

International Journal of Information Systems and Project Management

Volume 2 | Number 4

Article 2

2014

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Williams, Susan; Hausmann, Verena; Hardy, Catherine; and Schubert, Petra (2014) "Managing enterprise information: meeting performance and conformance objectives in a changing information environment," *International Journal of Information Systems and Project Management*. Vol. 2 : No. 4 , Article 2.
Available at: <https://aisel.aisnet.org/ijispm/vol2/iss4/2>

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Managing enterprise information: meeting performance and conformance objectives in a changing information environment

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Abstract:

This paper presents the findings of an in-depth survey to examine the current status of enterprise information management (EIM) in organizations. The survey explores five key areas: drivers and capabilities of EIM; current status of EIM strategies; EIM content and technologies; EIM and compliance; and the changing role of the information professional. The survey reveals that the drivers for EIM cannot be simply reduced to a series of technical or organizational needs and that EIM is a complex sociotechnical phenomenon. A fine balance is required to achieve business performance objectives whilst at the same time also meeting conformance requirements. To date, few organizations have implemented enterprise-wide EIM strategies; however those who do have them are better able to keep track of, and achieve, performance objectives. In terms of technologies and content the landscape is complex with organizations focusing their efforts into managing and reducing this complexity. Finally information management work is changing; the survey reveals EIM as a multi-stakeholder activity requiring the combination of a wide range of professional groups, skills and knowledge. The survey findings provide the basis for further research investigations in supporting organization in their EIM initiatives.

Keywords:

Enterprise Information Management (EIM); information capability; compliance; strategy.

DOI: 10.12821/ijispm020401

Manuscript received: 5 September 2014

Manuscript accepted: 21 November 2014

1. Introduction

The volume and variety of information available to organizations from both external and internal sources is growing rapidly [1, 2]. This growth in the amount and complexity of digital information has renewed attention on its effective management and protection as a key corporate asset [3, 4, 5, 6]. While concerns about effective information management are not new [7, 8], the types of information and the way they must be managed have changed, raising new challenges for organizations [9, 10, 11]. In order to progress both theory and practice and to assist organizations to achieve greater effectiveness in their information management activities we need a clearer understanding of what these information management issues and challenges actually are and what they mean in the context of achieving an effective enterprise-wide information capability.

This paper reports on the findings of a survey-based study to investigate the current status of enterprise information management (EIM) in organizations and explores the issues and challenges that organizations are facing. The survey is part of a wider program of interactive industry research, which examines how organizations are managing the rapidly changing information environment and achieving competences and capabilities towards the long-term, enterprise-wide management of digital information [12, 13, 14, 15, 16]. Building on the findings of this previous work, the aim of the study reported in this paper is to investigate EIM issues and challenges more deeply, to identify key trends and themes and begin to benchmark how organizations can achieve an effective information capability.

The paper is organized as follows. The next section provides a more detailed overview of the EIM literature to provide context and background to the study's research objectives and questions. Following this we present the research approach and survey design. In section 4, the main part of the paper, the survey findings are analyzed and synthesized to provide insights into current EIM issues and challenges. The paper concludes with a summary and discussion of the implications of the findings for both organizations and for future research studies.

2. Background to EIM: ongoing challenges and ambiguities

In the past decade EIM has emerged as a topic of significant interest in both scholarly and practitioner research [5, 6, 17, 18]. In 2006 Logan and Newman, research analysts at Gartner, provided a "working definition" of EIM [19] that led to much discussion and "conflicting interpretations" about how EIM differed from information management (IM). The definition was revised, describing EIM as "an integrated discipline for structuring, describing and governing information assets, regardless of organizational and technological boundaries, to improve operational efficiency, promote transparency and enable business insight" [3]. This definition has remained the same for close to a decade, and broadly represents characterizations of EIM in the literature; that is, it "[elevates] enterprise information to the position of a strategic asset that is effectively governed, leveraged and exploited for significant business value" [20].

Enterprise information management is not a new phenomenon; although largely unacknowledged in recent research, EIM has its origins in what in the 1980s and 1990s was defined as information resource management [21, 22]. Information resource management (IRM) focused attention on managing "information as a valuable entity, independent of the technology that manipulates it" [21] and on the management of information assets as a strategic business activity [7, 8]. Recent commentary indicates that "[i]nformation (and specifically, information management disciplines like EIM) is at the start of a 'renaissance'" [20] and that there is "a new sentiment" [23] towards delivering business value through the effective management of information, hence the (re-)emergence of EIM. *What has motivated this renewed interest in EIM? Does it differ from older ideas about information resource management?* A review of the current discourse on EIM reveals a number of key changes in the information environment that have motivated this renewed interest. We have grouped these into three areas of change and briefly summarized them below.

Quantitative and qualitative changes in the nature and type of business information

The first and most profound set of changes relate to the volumes, variety and velocity of information being produced [24]. It is estimated that 4.4 zettabytes of digital information was created globally in 2013 with predictions that by 2020 this volume will rise to 44 zettabytes [2]. Much of this information is unstructured or perhaps a better description, is less well structured, e.g. emails, business reports, blog posts, web pages; raising new issues for its management. While structured information, such as transactional data in databases or ERP systems, is today largely well managed, challenges remain around the management of unstructured information, which now accounts for over 80% of information being produced [25]. In addition to the traditional business documents and records (contracts, letters, policies, etc.) there is now huge variety in the types and nature of information being created. These include communications (emails, instant messages, blog posts, etc.); coordination information (diary entries, workflows and forms, etc.); information products (leaflets, websites, web/podcasts, newsfeeds, etc.); business media assets (photos, video, sound files, infographics, etc.); analytics and surveillance information (logfiles, BI reports, monitoring data etc.) – *all of this information must be managed*. There is also the expectation that the velocity at which this information is updated and made available is close to real time, bringing additional challenges and constraints to its management [24].

Proliferation of information creation and information management technologies

There has been a proliferation of information systems and devices. Alongside traditional information management systems such as document, content and records management systems, are new types of systems used to create, share and manage digital information. Organizations are increasingly adopting social software applications including wikis, blogs and open platforms such as Facebook or twitter [26]. With the use of new social software applications comes new types of content, changing the nature of the business documents and records that are created [27] and bringing the need for organizations to manage this software and its content [28]. The increase of mobile devices and BYOD within organizations is blurring the distinctions between the personal and business use of devices [13] and the increasing use of cloud services and externally hosted software raises new issues relating to ownership, access and security of enterprise information [29].

Requirements for protecting the information asset

As the volumes and variety of information have increased, so have the requirements for securing and protecting information assets. Many of these requirements are driven by statutory rules mandated by international and national laws (e.g. privacy, data protection) or through industry regulations. However, whilst protection and security requirements have increased, estimates of the amount of unprotected information have also increased [1, 2] indicating potential future risks and challenges. Overall the legal and regulatory compliance burden is now much higher than ever before.

In light of these changes, the importance of EIM for ensuring a coordinated and integrated approach to effectively manage and leverage an organization's information assets is widely acknowledged [5]. However, recent evidence suggests that many EIM initiatives are being conducted in a piecemeal fashion, information silos are proliferating and that benefits are not being realized or sustained [6, 9]. Gaining business understanding and engagement to justify necessary investments has been consistently identified as a key issue for EIM over a number of years [6, 10]. Hausmann et al. [16] argue that perhaps EIM is suggestive of something more than a "next phase" for information management, turning attention towards the need for reconsidering assumptions, processes and practices grounded in disciplinary traditions and legacy technologies. The current literature tends to focus on a limited set of issues, largely based on fragmented industry surveys with different foci, such as digital records management or participant groups consisting mainly of business and IT executives [16]. Whilst this research provides valuable insights, a systematic overview of EIM issues and challenges that garners the views of a wider group of information specialists and middle level managers (because of their practical intelligibility of work practices) is required [16]. The next section outlines the aims and objectives of a study that begins to address this requirement by obtaining deeper insights into the organizational readiness for EIM and the issues and challenges that organizations are facing. This research will assist practitioners in

understanding the challenges and issues they may encounter when developing EIM. At a theoretical level, findings from this research will form a solid basis for conceptualizing EIM challenges in future work.

3. Research approach and research design

As noted in the introduction, the authors are engaged in a long-term program of interactive, industry research to assist organizations to develop an information capability that enables them to manage their enterprise information assets more effectively in an increasingly complex and changing information environment. This study is part of the second cycle of research; the first cycle of research comprised a series of industry focus groups, in-depth practitioner interviews and a pilot EIM survey to identify key research imperatives and industry challenges associated with EIM.

3.1 Research objectives and survey design

The findings of the first cycle of research (reported in [12, 13, 14] identified five key areas for further research to provide a deeper understanding of i) the issues and challenges driving EIM initiatives, ii) organizational EIM readiness and strategies for EIM, iii) the impact of new technologies and new information types, iv) the governance, risk and compliance standards and policies impacting EIM and v) the changing role of the information professional. These five areas provided the input to the second research cycle, which begins with the survey-based study reported in this paper. The objectives of the survey are to:

- RO1: identify the range of *drivers of EIM* in organizations
- RO2: investigate the current status of *EIM strategy* and its benefits and EIM challenges
- RO3: identify the *information types, technologies and systems* that are (or are not) currently being managed
- RO4: identify *compliance requirements (standards, frameworks and regulations)* that affect EIM in organizations
- RO5: understand the *role of information professionals* and the required skills and knowledge for EIM

Drawing from the findings of our earlier research and recent academic and practitioner surveys on enterprise information management, a database of survey questions was developed to address the five research objectives. The questions were then evaluated and tested and an online survey was designed and implemented. A pilot test of the questions was conducted with five domain experts to test the suitability of the survey questions and to improve their comprehensibility and relevance. Following this the final survey was produced and implemented using the open source online survey application LimeSurvey®. The final survey comprises 34 questions with a range of question types (including: open, closed, Likert, selection) structured into the seven groupings (Table 1). Groupings 2-7 between them address research objectives 1-5 respectively. Further details of the study aims and design can be found in [16].

