons. In this phase, if SharePoint was used for records management, the Archives & Records Management department would be responsible for maintenance, access and preservation.

As previously mentioned, access to records is an important aspect to be aware of. With regards to digital preservation, there are two different types of access that are important. First, “authorized users must be able to access an archival institution’s holdings and unauthorized user’s restricted from doing so.”¹⁹⁸ In SharePoint, this can be controlled with rights management for users to libraries and individual records. Second, an archival institution must have access to a digital object to preserve it. This fact “leads to serious restrictions on the scope of digital preservation because much of the world’s digital information is inaccessible for the purpose of archiving by libraries and archives.”¹⁹⁹ In Great-West Life’s case, digital objects that could be problematic with regards to access, such as password protected webpages, are managed by the Company itself. Other areas that can be inaccessible are email and digital objects created and stored by individuals. However, Great-West Life has a records management policy in place that outlines what staff should do to manage these types of records. Emails with business value are often saved with the records they pertain to.

Disposition is another important aspect to be considered with digital records management. Compliance with legal, taxation, and privacy legislation is imperative, but another aspect to be considered is space. Just as paper records fill warehouses, offices, and file rooms,

¹⁹⁸ Kastellic. *Practical Limits to the Scope of Digital Preservation*, 65.

¹⁹⁹ Kastellic. *Practical Limits to the Scope of Digital Preservation*, 65.

digital records take up server space. Disposition reduces risk and operational costs, and makes discovery easier. With paper records, disposition of non-permanent or archival records is carried out by archives and records management staff in conjunction with Iron Mountain. The records retention committee approves classifications and reviews hold codes and once they have given their approval, a master list of all records up for destruction is created. Departments with records that have met their retention review the list pertaining to them and give their approval. Iron Mountain is then given a list of cartons to be destroyed, and once finished a certificate of destruction is provided. Therefore, the destruction process is managed by archival staff who are trained in the practical and legislative/regulatory requirements to ensure records are destroyed on time and properly. Digital records require looking at core archival functions in a different way. If semi-active records are managed in SharePoint libraries by the Archives & Records Management Department, the process will remain the same. However, it is possible that each department will have their own SharePoint site and manage their own records and only send files that are archival/permanent to archives. In this case, departments would be responsible for destruction, deleting files when they have met their retention. This would require a policy to ensure destruction procedures are in place in compliance with records management standards for disposition. Deleting digital files does not simply involve manually pushing the delete button on one's keyboard. Files will have to be deleted not only from the current SharePoint application they reside in, but also in any backups of the system the IS department keeps, and any other location the record might be stored such as shared drives or computer desktops. In preparation for this, the Archives & Records Management Department has updated their records retention policies and procedures to include instructions on how to manage, maintain and destroy records according to their classification.

It is important to understand SharePoint's retention capabilities before determining whether or not it is a viable solution for Great-West Life. Records retention is one of the most important pieces to be considered as records provide evidence of a transaction or activity taking place within the organization over a period of time. Often, these records are retained for legal or regulatory compliance requirements. As well, "a record by definition must be immutable, which means that once a document or piece of data is declared to be a record, it must remain unchanged."²⁰⁰ This point is especially important for digital records as the platform they are stored in must have version control and permissions capability. SharePoint has both of these. With regards to this case study, in an organization with hundreds of departments, most producing records, it is imperative that the chosen platform has the capability to show the original document and track changes given the collaborative nature of the organization. As well, it is important for the individual with permissions to lock the document to prevent potential unwanted changes. Individual departments will have their own SharePoint sites for managing their records before they come to the archives in some cases. Therefore, permissions must be set up to ensure only those who should have access to the records do.

The duration of time records are kept by an organization in conjunction with the procedures once they have met their retention is a critical element of records management. There are legal, compliance, and business implications of keeping records too long. Just as with paper records at Great-West Life, digital records will follow the same records retention and destruction policies to ensure the proper destruction or transfer to the archives of expired records. Therefore, processes are in place to ensure records are managed appropriately from all business perspectives. It is often found that, "for business processes to be applied consistently across all

²⁰⁰ Antonio Maio. "Records Management in Microsoft SharePoint," *Credit Control*, Vol 34, No. 3, (2013): 46.

SharePoint content or records, automation is a key requirement, as well as making appropriate use of metadata.”²⁰¹ As previously mentioned, taking full advantage of the metadata fields will increase the likelihood of a record search.

For the purpose of a case study, the first step in using SharePoint for records management at Great-West Life was to define a file plan. This includes “a description of the types of documents that the organization considers to be records; a taxonomy for categorizing the records; retention policies that define how long a record will be kept and how to handle disposition; and information about who owns the record throughout its information lifecycle, and who should have access to the record.”²⁰² Using this as a framework, a user acceptance testing (UAT) environment was set up in SharePoint. A department producing active, semi-active, and eventually, archival records was selected to participate as a pilot project to test the records management capabilities of SharePoint. The department that has been chosen for this pilot is Forms Design Services. They are within the same overarching department as Archives and Records Management, and therefore, the records they produce are familiar to the tester. This will make classification easier as the function of these records is well-understood. Another advantage of Forms and Design has is that although they create forms that are used across all Lifeco. companies, they only have a few record items on their departmental retention guide. This enabled a smaller, more organized library to be created and make it a more manageable pilot. Working within the UAT will allow the tester to assess retention capabilities, version control and permissions, document libraries, workflow processes, and email to SharePoint. The pilot began by setting up a UAT/test site to enable a means to fully explore capabilities without impacting

²⁰¹ Maio. *Records Management in Microsoft SharePoint*, 47.

²⁰² Maio. *Records Management in Microsoft SharePoint*, 47.

the actual site used by the department. If the pilot is successful, and the information created within the UAT is deemed useful going forward, the test site can be saved and transferred to the existing site.

The Forms and Design department is responsible for the creation and amendment of the majority of the forms produced by the company. This includes both customer facing and internal forms. They receive email requests to create a new form or edit one already existing, and from there a docket is created. Dockets consist of the requests, subsequent correspondence, drafts/final product and approvals. The retention for dockets is current year plus two years. In the past, dockets have been kept in paper format, with all information being printed, filed and sent off-site for storage until they have met their retention. Since all of the information contained in dockets is born-digital, it makes sense to stop printing and filing this material and begin managing it electronically.

The other major records produced by this department requiring classification and records management are the forms themselves. Final versions of all forms must be kept permanently in the archives once they have met their retention. This is for legal reasons as it has happened in the past where a customer asserts a form has said one thing and taken legal action. In this case, it is important to have the exact final version of the form the customer signed when agreeing to a service provided by Great-West Life. Currently these forms are in paper format and stored at the records centre in the archival storage space there. However, in the past 4 years, the archivist has asked to have forms sent in digital format as well with a future platform for digital records management in mind. Forms are especially useful as digital records, simply for the ease of searchability. If this pilot is successful, not only will this be a good example for other record producing areas in the Company, but it will improve processes for both departments.

