Meta-synthetic strategies to digital recordkeeping:

International trends and future directions

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Abstract: With the increasing number of applications and services online, more and more business processes are carried out in a fully integrated digital working environment. To ensure the success of a business, adequate recordkeeping becomes an essential. A review of the related literature indicates that international trends and future directions of recordkeeping awareness, recordkeeping processes and regimes, recordkeeping systems and technologies are moving towards meta-synthetic support in a digital world. However, little has been discussed about specific strategies of meta-synthetic support for digital recordkeeping.

The purpose of this paper is to propose the adoption and adaptation of the ISO/TC46/SC11 series of standards and the integrated use of ISO management systems standards (ISO MSSs) as enablers of meta-synthetic strategies to enhance and sustainably develop digital recordkeeping. ISO/TC46/SC11 has taken a leading role in improving the best practices in managing records by providing a managerial framework, as well as the standards and guidance for the design and application of records practices and processes to ensure authoritative and reliable information and evidence of business activities in organizations for as long as necessary for any purpose. *ISO 15489-1: 2001 Information and documentation-Records management (RM)-Part 1: General* provides integration approaches at operational level, ISO 30300: 2011 *Information and documentation-Management systems for records (MSR)-Fundamentals and vocabulary,* and ISO 30301: 2011 *Information and documentation-Management systems for records (MSR)-Requirements* provide integration approaches at strategic level. The integrated use of ISO MSSs provides ever increasing opportunities for integrated product, process and service control.

The mechanisms of the above meta-synthetic strategies are collaboration, optimization, innovation and compliance. The theoretical foundations are the integrated use of lifecycle, continuum and ecosystem theories with multidisciplinary perspectives. The practical implications are to support varied evidence-based collaborations at multiple levels, such as national strategies and plans of digital continuity, knowledge sharing and reuse, open government initiatives, e-government information architecture & services competence building, enterprise information governance & digital content management programs, etc..

Key words: records management; digital recordkeeping; meta-synthetic strategies; international trends

Introduction

With more and more applications and services online, more and more business processes are carried out in a fully integrated, common digital working environment. More and more records are born-digital and are expected to be maintained and used and reused digitally. "Creation and management of records are integral to any organization's activities, processes and systems, records enable business efficiency, accountability, risk management and business continuity. They also enable organizations to capitalize on the value of their information resources as business, commercial and knowledge assets, and to contribute to the preservation of collective memory, responding to the challenges of the global and digital environment" (ISO 30300: 2011; ISO 30301: 2011). Good digital recordkeeping becomes an essential component of successful e-business.

Elsewhere, open government initiatives in advanced countries are undergoing a transition from paper to electronic recordkeeping, for example, all ministries of the Netherland have to be connected in cloud ultimately by 2015 (Hofman, 2011), and Library and Archives Canada will go digital by 2017 (Allard,2011). Digital recordkeeping is the backbone of open government initiatives and should be integrated in business process (*Presidential memorandum -- Managing government records, 2011)*. There are increased expectations of citizens and customers that organizations should operate in a trustworthy, accountable, transparent and socially responsible manner (ISO 15489 Management Statement, 2007). However, according to a survey done in 2007, 79.6% of organizations had no measures for storage of the records of emerging technology in China (Zhang, 2008); and according to a survey done by NARA in 2010, 95% percent of federal agencies were at a high to moderate risk of compromising the integrity, authenticity, and reliability of records. These disturbing results reveal that many government records are at risk of being lost forever（Ferriero, 2012). The need for robust digital records management is becoming more pressing （Australian National Audit Office, 2012.

The challenges of how to effectively assure the authenticity, reliability, integrity, usability, and reusability of records through their entire lifecycle in an ever changing digital environment; how to accountably maintain both the business value and the enduring value of records in conformity with increasing diverse legal, business, cultural and societal requirements throughout the records continuum regime; and how to robustly enhance consistent and sustainable recordkeeping frameworks to bring people, process and technology together as complex new whole, have been the focus of many initiatives across the world in recent years (Mcleod, Childs, Hardiman, 2010). International trends and future directions of recordkeeping awareness, recordkeeping processes and regimes, recordkeeping systems and technologies are identified moving towards meta-synthetic support in the digital world (An, Sun, Zhang, 2011). However, there are few discussions on meta-synthetic strategies for digital recordkeeping based on integrated use of ISO/TC 46/SC11 products and the ISO management systems standards (MSSs) in archival and recordkeeping literature (ISO 15489 and other standardized management systems: analogies and synergies, 2011).