Table 1: EIM survey structure

Survey Question Groupings	No. of Questions
1. Company (Demographics)	3
2. EIM Drivers and Capabilities	3
3. EIM Strategy	6
4. EIM Challenges	2
5. Information, Systems and Technology	4
6. Standards, Frameworks and Regulations	6
7. Information Professionals	10

3.2 Data collection and data analysis

The target audience for the survey were individuals with specific responsibility for information management within their organization. The invitation to participate was sent to key professional bodies and special interest groups representing a range of information-related professionals, including, for example, ISACA, IIM, RIM, Asia Pacific Data Quality Congress and ARK Group. The main data collection period for the survey was January-April 2013.

For the purposes of analysis and to meet our universities' ethics requirements all data collected has been anonymized; no individual respondent or company can be identified from the study results. Respondents were invited to submit their contact details if they were interested in receiving a copy of the survey report and to participate in future studies. Almost all respondents provided contact details; these contact details were stored separately from the main results to maintain anonymity. At the end of the data collection period all data items were exported to a spreadsheet and organized for analysis. Two rounds of analysis were conducted. In the first round descriptive statistics were produced and presented for each survey section. In the second round a deeper analysis of the findings was conducted to identify cross-sectional themes.

Survey demographics: In terms of respondent demographics our initial target country was Australia with 71% of respondents coming from Australia. However, due to the international reach of many organizations respondents were also located internationally: UK (11%); USA (4%); rest of world (15%). We received submissions from 207 individual respondents. A preliminary analysis showed that not all respondents answered all the questions; 87 respondents completed every question and it is on these respondents we have focused our analysis for this paper. These respondents are individuals with a primary job responsibility in records/document management, IT management and/or strategy and business development (for more details see Figure 17). Respondents represent public sector and government agencies (32%) as well as private sector organizations (68%) and 70% of respondents represent medium and large sized organizations with more than 250 employees.

4. Findings and discussion

In this section we report on the survey findings, addressing the findings from each survey question group in turn.

4.1 EIM Drivers, capabilities and outlook

The first question group addresses RO1: to identify the range of *drivers of EIM* in organizations. The aim of these questions is to identify what factors are driving organizational EIM initiatives (Section 4.1.1); identify current organizational EIM capabilities (Section 4.1.2); and to obtain an assessment of how EIM will change (or not) in the next 2-5 years (Section 4.1.3).

4.1.1 EIM drivers

Respondents were asked to identify what has motivated and driven the need for EIM over the past two years in their organization. As can be seen in (Fig. 1), the top five EIM drivers identified as very important are: improving access to business information (39%); improving internal information sharing (31%); improving information integration across multiple systems (30%); meeting regulatory compliance requirements (29%); and improving information capture (28%). Of least importance *as a driver for EIM* is meeting green IT initiatives/targets (4%).

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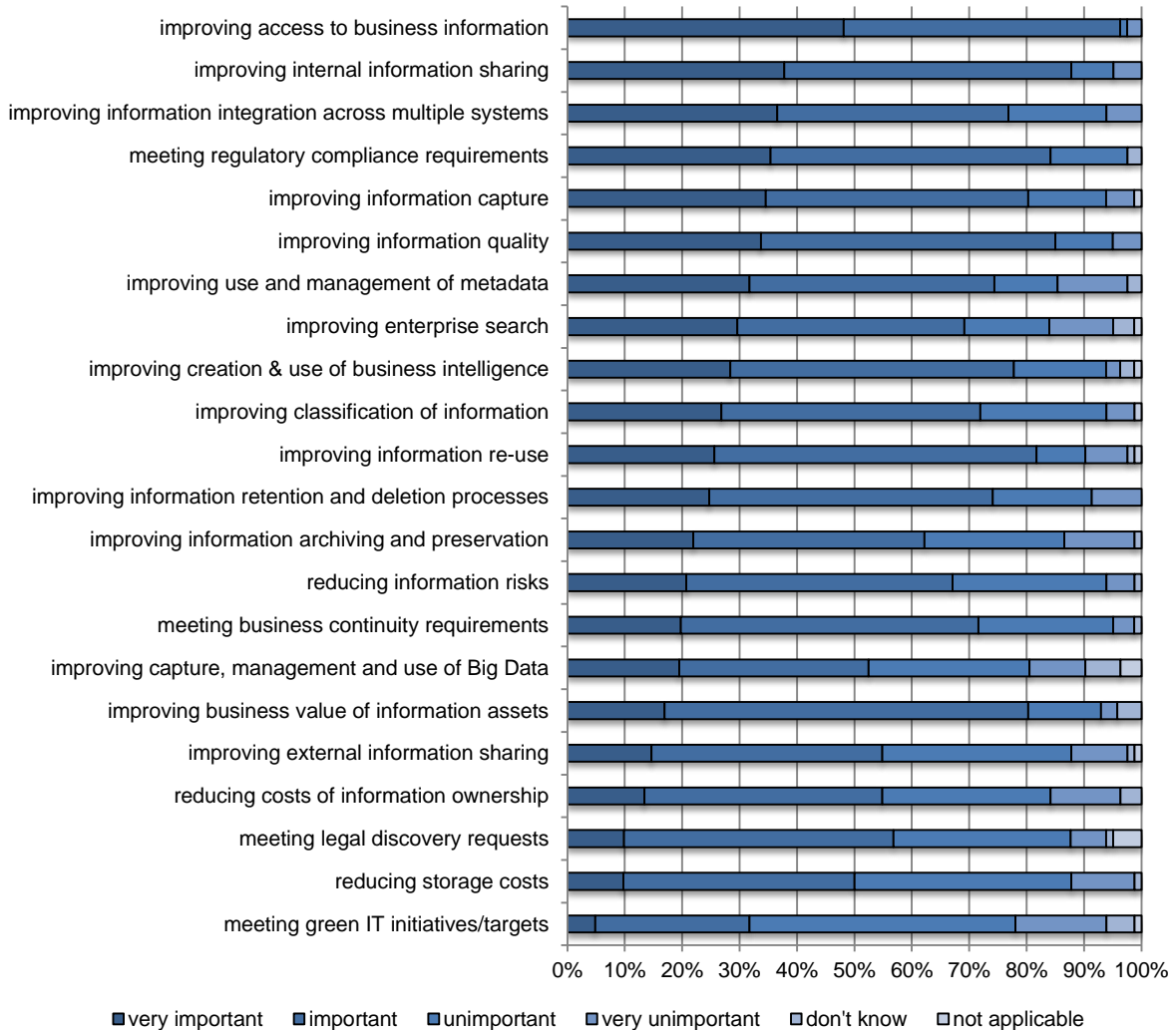


Fig. 1. Drivers of EIM over the past two years (sorted by “very important”)

These findings reveal three important themes about the current drivers of EIM.

Obtaining business value. The most important drivers are closely linked to improving business performance and to obtain greater value from information by improving the organization’s ability to access and share information, to re-use information and gain business intelligence. It is notable that reducing costs (whilst always desirable) was not rated as an important driver in comparison with the objective of generating value from business information.

Meeting regulatory compliance. As well as obtaining business value, there is also a conformance objective to the drivers of EIM. Respondents identified the need to meet regulatory compliance obligations such as maintaining data security and privacy laws and protecting and securing business information assets as important. This presents organizations with an interesting and potentially conflicting situation; balancing performance objectives by generating

business value with conformance objectives of meeting legal and regulatory requirements and protecting information assets.

Sociotechnical complexity. The drivers of EIM are not limited to one aspect of EIM but are evident at all stages of the information lifecycle, from information creation through to archiving and preservation of information at the end of its active life. They are both extensive and wide reaching and cannot be isolated to organizational or technical aspects, positioning EIM as a complex, sociotechnical activity within organizations.

4.1.2 Current EIM Capability

To understand organizations’ current EIM capabilities we asked respondents to rate a series of statements about their company’s current enterprise-wide information management capability (Fig. 2). Organizations self-assessed their capability to meet the conformance aspects of EIM as high; the findings reveal that 75% of respondents rated their organizations as very good/good at meeting regulatory compliance requirements. However, their assessment of their capability to meet performance objectives of EIM is low. Only 42% of respondents rated their organizations as very good/good at creating business value from information and only 38% considered themselves very good/good at providing business intelligence.



Fig. 2. EIM capability (sorted by “very good + good”)

4.1.3 Outlook: Significant EIM activities for the next two years

We asked respondents to look forward over the next two years and provide an assessment of the significance for their organization of a range of EIM activities. The responses (Fig. 3) fall into two areas: i) technology and systems; and ii) building human capacity.

Technology and systems: There is a clear focus on EIM technologies predicted over the next two years. Significant activities include: evaluating, implementing or migrating to new EIM technologies and improving existing systems and their integration with other systems.

Building human capacity: In terms of developing human capacity organizations reported that providing end-user training and managing and developing staff as expected to be very significant activities over the next two years. Again, this outlook draws attention to the sociotechnical nature of EIM as a business activity.

Respondents were also asked how they expect the complexity of EIM to change in the next 2-5 years. 66% of respondents expected it to become more complex; 16% think it will remain the same; and only 17% think it will become less complex.

The findings so far reveal that whilst organizations are aware of the need for EIM and have a clear idea of what is driving EIM in their organization, their assessment of their own EIM capability indicates that they have not yet reached a state of EIM readiness. This, and the anticipated increase in EIM complexity points to a need for greater understanding of what it means to have an EIM capability and how an organization might reach an adequate level of EIM maturity. This led us to ask our respondents a series of questions about the existence (or not) of an enterprise-wide EIM strategy in their organization.

