BRIEF OF THE INFORMATION TECHNOLOGY DIVISION REGARDING ADOPTION OF OPEN DOCUMENT FORMAT

Submitted to

The Honorable Marc Pacheco, Chair, Senate Post Audit Committee

Wednesday, November 16, 2005

I INTRODUCTION

On Monday, October 31, 2005, the Commonwealth of Massachusetts' Senate Post Audit Committee, presided over by its Chair, Senator Mark Pacheco, held a hearing with respect to the Commonwealth's Information Technology Division's (ITD's) adoption of the Open Document Format (ODF) standard for documents created in the Executive Department[1]. During the hearing, the Committee raised questions regarding legal issues related to ITD's adoption of the ODF standard. This brief is intended to address in more detail the legal issues raised at the hearing. ITD thanks Senator Pacheco for providing ITD with the opportunity to address these issues in writing.

II SUMMARY OF ARGUMENT

The Commonwealth of Massachusetts is a 23 bi1lion dollar enterprise that relies increasingly on the creation and use of electronic records. The majority of employees of that enterprise work in the Executive Department. ITD is the central agency assigned authority over the Executive Department's use and acquisition of information technology. ITD issued the latest version of its Information Technology architecture plan, known as the "Enterprise Technical Reference Model Version 3.5" or "ETRM 3.5", on September 21, 2005. ETRM 3.5 contained a requirement that as of a certain date all documents created within the Executive Department be created in a version of the reference schema for Extensible Markup Language (XML) known as the Open Document Format 1.0, an industry standard created through an open process and licensed under minimally restrictive terms. The standard, which has been adopted by the Library of Congress for electronic record preservation, and is being used by the National Archive and Records Administration in their Electronic Records Archive project, was adopted after a lengthy process conducted by ITD involving legal research, discussions with information technology experts, and an informal notice and comment process involving all three branches of state government and every Executive Department agency.

In adopting the ODF standard, ITD acted within its legal authority because:

[1] The only member of the Committee present in addition to Senator Pacheco was Senator Moore.

(1) In adopting the ODF Standard, ITD did not violate any state or Federal disability law, although ITD's implementation of the standard must be conducted in a manner consistent with those laws;
(2) ITD was not required by law to use the formal notice and comment process set forth in the Commonwealth's Administrative Procedures Act in connection with the issuance of the ODF standard;
(3) ITD did not violate any law pertaining to the Commonwealth's Information Technology Advisory Board in connection with the adoption of the ODF standard;
(4) Under its enabling legislation, Mass. Gen. L. ch. 7 section 4A(d), and under the Commonwealth's Uniform Electronic Transactions Act, Mass. Gen. L. ch. 110G section 17, ITD has clear authority to adopt standards pertaining to the formats of electronic documents created in the Executive Department[2]; and
(5) Adoption of the ODF standard did not create an illegal procurement preference.

III FACTS

A. The Information Technology Division.

The Commonwealth of Massachusetts has an annual budget of approximately $23 billion and employs roughly 80,000 people. The Information Technology Division ("ITD"), a division of the Commonwealth's Executive Office of Administration and Finance (ANF), has powers including "setting information technology standards" for the Executive Department, which employs roughly 55,000 of the Commonwealth's employees. See Mass. Gen. L. ch. 7 sec. 4A(d).

ITD has evolved into the central information technology ("IT") organization for the Executive Department, but also serves some enterprise functions for all branches of state government. It employees over 250 technologists and IT financial, legal and policy experts; roughly 1700 technologists are employed by other agencies in the Executive Department. ITD manages and maintains the Commonwealth's wide area network; runs a state of the art data center that hosts almost all of the Commonwealth's mission critical IT systems; hosts the Commonwealth's e-government portal, Mass.gov; and operates enterprise IT systems, including a central e-mail system, a central human resources system, and a data warehouse for the Commonwealth's electronic financial and human resources data. It also develops enterprise-wide applications; operates telecommunications facilities and a mail room; makes recommendations to the Secretary of ANF for the distribution of approximately $80,000,000 in information technology bond funding annually; sponsors a number of enterprise wide IT related groups such as the Enterprise Security Board, the WebMasters Group, the TechLaw Practice Group, and

[2] Throughout this brief, ITD uses the term "Executive Department" to refer to those agencies under the direct authority of the Governor, excluding the Constitutional Offices of the State Auditor, the Attorney General, the Secretary of the Commonwealth, and the State Treasurer (although in contexts other than pure administration the Governor may have authority over them as well).

the Enterprise Architecture Council; and has issued hundreds of individual standards related to the acquisition and use of information technology by Executive Department agencies[3].

B. The Nature of the Electronic Records Held by the Executive Department.

Today, IT and the use of electronic records permeate every aspect of the Executive Department's activities. As more and more Commonwealth business is performed electronically, and an increasing number of electronic records are created, ITD's role has become more critical. Reflecting broader trends in society, the Commonwealth has increasingly moved from paper to electronic processes and from face to face, traditional mail and telephone communications to web-based, email and other IT supported processes. State employees employ sophisticated IT from desktop PCs and complex software systems to cellphones, handheld devices, laptops, notebook computers, Palm Pilots, and Blackberry devices.

As a result of the proliferation of IT throughout the Executive Department, its agencies have, over the past several decades, generated billions of electronic records[4], some of which are now decades old. Some electronic records, regardless of age, are retained by agencies because they are currently in use by state agencies. A licensing agency, for instance, may retain years and even decades of licensing records because it needs to know whether a current applicant for license renewal has ever had his license revoked. Some electronic records are retained by agencies because, although the agency has no operative need for them, the agency is required to save them, for the short or long term, under the Secretary of the Commonwealth's Records in Common Schedule[5]. The Records in Common Schedule sets forth the records retention rules for all of the records generated by the Executive Department that are not currently in use by the Executive Department. The Schedule does not specify where the documents must be held, but how long they must be held for state government. ITD worked extensively with the Secretary of the Commonwealth's Records Management Unit to draft the current version of the electronic records provision of the Records in Common Schedule.

In an ideal world, the Commonwealth's state Archive would have a digital archive for the storage of this second category of electronic documents. ITD has repeatedly encouraged the Secretary of the Commonwealth, who maintains the state Archive and to whom the Supervisor of Public Records reports, to seek IT bond funding for the creation

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[3] ITD's published standards are available online at www.mass.gov/itd. click on "Policies, Standards and Legal"; ITD makes some of its security-related standards available only through its intranet site, which is not available to the public, and other sources.

[4] ITD, for example, holds over 118,000,000 personnel records from the PMIS and CAPS personnel and payroll systems. These payroll systems have been replaced by the Human Resources Compensation Management System, but their data is still used by state agencies.

[5] The Records in Common Schedule, available online at http://www.sec.state.ma.us/arc/arcrmu/rmuidx.htm is a list of the types of records that state agencies typically hold, and the rules governing how long they must be held. The Schedule does not specify where the documents must be held, but how long they must be held by state government.

of a digital archive[6]. Today the Commonwealth's state Archive is primarily a paper-only facility[7]. Because there is no state digital archive[8], only a small proportion of agencies have transferred electronic records destined for short and long term retention under the Records in Common Schedule to the Secretary's custody. The electronic records of those relatively few agencies that have taken this path have been shipped to private sector document storage facilities where they are not accessible online. The Archive itself may store some paper records that have been migrated to non-digital electronic formats like microfiche and optical character recognition media. These records, "born" as paper and only converted to a non-digitized electronic format later in their lifespan, are not subject to the ODF, which applies only to lifecycle electronic records (i.e. those records that are born, life and dies in electronic form) and are not the subject of the current dispute regarding ITD's adoption of the ODF standard. ITD looks forward to working with the Secretary of the Commonwealth on the development of a state of the art digital archive to which agencies can transfer no longer used electronic records[9]. In the meantime, the Executive Department holds, and ITD must continue to manage, both currently used and non-currently used electronic records generated over decades.

C. Standards Issued by ITD Inevitably Affect Electronic Public Records

ITD's authority to set standards extends only to the Executive Department agencies. Its standards, including the ODF standard that is the subject of this brief, apply as a matter of law only to the Executive Department[10]. They do not apply to the

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[6] A few days before the Senate Post Audit Hearing, the Supervisor of Public Records took ITD up on its offer to assist in the development of an investment brief for the study of the acquisition of a digital archive. The Supervisor's initial draft of that brief, a copy of which is attached hereto as Exhibit A, makes clear that the Supervisor does not have any digital archive, whether for optically scanned paper documents or life-cycle electronic records.

[7] An email of Alan Cote to ITD's General Counsel dated November 2, 2005, in response to a request from the General Counsel for a tour of the Commonwealth's Archive. Mr. Cote states: "A tour of our paper records center and Archive is usually available, I will contact the facility for a date. The electronic process is not accomplished in one location or by one person. There is no tour available for this process." ITD is aware that the Archive may hold some microfiche and microfilm copies of paper records, as well as paper records converted to optical media, but to ITD's knowledge the Archive does not hold the vast majority of the lifecycle electronic records that require short or long term preservation.

[8] The Secretary of the Commonwealth cannot be criticized for the Commonwealth's lack of a digital archive. The only state in the U.S. with a digital archive, Washington state, has only begun to migrate documents to its electronic facility. The Federal government's Electronic Records Archive is under development. As noted elsewhere in this brief, ITD stands ready to assist the Secretary of the Commonwealth is building a state of the art digital archive.

[9] Creation of a digital archive will be no simple matter and will involve more than the transfer of not currently used electronic records to the Archive. Some electronic records held by the Executive Department are only accessible through complex software applications that the Executive Department houses; some records that fall into this category are housed in abandoned proprietary systems, while others are dynamically generated by the applications still in use and are therefore currently inseparable from those applications. Even if the Commonwealth had a digital archive, some historic electronic records might have to remain in the Executive Department agency housing the applications through which they are dynamically created.

[10] The one exception to this rule is standards governing enterprise wide systems that ITD runs. For example, agencies are not required to host applications at MITC Chelsea, ITD's data center, but if they do

Legislature, Judiciary, or Constitutional Offices (the Office of the State Auditor, the Office of the Attorney General, the Office of the Secretary of the Commonwealth, and the Office of the State Treasurer)[11], or to any records held by them.