The purpose of this paper is to propose the adoption and adaptation of ISO/TC46/SC11 series of standards and integrated use of ISO MSSs as enablers of meta-synthetic strategy for digital recordkeeping towards innovation in and for society. 'MSSs provide tools for a system and

verifiable approach to organization control in an environment that encourages good business practices'. (Bustelo, Ellis, 2011). ISO/TC46/SC11 series of standards provide a managerial framework, as well as standards and guidance for the design and application of records practices and processes to ensure authoritative and reliable information and evidence of business activity in organizations for as long as it is needed for any purpose. In this paper, what, how and where questions have been asked and answered about meta-synthetic strategies for digital recordkeeping based on integrated use of relevant ISO records standards .

2 Concept of a meta-synthetic strategy

The concept of 'meta-synthetic' was originated in the late 1980's from Chinese scholars (Qian, Yu, Da, 1990). It refers to a comprehensive integration methodology, combining people, knowledge and tools, integrating quantitative and qualitative methods, theories and practices, dynamic and static processes, macro and micro levels, centralized and distributed status, etc. together (Qian, et al 1990; Da, 1995; Gu, 2007; Yu, 2007). The implications of the meta-synthetic ideas are that their holistic and system approach to the integration of different independent parts as an integrated whole result in a huge open and complex system for collaboration, optimization, innovation and compliance (An and Wang, 2010; An, 2011b).

In this paper, the hypothetical meta-synthetic strategy would include the following four aspects:

(1) Collaborative ways of thinking towards unified goals for value-added services and high effectiveness, which merges expectations of clients from more than one field or stakeholders from more than one group e.g. evidence-based governance and collaborations for ISO MSSs implementations (ISO 9000 Quality management, ISO 31000 Risk management, ISO 26000 Social responsibility, ISO 27000 Information security management, ISO 14000 Environment management, ISO 5001 Energy management, ISO /TS 22003 Food safety management, ISO 28003 supply chain security management, ISO 19011 auditing management, etc.); as a result, disaster recovery and business continuity, corporate and collective memory, and benefits to all the stakeholders would be strengthened.

(2) Optimized processes promoting towards competitive complementary advantages for best practice and overall efficiency, which merge procedures, methods and tools from more than one business process e.g. life cycle management, continuum regime, eco-system; as a result, redundant and duplicate information would be eliminated, and business efficiency, effective decision-making, IT performance, and the effectiveness and efficiency of organization as a whole would be improved.

(3) Innovative models promoting best values of products for a cost effective economy, which merge multiple product quality criteria and requirements across systems; relationships and linkages amongst MSS would be built to be adaptable to organizational structure and culture change to enable information sharing, sustainable development and organizational innovation competence building.

(4) Compliance synergy promoting consolidated conformity assessment with diverse kinds and multiple levels of legal, regulatory, policy and standards requirements; as a result, the responsibility chain, legislative and regulatory compliance, defence of stakeholders rights and interests, accountability and the social responsibility of organizations would be enhanced.

Such a strategy aims to build an overall management framework through which the organization's objectives are set, performed and controlled, and at the same time provide the benefits through integration with impact such as eliminating redundancy, establishing consistency, optimizing processes and resources, consolidating assessments, reducing maintenance, and improving decision making (The integrated use of management system standards, 2008, p.5).

**3 The mechanisms of meta-synthetic strategies**

Table 1 suggests integrated use of ISO/TC46/SC11 series of products and ISO MSSs as robust enablers of meta-synthetic strategy for digital recordkeeping. The mechanisms are the integrated use of three methodologies for digital recordkeeping, in terms of lifecycle (records management, RM), continuum (management system for records, MSR) and ecosystem methodology (management system of standards, MSS) as a complementary whole (An, et al, 2010; An, 2011b). Life cycle methodology focuses on protecting values of records as evidence of transactions across time and space in records system at operational level, which needs collaboration of various stakeholders as an integral whole. Continuum methodology focuses on sharing values of records as evidence and the resources of an organization across time-space, which requires optimization of processes and systems as a harmonious whole. Ecosystems methodology focuses on creating values of records as organizational evidence, resources and assets across time-space at strategic level, which needs innovation in records management systems to be embedded in management systems as an interactive whole. Based on the integrated use of the three methodologies, meta-synthetic methodology focuses on adding value to records as societal memory, resources and assets based on taking advantages of business continuity management, records management, and knowledge management (BRK) as an adaptive whole to face challenges of complexity, uncertainty, compliance and sustainability of business and systems in networked society .

