



Crossroads

Developments in electronic records management and information technology

NAGARA Crossroads 2009-2

This issue of *Crossroads* continues a series of white papers on various topics related to electronic records written by members of the Committee on Electronic Records and Information Systems (CERIS). This white paper covers the topic of enterprise architecture. It was written by **Scott Leonard**, State Records Manager and Electronic Records Specialist with the Kansas State Historical Society.

CERIS White Paper

Electronic Records Management and Enterprise Architecture

One of the key principles in effective electronic records management is to address electronic records management issues as soon as possible in the lifecycle of electronic information. As stated in the Kansas Electronic Records Management Guidelines, “[s]ince effective management of electronic records depends so heavily on the information systems involved, [...] agencies will have the most options for managing their electronic records effectively if they identify recordkeeping requirements when new systems are designed or when existing systems are upgraded.”¹ One key element in influencing system design is by codifying development within the context of an architecture for the entire enterprise. This codification process is the heart and soul of Enterprise Architecture.

What is Enterprise Architecture?

Enterprise architecture “...is a comprehensive framework used to manage and align an organization's Information Technology (IT) assets, people, operations, and projects with its operational characteristics. In other words, the enterprise architecture defines how information and technology will support the business operations and provide benefit for the business.”² As the definition indicates, Enterprise Architecture (EA) brings together business processes and technology, and ties information technology implementation to business drivers so that the requirements are determined by business needs. Another analogy to help understand Enterprise Architecture is proposed by *Government Technology*:

The classic analogy in a non-high tech realm is building a home. Telling an architect to “build me a house!” is not nearly enough information. The

¹ Kansas State Historical Society, *Kansas Electronic Records Management Guidelines*; <http://www.kshs.org/government/records/electronic/electronicrecordsguidelines.htm> (accessed 5/14/09).

² National Institutes of Health, “What is Enterprise Architecture?”, <http://enterprisearchitecture.nih.gov/About/What/> (accessed 5/5/09).

architect needs details about how many people will live in it, what kinds of activities it needs to support, the quality of furnishings to use, how long it needs to last, etc.

When talking about building a house, it is obvious that the owner needs to set these kinds of high-level requirements: unless you have money to burn, don't care about schedules and don't really plan to live in the house anyway, you're going to want to give instructions to the architect and general contractor about what you need and want.

Enterprise Architecture is derived from the understanding that technology exists to fulfill business needs. Which technologies are chosen should not be a matter of "coolness" and is only partially a matter of cost: more properly it is a matter of what technologies get the job done.³

The approach is to start at the strategic intent, with technology being the last step. The goal of EA efforts is to reconcile the vertical and horizontal views of the enterprise, improve access and the sharing of information, and to provide an enterprise view of costs.⁴ So EA helps to define technology within the business context in which it is needed. It describes the business requirements that guide technology decisions and provides a framework in which to develop system requirements based on those business requirements. EA reins in technological development, keeping it tied to enhancing business processes instead of driving the business processes.

The Composition of Enterprise Architecture

Many enterprise architectures are comprised of four areas of practice:

- Business includes business strategies, goal, policies, and processes;
- Information covers metadata and data models;
- Applications incorporates application software inventories, interfaces between applications, and links (such as Intranet, Extranet, and EDI) with parties inside and outside an organization; and
- Technology deals with hardware platforms, networks, operating systems and infrastructure software, and programming languages.⁵

These areas of practice are similar to the various parts of the blueprint for a house: the external structure of the building, and electrical, plumbing, HVAC systems and so forth that support those living in the house. EA brings the

³ David Aden, "Enterprise Architecture Demystified," *Government Technology*, Sept. 24, 2008; <http://www.govtech.com/gt/articles/418008> (accessed 5/7/09).

⁴ Doug Robinson, "Advancing Enterprise Architecture in the States," presentation at the 2006 Joint Meeting of the Society of American Archivists, the National Association of Government Archives & Records Administrators, and the Council of State Archivists; August 3, 2006.

⁵ "Enterprise Architecture," *Wikipedia*, http://en.wikipedia.org/wiki/Enterprise_Architecture, (accessed 5/8/09).

various aspects of business together to serve and support the functions of an organization.