In order to efficiently and securely administer the Executive Department's IT systems, ITD has adopted hundreds of information technology standards, almost all of which affect public records in some way. For instance, ITD has adopted policies permitting agencies to use "virtual private network" (VPN) a system by which state employees and others can gain remote access to the Commonwealth's IT systems and electronic records. VPN technology permits the state's telecommuting employees and field employees to create, amend, and store the state's public records at locations remote from its brick and mortar offices. ITD has heavily promoted the use of web sites and online transactions by state agencies in connection with their interactions with citizens, thus causing the proliferation of public records formatted in Hypertext Markup Language or HTML. ITD's Web Accessibility guidelines require that where agencies post online public records in electronic formats that are not accessible to the disabled, that they also post them in accessible formats. It is impossible for ITD, in its capacity as chief IT organization for the Executive Department, to manage a 21st century IT environment without having the discretion and authority to issue policies and standards that profoundly affect the creation and storage of public records within the Executive Department by Executive Department agencies, including their formats.

D. ITD's Issuance of the ETRM and the ODF Standard

1. Early Versions of the ETRM.

In 2002, the Legislature created the temporary Information Technology Commission ("IT Commission") for the purpose of recommending an enterprise-wide strategy, including all three branches of government (Executive Department, Legislature, and Judiciary) and the constitutional offices (Auditor, Treasurer, Attorney General, and Secretary of the Commonwealth) for the Commonwealth's "information technology infrastructure, system development and governance".[12] In its final report, issued on February 27, 2003, the IT Commission noted, among other things, that the Commonwealth's diverse and uncoordinated acquisition and use of heterogeneous information technology had created information silos; that insufficient resources were allocated to defining and advancing enterprise standards; and that architecture and standards are not aligned to adequately support the needs of the business of government. It recommended that the Commonwealth update its existing information technology architecture. The Commission also noted that, although the Commonwealth could not, due to the Commonwealth's constitution's requirement for the separation of powers

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so, they must follow ITD's security rules. The ETRM does not fall into this excepted category, and applies only to the Executive Department.

[11] ITD and ANF personnel have been quoted in the past referring to the application of the ODF standard to the "Commonwealth" and the "Commonwealth's records". Such comments were overstated because in fact ITD's jurisdiction, and therefore the applicability of its standards, as noted above, does not extend beyond the Executive Department.

[12] Acts of 2002, ch. 142, sec. 6

among the branches, have a single Chief Information Officer for all three branches, or even a central multi-branch entity governing information technology for all three branches, it could and should create a multibranch information technology advisory board.

In response to the recommendation of the IT Commission, ITD intensified its previous efforts to develop an information technology architecture for the Executive Department. Beginning in 2003, it created the office of the Chief Technology Officer (CTO), who hosted an Enterprise Architecture Council (EAC) comprised of members of various Executive Department agencies including ITD.

ITD named its evolving architecture plan the "Enterprise Technical Reference Model" or ETRM. The first draft of the ETRM was based on a general model used by the National Council of State Chief Information Officers and by Federal government agencies[13].

Throughout the development of the ETRM, ITD sought input from the EAC. In addition, as each version of the EAC was proposed by ITD, ITD circulated it to Executive Department CIO's and the IT staff for each of the Constitutional Offices (including the Secretary of the Commonwealth), all of whom are on ITD's CIO mailing list. Thereafter, ITD posted the relevant version of the ETRM online for public comment and distributed it to the Executive Department's CIO. In response to these postings, ITD received hundreds of comments from state agencies, citizens of Massachusetts, other states and other countries, and from technologists around the world. Following receipt of comments about the draft versions of the ETRM posted, ITD has always made responsive changes to the document. ITD's first CTO invited the Supervisor of Public Records to a meeting at which the commencement of the architecture project was discussed, and, as noted above, thereafter circulated copies of the evolving ETRM to the Secretary of the Commonwealth's IT staff.

The overarching goal of the ETRM is to create a web-based service oriented architecture. Such an architecture relies on the acquisition and development of technology based on open standards. The ETRM was a tool that ITD sought to use to ensure that all of the information technology that Executive Department agencies acquired or made use of was built to certain open standards so that communication between systems was seamless and parts could be replaced without disturbing the whole.[14]. Although ITD hoped that other branches of state government would adopt the

[13] The Introduction to the ETRM states that "The Enterprise Technical Reference Model (ETRM) provides an architectural framework used to identify the standards, specifications and technologies that support the Commonwealth' computing environment. The Commonwealth uses the concept of Domains, Disciplines, Technology Areas and Technology Specifications to define the enterprise architecture". From a layperson's perspective, the ETRM is the blueprint for the Executive Department's ever growing information technology "house". The ETRM has and will change over time as ITD addresses different standards and the needs of the Executive Department change.

[14] Consistent with its drive toward a standards based architecture, on January 13, 2004, ITD adopted an Enterprise Open Standards Policy that required that all Executive Department agencies acquire only open standards information technology. It also adopted an IT Acquisition Policy that required that agencies,

ETRM, it realized that it lacked the constitutional or statutory authority to require them to do so, and never attempted to require that the other branches of state government or the constitutional offices abide by the various versions of the ETRM. (Nonetheless, on its own, prior to the issuance of ETRM 3.5, the Trial Courts decided to rolled out 2,000 copies of an office application supporting ODF on the desktops of Trial Court employees).

2. The Development of the Data Formats Section of the ETRM.

Like the construction and electrical industries, the information technology industry has developed some industry standards. One of those standards is for a language called "Extensible Markup Language", or XML. XML is an open standard for data interchange that permits documents created by different information technology systems using an available open reference schema to interact with one another. XML has been adopted by the World Wide Web Consortium (W3C). It is becoming the lingua franca of the information technology world.

The current version of the ETRM adopted by ITD is version 3.5. Three prior versions, 1.0, 2.0, and 3.0 were posted online. Versions 1.0 and 2.0 were adopted by ITD with minor modifications. Versions 1.0 and 2.0 of the ETRM were posted online by ITD for public comment on April 21, 2004 and May 5, 2004. ETRM Version 2.0 was the first version of the ETRM posted for public comment by ITD that dealt with the topic of XML as a "data format".

Prior to publishing ETRM Version 3.0 for comment, ITD struggled with the question of what data formats should be included in the Executive Department's architecture. ITD knew that XML had to be a part of a service oriented architecture. However, in the area of document formats, there are multiple versions of the XML reference schema. The two that ITD considered including were the OASIS Open Document Format standard and the Microsoft Office 2003 XML Reference Schema. When ETRM 3.0 was first posted online for public comment, it included both of these versions of XML.

The OASIS version of XML, ODF 1.0, was developed through an open process and adopted by a standard setting body, OASIS. ODF 1.0 is currently being considered for fast-track adoption by the International Standards Organization ("ISO"), an international standard setting organization. ODF 1.0 is completely transparent, containing no binary elements, and is fully available for inspection. The ODF 1.0 reference schema is subject to a copyright held by OASIS, and a patent or patents held by Sun Microsystems, but both are licensed under licenses imposing minimal legal restrictions on licensees.

Microsoft, Inc. has also made available a reference schema for the version of the XML reference schema used in Microsoft Office 2003. That schema is referred to in this brief as "Office XML". Office XML is copyrighted and patented by Microsoft.

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while making the "best value" IT acquisitions required by state law, consider both proprietary and open source solutions. ITD's written policies have never required agencies to procure open source information technology, or given a preference to such technology.

Microsoft published its copyright license for Office XML in November of 2003, and issued its patent license for Office XML in December of 2003. The copyright and patent licenses under which MS licenses Office XML are much more open than Microsoft's proprietary licenses, but contain more legal restrictions on licensees than do the copyright and patent licenses to which ODF 1.0 is subject. Despite the laudable openness of the Office XML reference schema in comparison to completely proprietary formats, it is, according to most experts, not as open as ODF 1.0. In addition, the Microsoft version of the XML reference schema, which is published online, contains non-transparent binary elements that make Office XML less useful in a service oriented architecture environment than ODF 1.0[15].

The inclusion of binary elements in the Office XML schema will have an impact on software developers today who want to write office applications that support Office XML, and on software developers in the far future who want to write office applications that will open and read archival documents created in Office XML because the original MS Office application is no more available than nine-track tape players are today. The plight of such developers is akin to that of a translator who is given a copy of Tolstoy's *Anna Karenina* in Russian. If he is given the full text of the novel in Russian, he can translate it into the language of his readers' time and place. If, by comparison, he is given a copy of the Russian text of *Anna Karenina*, with holes snipped in the pages so that there are large gaps in the text, he cannot render a faithful translation. In the latter case, Tolstoy's "Happy families are all alike; every unhappy family is unhappy in its own way" might be reduced to gibberish: "Happy __families are _ all ____families unhappy". In the same way, the developer who would write code to create or read documents formatted in Office XML must be frustrated in his efforts by the presence of the "blanks" in the reference schema created by Microsoft's inclusion of proprietary binary elements.

For IT consumers like state governments, two practical results flow from Microsoft's patenting of the Office XML schema, the language of its copyright and patent licenses, and the reference schema's binary elements. First, fewer developers are likely to develop office applications that support Office XML, thus severely reducing competition for office applications. Second, years in the future, when today's office applications are no longer available, and when agencies or citizens attempt to read today's electronic records, there will be no means by which to create office applications to read such records.

ITD entered a negotiation with Microsoft beginning in late summer of 2004 to attempt to increase the openness of the Office XML reference schema. ITD's goal was first, to obtain an agreement from Microsoft that they would disclaim their patent in Office XML and second, failing that, that Microsoft would loosen the legal restrictions

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[15] Microsoft describes the binary elements as follows in a June 2005 white paper entitled "The Microsoft Office Open XML Format"

> In many instances, it is advantageous to have parts stored in their native content type. These parts are not stored as XML. Images in an Office document, for example, are stored as binary files (.png, .jpg, and so on.) within the document package . . .Other notable parts stored as binary parts are VBA projects and embedded OLE objects.

that impeded the licensing scheme for Office XML. ITD and Microsoft were unable to agree on the disclaimer of the patent, but did agree on three changes to the patent license that loosened the legal restrictions on use of Office XML[16]. MS made the changes agreed to by the parties to the negotiations. On January 15, 2005, before the Mass Software Council, Secretary Kriss discussed the need for Open Formats and announced that the changes to the MS patent license for Office 2003 made it acceptably open to the Commonwealth, and as a result Office XML would be considered an acceptable de facto standard format for purposes of the ETRM. On January 27, 2005 Microsoft issued its revised worldwide patent license and a clarification letter. The terms of the revised patent license were consistent with the agreement between Massachusetts and Microsoft.