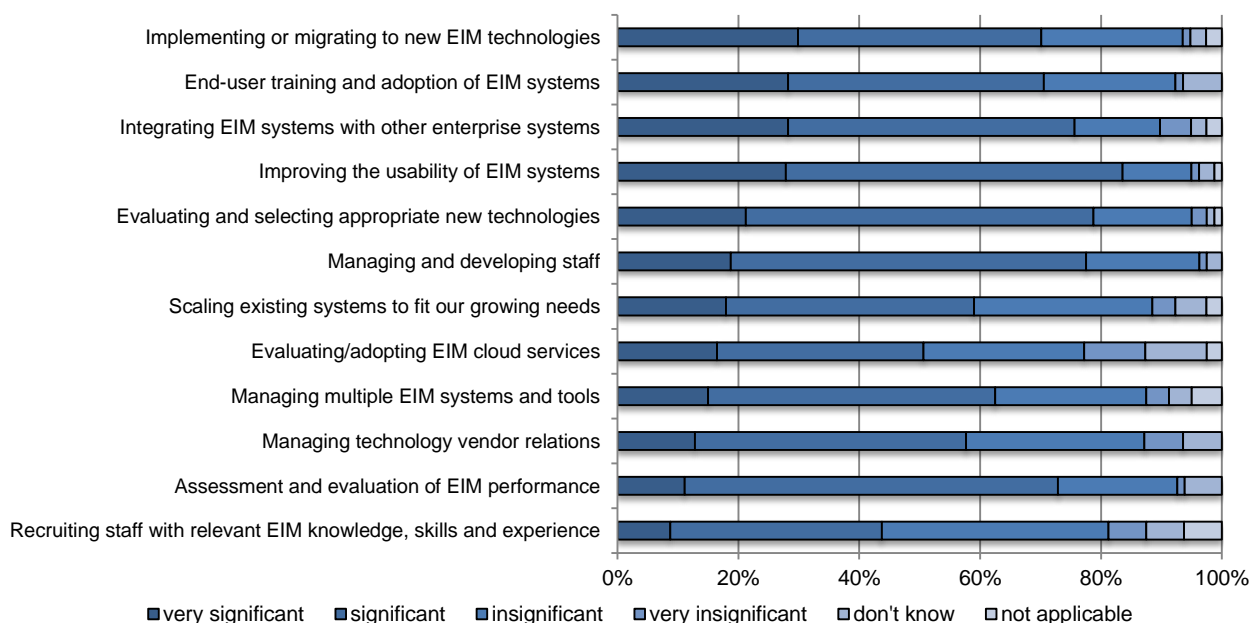


Fig. 3. Significant EIM activities for the next two years (sorted by "very significant")

4.2 EIM strategy

In this section of the survey we address RO2: to investigate the current status of *EIM strategy* and its benefits and challenges. The aim of this question group was to examine to what extent organizations have developed and implemented enterprise wide EIM strategies and, where such strategies exist to identify what benefits and challenges have arisen following implementation.

4.2.1 Enterprise-wide EIM Strategy

Respondents were questioned about the existence (or not) of an enterprise-wide information management strategy in their organization. As can be seen in Fig. 4, 34% of organizations have a documented and fully implemented EIM strategy; 17% of organizations have a strategy that is currently only partially implemented; and 22% have a documented strategy that is not yet implemented. The remaining 27% of organizations do not yet have and/or are not planning to develop an enterprise-wide information strategy. For 84% of respondents from organizations that have an EIM strategy,

the strategy was approved by the Executive Board or by specific C-level executives (most usually the CIO) pointing to the high strategic importance of EIM in these organizations.



Fig. 4. Status of EIM strategy (sum of responses is 100%)

4.2.2 Benefits and Challenges of an enterprise-wide EIM strategy

EIM is being portrayed in the literature as a key strategic business activity [3, 5, 6, 17]. In order to understand more fully what having an EIM strategy means we continued to question those respondents whose organizations have an EIM strategy. Our aim is to identify the most significant benefits and challenges that an EIM strategy is bringing to their organization. The most significant benefits reported by those who have an EIM strategy in place (Fig. 5) relate to better information sharing (23%), information integration (13%), and reducing non-compliance with regulatory requirements (16%). Whilst reducing IT costs was seen as a benefit by some organizations (4.3%) it appears that the major benefits are associated with improving the organization's use of information. Thus, the benefits serve to meet compliance requirements but are also leading to meeting the imperative to generate business value from information. The key finding here is that organizations with an EIM strategy appear to be better at meeting both the performance and conformance objectives associated with EIM.

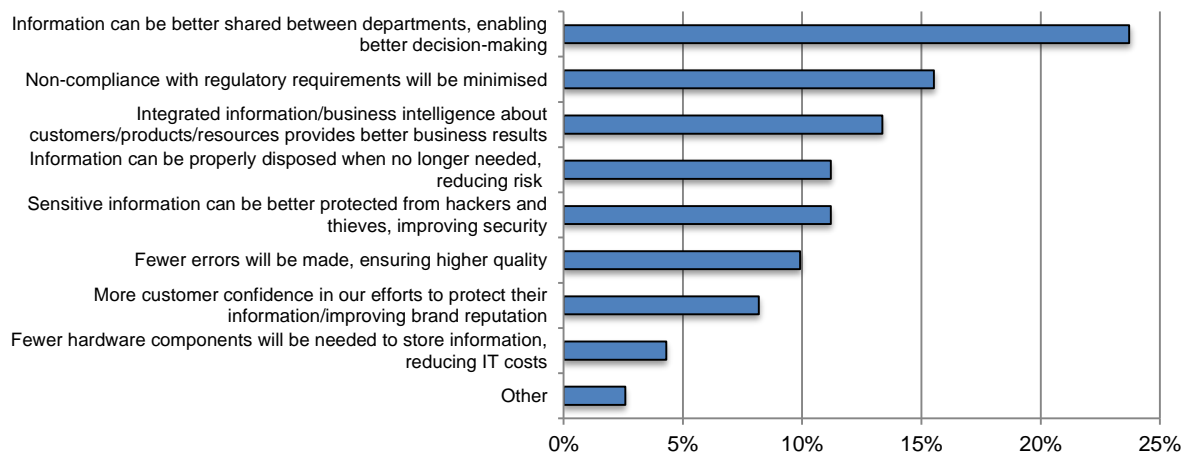


Fig. 5. Most significant benefits of an EIM strategy (percentage of total)

Respondents whose organizations have an EIM strategy were also asked to indicate the most significant challenges encountered when implementing their EIM strategy. The findings (Fig. 6) indicate that having a strategy is only the first step, translating that enterprise wide strategy into business activity was somewhat problematic and getting from strategy to action is in many cases proving difficult. For example, 45% of organizations report significant challenges in enforcing policies company-wide and in gaining the support of department and line managers. Thus, whilst having an EIM strategy can lead to significant benefits, the challenge lies in effectively implementing it across the entire organization.

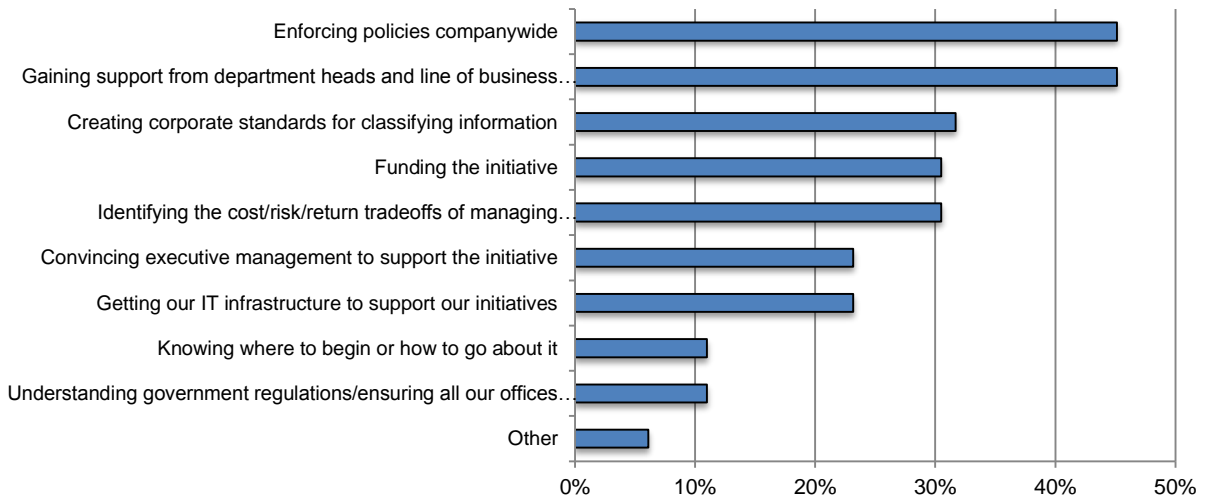


Fig. 6. Most significant challenges of implementing an EIM strategy (percentage of total)

4.2.3 Strategies for specific EIM activities

Whilst the majority of organizations reported that they did not yet have an implemented, enterprise-wide EIM strategy in place, we were interested to discover whether other types of information strategy have been implemented.

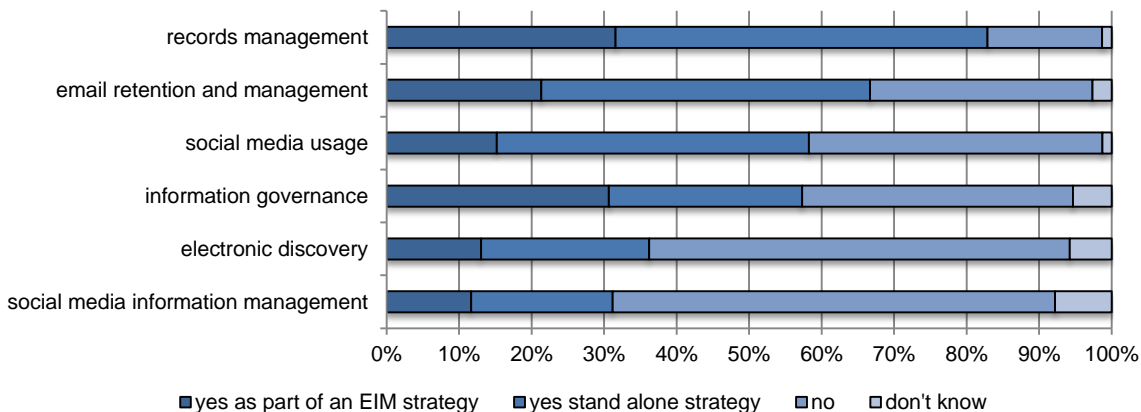


Fig. 7. Formal strategies for specific EIM activities

All respondents were asked whether they had formal strategies for managing different information types and information activities (Fig. 7). The majority of companies (82%) have some form of strategy for records management and email retention and management (67%). Interestingly, whilst 58% of organizations have some form of strategy in place for social media usage, only 31% have any strategy for social media information management. Social media content is proliferating and this lack of strategy for the management of social media information may lead to problems in the future.