The aforementioned SharePoint functions are part of the standard version and are not add-ons. Another feature that is part of the standard license that is being used as part of the pilot project is the *Records Centre* and was “introduced in 2007 as a site that served as a conventional records archive.”²⁰³ Content from across the Company can be “submitted to a Records Centre and then routed to the appropriate place where it picks up the right permissions and policies, such as expiration and auditing.”²⁰⁴ There are a range of features that try to mimic core records management and archival functions in a paper world. Our pilot will use of these features. As previously mentioned, documentid enables the user to assign every document a unique identifier that stays with the document through its entire lifecycle, including the archives. Each docket will be assigned a documentid as will each final version of the forms produced. Another feature being used for the pilot will be multi-stage retention. This means “retention policies can have multiple stages, allowing you to specify the entire document lifecycle as one policy (e.g. review Contracts every year, and delete after 7 years).”²⁰⁵ This is especially important with multiple records sets. As previously mentioned, there are two main record sets produced by Forms Design Services, however, they have different classification codes, and different retentions. The retention will be set up for dockets that after current plus two years, dockets will be deleted. Final versions of forms however have a classification that states one copy is to be sent to archives at the time of production, and one copy is kept by the department permanently. Therefore, two retention policies will be given to the record sets. The Per-Item Audit feature will also be used and audit report will be carried out to ensure the proper retention rules are being applied, and deletion of

²⁰³ Ryan Duguid. “Introducing Records Management in SharePoint2010,” *Microsoft Enterprise Content Management (ECM) Team Blog*. Microsoft website accessed on 5 October 2018.

<https://blogs.msdn.microsoft.com/ecm/2010/02/13/introducing-records-management-in-sharepoint-2010/>

²⁰⁴ Ryan Duguid. *Introducing Records Management in SharePoint2010*.

²⁰⁵ Ryan Duguid. *Introducing Records Management in SharePoint2010*.

records is taking place appropriately. A regular audit process will ensure any errors be caught quickly.

Another feature of the Records Centre in SharePoint 2010 is the Hierarchical File Plans. With this feature, “you can create deep, hierarchical folder structures and manage retention at each folder in the hierarchy (or inherit from parent folders).”²⁰⁶ This will be used to organize dockets in folders by year, for searchability as well as easier destruction once the records have met their retention. Another form of reporting offered in the Records Centre is file plan report. This enables the user to “generate status reports showing the number of items in each stage of the file plan, along with a rollup of the retention policies on each node in the plan.”²⁰⁷ This will be useful for yearend reporting of active or semi-active records for the Forms Design team, and as well, the Archives and Records Management staff can print off detailed reports of final versions of forms for reference purposes.

SharePoint 2010 offers special features to capture metadata that are also being used in the pilot. For instance, the Taxonomy and Centralized Content Types function recognizes that the “archive will be a consumer of enterprise-wide taxonomies and content types, ensuring consistency and context transfer between the collaborative spaces and the archive.”²⁰⁸ The SharePoint site itself will become a collaborative space, as each department has their own individual sites. Creating taxonomies to combine archival records with similar content types will enable collaboration between various departments in the Company. The Content Organizer function will be used to route email requests to the appropriate docket folder. The “records router can use metadata to route incoming documents to the right place in the hierarchical file plan. For

²⁰⁶ Ryan Duguid. *Introducing Records Management in SharePoint2010*.

²⁰⁷ Ryan Duguid. *Introducing Records Management in SharePoint2010*.

²⁰⁸ Ryan Duguid. *Introducing Records Management in SharePoint2010*.

instance, it enables you to automatically enforce rules on content that is submitted, like “If a Purchase Agreement is tagged with Project Alpha, send to the Alpha Contracts subfolder and apply that folder’s retention policy to the item.””²⁰⁹ This tool will save time overall as requests come in from across all core companies including London Life and Canada Life as well. It is a way to manage dockets and keep requests organized within them, without relying on an individual to carry out this action. In terms of organization and process improvement, this function is invaluable. This feature will also be very useful within this pilot and if it is successful and rolled out Company-wide, for the Archives and Records Management Department as the archival material comes in from across the core companies, including subsidiaries across Canada. Records retention guides dictate which departments will have records of archival value. In this case, documents are sent yearly to the archives. The Content Organizer function will allow these documents to be re-routed to their hierarchical folders within their proper records sets.

These are the core features that are being tested in this pilot. Currently, the features described should perform well for both Forms and Design and Archives and Records Management. Records are being organized and retention rules are being applied according to classification and will be grouped into libraries. Final versions of forms will be routed to the archives folder and managed by archives staff. Due to the timing of this pilot and the fact that paper records will not be imaged and added to the site, destruction of the records in this pilot will not be carried out until 2019 and beyond once the born-digital records have met their retention. The conclusion that has been drawn from this pilot is that SharePoint 2010 looks to be a capable records management tool for active, semi-active, and archival records. It remains to be seen if

²⁰⁹ Ryan Duguid. *Introducing Records Management in SharePoint2010*.

this will be rolled out to the rest of the Company, however, if it is confirmed that the UAT site is a success, it will be transferred to the live SharePoint site for wider use.

Digital Preservation

Digital preservation has been and continues to be a contemplated topic among records management professionals and those in broader communities relating to preservation. The challenges posed by digital records have meant that organizations and institutions have had to look beyond policies, standards, procedures, and orthodoxies familiar to them in a paper environment. The field of Digital Preservation “is concerned with keeping digital information authentic, understandable, and useable, through time and across socio-technological environments.”²¹⁰ Therefore, it is imperative to choose a system grounded in preservation standards to create a well-defined framework when deploying any digital preservation techniques that “will successfully yield value to the organization in the form of continually useful and accessible information.”²¹¹ Understanding digital preservation capabilities and limitations, and the standards that ground their guidelines is imperative to choosing the right system. An analysis of OAIS will be completed before examining Archivematica to determine if it is the right fit for the digital archival holdings at Great-West Life.

Open Archival Information System (OAIS)

As previously mentioned, an OAIS is “an Archive, consisting of an organization, which may be part of a larger organization of people and systems that has accepted the responsibility to preserve information and make it available for a Designated Community.”²¹² It meets a set of

²¹⁰ Diogo Proenca, Jose Tribolet, and Jose Borbinha. “Modeling the Value of Digital Preservation Activities,” *Procedia Computer Science* 100 (2016): 1050.

²¹¹ Proenca, Tribolet, and Borbinha. *Modeling the Value*, 1050.