From March 22, 2005 through April 1, 2005, ITD posted online Version 3.0 of the ETRM, which listed both MS Office XML and ODF as open formats. Both formats as well as PDF were described in the ETRM as acceptable for use by Executive Department agencies. Thereafter, ITD received a firestorm of negative comments regarding its inclusion of Office XML as an acceptably open standard, received via emails and through the technology press in response to the posting of draft ETRM 3.0. Due to the negative comments, ITD deleted from the ETRM the entire section on data formats and published the final version of ETRM 3.0 online on May 27, 2005 without it. Thereafter ITD continued its deliberations regarding how best to address data formats.

At its May 11, 2005 meeting, ITD's General Counsel made a presentation to the Information Technology Advisory Board (the "IT Advisory Board"), a board including representatives from ITD, the Legislature, the Judiciary, the IT industry and IT consumers, created by the Legislature in response to the IT Commission report. The presentation pertained to ITD's deliberations regarding the issue of whether to include Office XML in the document format section of the ETRM. She noted both the goals achieved and the progress not made in the MS negotiation, and ITD's struggle over the issue of acceptable data formats as it was treated in the ETRM.

As it deliberated on the issue of how to treat data formats in the ETRM, on June 9, 2005, ITD invited the Supervisor of Public Records, members of OASIS, legal counsel, and industry representatives, to an Open Document Format Summit. Summit attendees discussed the fact that there were no single criteria for openness, but there was a continuum of openness dependant upon licensing, functionality, interoperability, an open process (including peer review) for creating and maintaining the standard on which the format is based, and adoption by a standard setting organization. Attendees also noted that the Commonwealth as an IT consumer had to consider migration, backward and forward compatibility, and the marketplace. All attendees who spoke agreed that XML itself was a necessary component of a modern information technology architecture. Most of the attendees present agreed that the license terms and the nature of the Office XML

[16] Microsoft has been and continues to be a good business partner to the Commonwealth. The Microsoft employees involved in the negotiations over the XML reference schema patent license listened to the Commonwealth's concerns and worked diligently and thoughtfully over a long period of time to attempt to address the Commonwealth's concerns. ITD looks forward to continuing to work with Microsoft in the future.

reference schema did not meet the emerging standard for "openness", and many of the attendees present who spoke urged Microsoft to further open Office XML.

On July 28, 2005, ANF and ITD met with Microsoft as a courtesy to inform them that, as a result of the massive negative public comment received by ITD in response to the posting of the draft version of ETRM 3.0, the next draft of the ETRM, version 3.5, to be posted for public comment would include a data formats section that would not include Office XML due to its relative lack of openness. At that time, ITD also requested that Microsoft include support for ODF in a future version of Office. Microsoft has since declined to do so[17].

From August 29, 2005, through September 9, 2005, ITD posted online draft ETRM Version 3.5, which listed ODF 1.0 and other formats (.txt, .html) as *open* formats, and PDF versions 1.5 or higher as *acceptable* formats for use by Executive Department agencies for the creation of documents. The ETRM by its own terms did not apply to documents held by any entities outside of the Executive Department, including documents stored in an archive or at any location by the Secretary of the Commonwealth.

3. ETRM 3.5 and the ODF Standard

On September 16, 2005, Secretary Kriss, CIO Peter Quinn and General Counsel Linda Hamel appeared before the Mass. Technology Leadership Council and discussed ITD's preference for ODF 1.0. Shortly thereafter, after reviewing over 100 comments submitted electronically regarding draft Version 3.5, ITD made some minor changes to the draft version and published it as a final standard applicable to the Executive Department on September 21, 2005.

The Information Domain section of ETRM 3.5 contained, among other things, sections on data interoperability, data management, and data formats. It explicitly left blank sections on "records management, records formats, archiving, and records metadata". ITD felt that these sections, which pertained to how public records were formatted, archived as public records, and managed, were beyond the scope of ITD's sole authority and needed to be developed in conjunction with the Supervisor.

Exhibit B hereto sets forth the full language of the "Information Domain" section of ETRM 3.5[18]. The section pertaining to ODF states, in pertinent part:

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[17] Microsoft is clearly capable of including support for ODF 1.0 in a future version of Office; on October 2, 2005, it announced that Office 12, the soon to be released new version of Office, would support another open standard format, PDF. Microsoft's Steve Sinofsky said of PDF: "We're happy to take advantage of the openness of the PDF format to include this in Office "12" for our customers". Microsoft PressPass Information for Journalists, available online at ttp://www.microsoft.com/presspass/features/2005/oct05/10-02OfficePDF.mspx.

[18] The full version of ETRM 3.5 is available online at www.state.ma.us/itd

Information can be captured and exposed via a variety of data types. For example, information can be captured as text, numbers, maps, graphics, video and audio. The software used to create data files stores these files in different data formats. These formats can be proprietary and therefore controlled and supported by just one software developer. Formats can also be non-proprietary or open.

The Commonwealth defines ***open formats*** *as specifications for data file formats that are based on an underlying open standard, developed by an open community, affirmed and maintained by a standards body and are fully documented and publicly available.* ***It is the policy of the Commonwealth of Massachusetts that all official records of the Commonwealth be created and saved in an acceptable format as detailed below.***

BOUNDARY

The Data Formats Discipline addresses the acceptable formats in which data can be presented and captured. Data formats for the long term conservation of files will be addressed in the Records Management Discipline. . . .

ROADMAP

Information that traditionally has been presented in text form is increasingly being enriched through the use of multimedia data types such as graphics, audio and video. The variety of data formats used however raises concerns regarding interoperability and accessibility. Given that XML is the cornerstone of the Commonwealth's Service Oriented Architecture (SOA) vision of a unified enterprise information environment, it is crucial that the schema used to create XML files meet the open format definition as well. The target state is the ubiquitous use of open formats to capture and store data within applications and in individual data files. . . .

DESCRIPTION

The Open Formats Technology Area addresses open standards and specifications for the presentation of data as office documents, text, numbers, maps, graphics, video and audio. The selection of format must consider the access channel being used (Web, PDA, cell phone), the nature of the data and structure (legal requirements that address preservation of document structure), and ease of accessibility for users. . .

TECHNOLOGY SPECIFICATION: OASIS OPEN DOCUMENT FORMAT FOR OFFICE APPLICATIONS (OPENDOCUMENT)

Description *– The OASIS Open Document Format for Office Applications (OpenDocument) is a standardized XML-based file format specification suitable for office applications. It covers the features required by text, spreadsheets, charts, and graphical documents. The specification was recently approved by OASIS as an open standard. OASIS has also submitted the standard to ISO for consideration as an international standard for office document formats.*

Guidelines *– The OpenDocument format must be used for office documents such as text documents (**.odt**), spreadsheets (**.ods**), and presentations (**.odp**). The OpenDocument format is currently supported by a variety of office applications including OpenOffice.org, StarOffice, KOffice, and IBM Workplace.*

Standards and Specifications *–*

- *OpenDocument v. 1.0 – Defines an XML schema for office applications and its semantics. The schema is suitable for office documents, including text documents, spreadsheets, charts and graphical documents like drawings and presentations, but is not restricted to these kinds of documents.*

  Refer to: http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=office

Migration *– Given the majority of Executive Department agencies currently use office applications such as MS Office, Lotus Notes and WordPerfect that produce documents in proprietary formats, the magnitude of the migration effort to this new open standard is considerable. Agencies will need to develop phased migration plans allowing them to configure existing applications to save office documents by default in the OpenDocument format with an implementation date of January 1, 2007. Any acquisition of new office applications must support the OpenDocument format natively.*

Agencies should begin to evaluate office applications that support the OpenDocument specification to migrate from applications that use proprietary document formats. As of January 1, 2007 all agencies within the Executive Department will be required to [1]:

1. *Use office applications that provide conformance with the OpenDocument format, and*
2. *Configure the applications to save office documents in OpenDocument format by default.*

4. The Impact of the Executive Department's adoption of the ODF Standard on the Commonwealth's Future Digital Archive

Today, Executive Department agencies are faced with the task of storing older electronic records because they are currently in use by the agency, or because they are not in current use but there is no state digital archive to which to transfer them. In the near future, ITD hopes that agencies can transfer electronic records requiring long term storage to a digital archive maintained by the Secretary of the Commonwealth. As noted elsewhere in this brief, ITD looks forward to working closely with the Secretary to study, obtain funding for, and build the Commonwealth's first state of the art digital archive for lifecycle electronic records.

One might well ask what impact will ITD's adoption of the ODF standard have on such an effort on the Secretary's part. Based on the statements of the Supervisor of Public Record, and on comments from experts in digital archiving, there would appear to be no negative impact. Allen Cote stated at the hearing that, currently, at the state archives, "Preservation professionals under the direction of Dr. Warner, the state Archivist, convert all electronic records into multiple forms and formats…this process renders the issue of how a record is created moot…."[19]. Alan Cote recently stated to ITD's general counsel, in reference to the generation of ODF formatted documents by the Executive Department, that when documents are migrated from the Executive Department to the archives "We will accept all formats". This vision is consistent with that of the only state digital archive in the U.S., that of the State of Washington, whose Digital Archivist, Adam Jansen, stated in a speech given on November 15, 2005 before the National Electronic Commerce Coordinating Council that "we don't care how agencies create data" and "we are not telling our agencies how to generate data" but that the Washington Digital Archive, on receipt of heterogeneously formatted data, converts it into the open standard format PDF-A[20]. Similarly, the National

[19] Supervisor Cote went on to testify that the Executive Department's generation of ODF formatted documents would somehow create a barrier to the process of converting electronic records into formats appropriate for long term storage, but failed to explain how the existence of such documents could be an obstacle for the Commonwealth's present or future processes for conversion of electronic documents into long term storage formats, especially when the only operating state digital archive in the U.S. accepts ODF formatted documents, as will NARA's ERA archive.

[20] Digital Archivist Jansen made other comments that shed light on the problems currently faced by the Commonwealth. He pointed out that in the absence of digital archives, state IT personnel in all states have become de facto archivists; that until state digital archives are created Executive Department agencies in each state need to concern themselves with the problem of appropriate non-proprietary formatting for lifecycle electronic records; that proprietary formats were inappropriate for the long term storage of electronic records; that the Washington Archive was built to the open standard known as the Open Archival Information Systems Standard; and that maintaining electronic records in a vastly distributed environment where citizens cannot easily access them is "no way to conduct a government". Even the state of Washington's digital archive is in its infancy, and has captured only a tiny fraction of the records, electronic or paper, generated by counties and the state, implying that even in the State of Washington most electronic lifecycle records that require short or long term storage must be managed by Executive Department agencies.

Archives and Records Administration's Electronic Records Archives Project, as well as the Library of Congress' electronic records preservation project, imports documents formatted in many different electronic formats prior to converting them into non-proprietary, open standard formats.