4.3 Information, systems and technology

Section 4 of the EIM survey “Information, Systems and Technology” is aimed at addressing research objective 3 by identifying how, if at all, different information and content types are currently managed in organizations (Section 4.3.1); identifying the systems and technologies that are currently used for information management (Section 4.3.2), and evaluating the main EIM-related technological challenges for the next 2 years (Section 4.3.3).

4.3.1 Information and content types

Within recent years the development of technologies to collaborate and share content has led to the development of a range of new content types. While a large body of literature can be found that deals with the management of traditional content, such as physical and confidential documents, business application data from ERP systems and email messages, much less attention has been given to the management of new collaborative content such as instant messages, wiki entries or blog posts. Therefore we asked respondents to indicate how, if at all, different content types are managed within their organization (Fig. 8).

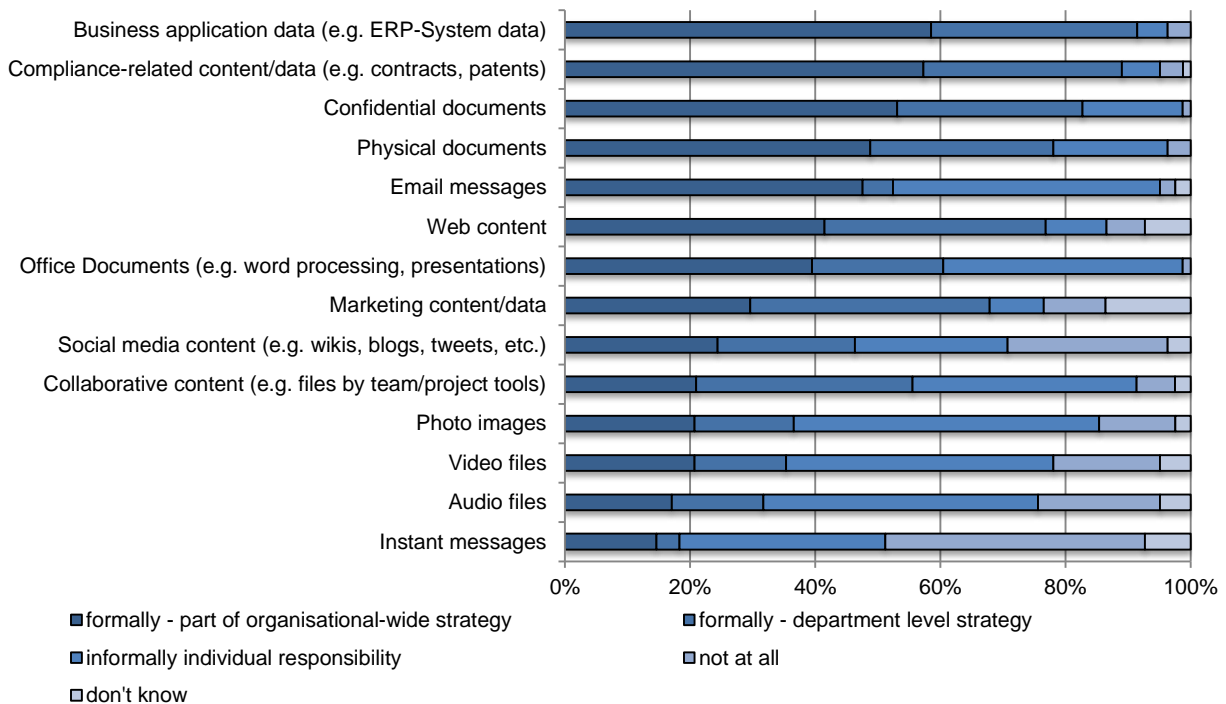


Fig. 8. Degree of the management of different content types

In more than 80% of organizations traditional content such as ERP systems data or compliance and confidential content is managed on a formal basis. However, the findings reveal a lack of formality in managing newer content types and media assets such as photos, videos or audio files. There is a clear lack of attention being paid to the management of more unstructured and newer content types. In over 25% of organizations instant messages and in more than 15% of organizations social media content are not managed at all, perhaps a consequence of the lack of strategy for social media information management reported in section 4.2.3.

4.3.2 EIM systems and technologies

The range of systems and technologies for managing organizational content has increased within recent years. Furthermore, the complexity in terms of functions and the content that these systems handle and produce is overlapping and converging. It is increasingly difficult to distinguish between different system types such as document and content management systems. Survey respondents were asked to indicate the kind of technologies they are using for information management and to name the specific systems they are using in their organization (Fig. 9).

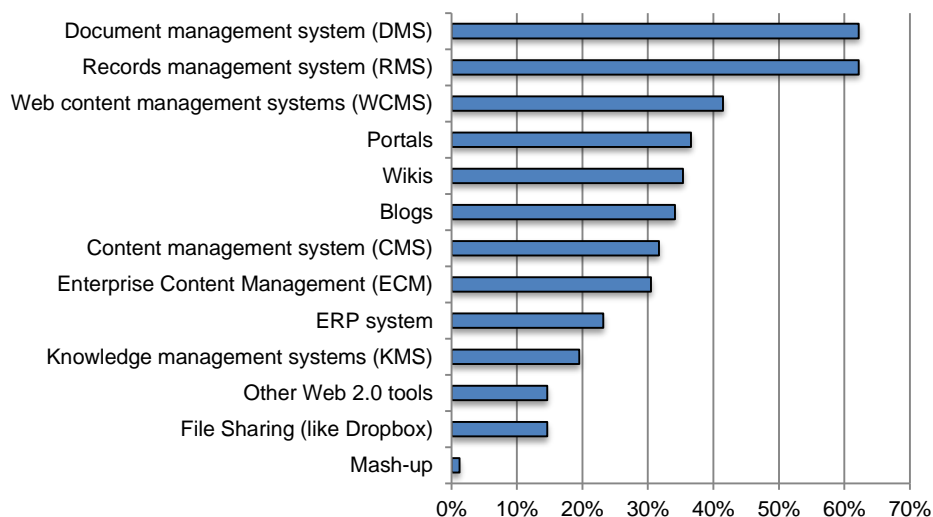


Fig. 9. Technologies used for information management

The findings show a dominant usage of document and records management systems in more than 50% of organizations. However, web content management systems, portals, wikis, blogs and content management systems are also used in more than 30% of organizations.

We also asked respondents to name the specific systems they are using for each technology; a wide range of systems was named. For example, 20 different document management and 16 different records management systems were named. Interestingly, systems like MS SharePoint or Drupal were mentioned in several categories (i.e. they are being used for several different purposes) and many respondents indicated they used multiple systems to serve the same purpose (e.g. they had implemented more than one system for document management or web content management). This emphasizes the complex array of system and functionalities of the systems on offer today and that multiple systems are often in use to serve the same needs.

4.3.3 Outlook: EIM-related technological plans and challenges

We concluded our technology-related survey section with questions about organizations’ plans and the perceived challenges for EIM technologies within the next two years. The findings show that most organizations (43%) are planning to upgrade/expand their existing system. Although only 13% of organizations are directly planning to buy a new system, 39% are evaluating new EIM technologies and 35% are planning to migrate from an existing to a new system. Furthermore 34% of organizations are planning the consolidation of systems and the integration of EIM systems with other enterprise systems (see Fig. 10).

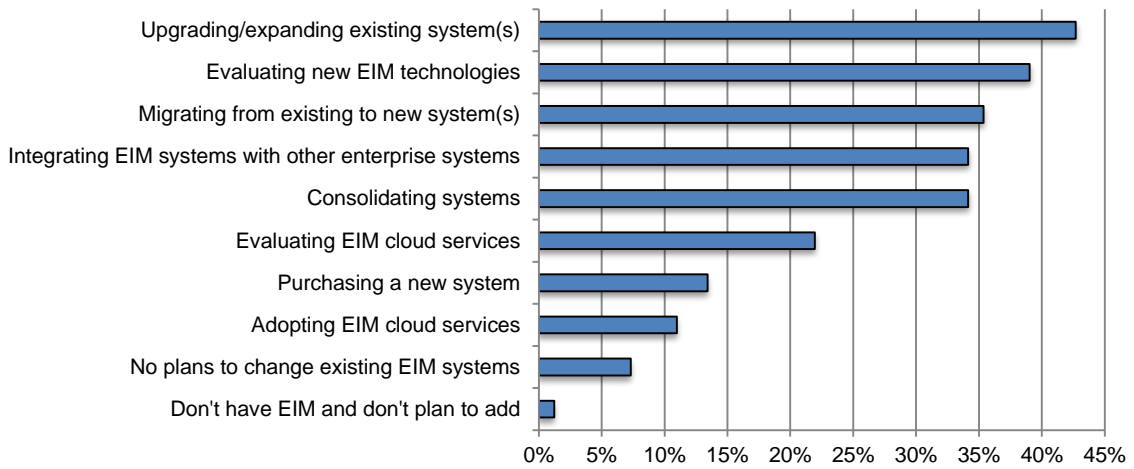


Fig. 10. Plans for EIM technologies for the next two years

The most significant EIM-related technological challenges are shown in Fig. 11 and are related to the integration, consolidation and customization of EIM systems. This perhaps is an effort to harmonize the complexity and variety of systems in use that was identified in the previous section.