EA describes both the current state of an organization and its future state. EA should project five to ten years into the future so that effective planning can be done. As the architecture is developed, this future state phase is important to anticipate so that the business can improve and expenditures of money and other resources can be justified. In the technology area especially, enterprise architects must follow technology trends to anticipate the hardware and software changes that will impact their organization. But the architects must also be aware of how the organization is changing and moving toward that future state. What will the organization look like in five years? Will it reorganize itself, either based on internal changes or external forces or drivers? How will the organization's customers be better served? What new areas for growth are opening up? All of these factors play into how the architects develop the framework for the enterprise.

Enterprise Architecture in Government

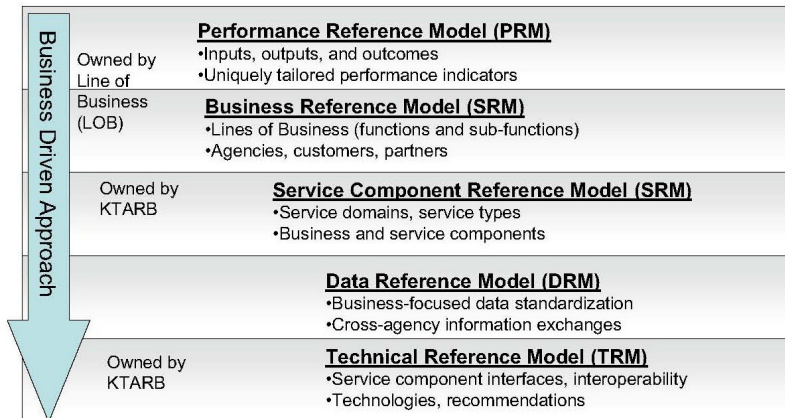
In the U.S., the largest implementation of EA is at the federal level. Work toward what became the Federal Enterprise Architecture (FEA) began in the late-1990s as the Federal CIO Council published the "Federal Enterprise Architecture Framework" to guide agencies as they developed their own enterprise architectures or built systems that crossed multiple agency boundaries. Version 1.0 of the FEA was published in February 2001. The majority of the states have developed some sort of technical architecture; about half are developing an EA in some form. A handful are attempting to align their state EA with the FEA, since there are many services to citizens that move from the federal government down through state agencies, as well as many sets of data, such as criminal justice, geospatial, and health and social service data, that are shared among all levels of government.

The FEA breaks out five "reference models" that develop a common taxonomy and ontology for describing IT resources. These include:

- the Performance Reference Model,
- the Business Reference Model,
- the Service Component Reference Model,
- the Data Reference Model and
- the Technical Reference Model.

These reference models are "designed to facilitate cross-agency analysis and the identification of duplicative investments, gaps and opportunities for collaboration within and across agencies. Collectively, the reference models comprise a framework for

describing important elements of the FEA in a common and consistent way.”⁶ This diagram, from the Kansas Information Technical Architecture⁷, provides a quick summary of the Models and shows the relationships between the Reference Models (KTARB stands for the Kansas Technical Architecture Review Board):



Kansas is one of the states that is attempting to align with the FEA. Kansas’s first version of an architecture was drafted in 1998 and was primarily an information technology architecture, outlining accepted standards and best practices and listing technologies germane to various aspects of IT such as system and application development, network infrastructure, and security, among others. This focus has continued to the present, but the latest iteration has aligned with the FEA areas of practice, while retaining standards and technologies. The Kansas Information Technical Architecture (KITA) is a subset of a yet-to-be-developed Kansas Enterprise Architecture “...and describes the information systems infrastructure that supports the business and applications used by the State.”⁸ The KITA is mainly comprised of the Service Reference Model and the Technical Reference Model components of the FEA.

Records Management in the Context of Enterprise Architecture

Shortly after the development of the KITA, the Kansas Historical Society was invited to become involved to incorporate records management requirements into the architecture. In the early iterations of the KITA, Records Management had its own stand-alone chapter. This chapter was a combination of the Kansas Electronic Records Management Guidelines, relevant records laws, and the then-current records management guidelines, standards, and regulations developed by other states, the federal government, and internationally. As the KITA evolved to match the FEA, records management was subsumed into parts of the Service Reference Model (SRM) and the Technical Reference Model (TRM).