²¹² CCSDS. Reference Model for an Open Archival Information System (OAIS), June 2012, section 1, 1-1.

responsibilities that enables an OAIS Archive to be distinguishable from any other use of the term ‘archive’. These recommendations “are developed in open forums, reflecting the term ‘Open’ in OAIS, and it is not implying access to the Archive is unrestricted.”²¹³ The information in the OAIS reference model has been deemed to need long term preservation, defined as “long term is enough to be concerned with the impacts of changing technologies, including support for new media and data formats, or with a changing user community. Long term may extend indefinitely.”²¹⁴ While the OAIS reference model encompasses information regarding both digital and physical information, there is a particular focus on the former.

Several challenges have arisen for traditional archives, their information providers, and other organizations in commercial, government, and non-profit sectors with the growth of digital information. Organizations are finding “that they will need to take on the information preservation functions typically associated with traditional Archives because digital information is easily lost or corrupted.”²¹⁵ Technology has evolved at a rapid pace rendering some hardware and software systems obsolete a few years after their inception. These changes “can put severe pressure on the ability of related data structures or formats to continue to be effective representation of the full information desired.”²¹⁶ This is because “much of the supporting information necessary to preserve information is more easily available or only available at the time when the original information is produced, these organizations need to be active participants in the Long Term Preservation effort, and they need to follow the principles espoused in this OAIS reference model to ensure that the information can be preserved Long Term.”²¹⁷ In a

²¹³ CCSDS. *Reference Model*, section 1, 1-1.

²¹⁴ CCSDS. *Reference Model*, section 1, 1-1.

²¹⁵ CCSDS. *Reference Model*, section 1, 2-1.

²¹⁶ CCSDS. *Reference Model*, section 1, 2-1.

²¹⁷ CCSDS. *Reference Model*, section 1, 2-1.

corporate environment, and in a department that is not a money making entity, it is important to show how business processes can save money. Adapting OAIS efforts can minimize lifecycle costs in the long run by enabling long term access to business critical records or documents for litigation.

The OAIS environment involves the interaction of four entities. These include the producers of information, the consumers of information (the Designated Community), management and the Archives. The Producer “is the role played by those persons, or client system, which provide the information to be preserved.”²¹⁸ In this case, the digital objects are within the Great-West Life archives. The Consumer is the “role played by those persons, or client systems, that interact with the OAIS services to find and acquire preserved information of interest.”²¹⁹ Within the Consumer entity, there is a special class called the Designated Community. These are the consumers who should be able to understand the preserved information. Furthermore, “a given individual or system may act in the role of both a Consumer and a Producer.”²²⁰ The management component of the OAIS environment is a “role played by those who set overall OAIS policy as one component in a broader policy domain, for example as a part of a larger organization.”²²¹ Therefore, this role manages the OAIS as one of their responsibilities, however, is not involved with the archives on a day-to-day basis. Finally, these three components interact with the Archive itself. Within the OAIS environment there are a range of possible interactions that may take place between the OAIS and the Archive depending on the user’s needs.

²¹⁸ CCSDS. *Reference Model*, section 2, 2-2.

²¹⁹ CCSDS. *Reference Model*, section 2, 2-3.

²²⁰ CCSDS. *Reference Model*, section 2, 2-3.

²²¹ CCSDS. *Reference Model*, section 2, 2-2.

The information model is key to the successful functioning of the OAIS environment. For the OAIS to enable preservation, it must be provided with a clear definition of the given information. A Knowledge Base allows a person or system to understand received information. Information “is defined as any type of knowledge that can be exchanged, and this information is always expressed (i.e. represented) by some type of data in an exchange.”²²² The physical or digital items which contain information are called data objects. Consumers, or members of the Designated Community of an Archive, should be able to understand and interpret the information within a data object because of their established knowledge base. In the event they cannot, they may use the assistance of supplementary information, or Representation Information, which provides information in a form that is understandable using the recipient’s Knowledge Base. The Designated Community, and its associated Knowledge Base, “for whom the information is being preserved by the Archive is defined by that Archive, and that Knowledge Base will, as described below, change over time.”²²³ Data interpreted using Representation Information yields information, and may have to be used when the Designated Community’s knowledge base needs supplementary help. In order for an Information Object to be successfully preserved, the OAIS must be able to clearly identify and understand the data object and any associated Representation Information.

An Information Package includes a variety of Information Objects. Every submission of information to an OAIS by a Producer and every dissemination of information to a Consumer counts as one or more discrete items. An Information Package is a conceptual container of two types of information called Content Information and Preservation Description Information (PDI).

²²² CCSDS. *Reference Model*, section 2, 2-3.

²²³ CCSDS. *Reference Model*, section 2, 2-3.

The Content Information and PDI are “viewed as being encapsulated and identifiable by the Packaging Information.”²²⁴ The resulting package is viewed as being discoverable by virtue of the Descriptive Information.

The original material to be preserved is called Content Information and consists of the Content Data Object and its associated Representation Information, as they are needed to make the content understandable to the Designated Community. Once the Content Information has been clearly defined, there can be an assessment of the PDI. The Preservation Description Information “applies to the Content Information and is needed to preserve the Content Information, to ensure it is clearly identified, and to understand the environment in which the Content Information was created.”²²⁵ There are five types of preserving information within the Preservation Description Information. The first is Provenance, which provides a description of the source of the Content Information, its custodian since it originated, and its history, including its processing history. The next type is Context and it “describes how the Content Information relates to one another from outside the Information Package.”²²⁶ It would provide a description of why the Content Information was produced and may also describe how it relates to another available Content Information object. Reference is the next type of preserving information. It provides one or more identifiers, or system identifiers that enable the Content Information to be uniquely identified. The next is Fixity and it “provides a wrapper, or protective shield, that protects the Content Information from undocumented alteration.”²²⁷ This may involve a checksum over Content Information of a digital package. Finally, Access Rights provides the

²²⁴ CCSDS. *Reference Model*, section 2, 2-5.

²²⁵ CCSDS. *Reference Model*, section 2, 2-6.

²²⁶ CCSDS. *Reference Model*, section 2, 2-6.

²²⁷ CCSDS. *Reference Model*, section 2, 2-7.

terms of access. This includes preservation, distribution and usage of Content Information.

Access Rights “would contain the statements to grant the OAIS permissions for preservation operations, licensing offers (for distribution) specifications for rights enforcement measures, as well as access control specifications.”²²⁸ Therefore, the Packaging Information works to identify Content Information, and Preservation Description Information. The Descriptive Information is then used to discover which package has the Content Information of interest.