Rather than complicating the creation of a digital archive, the adoption of the ODF standard should simplify the Secretary of the Commonwealth's efforts in that regard, because ODF formatted documents are formatted to an open standard and can easily be translated to other formats, whether proprietary or open, for short term retention or long term archival purposes.

IV LEGAL ANALYSIS

A. ITD's Mere Adoption of the ODF Standard, Prior to Implementation, Did Not Violate any State or Federal Disability Law.

The equal rights of the community of persons with disabilities are protected by law under the Americans with Disabilities Act, the Rehabilitation Act, Amendment CXIV to the Commonwealth's Constitution, Mass. Gen. L. ch. 151B, and Executive Order 348. These rights include the right not to be marginalized as citizens or employees by the Commonwealth's use of inaccessible technology. Today, according to citizen advocates for this community, the dominant office application, in combination with third party software, provides an acceptable, although not perfect, measure of accessibility to these citizens. Although no one has argued that ODF 1.0, which is only a document format, is in and of itself inaccessible, advocates for the disabled have suggested that the office applications currently capable of supporting ODF are inaccessible[21]. The Senate Post Audit Committee entertained the question of whether, in issuing ETRM 3.5, ITD violated the foregoing disability laws.

Not having chosen any products for the implementation of ODF 1.0, and not having yet implemented the ODF 1.0 policy, or even developed a specific implementation plan for any specific agency, ITD has not violated any law related to the rights of our citizens who are among the community of persons with disabilities. It is the office applications that support ODF, after all, not ODF itself, that is less accessible than the status quo. ITD is cognizant of the accessibility problems related to the applications that support ODF and does not intend to violate the laws protecting the rights of the community of persons with disabilities in implementing the ODF standard.

[21] The accessibility problems related to office applications that currently support ODF constitute compelling reasons for Microsoft, whose Office applications offer an acceptable degree of accessibility, to support ODF.

Beginning in late August of 2005, and based on comments and responses received by it in response to its posting of the draft version of ETRM 3.0, ITD learned for the first time from the comments filed with it beginning in late August of 2005 in response to the posting of draft ETRM 3.5 online of the accessibility problems associated with applications that support ODF 1.0. It is working closely with the four Executive Department agencies[22] that work with and advocate for the community of persons with disabilities, as well as with vendors and the software development community, to develop an acceptable level of accessibility for the use of applications supporting ODF 1.0. ITD invites the community of persons with disabilities to help us in this effort. The timing, pace, and scope of the implementation process for the ODF 1.0 policy will be subordinated to the legal and moral rights of the disabled. ITD intends to tailor its implementation of the ODF standard to there will be no violation of those rights.

B. ITD's Issuance of the ETRM was Not Subject to the Commonwealth's Administrative Procedures Act in Connection with the Adoption of the ETRM.

Critics of ITD's adoption of the ODF Standard have argued that ITD should have used the notice and comment process found in the Commonwealth's Administrative Procedures Act, Mass. Gen. L. ch. 30A ("APA") prior to adopting the ETRM. But there is no basis in law for this argument. Unlike other state agencies clearly subject to the APA, ITD is not authorized under its enabling legislation to issue regulations. There is no reference to the promulgation of regulations, or specific reference to the APA, in ITD's enabling legislation, Mass. Gen. L. ch. 7, sec. 4A(d). Although ANF is clearly authorized to issue regulations, there is no statutory reference in the General Laws to ANF exercising its explicit rulemaking authority to adopt regulations related to the information technology standards issued by ITD. By comparison, for example, the enabling legislation for ITD's sister ANF agency, the Operational Services Division, and other statutes, clearly contemplate ANF's issuance of regulations pertaining to state procurement. See Mass. Gen. L. ch. 7, sec. 4A; MGL c. 7, s. 22; MGL c. 30, s. 51, s. 52[23].

Furthermore, the ETRM does not meet two of the threshold tests for standards subject to the APA. First, under the APA, a standard must be a "rule, regulation, standard or other requirement of general application" in order to be subject to the formal notice and comment rules. Mass. Gen. L. ch. 30A, s. 1(5). The ETRM, a standard governing only Executive Department state agencies in the conduct of their internal affairs, is clearly not a standard of "generally application" to the Commonwealth's citizens". The ETRM does not govern the format in which citizens file documents with state government or even the

[22] Massachusetts Office on Disabilities, Massachusetts Commission for the Deaf and Hard of Hearing, Massachusetts Commission for the Blind, and Massachusetts Rehabilitation Commission.

[23] Even OSD, whose procurement related activities are subject to regulation, has engaged in a significant amount of standard setting regarding the rules internal to state government that agencies must follow in conducting procurement, without the use of APA rulemaking process. See the Operational Services Division Handbook, available online at www.mass.gov/osd.

format in which the Executive Department produces public records to them[24]. It does not govern our citizens or businesses at all.

Second, adoption of the ETRM does not meet the second threshold for regulations passed by state agencies that are subject to the APA. The APA further refines the definition of standards subject to the APA by defining the term "regulation: to exclude "*regulations concerning only the internal management or discipline of the adopting agency or another agency, and not substantially affecting the rights of or the procedures available to the public or that portion of the public affected by the agencies' activities*". The SJC has made clear that regulations subject to the APA manifestly do not include regulations of the internal workings of state government. See, e.g., Commonwealth v. Trumble 396 Mass. 81 (1985)(guidelines promulgated for conducting roadblocks to detect drunk driving not "regulation" because directed solely toward state troopers and instructed them as to manner in which to fulfill their duties, and thus, concerned internal management of state police, despite potential implications of such rules for citizens' constitutional rights).

Not only does the ETRM not meet the formal technical requirements for classification as a regulation under the APA; application of the APA to such a standard would be both inconsistent with the purpose of the APA and entirely impractical. The APA was adopted for the purpose of protecting the due process rights of our citizens against state government, rather than the rights of agencies against ANF. As one commentator has noted,

> "The essence of modern administrative law is a continuing concern with the protection of the individual citizen from the arbitrary and abusive exercise of governmental power by administrative agencies or officials through federal and state constitutions, statutes, administrative agency rulemaking, or judicial decisions.

Mass. Practice Series, Vol. 38, Sec. 1, citing Kenneth Culp Davis, Administrative Law Treatise, Second Edition, Volume 1, sections 1:5 through 1:10, inclusive[25]. For this reason, virtually all other kinds of state administrative agency actions other than rulemaking or adjudication are beyond the reach of the Massachusetts Administrative Procedure Act. Mass. Practice Series, Vol. 38, s. 23, citing William J. Curran and Albert M. Sacks, "The Massachusetts Administrative Procedure Act", 37 Boston University Law Review 70 (1957). Other than the legitimate concerns expressed by the community of persons with disabilities, no one has named a single constitutional right of our citizens implicated by ITD's adoption of the ETRM.

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[24] Because it is possible for agencies to easily translate documents created in ODF from ODF into multiple binary formats currently used by Microsoft, citizens seeking copies of electronic public records created using ODF 1.0 will be able to receive documents in the format desired by them.

[25] The Federal APA, on which the Massachusetts APA was modeled, was also adopted to curb the historic abuse of the rights of individual citizens committed by government. See S. Breyer and R Stewart, Administrative Law and Regulatory Policy, Little, Brown and Co., 1985 2nd Edition, pp. 22 through 40

Significantly, not a single one of the many state and federal agencies across the country that have adopted IT architectures has used the regulation process required by the relevant state or federal version of the APA. This is not surprising, given that most agencies that adopt such standards have no regulatory authority over the public and are charged instead with good public administration. In its capacity as issuer of IT standards, ITD is one of the control agencies, distinct from the "line" state agencies and their executive offices, both of which deal with the public directly in an administrative capacity. ITD has no authority over any member of the public; its authority is limited to state government agencies. Under the general umbrella of the Secretary of ANF's responsibility for administering state government, ITD's authority extends only to making state government work internally. A requirement that all IT standards issued by ITD be subject to formal APA procedure would cripple the effective and efficient administration of information technology throughout the Executive Department, tying ITD's hands and politicizing technical decisions that should be made solely on the basis of good technology administration. Such a requirement would have broad and unfortunate implications for all other control agencies—the Human Resource Division, the Operational Services Division, and the State Comptroller, for example---which have collectively issued hundreds of internal rules applicable to agencies only regarding the internal administration of state government. Without the discretion to issue rules based on sound business judgment to administer the internal workings of state government, each of these agencies would be severely hampered. There is no basis in law to pursue the damaging remedy of stripping ITD of its authority to issue IT standards.

C. ITD Violated No Law Pertaining to the Role of the IT Advisory Board in Connection with the Issuance of ETRM 3.5

Critics of ITD's adoption of the ETRM have argued that ITD violated the law pertaining to the IT Advisory Board. ITD respectfully disagrees.

In 2004, in response to a recommendation of the temporary IT Commission, the Legislature created the Information Technology Advisory Board. Acts of 2004, ch. 149, section 390. The enabling legislation for the IT Advisory Board states:

> *SECTION 390. There shall be an information technology advisory board. The advisory board shall consist of 7 members including: the executive department's chief information officer; the legislative departments chief information officer; the judicial department's chief information officer; the chair of the senate committee on science and technology; the chair of the house committee on science and technology; and 2 members appointed by the governor for terms of 1 year each, 1 of whom shall have expert knowledge in the area of information technology, 1 of whom shall represent the interests of business and the other the interests of the consumers.*

The board shall annually, by July first of every year, draft, recommend and present for signature to the governor, the speaker of the house of representatives, the president of the senate, the chief justice of the supreme judicial court and the constitutional officers, a memorandum of understanding among and acceptable to the executive department, legislature, judiciary and constitutional offices that shall include information technology standards and a strategic plan for the signatories' acquisition and use of information technology. In addition, the advisory board shall advise the executive department's chief information officer on information technology issues, including the development of an enterprise vision, strategy and direction for the use of information technology in the executive department, the development of policy, strategic planning, and project selection criteria, and information technology architecture, infrastructure, information technology investments and security. The advisory shall also file annually, on July first of every year, a report with the governor, the speaker of the house, the president of the senate, the constitutional officers, and the chief justice of the Supreme Court, including its analysis and recommendations during the previous year.

The information technology board's membership shall meet regularly on a schedule to be determined by its members, but in any case no fewer than 4 times a calendar year. The members of the board shall serve without compensation but shall be reimbursed for their expenses actually and necessarily incurred in the performance of their duties. The information technology division's staff shall provide such assistance as the board may deem necessary.

Acts of 2004, ch. 149, s. 390.