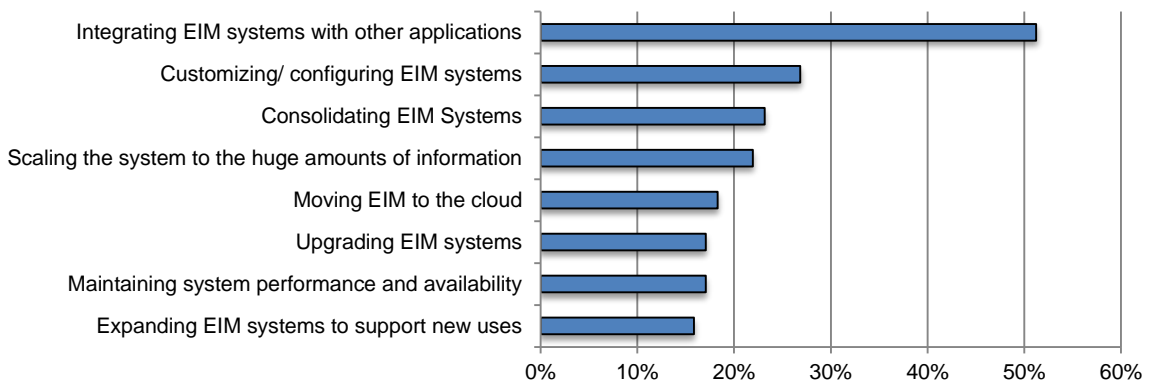


Fig. 11. Biggest EIM-related technological challenges over the next 2 years

4.4 EIM and compliance

Compliance is one of the eight Generally Accepted Recordkeeping Principles® published by ARMA International to effectively manage records and information assets [30]. It is also one of the most challenging and pressing concerns for organizations because of the complexity and variety of regulatory obligations at an international, national, industry and organizational level. Obligations may also encompass a range of areas such as financial reporting, privacy and data retention and based on past experience are likely to increase and become more complex in the future.

In this section we address RO4: *identifying compliance requirements*. Respondents were asked to identify legal and regulatory obligations relevant for EIM in their organization. The findings are as follows.

4.4.1 Information disposition: retain or destroy?

Disposal/destruction regulations (62%) and access to information/freedom of information regulations (57%) were identified as the most relevant regulatory obligations faced by organizations (Fig. 12). These are also the most influential areas shaping technology selection decisions (Fig. 13) and in developing EIM policies and practices (Fig. 14).

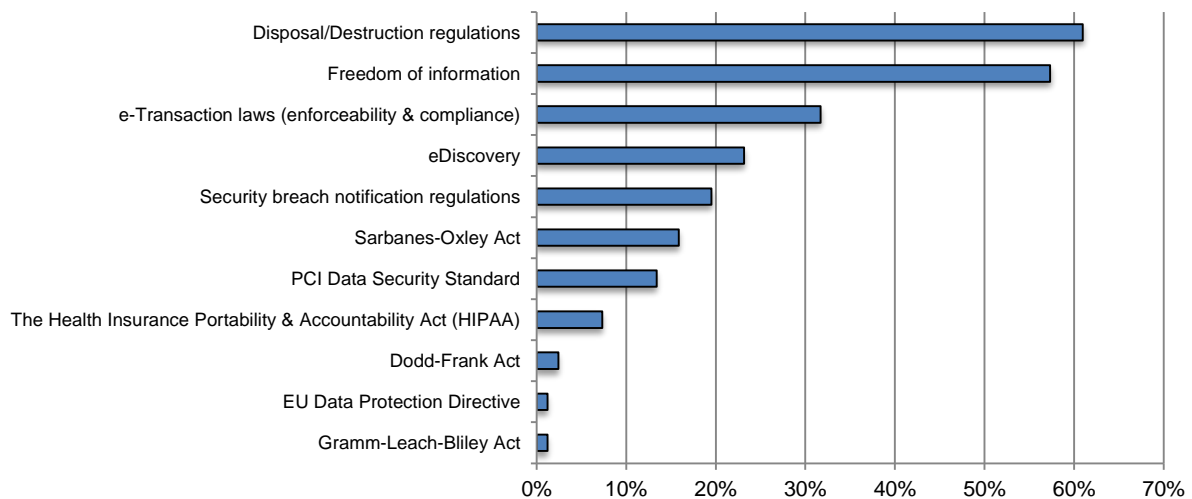


Fig. 12. Relevant legal and regulatory obligations

These findings go partly towards explaining why improving information retention and deletion processes were identified as important drivers for EIM over the past two years. With the growing volumes and variety of digital information come greater challenges in making decisions about what to retain and what to destroy. These findings also point to potential challenges in the future as identified earlier. Whilst 82% of organizations had a formal strategy for records management, only 31% have a strategy for social media information management (Fig. 7).

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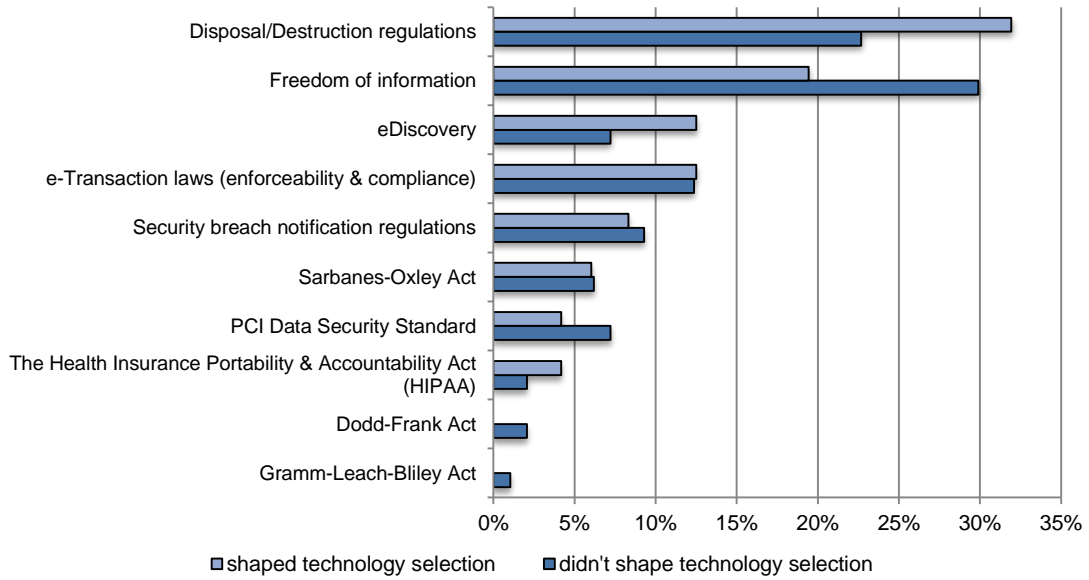


Fig. 13. Relevant legal and regulatory obligations and technology selection

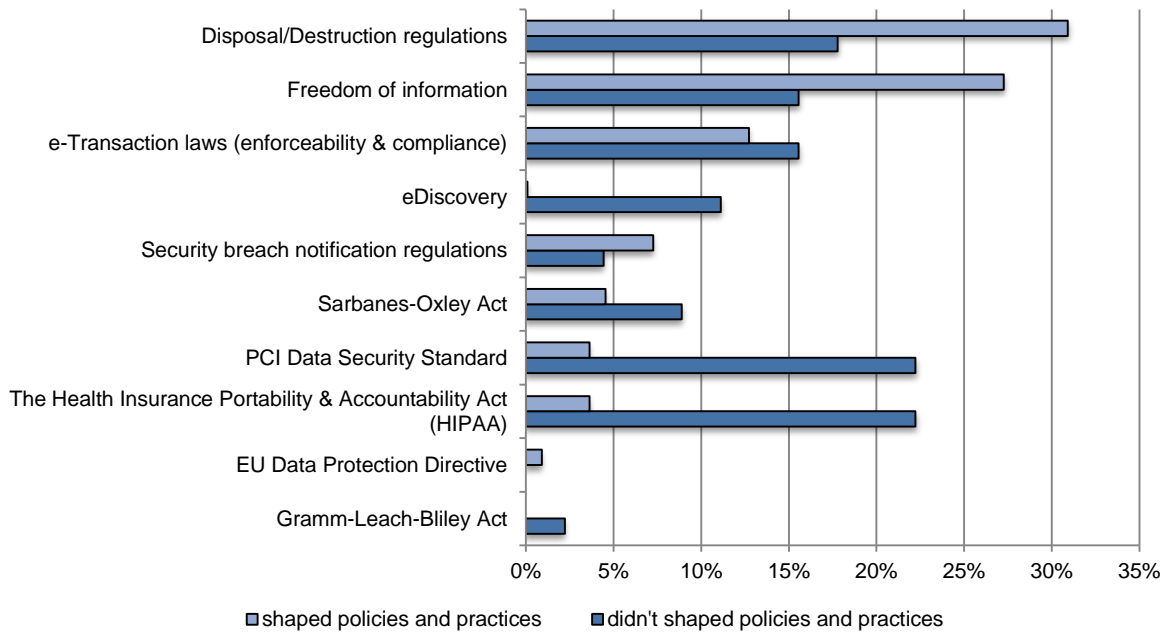


Fig. 14. Relevant legal and regulatory obligations and shaping of EIM policies and practices

4.4.2 Complex, multi-stakeholder effort

Respondents were also asked to list any additional legal and regulatory obligations relevant to their organization. Those listed include business related areas encompassing privacy, laws, data protection, corporations and financial regulations, intellectual property, taxation and evidence laws and matters such as archives and financial management. This broad range of regulations highlights the challenges faced by organizations in meeting their information compliance obligations and points towards the need for designing policies and controls that will meet the requirements of multiple regulations whilst avoiding duplication. This also requires a multi-stakeholder effort; no single employee or department has oversight of all of these areas. This is a topic that is developed in section 4.5.