It is important to differentiate between an “Information Package that is preserved by an OAIS and the Information Packages that are submitted to, or disseminated from an OAIS.”²²⁹ These variant packages are used to show how some submissions to an OAIS will not have the appropriate Representation Information or PDI to meet OAIS requirements. They may not be organized the same way the OAIS organizes preserved information, which could pose problems. As well, the “OAIS may provide to Consumers information that does not include all the Representation Information or all the PDI with the associated Content Information being disseminated.”²³⁰ The first of these variants is the Submission Information Package (SIP). This package is sent to an OAIS by the Producer. Its detailed content and form are usually negotiated by the Producer and the OAIS. Most SIPs have some Content Information and some PDI.

The second variant is the Archival Information Package (AIP). Within the OAIS, one or more SIPs will be transformed into one or more AIPs. The AIP has a complete set of PDI for associated Content Information and “may also contain a collection of other AIPs.”²³¹ The AIPs Packaging Information will conform to the OAIS internal standards and may vary as it is

²²⁸ CCSDS. *Reference Model*, section 2, 2-7.

²²⁹ CCSDS. *Reference Model*, section 2, 2-7.

²³⁰ CCSDS. *Reference Model*, section 2, 2-7.

²³¹ CCSDS. *Reference Model*, section 2, 2-8.

managed by the OAIS. The third and final variant is the Dissemination Information Package (DIP), which is the response to a request that includes all or part of an AIP from the OAIS to a Consumer. The DIP may include collections of AIPs and may or may not have complete PDI. The “Packaging Information will necessarily be present in some form so that the Consumer can clearly distinguish the information that was requested.”²³² The Packaging Information may take various forms depending on the dissemination media and Consumer requirements.

Understanding the relationships between the variants can be daunting. The relationships between the SIPs and AIPs can be complex. For instance, “as well as simple one-to-one relationship in which one SIP produces one AIP, other possibilities include: one AIP being produced from multiple SIPs produced at different times by one Producer or by many Producers; one SIP resulting in a number of AIPs; and many SIPs from one or more sources being unbundled and recombined in different ways to produce many AIPs.”²³³ A constant is the Packaging Information, which will always be present in some form.

The aforementioned are the pieces that work together to make up the OAIS environment. This enables external interactions to take shape. Management, Producers, and Consumers all have a role to play in the flow of data. Management provides the OAIS with its charter and scope. Though the charter may be created by the Archive, it is important that Management formally endorse the Archives activities. The scope “determines the breadth of both the Producer and Consumer groups served by the Archive.”²³⁴ Some examples using the Great-West Life case study are management being responsible to approve funding for an OAIS and any related staff or equipment for its implementation; management will want to measure the success of the OAIS to

²³² CCSDS. *Reference Model*, section 2, 2-7.

²³³ CCSDS. *Reference Model*, section 2, 2-7.

²³⁴ CCSDS. *Reference Model*, section 2, 2-9.

ensure both short and long term goals are being met and funding is being spent on a successful system; management may need to intervene between Producers, Consumers and the OAIS administration involving any conflicts; finally, management should provide support regarding policies and procedures regarding the utilization of the OAIS and require the adherence to the standards and procedures of the Archives. Currently, at Great-West Life all policies and procedures produced by the Archives and Records Management Department have multiple levels of management to gain approval before being put into use and published internally.

Producer Interaction takes place when the Producer requests that the OAIS preserves the data products created by the Producer. Contact may be initiated by the Producer, Management or the OAIS. A Submission Agreement is then established by the Producer, and identifies the SIPs to be submitted. Some Submissions Agreements will have a mandatory requirement to provide information to the OAIS and some will request voluntary information. At this time, payments which may be involved will also be requested. In the case of Great-West Life, there are chargebacks to be considered for interdepartmental work. Sessions are specified, and may have a significant time gap between each. A Data Submission Session “will contain one or more SIPs delivered as a set of media or via a single telecommunications session...it’s content is based on a data model negotiated between the OAIS and the Producer in the Submission Agreement.”²³⁵ At this point, the retention guidance is applied. This is where the logical components of the SIP such as Content Data Objects, Representation Information, PDI, Packaging Information, and Descriptive Information, come into play as they are identified by this data model. At this point they are provided and if they have representation in the Data Submission, this is identified. All data deliveries within a Data Submission Agreement belong to that particular agreement and

²³⁵ CCSDS. *Reference Model*, section 2, 2-9.

likely have a consent data model as per the Submission Agreement. Each SIP in a Data Submission Session must meet minimum OAIS requirements to be complete. A Submission Agreement “also includes, or references, the procedures and protocols by which an OAIS will either verify the arrival and completeness of a Data Submission Session.”²³⁶ This step can be put into perspective by comparing it to what currently takes place with paper records transferred to the Records Centre at Great-West Life. An inventory form is filled out by the producing department, it is then sent to the Records Centre where staff validate both the inventory form and supporting information, as well as the records themselves for completeness.

Finally, there are various forms of interactions between the Consumer and the OAIS. They may include engaging a help desk, requesting literature or orders and order status requests. The latter deals with the exchange of Archive holdings between the OAIS and the Consumer. Within this interaction an Order Agreement is established between the OAIS and the Consumer that encompasses already existing information in the Archive or information to be ingested in the future. It may span any length of time and may have one or more Data Dissemination Sessions taking place under it. A Data Dissemination Session may involve the transfer of a set of media or a single telecommunications session. The Order Agreement “identifies one or more AIPs of interest, how those AIPs are to be transformed and mapped into Dissemination Information Packages (DIPs) and how those DIPs will be packaged in a Data Dissemination Session.”²³⁷ Other information such as delivery information such as name and mailing address, rights information such as usage and restrictions/authorized Consumers, and pricing information where applicable will be present in the Order Agreement. The two most common order types Consumers

²³⁶ CCSDS. *Reference Model*, section 2, 2-10.

²³⁷ CCSDS. *Reference Model*, section 2, 2-10.

initiate are Event Based or Adhoc orders. When an order is placed that requires a Search Session, the Consumer will use OAIS Finding Aids that operate on the aforementioned Descriptive Information or on the AIPs themselves.

The OAIS reference model has seven functional entities to provide a precise set of terms and concepts for future OAIS designers as a reference.²³⁸ They also provide a tool to measure Archivematica's compliance with the OAIS principles and provide context further in the chapter when Archivematica is examined more closely. The "first contact between the OAIS and the Producer is a request that the OAIS preserve the data products created by the Producer."²³⁹ This may be initiated by the OAIS, Management, or the Producer. Then, the Producer creates a Submission Agreement with the OAIS, identifying the SIPs to be submitted. The Submission Agreement allows retention guidelines to be applied. There is no set time for this submission. Ingest is the first functional entity described in the reference manual. It is the process of preparing and adding digital objects and their accompanying metadata to a digital archives. Prior to ingest, data has been appraised and deemed to be in need of long term preservation. The "Submission Information Package (SIP) is the digital object to be archived and its corresponding metadata."²⁴⁰ Ingest functions include "receiving SIPs, performing quality assurance on SIPs, generating an Archival Information Package (AIP) which complies with the Archive's data formatting and documentation standards, extracting Descriptive Information from the AIPs for inclusion in the Archive database, and coordinating updates to Archival Storage and Data

²³⁸ See diagram on page 141.

