



INFORMATION MANAGEMENT
ARMA-AIEF SPECIAL EDITION
AN ARMA INTERNATIONAL PUBLICATION



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Introducing the ARMA- AIEF Special Edition

by **Nick Inglis**,
executive director of
content &
programming, ARMA;
and **Donald
Force**, Ph.D.,
chairman, AIEF.

In early 2018, the ARMA International Educational Foundation (AIEF) began discussions with ARMA International to create a special issue of Information Management magazine dedicated to innovative research within the fields of RIM and IG. The AIEF's Research Committee issued a call and received numerous responses. Acknowledging the hard work and dedication of the Research Committee, and its chair, Chad Doran, we are pleased and proud to see the fascinating and diverse content published in this issue.

This special edition contains two peer-reviewed articles and summaries of three AIEF-sponsored research reports previously published by the AIEF. The full research reports can be downloaded from the AIEF website.

Summaries of Research Reports:

Setting records retention periods can be a challenge for multi-national and trans-national organizations that need to understand and reconcile the differing requirements of multiple jurisdictions. In "Retention of Accounting Records: A Global Survey of Laws and Regulations," William Saffady, consultant and prolific writer in records management and information governance, reviews the results of a global survey and report on retention practices for accounting records. The survey explores the legal and regulatory requirements of 200 countries and territories pertaining to the retention of accounting records, including specific minimum retention periods from tax and accounting laws, relevant statutes of limitations from contract law, and storage location and format requirements. The report also discusses how organizations can take a global rather than country-by-country approach to retention requirements by setting global minimum retention periods that cover most jurisdictions in which the organization operates, with exceptions carved out for those with longer retention periods.

In "Blockchain Technology and Recordkeeping," Danielle Batista, Darra Hofman, Alysha Joo, and Victoria Lemieux, from the University of British Columbia's School of Library, Archival, and Information Studies, explore what records and information professionals need to know to manage records in blockchain systems. The report provides a technical overview of blockchain systems and reviews topics including record creation and storage; retention, disposition, and defensible deletion; and privacy and ownership challenges in blockchain systems. The report concludes with a discussion of early efforts at developing best practices and standards for this emerging technology.

In "Industry in One: Financial Services," Anna Lebedeva, vice president of RIM compliance at a global financial services company, takes an industry-focused, deep dive into the RIM challenges faced in the heavily regulated financial services industry. She offers an overview of the "turbulent" history of financial services, fluctuating between periods of more extensive government intervention and deregulation and spotted by financial crises. Lebedeva observes that compliance with financial services regulations, as well as those in privacy and cybersecurity, is the primary driver for RIM in that industry. She reviews three major operational risks faced by financial

institutions (i.e., cyberattacks, constantly changing regulations, and third-party management) and the role RIM professionals should play in mitigating those risks.

Two New Peer-Reviewed Articles:



In “AI, Records, and Accountability,” Norman Mooradian, an analyst with Konica Minolta in the ECM solutions group, proposes that RIM professionals have an important role to play in addressing some of the ethical and legal challenges inherent in artificial intelligence (AI). Mooradian explores how the RIM profession’s ability to increase accountability and transparency through reliable records can be brought to ethical challenges raised by AI. Mooradian defines what would constitute a “sufficient” AI record and the challenges AI systems pose for creating such a record.

In “Documentation Theory for Information Governance,” Marc Kosciejew, lecturer at the University of Malta, applies a documentation approach to information governance. He discusses that, while documents are ubiquitous and pervade nearly every aspect of our lives, they are often overlooked. “Information” gets top billing, instead, and often takes on an air of immateriality. Kosciejew explores what happens when we examine information governance through the more concrete, material lens of documentation theory.

Congratulations to the scholars who brought their proposals to us for consideration and turned them into valuable contributions to the RIM/IG field. We hope these articles encourage additional research to be done in the coming years!

Nick Inglis

Executive Director of Content & Programming, ARMA International

Donald C. Force, Ph.D.

Chairman, ARMA International Educational Foundation



RETENTION OF ACCOUNTING RECORDS: A GLOBAL SURVEY OF LAWS AND REGULATIONS

William Saffady, Ph.D., FAI

This article summarizes a report published by AIEF on June 3, 2019.

This article summarizes the findings of a global survey of legal retention requirements for accounting records, a category of recorded information that is created and maintained by virtually all companies, government agencies, and non-profit organizations. The survey, which was sponsored by the ARMA International Educational Foundation (AIEF), covers 192 sovereign nations as well as eight dependent territories with recordkeeping laws and regulations that differ from those of their controlling countries. The survey is intended for records managers, compliance officers, information

governance specialists, attorneys, risk managers, financial officers, and others who need to know how long accounting records must be kept to comply with legal and regulatory requirements in specific countries. The full survey, which cites applicable laws and regulations for each country and dependent territory, can be downloaded from the AIEF web site.

Legal Framework

Globally, more than 1,000 laws and regulations specify requirements or have significant implications for retention of records related to an organization's accounting transactions and financial

condition. In any given country, however, retention of accounting records is covered by three to six laws and regulations in the following categories:

- **Accounting Law:** 171 of the 200 countries and dependent territories have accounting laws or regulations that specify minimum retention periods for financial records maintained by organizations that operate within their borders. (Most of the remaining countries and dependent territories have accounting laws that require organizations to maintain adequate financial records, but those laws

do not specify retention periods.) In some countries, an accounting act or bookkeeping act specifies retention requirements for accounting ledgers, financial statements, fiscal audit reports, and supporting documentation, including inventory records, accounts payable and receivable records, and correspondence related to accounting transactions. More commonly, retention of accounting records is addressed in a commercial code, which regulates the activities of commercial enterprises, or a company law, which specifies recordkeeping requirements

to protect the interests of shareholders, partners, or other stakeholders. In many countries, national accounting laws apply to for-profit companies, but they provide a useful retention benchmark for educational institutions, cultural organizations, charities, and other non-profit entities that operate in a given country or dependent territory. As summarized in Figure 1, retention periods specified in accounting laws and regulations range from 3 years to more than 10 years. The retention period typically begins at the end of the fiscal or calendar year to which the records pertain.

- Tax Law:** 197 of the 200 countries and dependent territories have laws or regulations that mandate retention of accounting records that are relevant for assessment of income taxes. (The three exceptions do not have an income tax.) In some cases, minimum retention periods for accounting records are specified in an income tax code or in regulations that interpret or clarify the tax code. Alternatively, the income tax code or income tax regulations may state that accounting records must be retained until the limitation period for tax assessment has elapsed. In a few countries, the income tax code defers to retention requirements specified in an accounting law. As summarized in Figure 2, retention periods specified in tax laws range from 2 years to 10 years. The retention period may begin at the end of the tax year to which the records pertain or the date that a tax return was due or submitted. Retention periods based on the statute of limitations for tax assessment typically range from 3 to 6 years, but a longer limitation period may apply if a fraudulent return is suspected.

- Contract Law:** Accounting records may be relevant for contract claims and other legal disputes related to financial matters. In 194 of the 200 countries and dependent territories, a national civil code, national commercial code, limitation act, or other law specifies time limits – so-called statutes of limitation or periods of prescription – for initiation of civil litigation. Organizations are not obligated to retain accounting records until applicable limitation periods elapse, but it is widely considered prudent to do so. As summarized in Figure 3, limitation periods specified in contract laws range from 2 years to