One apparent criticism is that the ETRM is a "strategic plan" for the Commonwealth and that it therefore should have been agreed to by all members of the IT Advisory Board. But the ETRM is first, not a strategic plan, and second, not applicable to the Commonwealth as an enterprise.

A strategic plan is a high level roadmap for an organization's future. An example of a strategic plan is the E-gov Strategic Plan posted on ITD's website at www.mass.gov/it. Drafted by the former E-Government Task Force, that plan does not delve into technical standards at all but sets high level goals for the Commonwealth's evolving e-government. Another example of a strategic plan is Exhibit C hereto, a copy of a draft strategic plan (never adopted by ITD) for the Executive Department. The ETRM might flesh out an entity's strategic plan, but is certainly not a strategic plan in and of itself.

Even if the ETRM were a strategic plan for the Executive Department, the IT Advisory Board's enabling legislation does not require that the Board agree upon the Executive Department's own strategic plan for the Executive Department; rather it requires that the Board attempt to enter an MOU *"among and acceptable to the executive department, legislature, judiciary and constitutional offices that shall include information*

technology standards and a strategic plan for the signatories' acquisition and use of information technology. In other words, the Board is to attempt to reach agreement on a strategic plan that will apply *to every member of the Board*. As noted above, the application of the ETRM is much narrower than that of the strategic plan contemplated by the Board's legislation; while the strategic plan referred to therein would apply to all of the Boards' members, the ETRM by its terms and that of the Enterprise Open Standards Policy applies only to one signatory, the Executive Department.

There is nothing unconstitutional about the IT Advisory Board enabling legislation on its face.[26] But it would be unconstitutional for ITD, as a state agency, to interpret the statute in a manner inconsistent with its clear text, which refers only to strategic plans and then only to plans "for" all three branches of government, not to the Executive Department alone. And it would also be unconstitutional for ITD or any member of the Board[27] to interpret the statute in a manner that would require ITD's own IT architecture for the Executive Department to be held in abeyance until approved by the other branches of government represented on the Board, and by its unelected private sector members. The Supreme Judicial Court forbade one branch of government from subjecting the administration of its IT enterprise to another branch in In the Opinion of the Justices, 365 Mass. 639 (1974) (multibranch IT commission with power over administration of all three branches unconstitutional).

Critics have also argued that ITD bypassed the board in developing the policy. Although there was no unanimity among the Board regarding the policy, IT raised the issue with the Board and provided Board members with multiple opportunities to comment. The IT Advisory Board has only been in existence for a little over a year. It has had only four meetings, at half of which the subject of electronic document format standards has been presented at length by ITD. ITD's inclusion of the topic of document formats at half of the Advisory Board's meetings[28] hardly constitutes an effort by ITD to bypass the Board. ITD raised the issue at two separate meetings with the Board prior to adoption of the standard.

According to its enabling legislation, the Board is advisory only in nature. It lacks statutory authority to control ITD operations and the standards issued by ITD. If the Board had reached a conclusion, as a Board, that issuance of the ODF Standard should be delayed by ITD, ITD may have delayed it, as a courtesy. However, the Board as an entity never took any official action to criticize ITD for the process by which it adopted the ETRM, or its content.

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[26] And, even if the Advisory Board's enabling legislation were unconstitutional on its face, ITD as a state agency would not have legal standing to challenge its constitutionality. MBTA v. Auditor, 430 Mass. 783 (2000) (MBTA cannot challenge constitutionality of privatization law).

[27] No member of the IT Board has suggested that ITD should have defined the ETRM as a strategic plan or that ITD was required to have a strategic plan or information technology architecture for the Executive Department alone signed off on by all members of the IT Advisory Board.

[28] Critics have also suggested that ITD, which supports the Advisory Board, has failed to call sufficient Advisory Board meetings. In fact, ITD has repeatedly called for meetings only to postpone them after finding that due to conflicting commitments members cannot attend or send a staff representative.

ITD made repeated efforts to engage the Board in a discussion of the data format section of the ETRM. The IT Advisory Board has met four times since its inception, on March 28, 2005, May 11, 2005, June 5, 2005, and September 14, 2005. At half of those meetings, ITD raised the topic of open formats. As noted in the Facts section above, ITD's General Counsel made a presentation to the Board members in May of 2005 regarding ITD's struggles to define acceptably open formats, and the Board devoted a lively meeting in September of 2004, prior to ITD's final adoption of the policy. Prior to both the September meeting of the Advisory Board, or the commencement of the public comments period for ETRM that commenced on August 29, 2005, ITD notified the IT staff of each Board member so that they would have additional time to provide commentary.

As to the formal membership of the Board, ITD was well aware that the majority of the Board either supported ITD's position or was neutral. The members of the Board in September of 2005 when the ETRM 3.5 was adopted included Peter Quinn, ITD's CIO; Dan Bricklin, representing IT consumers; Bob Stack, representing the IT industry, Representative Bosley and Representative Hart from the Legislature, and the Trial Courts' CIO, Craig Burlingame. ITD was aware in September of 2005 that during his public sector tenure Mr. Stack had co-authored the ETRM; that Mr. Bricklin had questions about implementation but was strongly in favor of the ETRM and the ODF standard; that Mr. Burlingame had already rolled out 2,000 desktops supporting ODF in the trial courts of the Commonwealth; and that Rep. Bosley had submitted no negative comments. The only formal member of the Board who submitted negative comments about the ODF standard was Senator Hart.

Critics have also suggested that ITD bypassed the IT Advisory Board by failing to include in the process by which ETRM 3.5 was developed the Constitutional Officers of the Attorney General, the Auditor, the Secretary of the Commonwealth and the Treasurer. However, as noted above these officers never have been formal members of the Board. The original legislation drafted by ITD for the creation of the Board included as members all of the constitutional offices. However, reference to the constitutional offices was stripped out of the legislation when enacted by the Legislature. In March of 2005, ITD's CIO proposed, and other board members agreed, that the constitutional officers should be made official members of the IT Advisory Board, through an amendment to the Advisory Board's enabling legislation. To that end the minutes of the March, 2005 meeting contain the following passage:

> ***Legislation Amendment***
> *The board proposed expanding the participation in the IT Advisory Board to the following Offices:*
>
> - *Treasurer's Office*
> - *Auditor's Office*
> - *Secretary of State*
> - *Attorney General*

Peter Quinn [ITD's CIO] will meet with these organizations to determine their level of interest. An update will be presented at the next IT Advisory Board and a straw man of the proposed legislation will be provided.

Nothing in the Board's proposal required ITD to treat the Constitutional Officers as member of the Board before they were members by law. The legislation to expand the Board's membership to include the Constitutional Offices, was drafted by ITD and other Board members, but has not yet become law.

Nonetheless, ITD invited all four constitutional offices to the Board's September 14, 2005 meeting. Two of the Constitutional offices, the Auditor's and Treasurers' Offices, sent representatives to the meeting, and both of these officers submitted written comments during the comment period for ETRM 3.5. While the Treasurer's Office raised some implementation questions, his comments on the whole were favorable. While the Auditor's office raised some questions about the policy in his written and verbal comments, they went in the main to implementation issues and the Commonwealth's timeframe for implementation.

The Secretary of the Commonwealth was given special deference by ANF and ITD with respect to the document format issue. Before the issuance of the policy, Secretary Galvin and ANF Secretary Kriss had high level discussions about ETRM 3.5 during which Secretary Galvin agreed not to take a public position opposing the ODF standard. ITD had repeatedly sought to engage the Secretary in a discussion of adoption of the ODF standard, despite the fact that it applied only to documents held in the Executive Department, rather than to those held by the Secretary of the Commonwealth. All versions of the ETRM, from 1.0 onward, were distributed for comment to the Secretary's IT staff long before they were published. At the time that ITD's first CTO was appointed, he met with the Supervisor and discussed the general issue of IT architecture. ITD and the Secretary discussed the fact that the parts of the ETRM that dealt, not with the documents created by the Executive department but those that would be held by the Secretary for long term archival purposes, would be drafted with the Secretary's direct assistance, in that they would affect documents held by him. (As noted in the Facts section above, ETRM 3.5 states in a section entitled "Boundary", i.e. "limitation", that "data formats for the long term conservation of files will be addressed in the Records Management Discipline", and the Records Management Discipline section of ETRM e.5 is blank). During the Microsoft negotiation, ITD kept the Supervisor apprised of ITD's progress and exchanged multiple emails with him on the topic. During the development of the ODF standard that later appeared in ETRM 3.5, ITD exchanged 9 emails with the Supervisor on the topic. The Supervisor was invited by ITD to attend and did attend the June 9, 2005 "open format summit" hosted by ITD, and followed up on his attendance with the statement that it was 'interesting". ITD sent the Supervisor, before the public comment period, the draft of ETRM 3.5 that was sent out for internal review by the IT staff on ITD's multi-branch CIO list, and solicited his response. ITD emailed a copy of the ETRM to several members of the Secretary's IT staff, prior to the public comments period beginning on August 29, 2005. In September 2005, prior to the final adoption of

ETRM 3.5, ITD's General Counsel met with the Supervisor to answer any questions he had about ODF1.0.

ITD believes that many of the Secretary's criticisms of ETRM 3.5 raised at the Committee Hearing arise out of a misunderstanding of the scope of the policy. It appears that the Secretary feels that ITD was impinging on the Secretary's legal authority by issuing standards for entities outside the Executive Department; that ITD was expressing a desire to become the archivist for non-current electronic records; that the policy would require the migration of existing electronic documents to ODF 1.0; and that a generation of the Commonwealth's electronic records is not being lost. In fact, the ETRM applies only to the Executive Department; ITD has done everything in its power to collaborate with the Secretary so that he can obtain IT bond funding to study and build a digital archive; the policy does not require migration of any pre-existing documents to ODF format; and ITD's long experience with agency electronic records administration clearly indicates that many electronic records that are required under the Secretary's Records in Common Schedule to be retained for short periods or forever are being deleted or inadequately archived by Executive Department agencies.

Prior to the filing of this brief, the Secretary of ANF called the Secretary of the Commonwealth and attempted to set up a meeting with the Secretary and the Supervisor for the purpose of meeting on a constructive basis to reach a common understanding of these issues and to clarify any misunderstandings that ITD may have created through its descriptions of the ODF standard. ITD is committed to resolving those misunderstandings. At future meetings with the Secretary of the Commonwealth, ANF and ITD will also offer to assist the Secretary in our mutual goal of creating a state of the art digital archive. Specifically, ITD can assist the Secretary in drafting an investment brief through which he can apply for IT bond funding; as a technical advisor in the selection of vendors for a study of the potential for a digital archive; and in the archive's eventual construction, hosting, maintenance and operation. ITD will offer its best information technology specialists in the areas of information technology architecture, policy, planning, implementation, data migration, operations, and law to assist the Secretary in his effort to create a digital archive. The goal of such an effort would be a cost effective, state of the art digital archive owned and governed by the Secretary.