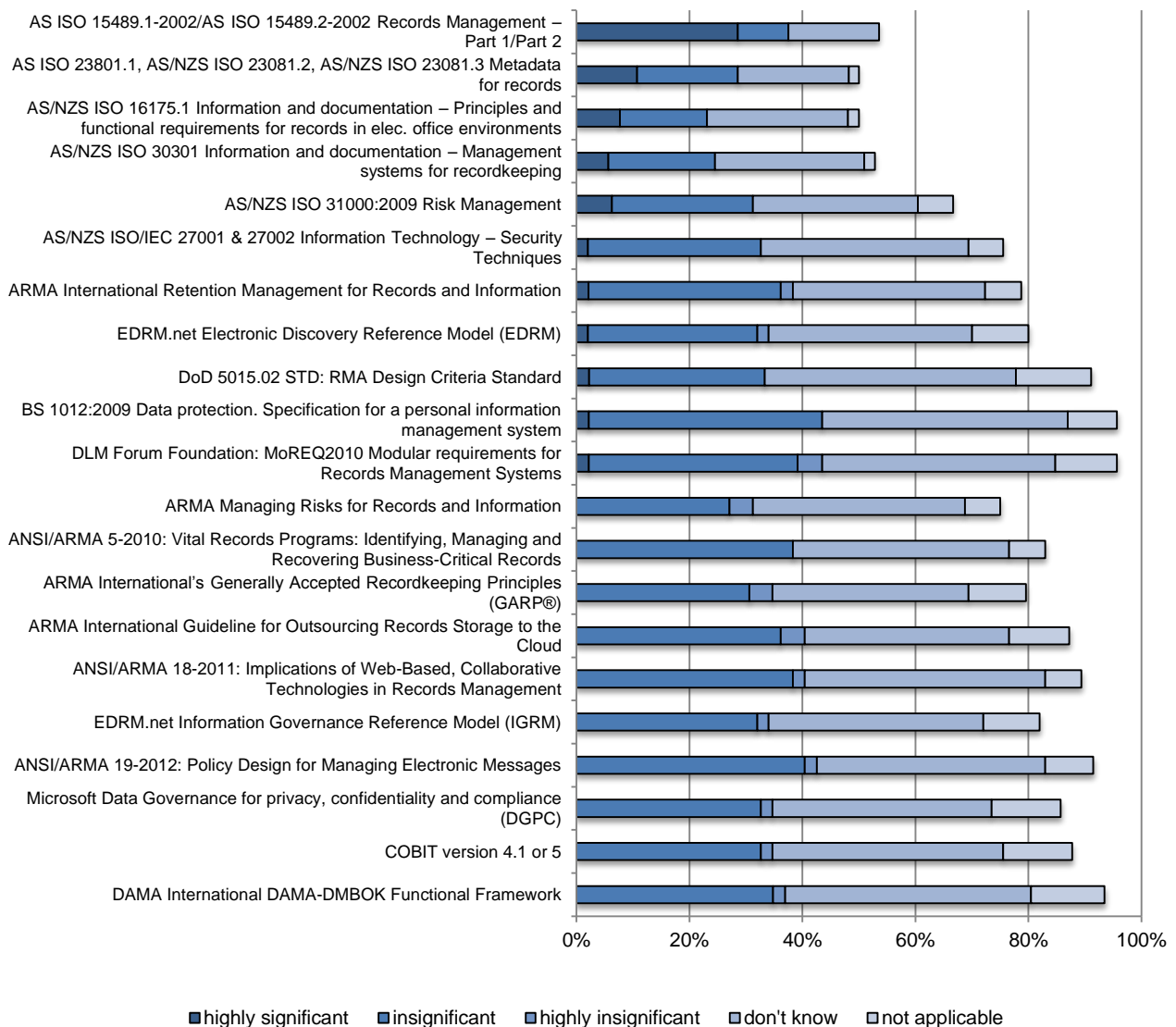


Fig. 15. Standards and Frameworks for information management and governance

4.4.3 Proliferation of standards and frameworks

There has been a proliferation of standards and frameworks over the past decade to assist organizations respond to a wide variety of compliance mandates. They have originated in various disciplinary areas to serve particular needs (e.g. records management, information security, risk management) and are increasingly applied across these areas to address current challenges. However, the range of standards and frameworks available to organizations has also created uncertainty as to what will provide a reasonable level of assurance that they are complying with all relevant mandates.

Respondents were asked how significant standards and frameworks (Fig. 15) are in the development, implementation and evaluation of enterprise information management in their organization. The AS/NZS ISO/IEC 15489 Records Management standard was identified as the most significant standard. This of course may be due to the significant representation of Australian organizations in this survey. It may also partly explain why the majority of organizations reported that they already have a formal strategy for records management (Fig. 7). No significant difference was identified between the different governance frameworks (e.g. EDRM, COBIT, Microsoft Data Governance) in developing, implementing and evaluating information governance programs.

4.5 The Information Professional

To address RO5: to understand the *role of information professionals* and the required skills and knowledge for EIM we asked respondents a series of questions about their EIM roles, knowledge and skills.

4.5.1 Job responsibility and expertise

In terms of primary job responsibility (Fig. 16) the largest single group of respondents (35%) identified records and information management as their primary responsibility. However, 65% of respondents combine information management with another role, with their primary responsibility being in areas such as IT management, strategy and business development and general management. What we see is that whilst there are some clearly dedicated roles for EIM, the role is also distributed across many different business areas.

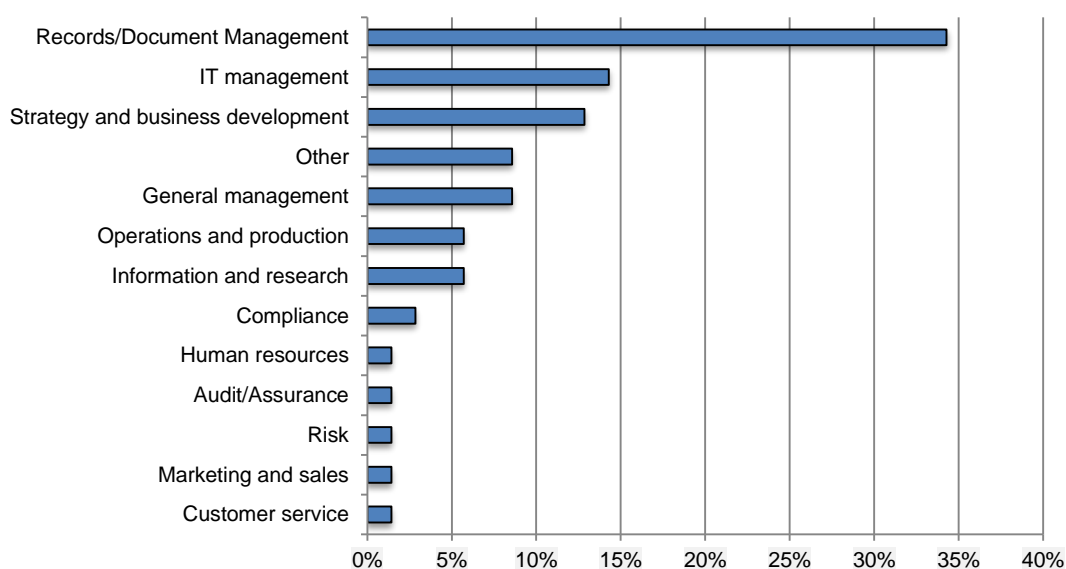


Fig. 16. Primary job responsibility of survey respondents

We pursued this further to identify in which areas our respondents had high levels of expertise (Fig. 17). Following the findings about primary job responsibility, expertise is mainly found in the areas of records management, information technology and strategy and business development. Interestingly information security, risk management, business continuity and audit/assurance are also common, revealing a high level of emphasis on conformance and the risk and compliance side of enterprise information management.

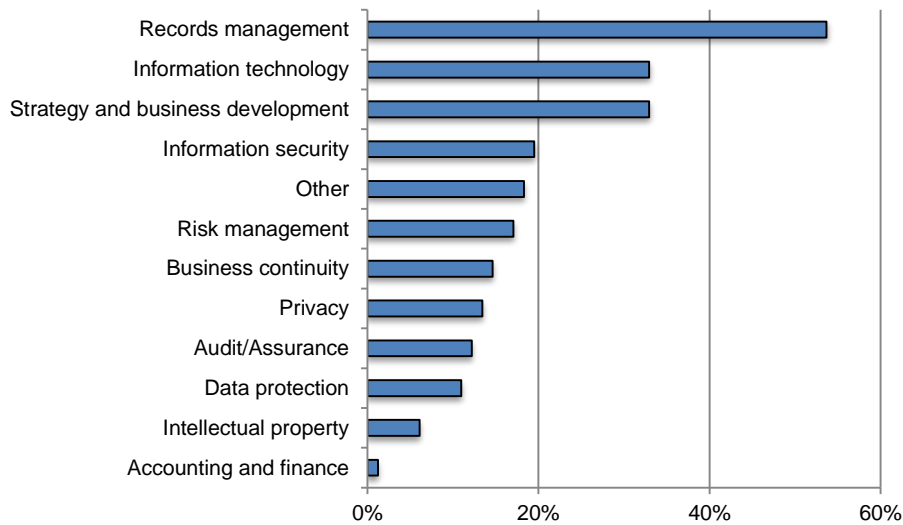


Fig. 17. Respondents' areas of expertise

4.5.2 EIM Skills and knowledge

Given the range of professional groups involved in EIM and its potentially distributed nature, we were interested in discovering to what degree information skills and skills development were recognized and supported in the respondents' organization. As seen from Fig. 18, most organizations recognize that information skills are important. 59% of respondents stated that their organization rates information skills very highly or highly. However, interestingly only 43% of organizations followed through on this by encouraging staff to undertake relevant training to develop their skills in information management.

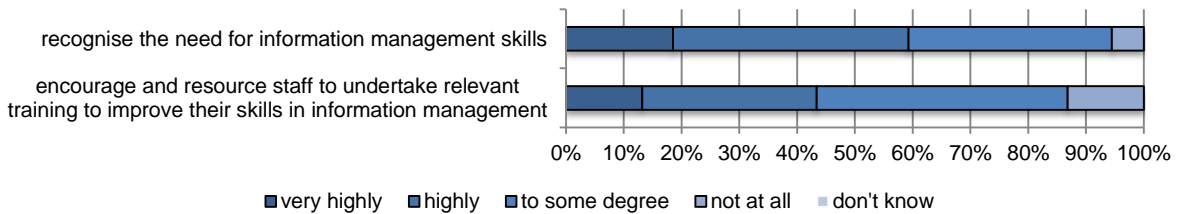


Fig. 18. Recognition of information management skills

We explored this further by asking respondents to identify what they see as the skills and knowledge areas required by contemporary information professionals. This was an open question and the responses were extensive and wide-

ranging. We used an open coding method to classify the skills and knowledge and identified six main skills areas: information and knowledge management; records management; governance, risk and compliance; technology; business; and soft skills. These are briefly discussed below.