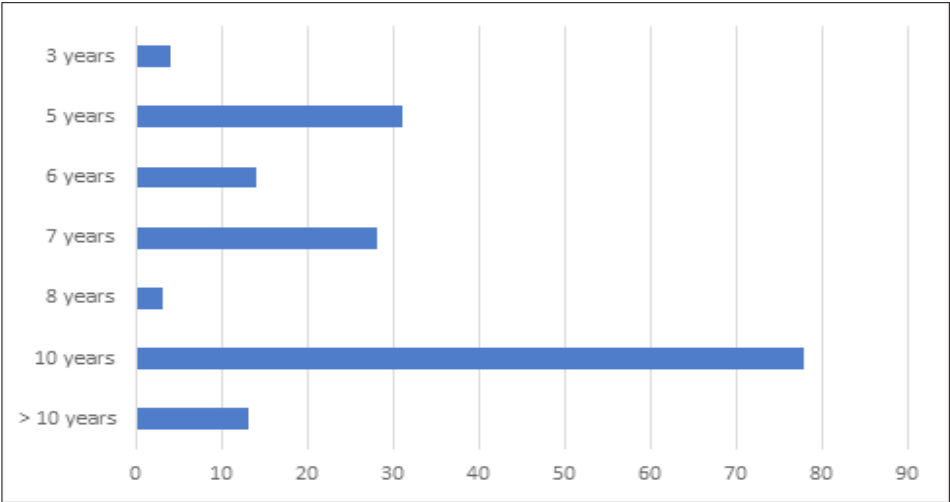


Figure 1: Retention Periods Specified in Accounting Laws

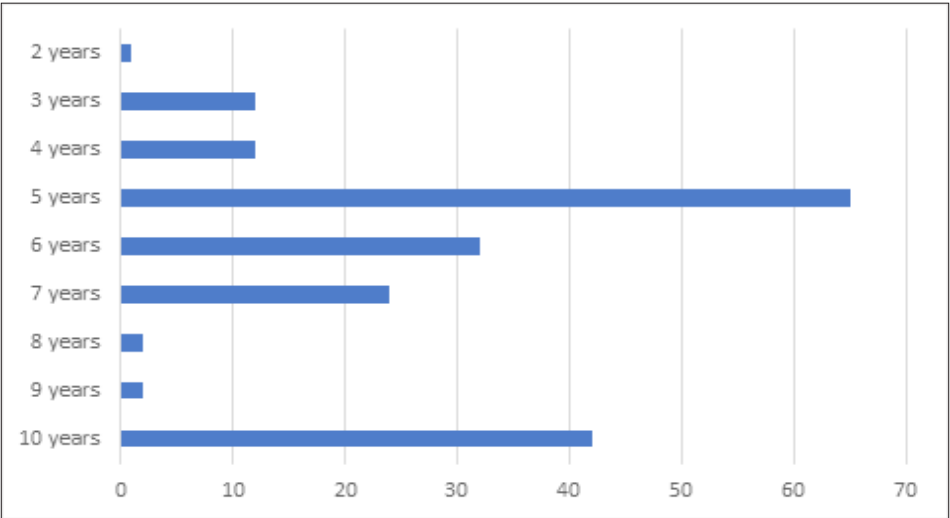


Figure 2: Retention Periods Specified in Tax Laws

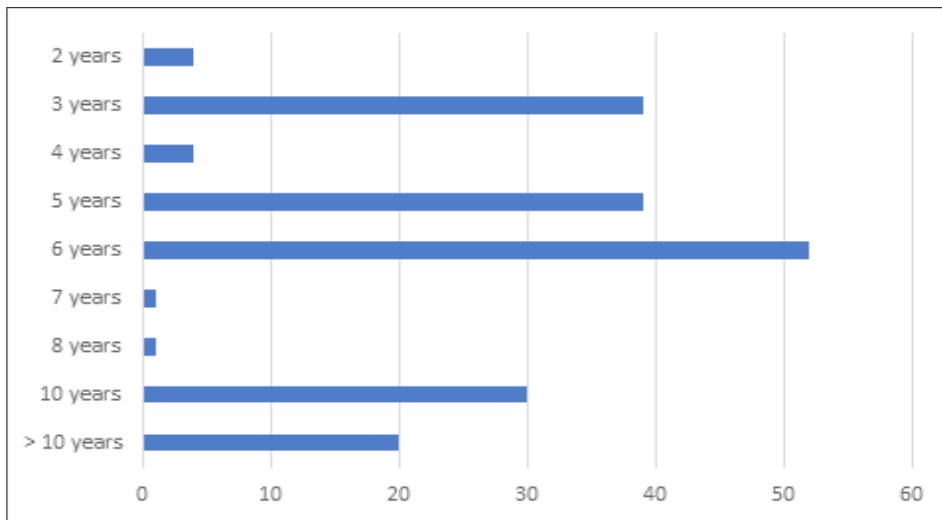


Figure 3: Statutes of Limitations Specified in Contract Laws

more than 10 years. The limitation period typically begins when a contract breach or other cause of action occurs.

Compliance-oriented retention decisions are based on the longest retention period specified in applicable laws and regulations. Generally, accounting laws are the retention drivers. Minimum retention periods specified in accounting laws are longer than those specified in tax laws in 163 of the 171 countries and dependent territories with an accounting law that specifies retention requirements. Overall, contract laws are the least important resource for retention decisions. The minimum retention periods specified in accounting laws and tax laws exceed the statute of limitations for contract-related litigation in 177 of the 200 countries and dependent territories. Even in countries and dependent territories with long limitation periods, contract laws do not have the same legal significance as retention periods mandated by accounting laws and tax laws because there is no legal requirement to retain accounting records until applicable statute of limitations elapse unless litigation is pending or imminent.

Location and Format Requirements

Record keeping requirements specified in laws and regulations are not limited to retention periods. More than 100 countries have laws and regulations that mandate retention of accounting records at an organization's principal business location or another location in the country. This is done to ensure the availability of accounting records for tax audits and, in the case of corporations and partnerships, inspection of the records by shareholders and government regulators. Even where in-country retention is not mandated, various laws and regulations require in-country retention of sufficient accounting records to accurately indicate an organization's financial position for a specified period – the most recent quarter, 6 months, or fiscal year, for example. In some countries and dependent territories, tax officials must approve out-of-country retention or in-country storage locations apart from an organization's registered office.

Acknowledging the longstanding computerization of accounting operations, most countries permit the retention of accounting records

in electronic form provided they are accessible throughout their retention periods. This provision may be included in an accounting law, a tax law, or an electronic transaction or electronic signature law. In this context, accessible means readable and usable. Some laws also require that the integrity of electronic records be protected and that printed copies be made available for reference upon request.

Developing Global Guidance

Compliance with national requirements for retention of accounting records is a significant concern for multi-national organizations, which are headquartered in one country but have branches or subsidiaries in other countries, and transnational organizations, which have distinct, autonomous operations in multiple countries. As an alternative to separately developed retention periods for accounting records in each jurisdiction, a multi-national and transnational organization may want to provide uniform, enterprise-wide retention guidance for accounting records in every country or dependent territory where it operates. That approach establishes a baseline retention period that complies with minimum legal and regulatory requirements in most of the applicable countries and dependent territories. Exceptions will be limited to jurisdictions that require longer retention. The baseline retention period must be long enough to encompass as many countries and dependent territories as possible, but some over-retention is unavoidable; the fewer the exceptions, the greater the number of countries and dependent territories where accounting records will be kept longer than necessary to comply with laws and regulations.

As previously depicted in Figure 1, 10 years is the most commonly encountered retention requirement by a wide margin in national accounting laws. Only 13 countries have accounting laws or tax laws that require longer retention of accounting records, but a 10-year baseline retention period exceeds the minimum retention requirement for accounting records in 96 countries and dependent territories. As Figure 4 indicates, a shorter baseline retention period – 6 years or 7 years – will reduce over-retention, but it will increase the number of exceptions that must be made for countries and dependent territories with longer retention requirements.

Operational Considerations

The AIEF survey was intentionally limited to legal and regulatory requirements, but retention decisions for accounting records must also consider operational needs. Accounting ledgers and journals are the basis for balance sheets, income statements, and other reports that depict an organization's financial position. They will be consulted

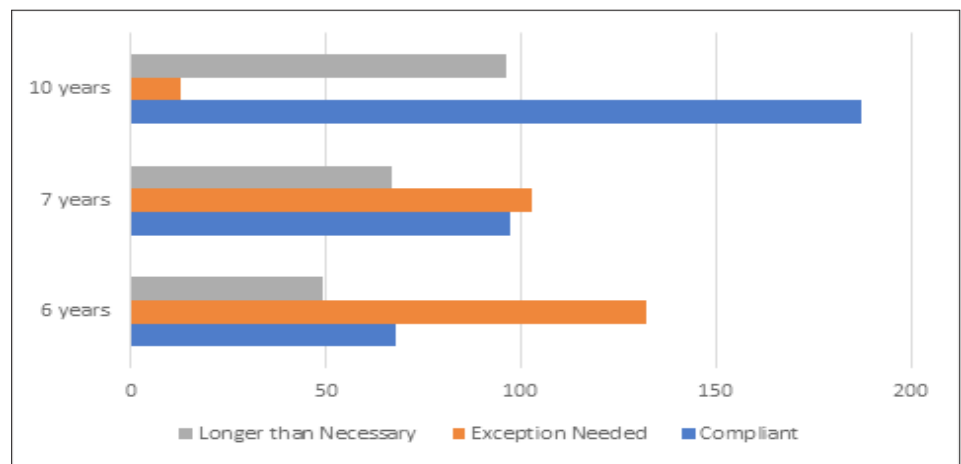


Figure 4: Impact of Uniform Retention Period on Compliance and Over-Retention

when questions, issues, or concerns arise about specific accounting transactions. Accounting ledgers and journals are routinely reviewed during financial audits to assess an organization's practices and internal controls; to verify the organization's financial statements; to confirm that transactions, assets, and liabilities are properly recorded; and to identify deficiencies or violations that require management attention and corrective action. Accounting ledgers

and journals are also used for management planning and decision-making related to an organization's financial performance, to monitor revenue and expenditures, and to prepare budgets for future years. While it is legally compliant, a 6-year, 7-year, or 10-year retention period may not be long enough for these operational purposes.