In summary, ITD has followed the letter of the law with respect to the ETRM by including the IT Advisory Board in its deliberations on that topic, and has followed the spirit of the law, and the wishes of the Board, by inviting the Constitutional Offices to comment in writing and at an Advisory Board meeting on the topic.

D. Under its enabling legislation, Mass. Gen. L. ch. 7 section 4A(d), and under the Commonwealth's Uniform Electronic Transactions Act, Mass. Gen. L. ch. 110G section 17, ITD has authority to adopt standards pertaining to the formats of electronic documents created in the Executive Department

The evolution of the Commonwealth's Constitution and its statutes pertaining to the creation of the offices of the Supervisor, The Archivist, the Records Conservation Board, and the Chief Information Officer make clear that the Commonwealth's current body of law has capably evolved from a world in which the Executive Department did not require information technology or electronic records to one in which it cannot survive without them. Today the Executive Department simply cannot function without electronic documents records and a central information technology agency with standard setting authority, and the current legal structure has fostered such standard setting. This is the inescapable conclusion of a review of the evolution of that legal structure in light of the SJC's rules of interpretation that later statutes govern earlier ones and more specific statutes govern more general ones. See Doe v. Attorney General, 425 Mass. 210 (1997).

Long before the creation of ITD or the Information Technology Advisory Board, or the emergence of IT as a central element in public administration, the roles of the Secretary of Administration and Finance, the Secretary of the Commonwealth, the Supervisor of Public Records, and the Records Conservation Board with respect to the records of the Commonwealth were established under the Commonwealth's Constitution and its laws. The Secretary of the Commonwealth is a constitutional officer elected by the people. Mass. Const. Part 2, Ch. , s. 4, Art. 1. The Supervisor of Public Records, the state Archive, and the Archivist are under his authority, and his appointees play a major role in the Records Conservation Board. The Commonwealth's constitution, under which the Secretary's role was introduced, was adopted in the 18th century.

The Archivist. The Secretary appoints the chief archivist for the Commonwealth, who is required to have charge of "the *non-current* records of the commonwealth, particularly with regard to their custody, preservation, management and, when authorized, their destruction, and shall supervise the operation of the Archive museum". Mass. Gen. L. ch. 9, s. 2, 4 (emphasis added). The current description of the Archivist's duties was enacted in 1988.

The Supervisor of Public Records. The Supervisor of Public Records is required to "take necessary measures to put the records of the commonwealth, counties, cities or towns in the custody and condition required by law and to secure their preservation". Mass. Gen. L. ch. 66, sec. 1. The duties of the Supervisor of Public Records were first written into law in 1892 and last amended in 1976. He administers and enforces (through the Office of the Attorney General) the state's Public Records Law, Mass. Gen. L. ch. 66, sec. 10. The Supervisor is also the sole arbiter of the manner in which paper public records are recorded:

> *Section 4. No ink shall be used upon any permanent public record except ink of such a standard as established and approved by the supervisor of records, and no ribbon,*

pad or other device used for printing by typewriting machines, or stamping pad, or any ink contained in such ribbon, pad, device, stamping pad or carbon paper, shall be used upon any permanent public record, nor shall any photographic machine or device or chemical used in connection therewith be used in making any permanent public record, except such as has been approved by the supervisor of records, who may cancel his approval if he finds that any article so approved is inferior to the standard established by him. . . ."

Mass. Gen. L. ch. 66, s. 4. He also specifies the type of paper on which the Commonwealth's paper records are created, and plays a role with respect to the Commonwealth's micrographic, and photographic records. See ch. 66, s. 3 (specifying paper to be used for written records; stating that officer recording public records adopting system including photographic or microphotographic process required to have records inspected and corrected and make report of such inspection and correction to the supervisor of records).

Although none of the enabling legislation for his office addresses the issue, the Supervisor declared in 1996, rightly so, that electronic records are public records[29]. He has also issued rules regarding the treatment of email[30], the fact that electronic records are subject to public records access[31], and the backing up and archiving of electronic public records[32], which states that agencies themselves must archive electronic data. [33]

Significantly, the Supervisor's Bulletin entitled SPR 1-96 assumes that agencies themselves will play a role in archiving electronic public records:

Government information created and maintained by electronic systems is an important public resource. Proper administration of this information entails protecting it from a variety of hazards, and preserving portions of it for future reference and use. …Because the backups contain the undifferentiated system content, however, they should not be used for longer-term off-line data storage. Such use is an uneconomic use of media and puts data at risk of inadvertent loss since the backup is, by definition, destined for erasure. Where off-line data storage is needed, data should be archived to dedicated disk or tape libraries, allowing for easy identification and retrieval of information. . . .

The content, organization, and intended use of backups does not render them desirable as a medium for prolonged off-line storage of data.

Backup and archiving requirements apply to all computer environments, but will be implemented by different personnel depending on the environment. In a mainframe or network environment, systems and network administrators will implement backup and archiving. In a PC environment, implementation must be at the level of the individual user. . . .

[29] Supervisor of Public Records Bulletin 4-96
[30] Supervisor of Public Records Bulletin 1-99
[31] Supervisor of Public Records Bulletin 3-96
[32] Supervisor of Public Records Bulletin 1-96.
[33] Specifically, SPR 1-96 states that:

ACTIONS:
1. Offices should implement policies governing the backing up and archiving of information in electronic media specifying frequency of backup, and identifying those records to be archived. . .

3. Off-line storage of data should be to dedicated archive disks and tapes. Standard practices for identification and retrieval of archived data should be implemented.

The Records Conservation Board (RCB). The RCB's membership is comprised of the state librarian, the Attorney General, the State Comptroller, the Secretary of ANF, the Supervisor of Public Records and the Archivist. The RCB, after consultation with the executive head of any agency, executive office, department, board, commission, bureau, division of the commonwealth may, either by its own motion or on the request of an agency head, sell or destroy, or authorize the sale or destruction, of all records in accordance with disposal schedules which shall have been submitted to the RCB. The RCB is empowered to require all departments of the commonwealth to report to it what series of records they hold, to set standards for the management and preservation of such records, and to establish schedules for the destruction, in whole, or in part, and transfer to the Archive or another appropriate division within the Secretary of the Commonwealth's Office of records *no longer needed for current business*. (emphasis added) Mass. Gen. L. ch. 30, s. 42. The role of the RCB was first introduced in legislation enacted in 1936, and the RCB's enabling legislation was last amended in 1976.

The enabling legislation for the RCB, as amended and existing as of 2004, clearly stated that the RCB's enabling legislation shall not "*lessen the existing powers of the executive office for administration and finance*, or compel any agency, executive office, department, board, commission, bureau, division or authority of the commonwealth or of any authority established by the general court to serve a public purpose to surrender records it deems of *current use*". (emphasis added)

Under the RCB's enabling legislation, records may be kept in the Archive or in another appropriate division within the office of the Secretary of State, under reasonable restrictions as to access, for a reasonable length of time.

Secretary of Administration and Finance, ITD, and ITD's Authority to Set Standards. The Secretary of Administration and Finance (ANF), the executive and administrator of ANF, is the executive officer of the governor in all matters pertaining to the financial, administrative, planning, and policy coordinating functions and affairs of the departments, commissions, offices, boards, divisions, institutions and other agencies within the executive department. Mass. Gen. L. ch. 7, sec. 4. The Secretary of ANF is the chief operating officer of the Commonwealth, with authority over ITD and all of the Executive Department agencies to whom ITD's authority extends. ITD is a division of the Commonwealth's chief administrative agency, the Executive Office for Administration and Finance, or ANF. ITD was created under Mass Gen. L. ch. 7, sec. 4A(d), and its enabling legislation, as of 2004, stated:

Section 4A. The executive office for administration and finance . . .the following divisions: human resources, information technology, fiscal affairs and operational services, which divisions shall develop policy and standards to govern the conduct of commonwealth secretariats, departments, agencies, boards and commissions in each of these areas, and shall provide expertise and centralized processing to said secretariats, departments, agencies, boards, commissions and other entities of state government . . .

(d) The information technology division shall be headed by the chief information officer who shall also serve as assistant secretary for information technology. He shall be appointed by the secretary. The chief information officer shall carry out such functions as the commissioner may from time to time deem necessary for the efficient and economical administration of information technology systems within the executive departments including, but not limited to, setting information technology standards, reviewing and approving secretariat and department information technology strategic plans, reviewing and approving the planning, design, acquisition and operation of information technology systems, assessing the performance of information technology systems and operations, managing central information technology systems, and managing the commonwealth's mailing operations. He may establish such bureaus, offices and other functional units within the division as he may deem appropriate.

(emphasis added) Mass. Gen. L. ch. 7, sec. 4A(d). ITD was created in 1996 through chapter 151, section 34 of the Acts of 1996.

The Legislature created ITD hundreds of years after the adoption of the constitutional provisions creating the Secretary of the Commonwealth and decades after the enactment of the statutes creating the Supervisor of Public Records, the Archivist and the Records Conservation Board. It clearly intended that the Commonwealth's administration evolve from that of a paper based organization to an electronic data based organization. IT was assigned the role of issuing IT standards that would profoundly affect public records even though the Legislature must be assumed to have known that it had, through prior legislation that did not specifically address the issue of electronic records, given some powers over public records to the Secretary, the Archivist, the RCB and the Supervisor.

The MUETA. The Commonwealth did not adopt its version of the Uniform Electronic Transactions Act, Mass. Gen. L. ch. 110G, ("MUETA") until February 24, 2004, centuries after the adoption of the Commonwealth's constitution, and decades after the creation of the offices of the Archivist, the Supervisor of Public Records, and the creation of the RCB. The MUETA is a validating act that validates the electronic signatures, contracts and records used in the private sector and in state government, putting those signatures, contracts and records on a par with their traditional paper counterparts.

The National Conference of Commissioners on Uniform State Law's (NCCUSL)'s version of the uniform law includes several optional sections pertaining to the administration of state government. Those provisions state:

[**SECTION 17. CREATION AND RETENTION OF ELECTRONIC RECORDS AND CONVERSION OF WRITTEN RECORDS BY GOVERNMENTAL AGENCIES.** [Each governmental agency] [The [designated state officer]] of this State shall determine whether, and the extent to which, [it] [a governmental agency] will create and retain electronic records and convert written records to electronic records.][34]

Section 17 of the Massachusetts version of UETA, "MUETA", states:

> (a) The supervisor of records *under section 1 of chapter 66 and clause Twenty-sixth of section 7 of chapter 4*, the records conservation board *under section 42 of chapter 30*, and the information technology division under section 7 of chapter 4A, shall determine whether, the extent to which and the manner by which each executive department agency shall create, maintain and preserve electronic records, signatures and contracts and the method of converting paper government records to electronic format. Nothing in this chapter shall affect the existing authority of the supervisor of records, the records conservation board or the information technology division under the cited sections.