²³⁹ CCSDS. *Reference Model*, section 2, 2-9.

²⁴⁰ Christopher J. Michael. "7 Key Functions of OAIS Reference Model for Digital Archiving." Paragon website accessed on 1/12/2018. www.Consultparagon.com/blog/functions-of-oais-reference-model-for-digital-archiving.

Management.”²⁴¹ Simply put, during ingest, information moves from the creator into the form of a SIP to the archives where it is transformed into one or more AIPs.

The second functional entity is Archival Storage. This provides “the services and functions for the storage, maintenance and retrieval of AIPs.”²⁴² The functions included in this entity are receiving AIPs from Ingest, “adding them to permanent storage, managing the storage hierarchy, refreshing the media on which Archive holdings are stored, performing routine and special error checking, providing disaster recovery capabilities, and providing AIPs to Access to fulfill orders.”²⁴³

The Data Management Functional Entity supports the search and retrieval of archival content by using descriptive metadata. Data function management functions include “administering the Archive database functions (maintaining schema and view definitions, and referential integrity), performing database updates (loading new descriptive information or Archive administrative data), performing queries on the data management data to generate query responses, and producing reports from these query responses.”²⁴⁴

The Administrative Functional Entity provides the services and functions that contribute to the overall operation of the Archive system. Its functions include “soliciting and negotiating submission agreements with Producers, auditing submissions to ensure they meet Archive standards, and maintaining configuration management of system hardware and software.”²⁴⁵ Its system engineering functions help monitor and improve Archive operations and provide an inventory, report, migration and updating of the contents of the Archive. This functional entity is

²⁴¹ CCSDS. *Reference Model*, section 4, 4-1-4-2.

²⁴² CCSDS. *Reference Model*, section 4, 4-2.

²⁴³ CCSDS. *Reference Model*, section 4, 4-2.

²⁴⁴ CCSDS. *Reference Model*, section 4, 4-2.

²⁴⁵ CCSDS. *Reference Model*, section 4, 4-2.

responsible for establishing and maintaining Archive standard and policies, provide customer support and activate stored requests.

The Preservation Planning Functional Entity monitors the environment of the OAIS and provides recommendations and preservation plans to ensure the stored information continues to be accessible and understood by the Designated Community long-term and in the event of obsolescence. Preservation planning functions include “evaluating the contents of the Archive and periodically recommending archival information updates, recommending the migration of current Archive holdings, developing recommendations for Archive standards and policies, providing periodic risk analysis reports, and monitoring changes in the technology environment and in the Designated Community’s service requirements and Knowledge base.”²⁴⁶ As well, this function designs Information Package templates and provides design assistance so they can be customized into SIPs and AIPs for specific submissions. Detailed migration plans, software prototypes and test plans are developed by this function to enable implementation of Administration migration goals. Essentially, this is an ongoing digital curation strategy.

The Access Functional Entity provide “services and functions that support Consumers in determining the existence, description, location, and availability of information stored in the OAIS, and allowing Consumers to request and receive information products.”²⁴⁷ This entity’s functions include “communicating with Consumers to receive requests, applying controls to limit access to specially protected information, coordinating the execution of requests to successful completion, generating responses (Dissemination Information Packages, query responses, reports) and delivering the responses to Consumers.”²⁴⁸ This function enables users to retrieve

²⁴⁶ CCSDS. *Reference Model*, section 4, 4-2.

²⁴⁷ CCSDS. *Reference Model*, section 4, 4-2.

²⁴⁸ CCSDS. *Reference Model*, section 4, 4-2.

data from the archives. Finally, Common Services is the final functional entity and are the services needs in order to operate. This includes operating system, network, and security services.

The seven functional entities of the OAIS reference model, describe the necessary components a system must have to provide trusted, long-term digital preservation. Digital information is ubiquitous in institutions of various kinds. Digital preservation affects a diverse community of users with varying needs. This reference model provides concepts, relationships, and processes that are common to a broad cross-section of preservation activities. As well, using the OAIS reference model may promote interoperability between institutions. Currently, Great-West Life is a private archives, however, shares information with the London Life Archives. Having both using OAIS compliant systems such as Archivematica would promote standardization, interoperability, and may even reduce costs through shared system components, and a move away from customized products and services. Currently, Great-West Life does not have its own cloud and therefore, each archive would need its own application of Archivematica.

Archivematica

Another option for archival records at Great-West Life is Archivematica. It is “a free and open-source digital preservation system that is designed to maintain standards-based, long term access to collections of digital objects.”²⁴⁹ While most of the existing archival collection at Great-West Life today is paper based, many current records are born-digital or imaged. If the Archives and Records Management department had access to Archivematica, a business case could be made to image some of the frequently used paper records in the existing collection. This

²⁴⁹ Bronwen Sprout. “Archivematica As a Service: COPPUL’s Shared Digital Preservation Platform.” *Canadian Journal of Information and Library Science* 39 No. 2 (2015): 236.

might include meeting minutes, annual reports, and photographs, among other records.

Digitizing paper records would greatly improve access and searchability of the vast archival collection at Great-West Life. It would also enable a shorter wait time for high risk or important requests such as those from legal, audit, or taxation, and may involve litigation. With the widespread acceptance of digital records as an original or source document in a court of law, there is even more reason to digitize certain records to make retrieval time shorter. Therefore, a proper repository for archival records must be in place to ensure access, secure storage, and preservation of digital records. While SharePoint offers an option for storage of digital records, it is not a platform devoted specifically to preserving records of archival value. This serves as a reminder of Mike Kestellic's observation that two major technical challenges of preserving digital content over time is obsolescence and media degradation.²⁵⁰ While they are not addressed by SharePoint, these concerns can be avoided by using a preservation system such as Archivematica. Archivematica "is a free and open-source digital preservation system that is designed to maintain long-term access to digital memory."²⁵¹ It is intended to work with the web-based archival access system AtoM for access to digital objects. Both were developed by Artefactual Systems in British Columbia.

Archivematica is standards-based and uses "a micro-services design pattern to provide an integrated suite of software tools that allows users to process digital objects from ingest to access in compliance with the ISO-OAIS functional model."²⁵² As well, Archivematica is open source, meaning all code is released under a public license enabling the user to be able to modify and

²⁵⁰ Kestellic. *Practical Limits*, 63.