Diagram 1 shows the relationships of ISO 30300 and ISO 30301 and the ISO 15489 series products, integrated use of which would provide a comprehensive set of solutions which would have three implications to the organization(An, 2011b; ISO/TC46/SC11, 2012): (1) to improve the efficiency, effectiveness, and economy of organizational resources and assets adaptable to complex global competition; (2) to enhance the quality assurance of documented information to support evidence-based governance adaptable to dynamic change in information and communication technologies; (3) to accumulate, share and exchange of information, evidence, memory and knowledge of e-business and e-service systems, aiming at collaboration, optimization, innovation and compliance of business processes and systems.

Table 1   Mechanisms of meta-synthetic strategies

Meta-synthetic mechanisms	Life cycle methodology	Continuum methodology	Ecosystem methodology	Meta-synthetic methodology
Why/values made (KM)	protecting value /RM	sharing value /MSR	Creating value/ MSSs	Adding value to sustainability/BRK
What /process featured (BCM)	passive/ standalone	Proactive/ connected	Interactive /networked	Adaptive to uncertainty

How/ systems and technology worked (risk management)	Product control	Process control	Service control	Compliance control
Where/ gaps filled in (BRK)	Collaboration/ inclusiveness of different group of people	Optimization/ orderliness under control	Innovation/ integrity of different parts	Compliance synergy/ complexity, uncertainty, compliance and sustainability capacity building
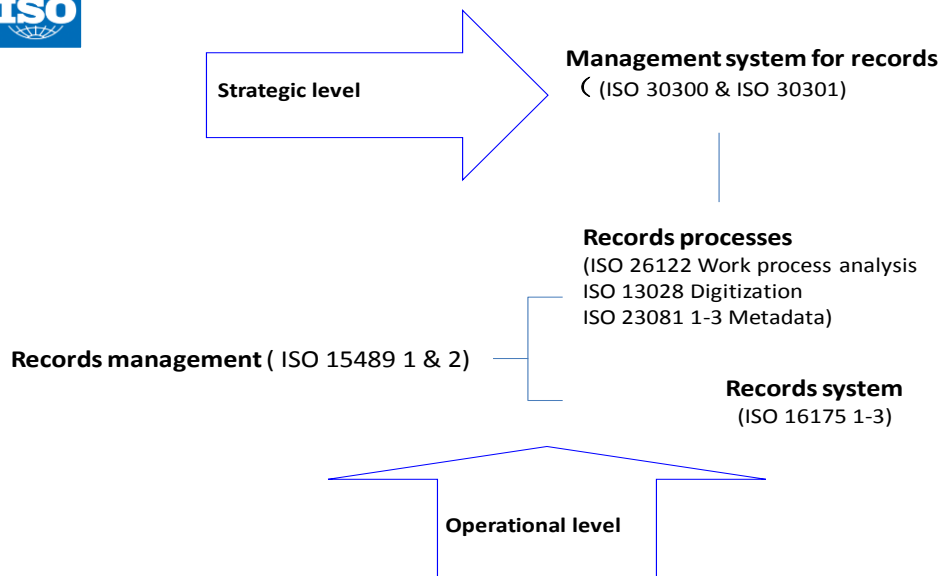
Relationships of ISO MSR series products and ISO 15489 series products
(Source: Xiaomi An, November 12, 2011 The Second National Forum on Electronic Records Management, Beijing, China)

Diagram 1 Integrated use of ISO MSR series products and ISO 15489 series products as a robust enabler

4 The enablers of meta-synthetic strategies

With more and more e-business using web-based emerging technologies such as the cloud, social networks, social media and blogs in a global market, with more and more outsourcing going to crowdsourcing, with ever increasing global competition for conformity assessment activities (eg. audits certification), there are increasing international, national, and local regulatory requirements for evidence-based collaborations to support legal protection, accountability, corporate governance, financial and practice audits, security, reputation management, business continuity planning and implementation. There is more and more need for cost-effective strategy to improve informed decision-making, performance management, productivity improvement, consistency, continuity and quality assurance in management and operations, as well as quicker response and more accurate service delivery, resource management and cost control in operations, and more expectations of openness and trust of stakeholders in ethics and need of innovation through capture and reuse of organizational knowledge, and use of strategic knowledge to support business (ISO 15489 management statement, 2007). Table 1 shows the benefits of integrated use of ISO/TC46/SC11 series of products and ISO MSSs as enablers of meta-synthetic strategy to meet the above demands through integrated service, process, product

and compliance controls (ISO 30300: 2011, ISO 30301: 2011; ISO 15489 and other standardized management systems: analogies and synergies, 2011; Bustelo and Ellis, 2010, 2011).