The full report is available at www.armaedfoundation.org/research-program_menu/research-reports

About The Author

William Saffady is an independent records management and information governance consultant and researcher based in New York City. He is the author of over three-dozen books and many articles on records management, record retention, document storage and retrieval technologies, and other information management topics. His latest book, *U.S. Record Retention Requirements: A Guide to 100 Commonly-Encountered Record Series*, was published in 2018 by ARMA International. He is currently working on a survey of world-wide retention requirements for personnel records and a book about identifying, assessing, and mitigating information risks, which will be published in 2020.

AI, RECORDS, AND ACCOUNTABILITY

By Norman Mooradian, Ph.D.

Introduction

Artificial intelligence (AI) promises wide-ranging benefits for society, but it also poses a host of ethical challenges, such as racial and gender bias, liability for harms caused by AI systems, inequality, economic dislocation, and others. The risks and harms posed by AI will have to be addressed at a societal level and at an organizational level. Records management should have a role in addressing some of the risks posed by AI given its mission of creating reliable records and its ethical core value of promoting accountability. For years, records management has been helping organizations address emerging legal and ethical challenges such as information privacy, compliance, and eDiscovery. It has expanded its scope, methods, and capabilities to encompass what is now called information governance. In order to address the AI-based issues that organizations will face, the records profession will (1) need to identify the types of problems it is best positioned to address and (2) develop a strategy of evolving its methods to address developments in AI.

To identify ethical issues that records management has a role in addressing and a contribution to make, we can start by identifying its ethical core and competencies, which are enabling



accountability and transparency within organizations through the creation and management of trustworthy records. AI-related issues where accountability and transparency are part of the ethical or legal problem should fall within the scope of records management and benefit from its evolving practices. Two prominent examples of such problem areas are: (1) racial and gender bias in AI algorithms and (2) liability for harms caused by AI systems. Both issue areas involve complicated questions of responsibility that require the capture of a reliable and understandable record. Both therefore are good candidate areas for records management to focus on.

To begin to effectively address AI issues, records management needs

to address two questions: (1) how to define an AI record in a given context and (2) how to capture an AI record. An AI record is by definition a record of an AI “act” sufficient to document the act and make it intelligible. To address the first question, records professionals should participate in the Explainable AI (XAI) initiative because its goals overlap with records management goals. To address the second question, records professionals should look for lessons in how records can be captured from other systems that share functional components with AI systems.

Definitions of AI

AI refers to computer systems that are able to perform tasks that are considered to require human intelligence – that is, cognitive tasks. Among the common cognitive tasks

are reasoning, predicting, planning, understanding, explaining, speaking, perceiving, and learning. The answer to the question of whether AIs instantiate these tasks intrinsically or simply imitate them to achieve their outcomes is in part dependent on one's conception of the human mind and brain. Early AI systems were based in formal/symbolic logic. They used logical languages (their syntax and semantics) to represent domains and generate inferences based on inputs. Expert systems are an example of the symbolic AI approach. They proved difficult to construct and maintain, however, given the limitation of formalistic methods to represent real-world domains whose causal laws and correlations are typically not fully known and describable.

With the explosion of data (big data), statistical approaches to AI found greater success. In particular, the field of machine learning (ML) has grown rapidly, and ML AIs and their constituent learning algorithms have found broad applications. ML AIs learn from their environment and improve their performance over time. ML algorithms operate over data inputs and learn from them in that they refine and develop their representations of the world (their models) in such a way that they can predict outputs based on new inputs, classify inputs, and infer hidden variables. ML algorithms require sufficient data inputs and some form of training. Three types of training approaches are supervised learning, where training data sets include inputs and their correct outputs; unsupervised learning, where training data relies purely on inputs; and reinforcement, in which incorrect outputs are corrected through intervention (Theobald, pp. 18-24). The power of ML and the opacity that results from its adaptation and evolution

in relation to the vast quantities of data over which it operates combine to raise or magnify ethical issues in a way that other computer technologies, such as symbolic AIs, did not. XAI, which will be discussed in this article, is an attempt to mitigate the opacity of ML AIs.

Bias

A central ethical issue for AI is bias in ML algorithms. ML algorithms are used widely in services that interface with consumers and citizens. A distinctive feature of ML is its use of statistical methods to analyze big data. It tends to include many more data points on an individual than would be collected using traditional decision methods and/or it uses data points from a broader population. While both points have ethical significance, the first point has privacy implications as well. The second also raises questions about fairness and rights, as information about groups and not the individual is used as the basis for automated decisions made about the individual. Further, of even greater concern is that the information about the groups may be biased. Combining ML with biased information means that the machine can learn to be biased, and the bias can be reinforced by its previous outcomes.

A recent Pew Research Center survey entitled "Public Attitudes toward Computer Algorithms" reported that a majority of people have concerns about the fairness and appropriateness of using AI algorithms to make important decisions about individuals. The report noted that approximately "... six-in-ten Americans (58%) feel that computer programs will always reflect the biases of the people who designed them ..." (Pew, p. 8).

The concerns revealed by Pew are supported by numerous studies.

For example, a RAND report cites a study on the use of software used to predict recidivism in parole cases. The algorithms assessed black convicts with a higher risk than nonblack convicts, "... even when the nonblack convicts had more severe offenses" (RAND, p. 13). The same report describes how predictive policing software programs over-predict crime rates for certain subpopulations and how the results of skewed predictions become data for the ML algorithms in a vicious feedback loop (p. 15). The skewed predictions raise the issue of biased data (the "data diet") that ML algorithms process recursively. Unlike rules-based algorithms, ML algorithms cannot be evaluated and tested at the formal level alone. Rather, the data they process changes their operational principles. This requires assessment based on outcomes and an analysis of the dynamic between the algorithms and their inputs.

Liability

The issue of bias demarcates a broad area of situations in which persons can be harmed through unjust decisions that deny them fundamental goods. These harms are, however, a subset of many other types of harms that can be caused by AI systems. Physical injury, financial loss, and misdiagnosis are only a few broad categories of harm that may result from the implementation of AIs. The well-known case of a fatality caused by a self-driving Tesla is an example of serious physical harm brought about by a type of AI. Whether a drone, an autonomous vehicle (AV), a robotic system, or an information/decision system, AIs often operate in risk-laden contexts. While operating in risk contexts is not new for computer technologies, AIs pose new questions about legal liability

that derive from three features of AIs: (1) their autonomy in defining means to achieve their objectives, (2) their ability to learn and thereby evolve their original programs, and (3) the opacity of their internal reasoning processes.

Law and ethics will need to evolve to address liability issues for AIs, just as records management will need to evolve to support law and ethics. A primary way of allocating legal liability (for civil offenses) in the United States is tort law (Smith, p. 12). Two relevant concepts from tort law are negligence and strict liability, and both are used to assess responsibility and assign damages for harms caused unintentionally. Negligence is typically applied to harms caused by humans and employs a “reasonable person” standard to judge culpability. Strict liability, by contrast, is based on causation and requires no fault to find damages. Products liability is a theory of liability that includes strict liability and negligence and has typically been applied to harms caused by computer systems (Ibid). Application of strict liability to AI will likely put emphasis on the inherent risks in the design and use of the AI, while application of the negligence standard will look at how feasible it would be to reduce or eliminate the risks. The difficulty in applying either standard to ML AIs is that they are designed to learn from data and thereby evolve, not just process data. As the case of invidious bias demonstrated (and such cases implicate additional areas of laws, in particular civil rights law), well-functioning algorithms can behave badly if they have a poor “data diet.” The question of who bears legal and moral responsibility for harms caused by ML AIs will therefore be a difficult issue to settle going forward. From a records perspective, the challenge will be to capture a sufficient record that documents the internal representations of

the AI and the causes of those representations, where those causes will often be the previous data analyzed. For this challenge, the topic of XAI is important.

Explainable AI

XAI is a research focus that attempts to make the decision making of AI systems more transparent and understandable to those using and affected by AI. The initiative has numerous stakeholders, including technical professional associations, regulators, and governmental and private sector AI user organizations. The Defense Advanced Research Agency (DARPA), which is funding research projects in XAI, defines the objectives of its initiative as the development of “... new or modified ML techniques that produce explainable models that, when combined with effective explanation techniques, enable end users to understand, appropriately trust, and effectively manage the emerging generation of Artificial Intelligence (AI) systems” (DARPA, p. 5). The European Union High Level Expert Group on AI has explicability as one of its principles of trustworthy AI (HLEG on AI, p. 10). The Institute of Electrical and Electronics Engineers (IEEE) makes transparency in the “... internal reasoning processes” of AI systems a technical requirement for safe and beneficial general intelligent systems (IEEE, p. 77).