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[34] The NCCUSL version of the law includes explanatory notes written by the Commissioners. The note for section 17 states in pertinent part:

"Sections 17-19 have been bracketed as optional provisions to be considered for adoption by each State. Among the barriers to electronic commerce are barriers which exist in the use of electronic media by state governmental agencies - whether among themselves or in external dealing with the private sector. In those circumstances where the government acts as a commercial party, e.g., in areas of procurement, the general validation provisions of this Act will apply. That is to say, the government must agree to conduct transactions electronically with vendors and customers of government services.

However, there are other circumstances when government ought to establish the ability to proceed in transactions electronically. Whether in regard to records and communications within and between governmental agencies, or with respect to information and filings which must be made with governmental agencies, these sections allow a State to establish the ground work for such electronicization. . . .

4. Section 17 authorizes state agencies to use electronic records and electronic signatures generally for intra-governmental purposes, and to convert written records and manual signatures to electronic records and electronic signatures. By its terms the section gives enacting legislatures the option to leave the decision to use electronic records or convert written records and signatures to the governmental agency or assign that duty to a designated state officer. It also authorizes the destruction of written records after conversion to electronic form.

(emphasis added), MUETA, Mass. Gen. L. ch. 110G, s. 17.

It is clear that, before the enactment of MUETA, the Archivist lacked authority over the Executive Department's "current" records, i.e. the records that the Executive Department currently uses. Even in the area of non- current records, the Archivist's authority was limited to matters related to the state Archive. Without a digital archive, the Archivist currently has no involvement in the archiving of digital records (although he appears to play a role in the archiving of microfilm, microfiche, and optically scanned media resulting from the scanning of paper records). MUETA section 17 does not even reference the Archivist, and therefore cannot be said to have changed his authority over the Executive Department's records.

Similarly, before the enactment of MUETA, the RCB had authority only over the Executive Department's "non-current" electronic records, and then only with respect to the sale or destruction of those records or their transfer to the Secretary of the Commonwealth. The RCB's enabling legislation explicitly excluded it from interfering with the Secretary of ANF's administration of state government, and from interfering with the Executive Department's current documents (see Mass. Gen. L. ch. 30, sec. 42, stating that the RCB's authority shall not "*lessen the existing powers of the executive office for administration and finance*, or compel any agency, executive office, department, board, commission, bureau, division or authority of the commonwealth or of any authority established by the general court to serve a public purpose to surrender records it deems of *current use* (emphasis added). When MUETA section 17 was enacted, the Legislature made clear that it was not creating a radical new role for the RCB in the creation, maintenance and preservation of records in the Executive Department was intended. In fact section 17 explicitly refers to the RCB only in the context of its existing legislation, ch. 30, sec 42. To emphasize that the MUETA does not increase the RCB's authority over the Executive Department, section 17 states that "Nothing in this chapter shall affect the existing authority of the supervisor of records, the records conservation board or the information technology division under the cited sections". Rather than extending the RCB's limited authority over Executive Department Records, section 17 appears to be an attempt to preserve it in its former state, but affirm that its preexisting authority pertains to the electronic records referred to in MUETA.

Similarly, prior to the enactment of MUETA, the Supervisor of Public Records had authority to "to put the records of the commonwealth. . .in the custody and condition required by law and to secure their preservation"; to set standards for the creation of paper, micrographic and photographic records, and to administer the public records law. But his statutory authority was created before ITD's enabling legislation, which gave ITD the mandate of creating IT standards. ITD's enabling legislation creates both a later and more specific statute pertaining to the creation of standards for electronic records, and therefore, under the SJC rules cited above, must take precedence over the Supervisor's earlier enacted and more general enabling legislation. Nor was this hierarchy of authority disturbed by MUETA section 17, which was carefully drafted jointly by ITD and the supervisor to (1) state that the Supervisor could determine whether, the extent to which

and the manner by which each executive department agency should create, maintain and preserve electronic records, signatures and contracts", but only under his preexisting statutory authority. That authority is explicitly referenced in section 17 ("The supervisor of records *under section 1 of chapter 66 and clause Twenty-sixth of section 7 of chapter 4 . . .")*, and referenced a second time at the end of section 17(a) ("Nothing in this chapter shall affect the existing authority of the supervisor of records . . ."). Again, through MUETA section 17(a), the Legislature appears to have intended to extend the known existing authority of the Supervisor to the realm of electronic records, not to upset the decades old distribution of authority among the Secretary, the Archivist, the RCB, the Supervisor and ITD.

In summary, even after MUETA, ITD clearly retained its right to set information technology standards, including data format standards for public records. MUETA was not a government reorganization act[35], but a validating through which the Legislature sought to put electronic signatures, contracts and other records used by state government

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[35] Article 87 of the Commonwealth's Constitution requires that all government reorganization legislation be designated as such and filed in accordance with the article's terms. Neither the terms of MUETA nor the manner in which it was filed suggests in any way that the Legislature viewed is as compliant with the Article 87.

Article 87 states:

> SECTION 1. For the purpose of ***transferring, abolishing, consolidating or co-ordinating the whole or any part of any agency, or the functions thereof, within the executive department of the government of the commonwealth, or for the purpose of authorizing any officer of any agency within the executive department of the government of the commonwealth to delegate any of his functions***, the governor may prepare one or more reorganization plans, each bearing an identifying number and may present such plan or plans to the general court, together with a message in explanation thereof.
>
> SEC. 2. (a) Every such reorganization plan shall be referred to an appropriate committee, to be determined by the Clerks of the Senate and the House of Representatives, with the approval of the President and Speaker, which committee shall not later than thirty days after the date of the Governor's presentation of said plan hold a public hearing thereon and shall not later than ten days after such hearing report that it approves or disapproves such plan and such reorganization plan shall have the force of law upon expiration of the sixty calendar days next following its presentation by the governor to the general court, unless disapproved by a majority vote of the members of either of the two branches of the general court present and voting, the general court not having been prorogued within such sixty days.
>
> (b) After its presentation by the governor to the general court, no such reorganization plan shall be subject to amendment by the general court before expiration of such sixty days.
>
> (c) Any such reorganization plan may provide for its taking effect on any date after expiration of such sixty days and every such reorganization plan shall comply with such conditions as the general court may from time to time prescribe by statute regarding the civil service status, seniority, retirement and other rights of any employee to be affected by such plan.
>
> (emphasis added) MA Const., Article 87.

on par with their paper counterparts[36]. It was not an effort to upend the decades old constellation of statutes governing the Secretaries of Commerce and ANF, the RCB, the Archivist, the Supervisor, and ITD[37].

However, it is equally clear that ITD has no authority to set document format standards for any documents in the hands of the Secretary of the Commonwealth or the State Archive. Nor does it have authority to dictate the electronic format in which citizens will receive documents pursuant to a public records request[38]. And ITD has not attempted to do so; the ETRM, like all other standards issued under ITD's enabling legislation and its Open Standards Policy, is limited in its reach to Executive Department agencies—from which the Secretary is excluded. It does not apply to any documents in the hands of

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[36] MUETA section 6 states: "This chapter shall be construed and applied: (1) to facilitate electronic transactions consistent with other applicable law; (2) to be consistent with reasonable practices concerning electronic transactions and with the continued expansion of those practices; and (3) to effectuate its general purpose to make uniform the law with respect to the subject of this chapter among states enacting it".

[37] Many rules of statutory construction other than the two cited at the beginning of this section support ITD's conclusion here. For instance, our courts have held that statutes relating to the same subject matter should be read together to create an harmonious whole consistent with the legislative purpose; see Casey v. Massachusetts Elec. Co., 392 Mass. 876, 467 N.E.2d 1358 (1984). Under this rule, not just MUETA but also the enabling legislation for the Secretary, the Archivist, the RCB, the Supervisor and ITD, and the history of their enactment (with ITD's enabling legislation being the last enacted prior to MUETA) must be taken into account in analyzing ITD's current authority. Similarly, our courts have said that "every word or clause must be given effect", see Matter of Yankee Milk, Inc., 372 Mass. 353, 358, 362 N.E.2d 207, 210 (1977). Under that rule, we cannot disregard MUETA's pointed reference to the existing enabling legislation for the Supervisor, the RCB and ITD, or to its statement that "Nothing in this chapter shall affect the existing authority of the supervisor of records, the records conservation board or the information technology division under the cited sections". This latter statement is an unambiguous statement on the part of the Legislature that ITD's existing authority is not to be abridged by MUETA.

[38] And adoption of the ODF form for document creation implies no limitation on the formats that Executive Department agencies can use to produce documents to citizens making public records requests. ITD was careful to word ETRM 3.5 so that agencies knew they could produce documents to citizens making public records requests in any format the citizen wanted, for no extra cost. The Supervisor of Public Records has taken a much harsher view, issuing a bulletin stating that citizens do not have the right to receive documents in any particular electronic format, and must pay agencies to have documents produced in the format chosen by the citizen. Supervisor of Public Records Bulletin 4-96 states:

> "In certain instances, the reprogramming necessary to comply with a request in a specific format is tantamount to creating a document, rather than segregating an existing record. A record holder's duty to comply with requests for information extends only to records that are in existence and in his custody. There is no obligation to create a record in response to a public records request. Since the newly created record is not within the statutory definition of "public records," the Regulations do not apply and the custodian may assess any reasonable fee for such reprogramming to create a document.

Using office applications that support ODF, this issue is unlikely to arise because many such applications are capable of translating ODF formatted documents into the MS binary formats that most citizens' office applications support.

the Secretary or any of the other constitutional offices, the Legislature, the Judiciary, the state authorities, or the municipalities; to citizens filing documents with state government or to agencies producing records to them.

ITD acknowledges there is an inevitable practical need for coordination among the RCB, the Archivist, the Supervisor, and ITD. After all, the electronic records created under ITD's standards are subject to the Public Records Law administered by the Supervisor, can only be destroyed with permission of the RCB and, when the Secretary develops a digital archive, some of these records will be archived and accessible to the public through the Secretary's archive. ITD has worked cooperatively with the Supervisor for years on issues pertaining to public records and looks forward to continuing to do so.