²⁵¹ Archivematica. "Main Page" Archivematica wiki accessed on 11 January 2018.
https://wiki.archivematica.org/Main_Page

²⁵² Archivematica. *Main Page*.

distribute it freely. Therefore, the Archives and Records Management and IS departments at Great-West could work together to customize Archivematica to suit the needs and requirements of both departments. This would be a benefit not only for gaining a new system, but to strengthen the relationship between Archives and Records Management and IS staff as digital records will require their collaboration more often in the future. The more each area understands about the other, the better the records management and archives system that will be built and maintained.

Archivematica has the potential to be integrated with a number of repositories for an end-to-end digital workflow. Two potential options are AtoM or DSpace. AtoM stands for Access to Memory and is “a web-based, open source application for standards-based archival description and access in a multilingual, multi-repository environment.”²⁵³ Its multi-repository capabilities would mean that the archives in both Winnipeg and London (London Life) could share and access the entire collection with a cloud based implementation, as there is overlap between the two with regards to requests. Alternatively, DSpace is an open-source repository platform that “preserves and enables easy and open access to all types of digital content including text, images, moving images, mpegs and data sets.”²⁵⁴ Great-West Life will have to determine whether AtoM or DSpace is the best fit for their needs. Both are strong possibilities, however, DSpace can serve as both the archival repository and the access system.

Archivematica has many benefits that would make it a valuable resource for Great-West Life. For example, archivists can appraise and review content within Archivematica to gain a fuller understanding of the nature and scope of born-digital collections. By carrying out this

²⁵³ Access to Memory Main Page. Access to Memory website accessed on 14 January 2018. <https://www.accesstomemory.org/en/>

²⁵⁴ DSpace. “About DSpace,” DSpace webpage accessed on 14 January 2018. <http://dspace.org/introducing>

function within Archivemata's dashboard it would "obviate the need to navigate and record information from multiple external tools and systems and greatly facilitate the training of staff."²⁵⁵ Currently, there are 2 archives staff at Great-West Life: the Archivist and the Archives Technician. This function would not only improve processes for these staff members but familiarize them with the collections they are working on by being able to view them in a single place. The Appraisal and Arrangement tab in Archivemata allows users to "characterize distributions of file formats within acquisitions, identify sensitive data, and preview content and also to apply tags for the purpose of recording information about restrictions, deaccessions, and/or the intellectual arrangement of materials."²⁵⁶ The shift towards digital record keeping at Great-West has been accelerated in the last year or so due to the increase in departments moving away from paper. This means Archives and Records Management staff will need to familiarize themselves quickly with new systems to be able to keep up with the records produced. The Appraisal and Arrangement function in Archivemata enables this work to be done in a similar way to paper processes, which will reduce confusion for staff learning to use a new system.

Another option to aid in appraisal and arrangement within Archivemata is to integrate ArchivesSpace. This is "an open source, web application for managing archives information. The application is designed to support core functions in archives administration such as accessioning; description and arrangement of processed materials including analog, hybrid, and born-digital content; management of authorities (agents and subjects) and rights; and reference service."²⁵⁷ This could be used in conjunction with Archivemata to further enhance accessioning,

²⁵⁵ Max Eckard, Dallas Pillen, and Mike Shallcross. "Bridging Technologies to Efficiently Arrange and Describe Digital Archives: the Bentley Historical Library's Archives Space-Archivemata-DSpace Workflow." *Code {4}lib Journal* Iss. 35 (2017)

²⁵⁶ Eckard, Pillen, and Shallcross. *Bridging Technologies*

²⁵⁷ ArchivesSpace. "Mission and History" ArchivesSpace webpage accessed on 14 January 2018. <http://archivesspace.org/about/mission-and-history/>

arrangement and description and make it a more efficient process. It is also an attractive add-on given that it is not strictly for digital records, but can be used for analog records as well. It would lend itself to creating a standardized process across the board for arrangement and description of all records, paper or digital, within Great-West's archives.

To use this function, and ArchivesSpace 'pane' is integrated into the Archivematica Appraisal and Arrangement tab. It then "utilizes the ArchivesSpace Application Programming Interface (API) to create and edit descriptive metadata for new or existing archival objects in ArchivesSpace; display resource records in a tree view, depicting the intellectual hierarchy of archival objects; and drag and drop digital content onto archival description to create ArchivesSpace digital object records and launch the ingest of Submission Information Packages (SIPs) in Archivematica."²⁵⁸ This would mean the archivist would begin by creating records for all accessions, analog or digital, in ArchivesSpace. Accession records would then be associated with an existing ArchivesSpace resource, such as a finding aid, or the archivist could create a new resource record based on the data given with the accession. The digital content associated with an accession would then be transferred to Archivematica's backlog where a number of micro-services are utilized. These include assigning UUIDS to transfers and files, assigning or verifying checksums, unzipping zipped or packaged files, scanning for viruses, indexing, performing file format identification and validation, and extracting technical metadata. The transfer would remain in the backlog until it is ready to be processed.

Once the transfer is complete, the archivist may use the Appraisal tab in Archivematica to review the content and understand the extent of the nature and scope of the collection or

²⁵⁸ Eckard, Pillen, and Shallcross. *Bridging Technologies*

transferred records. Here, the archivist can characterize transfers, identify sensitive data, preview content, and tag content as restricted. These are important features as Great-West has many records that will either be sensitive in nature due to personal information that is only kept while clients are active, but may be needed for litigation, or records such as Minute Books that are archival but not accessible to everyone.

Archivists are then able to search by accession number for transfers in the Archivematica backlog. The archivist may select “an entire transfer, a folder within a transfer, or individual files and perform a number of analyses on this content based on technical and other metadata extracted during Archivematica’s initial transfer micro-services.”²⁵⁹ The resulting information provides a report of file formats the archivist may view in the form of a tabular report or visualization. These can then be used to preview individual files. Within the Appraisal and Arrangement dashboard, the archivist can also examine contents. It is here where sensitive data such as personal information that could be found on a claim or application form, for example, can be viewed and restrictions can be enforced. This is a useful tool for an archives with sensitive records.

The integration of Archivematica and ArchivesSpace “was designed to allow archivists to search for ArchivesSpace resource records, to edit or add to existing archival description, and to create ArchivesSpace digital object instances with which content from the Archivematica backlog can be associated from within the Archivematica Appraisal and Arrangement tab.”²⁶⁰ By using the ArchivesSpace API, the archivist can associate digital content with archival

²⁵⁹ Eckard, Pillen, and Shallcross. *Bridging Technologies*

²⁶⁰ Eckard, Pillen, and Shallcross. *Bridging Technologies*

description. This promotes efficiency in workflow for the archivist by eliminating the need to navigate between systems and have to re-type or copy and paste metadata from various places.