A paradox of developments in AI is that the most successful approaches (in particular, ML in all its varieties) are the most opaque. Earlier AI systems, such as expert systems, were rules based and expressed in formal logic systems that were in principle understandable by humans. Models were based in if-then conditionals, decision trees, and ontologies, wherein relations between categories of things were represented. As

noted earlier, these systems were limited and difficult to construct. ML algorithms, coupled with big data inputs, have proven to be very powerful but have also been opaque at the operational level. Some ML AIs can even form different models (hypotheses about correlations between things and their features) when fed different data. For this reason they have been called “black box” algorithms, and the inscrutability of their decisions is viewed as a barrier to trustworthy computing.

Techniques being explored in XAI to make ML less opaque include developing ML AIs that generate more explainable features or representations or that use more interpretable models, or to develop algorithms that can infer explainable models from black box algorithms (DARPA, pp. 7-8). The latter technique might be considered to involve meta-algorithms that produce “theories” of other ML algorithms. An important component of the DARPA research initiative is to develop interfaces between the explainability functionality and human users such that users can interrogate AI systems as to the basis of their decisions. This component of the initiative is of direct relevance to records management, as interface development should take into consideration the production of reliable records that can be captured by user organizations.

Strategies for Records Management

Records management has evolved to meet ethical and legal challenges posed by technological developments (e.g., eDiscovery, information privacy). It will similarly evolve to support accountability in the area of AI, though challenges will remain. To do so, it will need to develop new approaches, concepts,

and methods, but experience from other expansions can be drawn upon. The first step is to define an AI record – that is, to define the scope of records needed to support accountability. This will be an ongoing and evolving task, but a clear definition of the documents and data that constitute an adequate record is a prerequisite to any effective records management practices in the area of AI. The second step is to develop practices for capturing the full scope of records. Having established criteria for a sufficient AI record provides a normative standard. Capturing the information identified in the standard will be a challenge and will require interdisciplinary teams. This too will be an ongoing initiative, but one in which records professionals should be key subject matter experts and stakeholders.

In defining a sufficient AI record, its scope and contents needed to be characterized. Its scope will be actions, transactions, and events that are carried out (fully or in part) by AI algorithms. Its scope therefore potentially can be as inclusive as any records program insofar as AI algorithms infuse organizational actions, transactions, and events, many of which are already computer mediated. Further, as AI and IoT (internet of things) expand the range of actions, transactions, and events carried out by organizations, the scope of organizational records will increase and along with it the scope of AI records.

As regards the contents of an AI record, a few target areas should be considered at the outset. First, it can be expected that as the regulatory environment changes, compliance documentation will be required for AI implementations. Just as data systems that capture personal information require privacy impact assessments (PIAs) in

certain jurisdictions, ethical impact assessments are likely to emerge as a kind of compliance record. Basic compliance documentation should be captured as a record series and referenced by the AI record. PIAs are a good example of the kind of compliance documentation that may be required by law or best practice in the future (and are already required in many jurisdictions for AI algorithms that process personal information). PIAs require a description of the technology, its use cases, and risks attendant upon its application, as well as mitigation plans. For AI-enabled actions, transactions, and events, a record of these should reference the controlling compliance documentation in place when they happened.

Second, AIs consist of algorithms and other technical structures, so base system design and testing documentation for any implementation should be part of the record. ML AIs are more than their designs, of course, but the design documentation is a foundation. As with the compliance documentation, the AI record can reference the technical documentation for the algorithms underlying the transactions. The link back to the relevant documentation will need to be as granular as the deployment of the algorithms and will therefore need to be version-specific or iteration-specific.

Third, and most challenging, records of decisions need to be captured. These records will constitute the bulk of the AI record and will be transactional or case file record sets. They will consist of summaries of the algorithms deployed in relation to the decision, the data processed, and the internal representations of the AI during the processing. Capturing a record of the decision process and representing the

data used as inputs are technical challenges tied to the goal of XAI. As described earlier, XAI aims to make specific decisions explainable through an interface that allows users to interrogate the decision or have the system present a summary of its reasoning. For ML AIs, the technical challenge is substantial. Records professionals will depend on developments in XAI to be able to create usable records. Nevertheless, they should play an active role in shaping requirements for XAI in relation to records such that usable records are capturable. It may be necessary for the profession to develop a specialization for records professionals who work on interdisciplinary teams of data scientists and other IT professionals, but, as noted earlier, the records profession has had to evolve with technological change, so further evolution would be in keeping with its recent history. In any event, XAI has the potential to lay the basis for sufficient AI records, but the records profession and records professionals are essential to the development of guidelines for records that can be relied upon in legal and other proceedings where records are scrutinized and tested.

ML AI implementations will be increasingly common in the near future. Instead of waiting for the adoption of such technologies, records professionals should begin by assessing how they currently capture records of decision systems. They should also review whether their organization processes big data and how it captures a record of its uses. In the case of decision systems, enterprise-wide data and content management systems often have rules-based workflows that include decision points. As part of the implementation of such workflows, it should be possible to capture a record of the configuration or programming

of the workflow as well as an audit trail of the key decisions and actions executed in any workflow. Records professionals should be participating in the requirements process for decision systems to ensure that reliable, complete, and usable records are created. Doing so will address current needs but also serve as a preparation for future AI deployments.

In the case of big data (e.g., social media, IoT data, or other big data sources), organizations should review how records are captured and managed. Big data can create a deluge of information coming into an organization, and for management purposes this data may need to be purged in short-term intervals if not immediately. Assessing record needs in relation to big data flows is critical to organizational accountability, however. Where usable records are required, a balance may need to be found between raw data and syntheses or summaries of the data that is manageable. Developing feasible means of capturing big data records can be an answer to real and present needs within

the organization, and at the same time it will serve as a preparation for capturing a record of data inputs that will be used by ML algorithms in areas where risk of unfair bias and harms is present. In sum, the benefit of evaluating current records in relation to decision systems and big data is that records professionals can start building capacity in advance of AI implementations and can also address present gaps relative to current decision/information systems while doing so.

Conclusion

This article reviewed ethical and legal risk areas arising from AI where the need for reliable, authentic, and usable records is a necessary condition for addressing those risks. It argued that the ethical core of the records profession – namely, enabling accountability in organizations, and its core competencies of defining and capturing records from diverse content types – makes records an important field in and contributor to the emerging interdisciplinary effort to govern AI technologies. The central

risk areas reviewed were bias (e.g., racial and gender) in AI algorithms and liability for harms caused by AIs. The risk areas reviewed are broad but not exhaustive. Other types of ethical and legal risk will arise that will require accountability and, by implication, the ability to capture records. The records profession can play an important role in mitigating risks and harms arising from AIs, but it will need to expand its toolkit to do so. Defining an AI record and developing methods for capturing AI records is a project the profession should take on. Joining cause with XAI initiatives is a good place to start. Identifying gaps in the current state of records programs in relation to automated decision systems and big data is another step that can be taken in tandem. The records profession has been responding to challenges in organizational transparency brought on by technological developments for a number of decades and has evolved and expanded in the process. AI presents a new set of challenges as well as new opportunities that one can reasonably expect will be met and seized upon by records professionals.

About The Author

Norman Mooradian, Ph.D., is senior business analyst at Konica Minolta in the ECM solutions group. He received a Ph.D. in philosophy from the Ohio State University and has completed graduate courses in legal studies at the University of Illinois. He has published articles on information and business ethics and is the author of *Ethics for Records and Information Management* (2018, ALA). He is a lecturer at the San Jose State University School of Information.