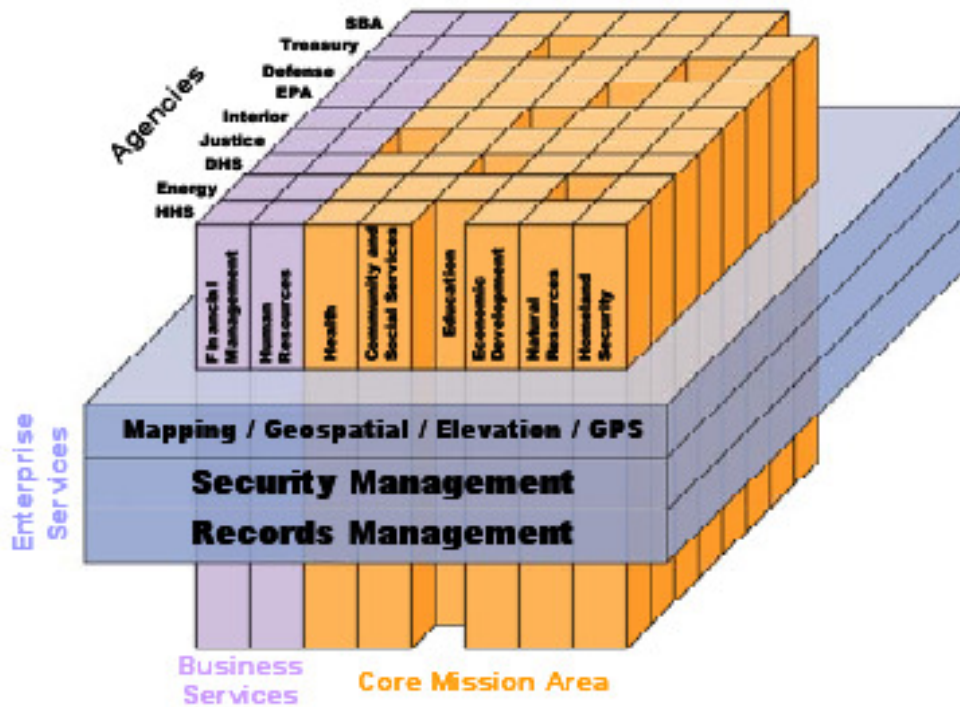
⁶ FEA Consolidated Reference Model Document Version 2.3, October 2007, p. 5, http://www.whitehouse.gov/omb/assets/fea_docs/FEA_CRM_v23_Final_Oct_2007_Revised.pdf, (accessed 5/8/09).

⁷ Kansas Information Technical Architecture version 11.0, <http://www.da.ks.gov/itec/KITAMain.htm>, (accessed 5/8/09).

⁸ Ibid, p. 1-2 (accessed 6/1/09).

The FEA places records management concepts in the SRM under the Digital Asset Services Domain. This domain "...defines the set of capabilities to support the generation, management, and distribution of intellectual capital and electronic media across the business and extended enterprise."⁹ Under this domain one finds "Service Types," which categorize and define the capabilities of the domain, including Content Management, Document Management, Knowledge Management, and Records Management. Records Management touches areas in the SRM, as well as pieces of the TRM, but the topic is covered more thoroughly in the Digital Asset Services domain.

Another aspect of the FEA is the approach taken by the CIO Council to approach common services that cut across the enterprise and develop profiles applicable to all agencies. The following image illustrates these enterprise services¹⁰:



⁹ *Consolidated Reference Model Version 2.3*, Executive Office of the President of the United States, Office of Management and Budget, October 2007, p. 53; http://www.whitehouse.gov/omb/assets/fea_docs/FEA_CRM_v23_Final_Oct_2007_Revised.pdf (accessed 5/11/09).

¹⁰ *FEA Practice Guidance*, Federal Enterprise Architecture Program Management Office, OMB; November 2007; http://www.whitehouse.gov/omb/assets/fea_docs/FEA_Practice_Guidance_Nov_2007d.pdf (accessed 5/11/09)

These profiles “...provide the framework for embedding common and consistent [enterprise service] procedures and practices into agency business processes.”¹¹ The first profile, released in July 2004, was related to security and privacy. The records management profile was published in December 2005 and the geospatial profile in 2007.