Metadata fields may then be created or edited directly within ArchivesSpace. Once an ArchivesSpace “archival object with which to associate digital content has been identified or created, an ArchivesSpace digital object instance can be associated with that archival object.”²⁶¹ From there, relevant data from the transfer backlog in Archivematica can be associated with the digital object by the simple act of dragging and dropping folders or individual files from the backlog pane onto the digital object. Once all relevant content has been associated with the digital object, the archivist can finalize arrangement to initiate Archivematica’s Ingest workflow and deposit the content into DSpace or AtoM.

Archivematica speaks well to both AtoM and DSpace, but the latter will be used for this example. The integration of the two applications were created to streamline the Ingest and deposit of content from Archivematica to a preservation and access repository. Once the appraisal and arrangement processes are finalized, Archivematica runs SIPs through several ingest micro-services, including normalization, and packages them into AIPs. AIPs are then automatically deposited into DSpace. This integration can be found within Archivematica’s storage service. The data deposit itself may be enabled by the Simple Web-service Offering Repository Deposit (SWORD v2) protocol. This is “an interoperability standard that allows digital repository servers to accept the deposit of content from clients via a standardized protocol.”²⁶² Using this application enables an item to be posted to a particular DSpace collection with associated metadata and two bitstreams attached to the item, one for the

²⁶¹ Eckard, Pillen, and Shallcross. *Bridging Technologies*

²⁶² Swordapp.org. “About Sword” Sword website accessed on 14 January 2018. <http://swordapp.org/about/>

bitstreams one for the objects and one for the metadata. Alternatively, Archivematica can also use DSpace itself to update the permissions on the metadata bitstream. However, using SWORD may make the process more flexible. What will be the deciding factor in this case study will be the method with the simplest process as it will take time which in turn will cost the Company money to train staff how to use this new system. Finally, Archivematica “completes the deposit by making use of the ArchivesSpace API to write the Handle of the DSpace item back to the File URI of the linked digital object in ArchivesSpace.”²⁶³ This process confirms the archivist’s ability to manage the locations of collection components both physical and digital in ArchivesSpace.

Access to the material stored on DSpace is the final piece to determine whether or not Archivematica will work for Great-West Life’s digital records. Currently, general staff does not have access to search the database of archival material for a couple of reasons. The first is that not all staff have access to OmniRim, the database used by Great-West Life’s Archives and Records Management department. The second reason is that some records are restricted and the current system does not have the capability to manage this on an individual basis. Therefore, access will likely initially be granted only to archives staff until access controls are understood. In the future, Archives and Records Management staff can write access rules for DSpace that would allow GWL staff to access only contents for which they are authorized. DSpace has the ability to process uploaded text based contents to allow full-text searching. This means that “not only the metadata you provide for a given file will be searchable, but all of its indexed contents

²⁶³ Swordapp.org. *About Sword* Sword

as well.”²⁶⁴ Users will also be allowed to search by specific keywords appearing in content, not just in the description field.

DSpace allows users to find and access content in a variety of ways. First, by searching, users can type in one or more keywords in metadata or extracted full-text. Second, facet browsing allows users to search through any field provided in the item description. It is DSpace’s goal to provide as many features as possible to enable the most accurate search. DSpace’s “indexing and search module has a very simple API which allows for indexing new content, regenerating the index, and performing searches on the entire corpus, a community, or collection.”²⁶⁵ The Java freeware search engine, Lucene, is behind the API and gives DSpace “fielded searching, stop word removal, stemming, and the ability to incrementally add new indexed content without regenerating the entire index.”²⁶⁶ Furthermore, the specific Lucene search indexes can be configured which enables institutions to customize which DSpace metadata fields are indexed. Finally, the browse function allows users to search DSpace to find and access assets. A user may view a particular index, for example, the title index, and navigate within that to see what items are of interest to them. Access rules written by Archives and Records Management staff and enforced via the access protocols in DSpace will ensure that staff access only those records for which they are authorized.

²⁶⁴ DuraSpace. “Online Access to Your Digital Assets.” DSpacewiki webpage accessed on 17 January 2018. <https://wiki.duraspace.org/display/DSDOC5x/Functional+Overview#FunctionalOverview-Onlineaccesstoyourdigitalassets>

²⁶⁵ DuraSpace. *Online Access to Your Digital Assets*.

²⁶⁶ DuraSpace. *Online Access to Your Digital Assets*.

Conclusion

It is clear from examining and comparing Archivemata's capabilities to SharePoint with regards to archival records, Archivemata is the clear leader in terms of offering utilities that are in line with core archival functions. However, in the context of all records at Great-West Life, it is fair to say that records management of active and semi-active records make up the majority of the records produced by the Company. This is not to say that archival assets are less important, and currently, with no digital solution in place, the Archives and Records Management Department is helping departments manage digital records on their own computers until a decision is made regarding which platform will be used. After completing this case study, it is evident that there is a need for a platform for active and semi-active records as well as archival assets. To maximize preservation, storage, access, organization and proper description of records, having a system to manage records at the active/semi-active phase (SharePoint) and in the archival stage (Archivemata) would be optimal. This would enable all departments to manage their active/semi-active records on their departmental SharePoint sites, as the Company has already paid for the license, and for records of archival value, to be transferred to the archives, Archives and Records Management staff would be responsible to ingest material into Archivemata for long-term preservation. Using both SharePoint and Archivemata would enable good recordkeeping practices at Great-West Life to continue in a digital format, just as they have in paper. SharePoint represents a good solution for the records management functions of managing active and semi-active records with Great-West Life. Unfortunately, SharePoint does not have capacity to perform OAIS-compliant digital preservation and access. Therefore, Great-West Life's archival functions might be managed by using Archivemata in conjunction with DSpace as a storage and access solution.

Conclusion

One of the overarching goals of this thesis was to explore the history and evolution of firsts, so to speak with regards to the life insurance industry in Canada, and more specifically, recordkeeping within the industry and at The Great-West Life Assurance Company. This includes the evolution of technology at the company, and how this affected records over time. Today, the most important question for Archives and Records Management is how current technology can be used for archives and records management purposes.

By looking back to nineteenth century examples of life insurance companies, it is clear that advanced office technology had its place early on and impacted the volume and media of records produced. We have also seen that while medias have changed over time and records management have adapted to be compliant with changing legal, compliance, and business requirements, from the onset, keeping organized, searchable, and quickly accessible records was of utmost importance. Often, company secretaries were the back bone of early records management programs as the most important records passed through their hands on a daily basis. They seemed to have an intuitive understanding of the records management principles used today, such as classification, retention, disposition, and access to name a few. Though the terminology and rules may not have been in place, early records show that, though not formalized, they were practicing records management of sorts. This was particularly true in the example of Great-West Life, as Arbuckle Jardine was instrumental in commissioning reports on the proper management of records within the company, as well as exploring the potential of innovative new technology such as the photocopy machine. This would prove to be an invaluable new office machine in the early twentieth-century when one client might result in the need for various copies of a contract, claim, or policy register.