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Blockchain Technology and Recordkeeping

By Danielle Batista, BARM, MIS; Darra Hofman, JD, MSLS;
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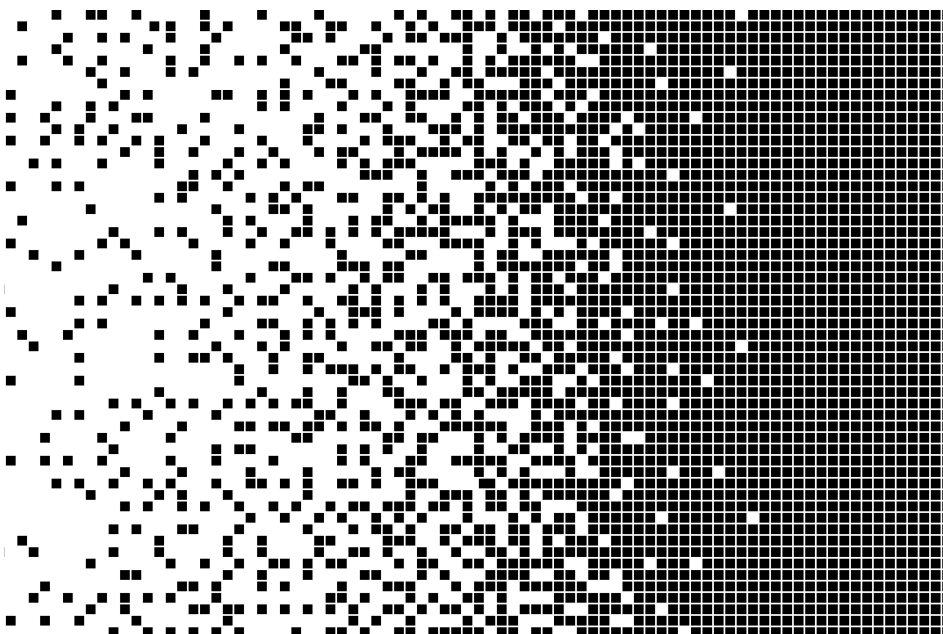
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Blockchain is often defined as ledgers with entries organized in an append-only, sequential chain using cryptographic links and distributed out and stored on

a peer-to-peer computer network. It's an emerging recordkeeping technology producing new forms of records, and new modalities of recordkeeping, with which records and information professionals

will need to engage. This new technology has been considered or implemented in practically every country in the world; blockchain's ubiquity requires that records and information managers should be able to understand, operate, and support the design of such systems.

In a new AIEF report, *Blockchain Technology and Recordkeeping*, the authors aim to provide an overview of blockchain technology that helps information professionals know how to address the challenge of effectively managing records in these emerging recordkeeping environments. The chapters respond to, and are structured according to, an initial set of questions from the AIEF's call for proposals for a study on blockchain, records, and information management. The authors shared their current state of understanding with a view to help prepare records and information



professionals for the future of recordkeeping in a blockchain world.

The first chapter provides an overview of blockchain technology, explains how blockchain operates as a “technology of trust,” and introduces technical aspects in greater detail. The chapter presents the three interacting “trust layers” on which blockchain systems are designed: a social layer, a records layer, and a technical layer. The primary focus of the overview is on the records layer, but there is also an explanation of how records professionals can understand the other two layers and, to some extent, how the layers interact in the design and operation of blockchain systems. The technical sections cover aspects of how blockchain transactions are executed, present the blockchain technical features, provide an overview of the types of blockchains, and explain the blockchain technology stack.

Chapter 2, “The Creation and Storage of Blockchain Records,” is about what records are generated by and stored in blockchain systems. The chapter highlights that records and their location in blockchain systems are complicated by four factors: 1) differences among various blockchain systems in terms of how they generate and store records, 2) the distributed and decentralized architecture of blockchain systems, 3) the design choices of blockchain solution developers about what to record and how to store records in blockchain systems, and 4) the way in which the nature of records and recordkeeping is being transformed by blockchain technology. The authors propose a typology of records produced and/or recorded on blockchain systems

with examples, locations, and a rich diplomatic analysis showing how the elements of the intellectual form may be identified in blockchain records. The discussion shows that this new recordkeeping system imposes challenges for records professionals and records creators that require new strategies and techniques to address the changes imposed by this new technology.

Chapter 3, “Blockchain Technology and the Life Cycle of the Record,” presents an analysis of the applicability of the two main models of the management of records – the life cycle and the continuum – to blockchain-based records and blockchain systems. The chapter presents an overview of the two models and analyzes their relevance to blockchain systems, primarily in the context of the Bitcoin and Ethereum public blockchains. The analysis reveals that neither of the models is completely applicable to the management of records in blockchain systems, and this new technology might impose reframing of recordkeeping practices into a new paradigm.

Chapter 4, “Retention & Disposition of Blockchain Records,” discusses three main questions: Can blockchain reduce any of the investment required for records retention? Does it impose new challenges or risks for the execution of those archival functions? What could blockchain records retention look like? These questions stimulate a discussion about blockchain and records retention and the difficulty of destruction in blockchain systems. The conclusions determine that retention and disposition depend on decisions made about the design of blockchain systems, and how these decisions can serve as a complement or hindrance to an organization’s RIM program.

The issues related to “Blockchain and Defensible Disposition” are discussed in **Chapter 5**. The report highlights the problems of retaining records after the immediate business need for them has passed, and the difficulties in implementing defensible disposition when records are stored on an immutable blockchain. This chapter emphasizes legal elements and technical aspects of defensible disposition on blockchain systems. This chapter concludes that a successful defensible disposition plan depends on the consideration of legal obligations, business goals and needs, technological capabilities, and risk assessment. All these elements must be considered when implementing blockchain systems.

Chapter 6, “Preservation of Blockchain Records and Systems,” explores how blockchain technology can be used to support long-term preservation of archival documents, as well as some of the issues around the long-term preservation of blockchain records and systems themselves. The chapter presents two interesting projects that make it easier to understand how blockchain technology could support this archival function. The first one is Project ARCHANGEL, which combines computer vision and artificial intelligence techniques to fingerprint visual records using blockchain technology as a curation tool and as a means of securing content against tampering during the custody of the record. The other is the InterPARES Trust TRUSTER project, which proposed TrustChain, a model for long-term preservation of digitally signed documents using blockchain technology. There are also relevant considerations about the issues relating to the long-term preservation of blockchain records – a difficult task given that the challenges of

envisioning what long-term digital preservation requirements might arise in a blockchain environment. The chapter calls for records and archival professionals to expand their research efforts on these challenges.

The evidentiary character of records in blockchain systems is analyzed in **Chapter 7**, “Blockchain Records as Evidence.” The chapter argues that blockchain systems should be designed to provide final, definitive, and immutable records of transactions. The analysis of blockchain-based records’ trustworthiness is based on archival and diplomatic theory. Both sciences together form complementary perspectives that enable understanding of the nature and basis of trust in records as sources of evidence of the facts and acts to which they refer. The perspective is characterized by

the requirement that records must possess three fundamental qualities to be considered trustworthy: accuracy, reliability, and authenticity. The conclusions are that trusted records creation and recordkeeping are central to the operation of blockchain technologies as a technology of trust, but that additional thought needs to be put into designing blockchain systems for the keeping of trustworthy records since many aspects of records’ trustworthiness are still not addressed in these systems.

The ownership of the record is another intriguing aspect of blockchain systems. **Chapter 8**, “Who Owns the Record? Ownership and Custody of Blockchain Records,” indicates that the issue of ownership is dependent on how a blockchain is being used in managing information and records, what type of blockchain system is implemented (e.g., public,

private, permissioned, etc.), how it is designed, and where the records are stored. This chapter explores at a high level the issues surrounding blockchain records and ownership. The discussion draws upon research into the issues of record ownership in the cloud, discusses various definitions of “ownership” in terms of custody and control, and examines several theoretical blockchain recordkeeping systems scenarios and how ownership would theoretically apply to each one of those scenarios. There are some expectations about ownership being commuted to data subjects, with blockchain recordkeeping systems resulting in a redefinition of ownership and information governance into “self-sovereign” ownership. The results of the analysis show that there are still many questions of ownership and custody in the blockchain environment.



Chapter 9, “Blockchain Technology and Privacy,” discusses how society’s notions of records privacy arose when records were in paper form, but the proliferation of digital records has necessitated new tools for managing privacy. This chapter explores different conceptions of privacy and analyzes the use of blockchain to solve some privacy dilemmas. It also highlights challenges in the design of blockchain systems when considering privacy requirements and the immaturity of blockchain systems as records management tools. The chapter concludes that blockchains can be a dream when designed to enhance records’ privacy, security, and accessibility, or can become a nightmare when thought and effort are not put into designing in privacy up front.

The final chapter is called “Blockchain Standards and Best Practices.” The process of standardizing blockchain technology is only just beginning, and this chapter outlines some of the major standard-making initiatives likely to have an impact. The current initiatives are as follows: 11 standards under development by International Standards Organization; a CEN-CENELAC Focus Group on Blockchains and Distributed Ledger Technologies; a focus group established by International Telecommunications Union (ITU); the World Wide Web Consortium (W3C) and the Decentralized Identity Foundation working group; National Standards from China and United States; standards from different blockchain communities like consortiums, foundations, and

societies such as IEEE; and sector-specific best practice standards such as the HIMMS Blockchain Workgroup. It is a fact that many standards initiatives are still in the early stages, and new initiatives are emerging, meaning that the blockchain world has come to recognize the value of standards to promote interoperability and growth of the technology and its application.