Information and knowledge management skills. Not surprisingly the largest group of skills relate to management of the information (and knowledge) itself. Skills range across various levels from understanding the business and contribution of information and its value, to specific skills such as managing information quality, metadata design and management, information audit and information needs analysis, information architecture design, etc.

Records management skills. Specific skills in records management were highlighted, including understanding records management principles and the legal requirements and standards for records management through to being able to design and manage retention/destruction schedules, business classification schemes, etc.

Governance, risk and compliance (GRC) skills. A small but clearly defined group of skills relate to aspects of governance, compliance and risk management more widely. These include meeting statutory and regulatory compliance mandates, skills in developing governance policies and procedures through to practical skills relating to risk management and the protection of information assets.

Technology skills. Respondents identified a broad range of required technology skills; ranging from general IT awareness and understanding through to IT and systems admin/support and the ability to design and customize EIM systems.

Business skills. These range from having a good understanding of the business and business processes through to being a strategic thinker, preparing business proposals that meet business needs, engaging stakeholders and managing customers both internal and external.

Soft skills. One of the largest skill areas was that defined as soft skills. All the survey respondents identified these as important. Information professionals need skills in people management and relationship building, negotiation and communication, project management and planning.

This examination of the roles, skills and knowledge reveals that enterprise information management is the responsibility of many different stakeholder groups within the organization and requires the combination of a wide range of skills and knowledge.

5. Concluding remarks

The aim of this study was to investigate key research imperatives and industry challenges associated with enterprise information management. Building on previous work the study examines five, inter-related aspects of EIM to understand the current status of enterprise information management in organizations and to identify the issues and challenges organizations are currently facing. A number of imperatives have been identified from the study; these are discussed below along with the implications of these findings for future research.

Meeting performance and conformance objectives

In terms of the drivers of EIM, we identified an emphasis on both performance (deriving greater business value and meeting business objectives) and conformance (meeting compliance requirements and protection of information assets). Whilst meeting performance and conformance objectives are high-level strategic goals, EIM drivers are found to impact on every stage of the information lifecycle from information creation to information disposition or destruction indicating a significant need for operational readiness to handle this complex mix of drivers. Further, EIM drivers cannot be simply reduced to a series of technical or organizational needs but reveal EIM as a complex sociotechnical phenomenon.

In terms of organizations' current EIM capability the survey reveals that organizations are largely meeting their conformance goals but are still struggling to improve business performance. The challenges that they are facing over the next two years relate to the effective selection and implementation of technology and to develop human capacity towards effectively using EIM technologies.

EIM as a strategic issue

Given the enterprise-wide nature of EIM we placed a special emphasis on understanding the current status of EIM strategy. Few organizations currently have an EIM strategy in place across the whole organization to coordinate and manage EIM activities. The survey revealed that those organizations that do have an EIM strategy in place have been better able to achieve key performance objectives such as improving information sharing and information integration. However, implementing an enterprise-wide EIM strategy is non-trivial and most organizations are struggling to achieve buy-in from departments and to enforce enterprise-wide policies and standards. There is currently limited guidance available in scoping the complexity of the activities and capabilities required to generate and sustain effective EIM strategies. This points to the need for further research to examine how EIM strategies are being implemented successfully and how these enterprise-wide issues of buy-in and policy/standards enforcement can be most effectively achieved. A direction we are currently following is to examine if, and how, the well-established capability view in the IS scholarly literature (e.g. [8, 31]) and its focus on the strategic value of information system resources provides a potentially useful base upon which to progress EIM research. This forms the foundation and direction for the next stage in this research project, which is currently underway.

Growing complexity and diversity of technologies

In terms of technologies and content the landscape remains complex and changing, with organizations focusing their efforts into managing and reducing this complexity. The survey reveals a wide diversity of EIM systems in use for purposes such as document, records and content management. Organizations frequently support multiple systems of the same type and identified that integrating multiple different systems is a key technology challenge. Survey respondents also expected that enterprise-wide information management would become more complex in the future pointing to an imperative to accelerate and deepen research into EIM to assist organizations to handle this increasing complexity.

Social business content management

The survey also reveals a growing use of social business content and social software. However, for most of the organizations surveyed, the content from these systems is currently not being systematically managed, nor do they have a strategy for managing social business content. This is a weak spot and a potential area for significant information risks and preservation concerns in the future. A new study is currently underway to specifically examine the nature of social business content and strategies for its effective management.

Legal and compliance

Organizations have reported a wide range of legal and compliance requirements shaping their EIM activities. Disposal/destruction regulations and access to information/freedom of information regulations are identified as the most influential in developing enterprise information management policies and practices and have also shaped the selection of technology solutions. Whilst frameworks to support EIM and compliance exist, no single framework is achieving widespread use or dominance. This requires further examination to establish the inhibitors to uptake of these frameworks and to assess their scope and fitness for purpose.

Changing nature of information work

Whilst most organizations clearly recognize the importance of enterprise information management there is less evidence that organizations are providing support for EIM training and development. The survey shows that there is an increasingly diverse range of skills and knowledge required by the information professional. Traditional information and records management remain at the core and are complemented by the increasingly important technology, business

and strategy knowledge and a good understanding of wider governance, risk and compliance. What becomes clearer is that EIM is a responsibility shared between a wide range of professionals and is a multi-stakeholder, multi-disciplinary activity. This is currently being explored through a series of in-depth case studies that examine the nature, scope and requirements of information work.

The findings of this study have assisted us in gaining a clearer understanding of the current status and implementation of EIM in organizations; it has also revealed a number of imperatives for further research as outlined above.

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Appendix A. Questionnaire Items - 2013 Enterprise Information Management Survey

1. Company Background

[] Which industry sector is your organization in?

Please choose only one of the following:

- Agriculture, forestry and fishing
- Mining and quarrying
- Manufacturing
- Electricity, gas, steam and air conditioning supply
- Water supply; sewerage; waste management and remediation activities
- Construction
- Wholesale and retail trade; repair of motor vehicles and motorcycles
- Transporting and storage
- Accommodation and food service activities
- Information and communication
- Financial and insurance activities
- Real estate activities
- Professional, scientific and technical activities
- Administrative and support service activities
- Public administration and defence
- Education
- Human health and social work activities
- Arts, entertainment and recreation
- Other services activities
- O: _____

[] What is the size of your organization?

Please choose **only one** of the following:

- 1-9 employees
- 10-49 employees
- 50-149 employees
- 150-249 employees
- 250-999 employees
- > 1000 employees

[] In which country are you located? _____

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2. EIM Drivers & Capabilities

□ Over the past 2 years how important have the following drivers been for enterprise-wide information management in your organization?

Please choose the appropriate response for each item:

	very important	important	unimportant	very unimportant	don't know	not applicable
improving business value of information assets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
improving access to business information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
improving creation & use of business intelligence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
improving capture, management and use of Big Data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
improving information capture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
improving classification of information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
improving use and management of metadata	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
improving enterprise search	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
improving information re-use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
improving information quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
improving information integration across multiple systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
improving internal information sharing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
improving external information sharing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
improving information archiving and preservation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
improving information retention and deletion processes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
reducing costs of information ownership	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
reducing information risks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
reducing storage costs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
meeting regulatory compliance requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
meeting green IT initiatives/targets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
meeting legal discovery requests	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
meeting business continuity requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

□ Please list below any other very important drivers.

Please write your answer here:

□ Rate the following statements about your organization's current enterprise-wide information management capability.

Please choose the appropriate response for each item:

	very good	good	poor	very poor	don't know	not applicable
...integrate and share information internally between departments is	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...integrate and share information externally with customers, suppliers, business partners is	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...create value from business information is	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...use our information assets to provide business intelligence is	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...manage the cost of collecting, storing and securing information throughout its lifecycle is	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...provide access to critical business information when it is needed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...meet our regulatory compliance requirements is	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...achieve information governance is	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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3. EIM Strategy

□ Who sponsors or “champions” enterprise-wide information management within your organization?

Please choose **all** that apply:

- Board/Executive Management Team
- Chief Executive Officer/Director General
- Chief Information Officer
- Legal/Compliance Officer
- IS/IT Manager
- Internal Auditor
- Records Manager
- O: _____

□ Does your organization have a formal documented enterprise-wide information management strategy?

Please choose **only one** of the following:

- Yes, a strategy is in place across the entire organization
- Yes, a strategy is in place in some parts of the organization
- Yes, we have a strategy in draft form, it is not yet implemented
- No, but we are considering creating one
- No, nor do we have plans to create one
- Don't know

□ Who approved the enterprise information strategy?

Only answer this question if the following conditions are met:

Answer was 'Yes, a strategy is in place across the entire organization' or 'Yes, a strategy is in place in some parts of the organization' or 'Yes, we have a strategy in draft form, it is not yet implemented' at question '8 [Q8]' (Does your organization have a formal documented enterprise-wide information management strategy?)

Please choose **only one** of the following:

- Board/Executive Management Team
- Chief Executive Officer/Director General
- Chief Information Officer
- Legal department/Chief Counsel
- Internal Auditor
- IS/IT manager
- Records Manager
- O: _____

□ In your opinion, what are the greatest benefits of an enterprise-wide information strategy at your organization?

Only answer this question if the following conditions are met:

Answer was 'Yes, we have a strategy in draft form, it is not yet implemented' or 'Yes, a strategy is in place in some parts of the organization' or 'Yes, a strategy is in place across the entire organization' at question '8 [Q8]' (Does your organization have a formal documented enterprise-wide information management strategy?)

Please choose **all** that apply:

- Information can be better shared between departments, enabling better decision-making
- Integrated information and business intelligence about our customers, products and resources can be leveraged for greater business results
- Sensitive information can be better protected from hackers and thieves, improving security
- Fewer errors will be made, ensuring higher quality
- Non-compliance with regulatory requirements will be minimized
- Information can be properly disposed when no longer needed, reducing risk
- Customers will have more confidence in our efforts to secure their information, improving brand reputation
- Fewer hardware components will be needed to store information, reducing IT costs
- Don't know
- O: _____

Managing enterprise information: meeting performance and conformance objectives in a changing information environment

□ In your opinion, what are the greatest challenges of an enterprise-wide information strategy at your organization?