Integrated services control refers to customer and other stakeholders focusing on a collaborative way of thinking that leadership and accountabilities for authenticity, reliability, integrity and usability of records are integrated components of doing business as strategic objectives, for evidence-based collaborations, legal obligations, business requirements, risks and client needs. Digital recordkeeping is no longer the responsibility of records managers alone, it comprises partnerships between all the stakeholders in conformity with the principle of involvement of people in multiple business applications and appropriate leadership. Funds and people would be guaranteed from top management; resources allocated to managing records generated by business commensurate with the assessment of risk, the nature of the activities and the size and type of organization. Thus scalable, extensible and sustainable services can be built to improve the accessibility and availability of records and timely response to best utilise their multiple values.

Integrated process control refers to a process system approach to management with optimization for continual improvement so that management of risk, quicker response to dynamic change, measurement and assessment of performance are interrelated processes of recordkeeping programs. The overall management system of operational records activities are linked to save resources, cut cost and improve efficiency and productivity. Thus cost-effectiveness and efficiency and green business processes can be continually improved.

Integrated product control refers to the creation and control of records integral to an organization's activities; the proper management of records integrated into processes and systems automatically for effective and efficient conduct of business; techniques, processes, and systems used to create and manage records are aligned with the organization's specific business requirements; the requirements for records, their management and ongoing use are incorporated into the design and implementation of an organization's overall information framework; business rules are developed for designing and implementation systems which hold records for managing, using and disposing of records; business system and processes are designed so that records are secure from unauthorized use or modification and thus accurate, authoritative, accessible and acceptable as evidence and assets as long as they are needed. (ISO 15489: 2001; Bustelo and Ellis, 2010; Bustelo and Ellis, 2011)

Integrated compliance control refers to consolidated conformity assessment and synergy activities that meet all the legal, regulatory and policy requirements and support accountable business practice, legal compliance and protection, which will enable easy communication, technical operability, cost savings, better delivery, sustainable development, and competitive advantage. Thus accountability, transparency and openness of business practice can be enhanced.

Table 2   Enablers of meta-synthetic strategies and the maximized benefits

Meta-synthetic enablers	Integrated use of MSSs and ISO/TC 46/SC11 products	Maximized benefits

Integrated service control	Action of an organization to meet a demand or need (ISO 26000:2010, 2.1.6)	accessibility, availability, timely response, scalable, extensible, sustainable
Integrated process control	Set of interrelated or interacting activities which transforms inputs into outputs (ISO 9000: 2005, 3.4.1)	cost-effectiveness, efficient, energy green
Integrated product control	Results of a process (ISO 9000: 2005. 3.4.2)	authenticity, reliability, integrity, usability and reusability
Integrated compliance control	Responsibility of an organization for its decisions and activities, and state of being answerable to its governing bodies, legal authorities and, more broadly, its other stakeholders regarding these decisions and activities (ISO 2600: 2010, 2.1.10)	accountability, transparency, openness, good governance

5   Contributions and significance

A review of digital recordkeeping practices in table 3 indicates that meta-synthetic strategies can provide collaborative ways of thinking for recordkeeping awareness, optimized processes for recordkeeping regimes and innovation models for recordkeeping system and technology.

Recordkeeping awareness has been changed from bottom up to top down, and recordkeeping is moving towards managing records as business, evidentiary and community resources and knowledge assets, to ensure that public sector resources are created, maintained and used more efficiently through collaborations by sharing ideas, expertise, and systems and by minimizing duplication, by coordinating ways to manage digital information efficiently, and ensuring digital information is authentic, reliable, discoverable, accessible, usable, and reusable both now and in the future, whilst also ensuring what is not needed is properly disposed of in a controlled environment(Digital Continuity Action Plan of New Zealand, 2009; digital continuity plan of Australia, 2011). Its focus is on areas of open data, high value (strategic) and complexity, collective decisions around business value and enduring societal value, contribution to digital economy, access and accountability (Piche, 2011).