The report also presents valuable appendices for a practical view of blockchain use cases, a high-level comparison of some of the features of popular blockchains, an overview of “Records in the Chain Project” case studies, and examples of blockchain risks.

The full report is available at www.armaedfoundation.org/researchprogram_menu/research-reports

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INDUSTRY IN ONE: FINANCIAL SERVICES

By Anna Lebedeva, IGP, CIPM, PMP

This article summarizes a report published by AIEF on June 26, 2019.



The scope of a records and information management (RIM) program in financial services can seem overwhelming. Compared to other industries, the complexities of managing records and information in financial services are arguably some of the toughest to solve, primarily because of the intense regulatory scrutiny. The program must evolve with the industry as new challenges and opportunities emerge, and it requires constant attention and program adjustments. Designing RIM programs in financial services requires a pragmatic and consistent approach that supports balancing the requirements of regulatory compliance with the goals of growing the business.

History of Financial System

From the establishment of the first bank in 1791 to the modern day, the financial system in the United States has been shaped by a cyclical experimentation of federal and state legislation. Over the years, the regulations reflected the conflicting forces of centralized government control to maintain stability in the financial system vs. the fear of too much control being concentrated in too few hands, which resulted in deregulation.

Shaped by several financial catastrophes of modern history, such as the Great Depression of 1929 and the Great Recession of 2007, the U.S. financial system continues to evolve in response to changing regulations. If history is any

indication, the lessons demonstrate that 1) financial stability of major firms is paramount to the stability of the financial system and the economy overall, and 2) financial institutions have to be more transparent and accountable when conducting business practices to protect consumers' best interests. Regulations force financial institutions to "play by the rules." Non-compliance no longer results in just fines and bad publicity; it can take firms out of business.

Now more than ever, financial institutions are required to show evidence that their business practices are in line with regulatory requirements, and one of the best ways to do that is through sound RIM practices. The turbulent history of the U.S. financial system has led to the imposition of enhanced reporting, supervisory, and record keeping regulations, which require prudent and consistent implementation to withstand the regulatory and legal scrutiny. The role of RIM in financial institutions has been elevated in the last two decades, now requiring a continued focus, executive support, and an enterprise-wide program scope to be effective at minimizing the risk of non-compliance and delivering organizational value of information.

Financial Services Industry Overview

In today's financial services marketplace, a financial institution exists to provide a wide variety of deposit, lending, and investment products to individuals, businesses, and/or governments. The major categories of financial institutions include central banks, retail and commercial banks, investment banks, investment companies, brokerage firms, internet banks,

credit unions, and savings and loans associations. To build and implement a compliant RIM program, it is important to understand the difference between the types of financial institutions to determine their specific recordkeeping obligations.

Federal and state governments have many agencies that regulate and oversee financial institutions. While these agencies each have specific responsibilities, they work to accomplish similar goals – to regulate and protect those who participate in the financial industry. While their areas of coverage often overlap, federal agencies usually supersede state agencies. However, this does not mean that state agencies have less power, as their responsibilities and authorities are far-reaching.

Drivers for RIM in Financial Services

Intense regulatory pressure is the main driver for RIM in financial services. Many of the financial services regulations have requirements for sound recordkeeping as a way to demonstrate transparent and accountable business practices. By far, the most stringent recordkeeping regulations in the United States are those imposed on the securities broker-dealer industry. There are many recordkeeping regulations that apply to specific types of registered members and also broadly across many registrants and types of financial institutions.

In addition to financial services regulators mandating recordkeeping obligations on its member firms, there are other regulations in the United States and globally that impact the RIM practices of the

U.S. financial institutions. Generally, those regulations cover data privacy and information security, and include limitations on data retention and requirements for data disposition. With privacy and cybersecurity challenges impacting RIM, it is important for organizations today to rethink how they look at data, records, and non-records, and develop a combined approach for broader information management that involves collaborative efforts of business, legal, data governance, privacy, information security, and RIM stakeholders to build a coordinated, comprehensive, and agile information governance program.

There are several other drivers that can help make the business case for RIM in financial services, such as business needs, industry standards and best practices, business continuity, corporate legacy, litigation risk, information overload and inefficiencies, lacking or ineffective RIM practices, and information security breaches.

Risk Management and RIM

Most financial institutions have become very effective at managing risk in traditional financial risk areas such as markets, liquidity, and credit. However, the emerging key risk areas for financial institutions are non-financial in nature, broadly defined as events or actions, other than financial transactions, that can negatively impact the operations or assets of a firm. Both financial and non-financial risks can result in financial ramifications to the firms if not managed properly.

It is no surprise that cybersecurity is not only the number one operational risk in the non-financial risk category, but is also the one expected to increase the



most in importance over the next several years as the number of cyberattacks, their size, associated costs, and consumer impact rise. Financial organizations are among the most targeted by hackers. Most firms have terabytes of sensitive information that do not need to be retained for legal, regulatory, or business purposes and can be deleted, but doing so is one of the greatest challenges most firms face. By implementing ongoing defensible disposition processes, RIM professionals can minimize the amount of sensitive information being exposed in data breaches and thereby reduce the financial and reputational damages to their firms.

Constantly changing regulations is the second biggest operational risk for financial institutions today. The regulators in the United States and around the world are increasing their focus on risk management, cybersecurity, data privacy, conduct and culture, and financial crimes.

RIM professionals need to stay abreast of regulatory developments by collaborating closely with the business, legal, and compliance stakeholders in their organizations to be able to adequately respond to the regulatory changes and incorporate them into the RIM policies, retention schedules, and procedures.

Third-party risk is the third biggest operational risk faced by the firms, resulting from the growing reliance on vast networks of external service providers for everything from online platform management to extra network capacity. Being able to police the way the vendors do business and protect the firms' data and intellectual property is a constant area of concern. Poor management of third-parties and fourth-parties (vendors' vendors) leaves firms exposed to the risk of costly data breaches. RIM professionals must be standing members of a third-party risk

management process in their organizations to ensure that vendor contracts have proper provisions for data and record retention, disposition, legal holds, inspection, data transfers, etc., to enable the most control over the data.

Electronic Communications Retention and Supervision

Electronic communications (e-communications) is one of the key record categories that RIM professionals at financial organizations need to manage effectively. While 15 years ago emails were the only means of e-communications utilized at workplaces, today firms are witnessing a number of emerging communication technologies being employed in conjunction with or instead of email to conduct business as they offer more interactive and effective ways of sharing information with internal and external parties. Such new e-communication technologies include social media, blogs, instant messaging, audio and video recordings, and websites.

The first step in managing the emerging communication tools is developing policies delineating the use of those tools at the firms. The acceptable use may be limited to internal employee communications, in which case the firms may choose to not treat those as official records. However, adoption of the new e-communication tools as acceptable for conducting business with clients immediately mandates that the firms implement record keeping and supervisory controls for governing communications as they become regulated records. As the use of emerging e-communication tools broadens among financial institutions, so does the market

for e-communication archiving solutions, some of which offer capabilities to retain all types of e-communications with a single interface to search, view, retrieve, and manage records while preserving their native format.

Industry Trends and Impact on RIM

Emerging e-communications technologies is just one example of new technologies that will continue to impact financial services. Firms are beginning to use a wide variety of other new technologies, such as cloud computing, artificial intelligence (AI), machine learning, big data, advanced analytics, and blockchain. Many firms are undergoing a digital transformation as an increasing number of transactions are moving to digital channels, and more and more institutions are introducing digital-only entities to provide lending, investing, and specialty services. The focus is on gaining operational efficiencies to provide innovative personalized customer experiences and increase information value to both the firm and the customer.

The speed and the rate of change brought about by new technologies are forcing RIM, risk, and compliance professionals, as well as regulators, to look into these new technologies and understand their impacts. RIM has to be closely aligned with other risk and compliance functions to be able to ensure continued compliance with regulations and internal RIM policies.

Future Industry Outlook and RIM

To be able to compete where margins are thin, competition is fierce, regulations are changing, and technology has an increasing impact, financial institutions will place innovation as a top priority. Organizational cultures must be shifted to support innovations which will impact not only increasingly outdated business models, but perhaps entire organizations that fail to recognize the significance of innovations in maintaining their competitive position or staying in business. Firms will also put a stronger focus on improving customer experience

to be able to innovate in ways that prioritize the most effective mix of capabilities, processes, and people.