The Records Management Profile states “[r]ecords management cross-cuts each of the FEA reference models, and, in fact, supports every Federal Line of Business and Sub-function.”¹² It goes on to describe where, in each Reference Model, the records management function exists. This then allows federal agencies to “bake” records management into the systems and business processes that run throughout the agency. This brings electronic records management to the forefront of the system planning process – at the beginning of the lifecycle, rather than waiting to tack it on at the end, when it could be too late to effectively manage records in information systems.

Enterprise Architecture Impact and Electronic Records Management in Practice

Because EA has an impact on IT procurement and governance, it provides an opportunity for records management to play a pragmatic role in system development. NARA, along with the U.S. Department of Treasury and the Department of the Interior, developed three checklists to help agencies embed records management and electronic recordkeeping into business processes and the FEA. These checklists look at system development life cycle, capital planning and investment control, and business planning redesign (see the NARA FEA Records Management Profile web site, <http://archives.gov/records-mgmt/initiatives/erm-guidance.html>, for these checklists).

Enterprise Architecture provides many benefits to archives and records management functions. It provides a cross-boundary view of the government enterprise, looking not only at the various agencies, but also at the business processes and functions that concern government. It allows archivists and records managers to get into the game early because of the tie EA has to those business processes and system life cycle. And it allows archivists and records managers to influence the reference models and take an enterprise approach to electronic records management.

How Records Programs Can Influence Enterprise Architecture Development

In Kansas, the State Historical Society has been able to build relationships with key information technology staff within the Executive Branch Chief Information Technology Officer's (CITO) office. These relationships lead to the State Archivist becoming involved in the IT governance structure, and in turn, getting staff on the committees tasked with updating the Kansas Information Technology Architecture (KITA).

¹¹“Federal Enterprise Architecture Records Management Profile, Version 1.0,” National Archives and Records Administration, Office of Management and Budget, and Architecture and Infrastructure Committee, Federal CIO Council; December 15, 2005, p. 1; <http://archives.gov/records-mgmt/pdf/rm-profile.pdf> (accessed 5/11/09).

¹²Ibid, p. 12.

Eventually the role KSHS staff played in the KITA broadened to being a committee chair and sitting on the Kansas Technical Architecture Review Board, the group gathered around the Chief Information Technology Architect with responsibility for the KITA. At the federal level, NARA played a key role with the FEA and took the lead in developing the Records Management Profile. The key is to have those relationships with business and IT decision makers, be invited to the table, and have the opportunity to influence any architecture developments. This could be as simple as serving on a subcommittee tasked with one area of practice, and bringing records expertise to bear on those issues which effect long-term access and preservation of digital assets.

Recommended Resources

Federal Enterprise Architecture: <http://www.whitehouse.gov/omb/e-gov/fea/>.

FEA Records Management Profile: <http://archives.gov/records-mgmt/initiatives/erm-guidance.html>.

Kansas Information Technical Architecture: <http://www.da.ks.gov/itec/KITAMain.htm>.

Kansas Electronic Records Management Guidelines:

<http://www.kshs.org/government/records/electronic/electronicrecordsguidelines.htm>.

All hyperlinks in this issue were valid as of the date of publication.

Issues of *Crossroads* are available on the NAGARA Web site at www.nagara.org in Portable Document Format (PDF) for downloading and easy printing.

Crossroads is sponsored by the NAGARA Committee on Electronic Records and Information Systems (CERIS). CERIS members include LaDonna Wagers (Chair), State Library and Archives of Florida; Glenn McAninch (Vice Chair), Kentucky Department of Libraries & Archives; Mark Conrad, National Archives and Records Commission; Cindy Bendroth, Pennsylvania Historical and Museum Commission; Scott Leonard, Kansas State Historical Society; Caryn Wojcik, State Archives of Michigan; and Patty Davis, Ohio Historical Society.

Crossroads is edited by LaDonna Wagers, State Library and Archives of Florida, 500 S. Bronough Street, Mail Station 9A, Tallahassee, Florida 32399, 850-245-6777, lwagers@dos.state.fl.us.