Recordkeeping regimes have been changed from static to dynamic status, from passive to proactive, interactive and adaptable approaches. Initiatives have been taken towards cross organizational collaboration and societal innovation, holistic approaches across multiple levels and multi-dimensional governance (The Provisional Measures for Managing Electronic Records of China, 2009; Feng, et al, 2011). Benefits of information to agency businesses, the government and the community are optimized; people, processes and technology are aligned to support effective information management; information is fit-for-purpose over its life (Digital Continuity Plan of Australia, 2011). The direction of recordkeeping is moving towards information resource management and knowledge asset management, utilising multidisciplinary interests and pluralist approaches to deal with challenges of complexity and uncertainty in a dynamically changing digital networking environment and to support varied evidence-based collaborations (Managing Digital Continuity of UK, 2011).

Recordkeeping systems and technologies have been changed from separated lifecycle processes and systems to seamless workflow of EDMS, ERMS and TDR integration (Liu, 2011); from isolated

business management, records management and knowledge management systems to their integrated management systems (An, 2009; An, et al, 2010; An, 2011a). The direction of digital recordkeeping is focusing on cross-agency information sharing and collaboration across the public sector which will minimize duplication of effort and expenditure and help generate cost savings and improve service delivery, and providing an inclusive and unified whole government plan at strategic management level linking digital recordkeeping to business (New Zealand's digital continuity action plan, 2009).

Meta-synthetic frameworks have been built into open government initiatives, e-government information architecture, emerging technologies solutions and enablers, and government capability building plans to improve public values of e-government services and e-government performance as a whole, which provide a foundation for open government, leverage information to improve agency performance, and reduce unnecessary costs and burdens (Information Matters: Building Government's Capability in managing Knowledge and Information, 2008; Presidential Memorandum-Managing Government Records of US, 2011). Framework requirements for recordkeeping are based upon legislation, the ISO 30300, ISO 30301, ISO 15489 and 23081. Collaboration between business areas and information management areas is critical to the success of effective recordkeeping; collaboration between departments, agencies and archival repositories are critical to the successful implementation of the recordkeeping plans, not just a technical framework (Hofman, 2011; Piche, 2011; AFNOR-CN11, 2012).

Table 3   Meta-synthetic strategies in digital recordkeeping practices

Meta-synthetic initiatives	Meta-synthetic perspectives	Meta-synthetic approaches	Meta-synthetic implications
Recordkeeping awareness (collaborative ways of thinking)	from bottom up to top down; from managing records as data to managing records as business, evidentiary and community resources and assets	towards information resources management and knowledge asset management; multidisciplinary interests and pluralist approaches	managing complexity, uncertainty, compliance and sustainability
Recordkeeping regime (optimized process)	from static process to dynamic process from passive approach to proactive and interactive approach	towards across organization collaboration and social innovation; digital continuity action plan and holistic approaches	Integrated lifecycle, continuum and eco-system regime
Recordkeeping system and technology (innovative models)	from lifecycle separated processes to seamless workflow of EDMS, ERMS and TDR integration; from isolated BMS, RMS, KMS to their integrated management system	towards recordkeeping system embedded into business continuity management system and knowledge management system; ecosystem building	connectivity, collaboration, community and compliance capacity building

6 Conclusion

In conclusion, this paper proposes integrated use of ISO/TC46/SC11 series of standards and integrated use of ISO MSSs as enablers of meta-synthetic strategy to support effective evidence-based collaborations and enhanced good governance for digital recordkeeping, which will benefit of all the stakeholders and build links with business continuity management, quality management, security and risk management, audit and knowledge management. Such a proposal provides a holistic and systematic approach to digital recordkeeping that covers all aspects of the creation, control and use of records as long as they are required throughout their

life cycle of records. Different management aspects and systems are integrated for shared values and varied impacts through integrated service, process, product and compliance control. The mechanisms of meta-synthetic strategy are collaboration, optimization, innovation and compliance synergy; complementary and multi-disciplinary approaches of lifecycle, continuum and ecosystem methodology come together as an integral, harmonious and comprehensive new whole.

Practical implications of meta-synthetic strategies focus on complete sets of solutions to managing complexity, uncertainty, compliance and sustainability in an ever changing networking society, which would build connectivity, collaboration, community and compliance among recordkeeping, business continuity management, knowledge management, legal requirements and technological infrastructure to support varied evidence-based collaborations across boundaries at multiple levels and in multiple dimensions such as national strategies and plans of digital continuity, knowledge sharing and reuse, open government initiatives, e-government information architecture and services competence building, enterprise information governance and digital content management programs, etc.

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