The job of RIM professionals in this rapidly changing business environment is to become a profit protection center for the business. RIM processes have to be cognizant, agile, and adaptable to the constantly changing regulations, non-regulatory drivers, risks, new technologies, trends, and innovations to support the objectives of growing the business while making sure they do it in a compliant way to avoid the alternatives of regulatory fines or shut downs. As with any industry, the success of RIM in financial services relies on collaboration of many stakeholders across the organization to bring the common vision of sound, legally-defensible information governance to the forefront, where information is raised to the same level as other key organizational assets.

The full report is available at www.armaedfoundation.org/research-program_menu/research-reports/

About The Author

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DOCUMENTATION THEORY FOR INFORMATION GOVERNANCE

By Marc Kosciejew, MLIS, Ph.D.

Documentation the Emblem of Modern Society?

Documentation is a central feature of the contemporary world. We are immersed in documents in nearly every sphere of life and constantly engage with them. Our lives, in many ways, are “document-pervaded.”¹ Documents are created, deployed, and used to help us communicate, organize, control, discipline, monitor, and represent many aspects of information, institutions, and individuals. We have a seemingly inherent need to record our lives into diverse kinds of documents

that, in turn, we increasingly depend upon to interpret, understand, navigate, and shape the world around us. This need for and dependence upon documentation is arguably the signature cultural technique of our time; or put differently, documentation is *the* emblem of modern society.²

Most institutions – governmental and corporate, public and private – rest and rely upon documentation to enable and facilitate their activities, operations, transactions, and other functions. Documents are the lifeblood of institutions.³ Most institutions are “unthinkable, impracticable, not feasible without documents: messages, memoranda,

laws, statements, diplomatic briefs, warrants, reports, white papers, submissions, applications, records, minutes of meetings, job descriptions, letters of guidance, press releases, bills, budgets, and accounts.”⁴ Further, “the practices of government [and other public and private institutions] become formal or official to the extent that they are documented.”⁵ Most institutions deal with a diversity of documents that, in turn, demand different kinds of practices with them, including designing, composing, circulating, reading, viewing, discussing, organizing, filing, managing, retaining, preserving, and otherwise using them.

Yet, despite our need for and use of documents, and their subsequent ubiquitous presence, we remain largely blinded to them; or, as David Levy observes, we are inured to the documents we use and that surround us.⁶ We are so used to dealing with documents that we seemingly take them for granted or at least overlook their importance in our lives. Many people tend to concentrate on the information instantiated – that is, inscribed and contained in and made tangible – by documents instead of the documents themselves as material objects. This focus on information, or as some scholars describe as a privileging of information,⁷ effectively renders documents as unimportant or disposable items. Information is treated as though it is indifferent to its documentation. The importance of documents as material objects, in addition to the importance of our practices that are afforded by – that is, made possible by – this materiality, are rarely recognized or, at best, considered of marginal interest.

But what exactly is documentation? What are these material objects that surround us and that we depend upon to help organize, navigate, interpret, understand, and shape our world? What is it that we are creating, collecting, generating, consuming, organizing, managing, preserving, and otherwise using? There are often various related, but different, terms conflated with “documentation,” including “information,” “record,” “file,” and in some cases “database.” What are the distinctions between these terms and why are they important to recognize?

This article aims to consider what a documentary focus can offer to the practices and understandings of information

governance. It specifically argues that documentation theory can help to expand, and thereby more fully illuminate, the foundation and diversity of this profession. It takes Marc Kosciejew’s material-documentary literacy framework⁸ as its point of departure for this article’s conceptual conversation on documents, specifically approaching and analyzing objects as documents. This framework “places a specific document, or documents, at the center of observation, study, and analysis and thereby develops documentary dialogues about and for it, uses the document to better illuminate its contexts, and integrates the document in teaching and researching [and managing] information.”⁹ Using this framework as a device for shaping the following discussion, this article helps shift focus from information to documentation; specifically, it reorients considerations of information to considerations of the documents that materialize and make possible information that is, in turn, organized, managed, preserved, and otherwise used for diverse purposes in information governance and beyond.

It is important to note that this article does not claim that a documentary focus is a major departure from conventional scholarly or professional approaches to information governance, or even to information generally. It instead provides a different, indeed overlooked, angle – a documentary focus – in which to situate discussions and practices with information. A documentary focus “traverses disciplinary [and practical] boundaries to illuminate the many important roles that documentation plays in most areas of life and society. It also helps to better illuminate diverse kinds of information, and the way in which

information is materialized.”¹⁰ This article’s documentary focus shows documentation’s central position in information governance and sheds light on the diverse kinds of documents and practices that deal with information.

The following discussion is arranged into three main sections. The first section presents definitions of three significant terms used in information governance, namely “record,” “information,” and “document.” These definitions, drawn from the scholarly literature on theories of information and documentation, also illuminate the important distinctions between these terms. This section further argues that the term of “documentation” can serve as an overarching, indeed unifying, concept for the profession’s focus. The second section begins a conceptual documentary approach to objects, and, by extension, information. It presents some possible pathways to take in which to more fully understand the features and effects of documentation and also discusses the usefulness of this approach to information and our practices with it. The third and concluding section calls for more documentary considerations of information. Let us first turn to distinguishing between three often conflated terms: information, records, and documentation.

Distinctions between Information, Records, and Documentation

The terms “information,” “record,” and “documentation” are often used synonymously as each one focuses on evidence, broadly understood; however, they have divergent concerns and perspectives on the nature of evidence.¹¹ The

term “information” covers any phenomena, including physical or digital objects, intangible knowledge, events, and nearly everything that could be considered as informative. In this sense, “information” is closely aligned with “evidence” as it can be regarded as evidence of something. The term “record” concentrates on evidence that is created, used, and required for organizational activities and affairs. In this sense, “record” is mainly concerned with the documents needed in and for the business of various kinds of public and private institutions.

Arguably, these two terms are conceptually and practically limiting. “Information” is limiting because it usually does not account for the central role that materiality – that is, physical components and characteristics of items – plays in its emergence as tangible items. This limitation therefore conceptually neglects materiality, and, practically, overlooks how materiality determines and disciplines practices with information. “Record” is limiting due to its narrow focus on information-bearing objects created, maintained, and used by institutions. This limitation conceptually excludes the diversity of items beyond organizational settings and can even undermine understandings of increasingly dynamic, interactive, and pervasive kinds of digital documentation such as augmented and virtual reality environments.

The limitations presented by the terms “information” and “record” can be reconciled by situating them within the materialist lens of “documentation.” This term brings together “information” and “record” by emphasizing their material foundations and associated practices, and also expands the focus to the diversity of objects,

beyond institutional settings, that instantiate information into tangible items that can be used in different ways in various contexts. Michael Buckland employs the concept of “information-as-thing”¹² to help further describe documents and to clarify their close relationship to information. “Information-as-thing” denotes bits, bytes, books, and other physical media and technologies, including any material object or action perceived as signifying something. An “information-as-thing” is, in other words, a document since it is a material object that presents evidence of something. A document makes information tangible in order to be practiced with and used. It is documents, or “information-as-things,” that we are dealing with in our lives, workplaces, and societies.

Yet, as aforementioned, the term “information” is often favored over “documentation” (and even “record”). Favoring the term information divorces it from materiality, that is, the material forms and formats in which it is instantiated, and instead considers it as immaterial phenomena. Bernd Frohmann criticizes overlooking information’s materiality, arguing that “to imagine the information conveyed by a member of the rapidly expanding universe of documents as abstract, noble, document content indifferent to the transformation of its vehicles and stripped of all material, institutional, and social supports is to imagine it as belonging to the same ontological category as the immaterial, intentional, and mental substance present to an individual mind in a state of understanding that document.”¹³ Information, in other words, does not exist in some idealized “state of knowing” but instead needs material objects in which to communicate, display, represent, or use it.

Viewing or considering information as immaterial is further exacerbated by the increasing ubiquity of digital devices and technologies that tend to promote “a widespread perception of the immateriality of the digital domain and the related assumption that it was somehow enabling us to transcend matter.”¹⁴ Digital information is often regarded as being “ephemeral,” without material or physical constraints, somehow simply existing or floating around in the virtual ether of the “clouds” (another ephemeral phenomena). Put differently, it is as though being or going digital means eschewing the physical world, and that digital information, by extension, somehow simply exists in virtual space as some ephemeral entity appearing, hovering, and disappearing on screens. But the digital world and its digital information are very material; they depend upon complex physical items and infrastructures for their existence, operations, and uses.¹⁵

As a result of this perception, there is even less consideration given to, and more confusion about, the documentary forms and formats that make this digital information possible. As Buckland notes, “a paper document is distinguished, in part, by the fact that it is on paper. But that aspect, the technological medium, is less helpful with digital documents. An e-mail message and a technical report exist physically in a digital environment as a string of bits, but so does everything else in a physical environment.”¹⁶ A digital document – whether wiki or e-book, file or database, website or podcast, virtual reality environment or social media profile – is a discrete unit of bits requiring a surrounding and supporting infrastructural assemblage of hardware and software infrastructures and

associated devices, platforms, and operating systems. This discrete unit of bits, moreover, cannot be separated from this surrounding and supporting assemblage upon which it depends.