The introduction of first, electronic data processing, and then digital computers in the 1950s and 1960s was another major milestone for Great-West Life, who was always striving to be on the cutting edge of new office technology. EDP and early computers changed records medias once again. The punch card became a familiar staple throughout the departments, and later in the Company Records department at Head Office. The widespread use of desktop computing beginning in the 1980s, and the addition of handheld computers today has forced corporations such as Great-West to think about how to manage electronic records according to the same standards that apply to paper records. This involves having sound records management policies in place, following existing schedules and guides, and most importantly, having a trusted digital repository to store records, providing both security for records and authorized access to users and administrators.

Great-West Life has seen an increase in the last five years of electronic records being produced and has therefore taken the steps to implement a sound recordkeeping strategy. The Corporate Imaging Policy was the first step in providing guidelines for another new records medium, imaged digital records. The shift away from paper records towards imaged or born-digital has stimulated records professionals within the Company to come up with solutions as to where and how best to store these records going forward. It has yet to be determined what application will be the most viable, however, this thesis provided a case study to examine both SharePoint and Archivematica to determine if either, both, or neither would make good business sense to deploy at Great-West Life. Currently, SharePoint is being used in other ways to manage and store projects, workflows and documents. As well, part of the case study involved setting up a pilot to use SharePoint for the records of a department that had active, semi-active, and archival records. At the time of writing this conclusion, the pilot has so far been a success. Work flows

managing incoming records (forms), requests, emails, and approvals are automatically routed to their libraries within the Records Center function within the standard version of SharePoint.

From here, a business case will be created and presented to upper management with the findings to determine whether or not this would be a viable solution for other departments within the Company. It was determined, however, with regards to managing media degradation and format obsolescence, that SharePoint did not have the capability to effect digital preservation.

Therefore, the strengths and weaknesses of Archivematica were analyzed, including a detailed analysis of OAIS. It was determined that Archivematica would be a good fit for the digital collection at Great-West as is an OAIS compliant system. While Archivematica would manage records on ingest into the archive, a digital repository would be needed to store records and provide controlled authorized access. It was determined that DSpace was a viable storage and access solution.

At the time of writing this conclusion, it is unlikely that a digital preservation system such as Archivematica is in scope for the Great-West Life Archives within the next couple of years at least. It is more important to prioritize digital records management for active and semi-active records as born-digital records are proliferating rapidly amongst departments. Most of the current archival holdings at Great-West are paper-based records or artifacts, and digitizing these would not be an immediate priority, even with Archivematica. It will still be a number of years before the records that are born-digital today, of archival value, will be sent to the archives. The limited amount of digital records the archives receives today, are stored on their individual computers and backed up. Like Arbuckle Jardine demonstrating due diligence by exploring records management options in advance of their being implemented by the Company, this thesis explores current best practices in digital archiving so that we can be ready when the time comes.

The insurance industry, its records, and technology have come a long way since the nineteenth century, and so too has The Great-West Life Assurance Company. It has continued its success as a global presence, and in doing so, has maintained its drive to be on the cutting edge of technology and in turn diversified its records. Great-West Life has a sound records management program and is making the shift to accommodate digital records. It will be exciting to see the evolution of firsts for the next twenty-five years at Great-West Life.

Appendix A



Photo courtesy of The Great-West Life Assurance Company Archives

List of Acronyms

EDPM – Electronic Data Processing Machine

EDRMS – Electronic Digital Records Management System

CMS – Content Management System

OAIS – Open Archival Information System

UAT – User Acceptance Testing

PDI- Preservation Description Information

SIP – Submission Information Package

AIP – Archival Information Package

DIP – Dissemination Information Package

API – Application Programming Interface

OAIS Functional Model

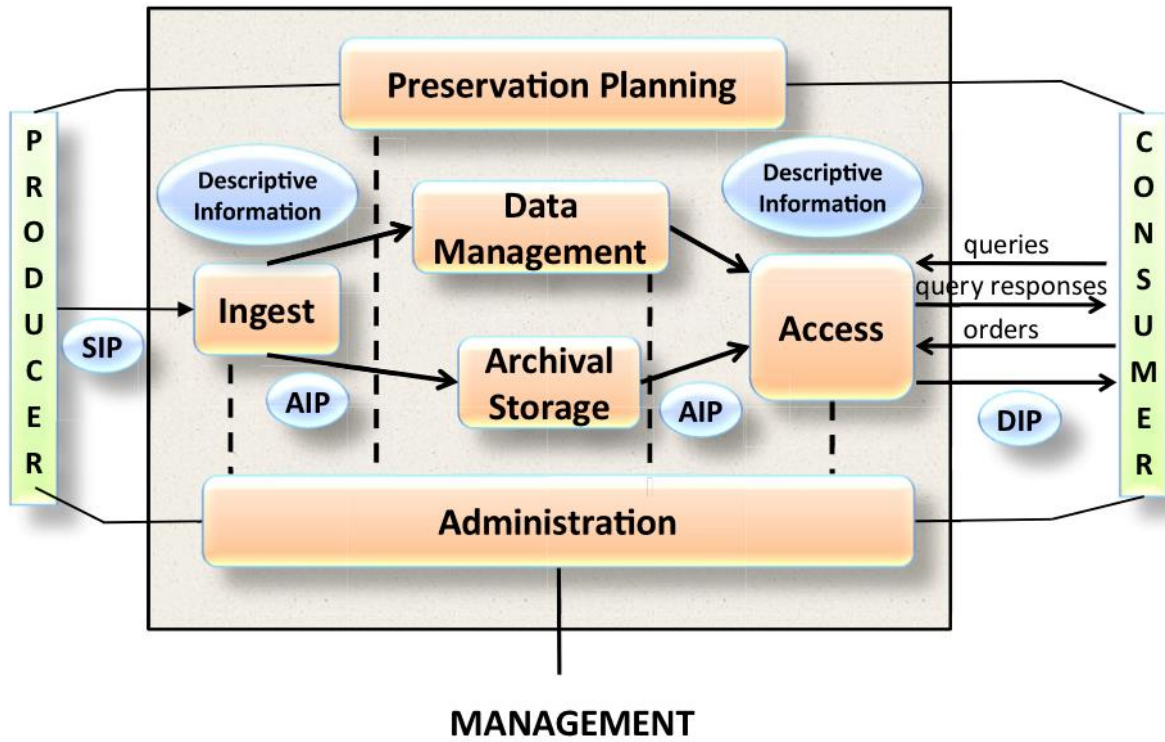


Figure 4-1: OAIS Functional Entities

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ISO 16175-3:2010—Information and documentation—Principles and functional requirements for records in electronic office environments—Part 3: Guidelines and functional requirements for records in business systems

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