Only answer this question if the following conditions are met:

Answer was 'Yes, a strategy is in place across the entire organization' or 'Yes, we have a strategy in draft form, it is not yet implemented' or 'Yes, a strategy is in place in some parts of the organization' at question '8 [Q8]' (Does your organization have a formal documented enterprise-wide information management strategy?)
Please choose **all** that apply:

- Identifying the cost/risk/return tradeoffs of managing information companywide
- Enforcing policies companywide
- Gaining support from department heads and line of business managers
- Knowing where to begin or how to go about it
- Convincing executive management to support the initiative
- Getting our IT infrastructure to support our initiatives
- Creating corporate standards for classifying information
- Funding the initiative
- Understanding government regulations and ensuring that our various international offices are meeting those requirements
- Don't know
- O: _____

□ Does your organization have formal strategies for the following?

Please choose the appropriate response for each item:

	yes, part of an EIM strategy	yes, stand alone strategy	no	don't know
records management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
email retention and management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
social media usage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
social media information management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
electronic discovery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
information governance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. EIM Challenges

□ In the next two years how significant will the following activities be for enterprise-wide information management in your organization?

Please choose the appropriate response for each item:

	very significant	significant	insignificant	very insignificant	don't know	Not applicable
End-user training and adoption of EIM systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improving the usability of EIM systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Managing and developing staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assessment and evaluation of EIM performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recruiting staff with relevant EIM knowledge, skills and experience	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Integrating EIM systems with other enterprise systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Scaling existing systems to fit our growing needs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Managing multiple EIM systems and tools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Evaluating and selecting appropriate new Technologies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Implementing or migrating to new EIM technologies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Evaluating/adopting EIM cloud services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Managing technology vendor relations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Managing enterprise information: meeting performance and conformance objectives in a changing information environment

□ Over the next 2-5 years how do you expect the complexity of enterprise-wide information management will change?

Please choose **only one** of the following:

- It will become more complex
- It will stay about the same
- It will become less complex
- Don't know

5. Information, Systems & Technologies

□ How are the following content types managed in your organization?

Please choose the appropriate response for each item:

	formally - part of organizational-wide strategy	formally – department level strategy	informally individual responsibility	not at all	don't know
Office Documents (e.g. word processing, presentations, spreadsheets)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Email messages	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Photo images	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Audio files	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Video files	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Instant messages	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Collaborative content (e.g. files generated by team/project tools)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Web content	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social media content (e.g. wikis, blogs, tweets, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Marketing content/data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Business application data (e.g. ERP-System data, invoices, orders)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Compliance-related content/data (e.g. contracts, patents)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Confidential documents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical documents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

□ Which of the following technologies are used for information management within your organization?

Please choose all that apply and name the vendor and system (if known)

- Document management system (DMS) _____
- Records management system (RMS) _____
- Content management system (CMS) _____
- Web content management systems (WCMS) _____
- Knowledge management systems (KMS) _____
- Enterprise Content Management (ECM) _____
- Wikis _____
- Blogs _____
- Portals _____
- Mash-up _____
- Other Web 2.0 tools _____
- File Sharing (like Dropbox) _____
- ERP system _____
- Other _____

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□ What are your plans for EIM technologies within the next 2 years?

Please choose all that apply:

- Evaluating new EIM technologies
- Purchasing a new system
- Migrating from existing to new system(s)
- Upgrading/expanding existing system(s)
- Consolidating systems
- Integrating EIM systems with other enterprise systems
- Evaluating EIM cloud services
- Adopting EIM cloud services
- No plans to change existing EIM systems
- Don't have EIM and don't plan to add
- O: _____

□ What do you expect to be the biggest EIM-related technological challenges over the next 2 years?

Please choose all that apply:

- Integrating EIM systems with other applications
- Expanding EIM systems to support new uses
- Upgrading EIM systems
- Customizing/configuring EIM systems
- Maintaining system performance and availability
- Moving EIM to the cloud
- Consolidating EIM Systems
- Scaling the system to the huge amounts of information
- O: _____

6. Standards, Frameworks & Regulations

□ Which of the following legal and regulatory obligations are relevant for your organization?

Please choose all that apply:

- Sarbanes-Oxley Act
- Dodd-Frank Act
- The Health Insurance Portability & Accountability Act (HIPAA)
- Gramm-Leach-Bliley Act
- EU Data Protection Directive
- PCI Data Security Standard
- e-Transaction laws (enforceability & compliance of electronic documents generally)
- Security breach notification regulations
- Disposal/Destruction regulations
- eDiscovery
- Freedom of information

□ Below is the list of legal and regulatory obligations that you selected from the list above.

Please indicate whether (or not) these obligations have shaped your technology selection and/or the development of enterprise information management policies and practices.

Please choose the appropriate response for each item: ('Which of the following legal and regulatory obligations are relevant for your organization?')

	shaped technology selection	didn't shape technology selection	shaped policies and practices	didn't shape policies and practices
Sarbanes-Oxley Act	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dodd-Frank Act	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The Health Insurance Portability & Accountability Act (HIPAA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gramm-Leach-Bliley Act	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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EU Data Protection Directive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PCI Data Security Standard	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e-Transaction laws (enforceability & compliance of electronic documents generally)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Security breach notification regulations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Disposal/Destruction regulations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
eDiscovery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Freedom of information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

□ Please list any other significant legislation & regulations that influence your organization's enterprise-wide information management.

Please write your answer(s) here:

1. _____
2. _____
3. _____
4. _____
5. _____

□ How significant are the following in the development, implementation and evaluation of enterprise information management within your organization?

Please choose the appropriate response for each item:

	highly significant	significant	insignificant	highly insignificant	don't know	not applicable
ARMA International's Generally Accepted Recordkeeping Principles (GARP®)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EDRM.net Information Governance Reference Model (IGRM)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EDRM.net Electronic Discovery Reference Model (EDRM)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
COBIT version 4.1 or 5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Microsoft Data Governance for privacy, confidentiality and compliance (DGPC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DAMA International DAMA-DMBOK Functional Framework	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DLM Forum Foundation: MoREQ2010 Modular requirements for Records Management Systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DoD 5015.02 STD: RMA Design Criteria Standard	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
AS ISO 15489.1-2002/AS ISO 15489.2-2002 Records Management – Part 1/Part 2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
AS ISO 23801.1, AS/NZS ISO 23081.2, AS/NZS ISO 23081.3 Metadata for Records	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
AS/NZS ISO 16175.1 Information and documentation – Principles and functional requirements for records in electronic office environments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
AS/NZS ISO 30301 Information and documentation – Management systems for recordkeeping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ARMA International Retention Management for Records and Information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ARMA International Guideline for Outsourcing Records Storage to the Cloud	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ANSI/ARMA 19-2012: Policy Design for Managing Electronic Messages	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ANSI/ARMA 18-2011: Implications of Web-Based, Collaborative Technologies in Records Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ANSI/ARMA 5-2010: Vital Records Programs: Identifying, Managing and Recovering Business-Critical Records	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
BS 1012:2009 Data protection. Specification for a personal information management system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
AS/NZS ISO/IEC 27001 & 27002 Information Technology – Security Techniques	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
AS/NZS ISO 31000:2009 Risk Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ARMA Managing Risks for Records and Information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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□ Please list any other significant frameworks and guidelines that influenced your organization's enterprise-wide information management.

Please write your answer(s) here:

1. _____
2. _____
3. _____
4. _____
5. _____

7. Information Professionals

□ What is your job title? Please name:

Please write your answer here:

□ Which of the following best describes your primary job responsibility?

Please choose **only one** of the following:

- Audit/Assurance
- Compliance
- Customer service
- Finance
- General management
- Human resources
- Information and research
- IT management
- IT Security
- Legal
- Marketing and sales
- Operations and production
- Procurement
- Records/Document Management
- Risk
- Research & Development
- Strategy and business development
- Supply-chain management
- O: _____

□ What is the name of the business unit/department that you are located in? Please specify

Please write your answer here:

□ Please indicate any of the following areas in which you believe you have a high level of expertise.

Please choose **all** that apply:

- Accounting and finance
- Audit/Assurance
- Business continuity
- Data protection
- Information security
- Information technology
- Intellectual property
- Privacy

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- Records management
- Risk management
- Strategy and business development
- O: _____

[] What areas best reflect your professional background?

Please choose **all** that apply:

- Audit/Assurance
- Law
- Library and Records management
- IT
- Public administration
- O: _____

[] What is your highest level of qualification?

Please choose **only one** of the following:

- Secondary Education
- Certificate/Diploma
- Bachelor Degree
- Master Degree
- DBA or PhD

[] Are you a member of any professional associations and/or have any professional accreditations?

Please choose **only one** of the following:

- Yes
- No

[] Please list your professional memberships and accreditations

Only answer this question if the following conditions are met:

Answer was 'Yes' at question '30 [Q27]' (Are you a member of any professional associations and/or have any professional accreditations?)

Please write your answer(s) here:

1. _____
2. _____
3. _____
4. _____

[] To what degree does your organization...

Please choose the appropriate response for each item:

	very highly	highly	to some degree	not at all	don't know
...recognize the need for information management skills?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...encourage and resource staff to undertake relevant training to improve their skills in information management?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

[] What are the 5 most important skills and knowledge areas required by the contemporary information professional? Please name:

Please write your answer(s) here:

1. _____
2. _____
3. _____
4. _____
5. _____

Biographical notes**Susan P. Williams**

Susan Williams is Professor of Enterprise Information Management at the Faculty of Computer Science of the University of Koblenz-Landau and Director of the Information Design Lab. She is also Visiting Professor at the Human-Centred Technology Design Research Group, University of Technology, Sydney. With a focus on the complex interplay between human-centred information design, technical innovation and organisational change, her research program is directed towards assisting organisations to improve the design, management and protection of their digital information assets.

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Verena Hausmann (M.Sc.) is currently a research assistant and PhD student with the Enterprise Information Management Research Group at the University of Koblenz-Landau. She holds an MSc in Information Management and previously worked as a student assistant at the University of Koblenz-Landau. She was involved in the student council of Information Management and today she is the chairperson of the Association of Information Management. Her current field of research is in the area of unstructured information management and documentary practices.

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