This complex material assemblage raises questions of what exactly are digital documents? As Lund observes, “when you can no longer hold a document in your hand, but only see it on the computer screen... [the] crucial quality of a document being a finite/discrete entity in a material sense is dissolved into a number of bits organized for a short period of time with the permanent risk of crash and disappearance.”¹⁷ Are digital documents only the discrete units of bits and bytes and their codes, or must their surrounding and supporting assemblage be taken into account? Where do digital documents begin and end, especially since there are no clear boundaries as everything in virtual space exists as bits and bytes? Are digital documents fixed or fluid?

Roswitha Skare and Niels W. Lund, for example, question whether

Facebook is a digital document.¹⁸ They ask if Facebook is a document with or without borders – and if it has borders, what or where are they; if it does not have borders, where does it begin and end – and if it is a book as it claims to be in its name. They argue that Facebook represents a new kind of document, a worldwide document, that is a complex, dynamic document on its own but that also creates, embeds, facilitates, supports, shares, and extends a diverse range of other kinds of digital documents. It offers more than a conventional book or e-book and yet has similarities and differences with more established print and physical documents. It “has similarities with many classical documentation forms like literary books, telephone directories, annual [a]cademic [f]ace books, newspapers etc. and at the same time it is something completely new challenging hitherto used analytical conceptual tools.”¹⁹ One feature that makes Facebook a unique kind of (digital) document is its complex plethora of documents that make up or are a part of it – such as pictures, videos, articles, stories, reports,

e-books, blogs, links to other websites, interactive chat and video services, integration with other social media sites like Instagram, and so on – that give it multiple borders and simultaneously render it borderless.

New and emerging digital technologies additionally complicate considerations of digital information because they are often accompanied by the need for new kinds of digital documentation. Lyn Robinson explains that these new kinds of digital documents – from interactive, multimedia, multiplatform texts to virtual reality environments – require new kinds of practices.²⁰ These new digital documents arise “from a combination of rapidly developing technologies, particularly pervasive, networked information and multi-sensory interaction, when combined with participatory texts.”²¹ Three technological trends are creating new kinds of digital documents: first, mobile becoming pervasive; second, multi-media becoming multi-sensory; and third, interactive becoming participative. These three trends are further deepening our dependence upon and immersion in documentation. Robinson explains that “the feeling of being enveloped in information which is provided by a pervasive information environment, involving multi-sensory input, delivering a participative text, provides what may reasonably be described an immersive experience. The record of such experiences is an immersive document. Both the ‘raw’ text, and each experience of it, may be considered as a document, posing interesting issues for the organization and management of such documents.”²² Information



governance is directly impacted by these developments since it must increasingly deal with digital documentation, including these new kinds, in professional settings and practices.

A documentary approach can be applied to objects and information to help illuminate their documentary features and status as documents. Such an approach provides pathways for exploring different aspects of objects – including their material forms, associated practices, and contexts in which they appear and are used – to determine their roles as documentation. Such an approach is important for information governance because the profession, even with its apparent favoring of “information,” is deeply engaged with documentation. Let us now turn to one possible documentary approach to objects and information.

A Documentary Approach

Although ostensibly concerned with information, the information governance field deals with documentation at its most fundamental level. It would arguably be impracticable, and even unthinkable, without documentation. Organizing and managing a database, for example, involves the selection, organization, and management of documents. A database itself is a kind of document that incorporates, arranges, and stores other documents.²³ Retrieving information from a database means engaging in a documentary practice. One is, after all, seeking a specific document in order to acquire the information they desire or need. The database does not display the information that is sought; instead, the database offers the document in which the information is instantiated and thus where it is featured and located.

A documentary approach helps draw attention to the documentation at the center of the profession. According to Buckland, there are four interrelated components of a documentary approach, namely:

- 1) human agency;
- 2) materials and technologies;
- 3) techniques and practices; and
- 4) effects, purposes, and outcomes.²⁴

The first aspect, regarding human agency, examines the creators of documents. Documents often “are social productions, not the work of individuals. A wide variety of people are involved in differing ways.”²⁵ Documents further “have a series of lives, with different players involved in differing ways at successive stages.”²⁶ Different kinds of actors, both human and nonhuman, are involved in creating or generating documents in diverse ways at various points.

Documents can therefore be seen as having their own particular kinds of careers and associated histories. Don Brenneis, for instance, describes how documents have careers and histories. Documents “are embedded in multiple histories [at every institutional level].”²⁷ Put differently, documents can have various, but interrelated, historical narratives in different settings and at different stages of their so-called lifespan and usage. These multiple histories, otherwise referred to as the record continuum or lifecycle in more practical records and information management contexts, affect and shape the forms, formats, structure, and use of these documents.

These histories, moreover, are intimately connected with particular careers. Brenneis states that “in order to understand these changes it is crucial to locate the forms in the specific annual administrative processes within which they figure,

that is, to follow their ‘careers’ – the doings with documents in which they are routinely involved – and to trace the subsequent events in which they take particular kinds of evaluative life.”²⁸ Richard Harper similarly observes how documents have a series of lives with different players involved in different ways at successive stages of their so-called careers.²⁹ These doings with documents are the practices associated with and afforded by documents at different stages of their histories. Documents, in other words, display and demand different affordances, purposes, and objectives depending upon the context in which they are deployed.

The second and third aspects of a documentary methodology examine the materials and technologies and the techniques and practices, respectively, involved in documentation. The materials involved and used shape the object and, in turn, determine the practices afforded by and with it; in other words, different materials demand different practices. Material differences are especially evident when documents are dissimilar in forms, formats, and functions. A digital tablet, for example, involves different materials and affords different practices than a clay tablet. On the one hand, a digital tablet depends upon electrical and telecommunications infrastructures and further “requires practices such as tapping, typing, and scrolling in addition to downloading, uploading, picture taking, audiovisual recording, and the use of diverse apps that themselves require different practices.”³⁰ On the other hand, a clay tablet depends upon soil and water and “requires practices such as molding, inscribing, and reading.”³¹ Although there are similar practices enabled by both kinds of documents, such

as reading or viewing textual or visual information, their material differences, and consequently affordances, starkly contrast with each other.

The fourth aspect examines documentation's effects. One major effect of documentation is information. Frohmann argues "attention to [documents and] practices with documents reveals how it is that particular documents, at particular times and places and in particular areas of the social and cultural terrain, become informative."³² Examining the materiality of documents and what practices are engaged with them helps better reveal their surrounding contexts – whether in an office or a society – and how it is that they are or become informing. An effect of documentation, in other words, is instantiating and making possible the objects of information, and practices with them including organizing, managing, and preserving, that are central to information governance.

Conclusion: Dealing with Documents

Documentation helps reorient our focus back to information's materiality. A documentary perspective or lens permits different opportunities to approach and analyze objects, information, and other "things" deemed as constituting evidence. A documentary perspective or lens therefore helps us better understand how "a document allows for the materialization of information, helping transform it from something that is intangible into something that is tangible that, in turn, can be used by many different actors for various purposes in diverse settings."³³ Information is in many respects dependent upon its materiality – that is, its documentation – for its existence; in fact, it can be argued that information is, after all, an effect of documentation. Information governance is therefore necessarily concerned with documentation generally and the governance of

documents and practices with them specifically.

The term "documentation," moreover, permits more diverse considerations of and reflections on diverse objects as documents and information beyond those items that are conventionally regarded as "records." In this sense, "documentation" expands understandings of information and helps broaden information governance concerns and practices to cover all kinds of items that serve as evidence of something. This broadening of the field is important because it takes into account and also goes beyond conventional institutional documents – including records like files, memos, letters, applications, policies, procedures, and databases – to other kinds of objects, and increasingly new kinds of digital and hybrid physical-digital objects, that organizations encounter and need. Like modern society and contemporary institutions, documentation is indeed the emblem of information governance.

About The Author

Marc Kosciejew is a Senior Lecturer and previous Head of Department of Library, Information, and Archive Sciences at the University of Malta. He received his Ph.D. from Western University in London, Canada. In 2007, he conducted research in North Korea on its library system, becoming one of the first English speakers to publish and present on this topic. In 2016-2017, he was appointed by Malta's Minister for Education and Employment as chairperson of the Malta Libraries Council, a government-appointed council stipulated in the Malta Libraries Act, 2011, to help advise senior cultural and political figures on libraries, learning, and literacy.

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Endnotes

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