ITD shares the Secretary's vision of a state of the art digital archive to be owned by the Secretary. In order to achieve that goal, ITD is committed to collaborating with the Secretary to obtain IT bond funding; study, plan and build the archive; migrate lifecycle electronic documents requiring permanent storage from Executive Department agencies to the archive; and sharing its personnel and other resources with the Secretary to accomplish these tasks[39].

Nothing in the General Laws supports the theory that ITD's adoption of the ODF standard was illegal. ITD clearly had authority to set information technology standards prior to the enactment of MUETA, and MUETA was not a government reorganization bill transferring ITD's pre-existing authority to set IT standards to the Supervisor or the RCB, but a validating act firmly transporting these entities' pre-existing authority from the past into our increasingly electronic present, and preserving their former relationship to one another.

Nor do the facts support any claim of illegality. Executive Department agencies must keep their own lifecycle electronic records for many years either because they continue to use them; they are inextricably linked with a current Executive Department IT system; or have no home at the current Archive, which lacks a digital archive component. The Supervisor has issued explicit directives to agencies regarding the archiving of their own documents in acknowledgment of the fact that, in the absence of an electronic archive, he cannot currently provide a facility at which they can be housed for easy online access by our citizens. Furthermore, the ODF standard pertains only to the creation of documents in the Executive Department. ITD refrained in the ETRM from issuing standards for long term management of lifecycle electronic records, recognizing that those issues are within the Secretary's authority and any standards adopted by ITD pertaining to long term storage must have his blessing.

Having exercised only the authority granted to is specifically by law, ITD violated no state law in adopting the ODF standard.

[39] ITD will only play a supporting role in such efforts, not only because the Secretary has legal authority over the Archive, but also because, as one archivist has stated, technologists know a lot about technology but ,little about archival science.

E. Adoption of the ODF Standard Did Not Create an Illegal Procurement Preference

The regulations governing the Commonwealth's procurement practices require that agency procurement foster competition. See 801 CMR 21.01. Agencies are required to engage in "best value procurement":

> *Procurements will be considered in the best interests, or the Best Value, to a Department and the State when a Procurement supports and balances the following Procurement Principles: the achievement of required outcomes, generates the best quality economic value, is performed timely, minimizes the burden on administrative resources, expedites simple or routine purchases, allows flexibility in developing alternative Procurement and business relationships, encourages competition, encourages the continuing participation of quality Contractors and supports State and Department Procurement planning and implementation.*

801 CMR 21.01.

ETRM is a set of open standards, not a set of requirements that agencies buy any particular product. In fact, the ETRM itself states:

> This document is not to be interpreted to require any agency to acquire or use goods bearing any particular trade mark or trade name or subject to any patent. Any references herein to a particular trademark or trade name or patent are included only because there is no other sufficiently precise or intelligible way of describing agencies' procurement choices. Such references are to be interpreted to permit agencies to use any number of optional technologies, including the specified trade marked, trade named, or patented formats referenced herein or their equivalents.

ETRM n. 1. When ITD adopted the ODF standard in September of 2005, over 90% of all of the office applications used by the Commonwealth's Executive Departments were sold by a single vendor. Because ODF is an open standard, any vendor in the world can develop an office application that supports ODF. The current majority vendor of office applications for the Commonwealth has demonstrated its technological ability to support open standard formats by supporting PDF, another open standard format. Multiple other vendors and sources provide office applications that support ODF. Adoption of the ODF standard does not decrease, and in fact should increase, the competition among vendors for the Commonwealth's office application business.

V CONCLUSION

As this brief has documented, ITD did not violate any state or Federal laws in adopting the ODF standard. Nor did it fail to collaborate with all parts of state government or with the public. In adopting the standard, it collaborated across the Commonwealth's entire information technology community, exposing its decisionmaking process and its multiple drafts of the ETRM to the IT Advisory Board members, the Constitutional Offices, the IT staff in every agency and branch of state government, and the public, using face to face meetings, emails, the state's Web pages, and the Internet. The multiple emails to state IT leaders prior to public posting of drafts of the ETRM, the multiple drafts of the ETRM posted online for public comment, and the hundreds of comments received electronically by ITD from across our Commonwealth, our country, and the globe, attest to the transparency of the process through which the ODF standard was adopted. ITD's implementation of the ODF standard must respect the legal rights of the community of persons with disabilities, and the needs of that community will determine many aspects of the implementation, including whether the target date for the policy is practical. Nonetheless, ITD intends to move forward in implementing the ODF standard.

Prior generations of the Commonwealth's citizens have taken pains to ensure that current and historic government records are available to our citizens. Our children's children will live in a world of information technology that we cannot now imagine. Long after today's popular office applications have disappeared, future Massachusetts citizens will seek information about the past. When we create documents today in open standard formats, we engage in intergenerational democracy, reaching forward across time to future citizens of our Commonwealth to offer them unfettered access to the electronic record of their past and our future, and backward across time to honor the ideals of past citizens of the Commonwealth who fought for open access to public records.

Respectfully submitted,

Linda Hamel
General Counsel
for
The Information Technology Division
Commonwealth of Massachusetts

EXHIBIT A

Supervisor of Public Records Draft Investment Brief for Creation of Commonwealth's First Digital Archive

EXHIBIT B

ETRM Data Formats Section

ETRM Version 3.5 Information Domain

Download a printable version PDF
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Effective Date: September 21, 2005

Domain: Information

DESCRIPTION

The Information Domain addresses standards and guidelines for:

- Data Interoperability
- Data Management
- Data Formats
- Records Management (TBD)

A process-independent, enterprise view of government information enables data sharing where appropriate within the bounds of security and privacy considerations. Service oriented architectures promote information and service reuse through open standards.

To help the Commonwealth achieve the enormous benefits of information and service reuse, the Information Domain emphasizes standards for data interoperability among diverse internal and external platforms and applications. By promoting the ubiquitous use of XML standards, the ETRM specifications insure that all new development initiatives result in interoperable services that can be reused across the enterprise, as well as with external business partners and governments where appropriate.

Given the level of complexity of integration projects, especially with multiple developers and teams collaborating on the development of services, data models should be explicitly visible to all architects, developers, and project managers as a coherent set of XML schemas, in a Commonwealth Registry, and service development should be driven by those schemas.

Initiatives such as Homeland Security rely upon all parties adhering to Community of Interest XML specifications, defined by open standards bodies comprised of representatives from Government, Business and Technology Communities. Open formats for data files ensure that government records remain independent of underlying systems and applications thereby preserving their accessibility over very long periods of time.

STRATEGIC IMPORTANCE

Return on investment in IT assets is greatly improved by the ability to reuse information and services based on open standards. When information and data is viewed as a Commonwealth strategic asset and resource, it can improve state government's ability to serve its constituents, to improve its stewardship of public records currently and in the future, and to consistently apply appropriate privacy and security protections to information no matter where that information is held. Better data interoperability and management will foster better IT governance, while also improving the quality and accessibility of information and services.

RELATED TRENDS

- Customer-centric approaches to information management leverage data across organizational boundaries to give a comprehensive view of the organization's interactions with that customer
- Information classification is being used at the enterprise level to assign appropriate and consistent levels of sensitivity and security across the various organizational boundaries
- Data that is common to many business processes are being shared and re-used within the constraints of privacy and security considerations
- As records move from paper to electronic formats there is an increasing need for electronic records management and conservation policies and systems.

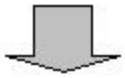
VISION

Information is no longer viewed as an exclusive agency asset but is leveraged and re-used throughout the enterprise while observing appropriate privacy and security protections. Electronic records are preserved in open formats that allow for optimal electronic records conservation and availability to the public over long periods of time.

ROADMAP

Current State

- Data is collected and managed by individual agencies often on a program-specific basis.
- The same constituent data is often collected by more than one agency and kept in redundant data stores.
- There is no standard information classification system to assign consistent and appropriate protections for data as it travel within and outside the enterprise.
- Electronic records are stored by agencies most often in proprietary formats that jeopardize the long-term accessibility of those records.



Target State

- Data is categorized at the Executive Office or Community of Interest level to identify data that may be reusable or that can support multiple business processes
- XML data standards are adopted for all new development projects
- Data that can be used by multiple applications is collected once and encapsulated as service components that can be reused by those applications
- All data is classified for sensitivity according to a standard enterprise classification system. Data classification is captured as metadata that travels with the information
- Electronic records are stored in standard open formats with associated metadata and are managed using enterprise Records Management Applications (RMAs)

BOUNDARY

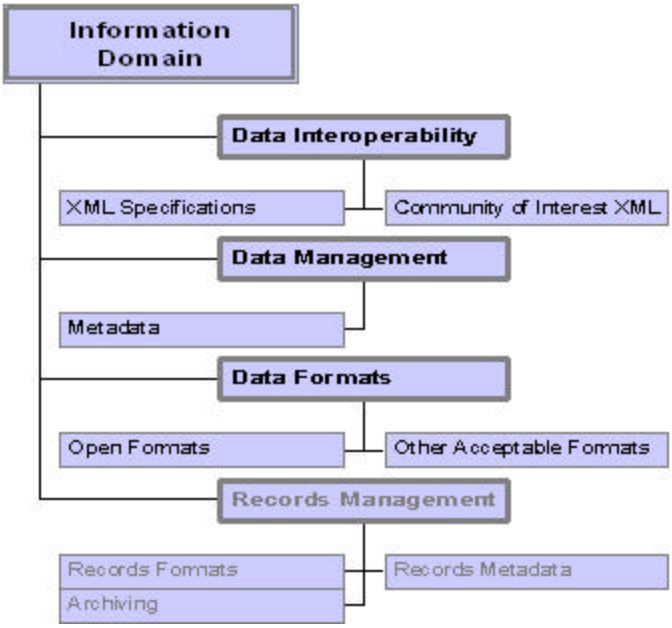
The Information Domain addresses specifications for Data Interoperability, Data Management, Data Formats, and Records Management. Inclusion of these specifications in the development of service oriented applications is addressed in the Application Domain.

RELATED POLICIES

- Enterprise Open Standards Policy
- Enterprise Information Classification Policy (TBD)

ASSOCIATED DISCIPLINES

- Data Interoperability
- Data Management
- Data Formats
- Records Management (TBD)



Domain: Information

Discipline: Data Interoperability

DESCRIPTION

One of the most critical SOA decisions for the Commonwealth is the adoption of XML as the primary standard for Data Interoperability. XML has become the lingua franca of application integration, facilitating application interoperability, regardless of platform or programming language. The adoption of XML is the cornerstone of the Commonwealth's Service Oriented Architecture (SOA) vision of a unified enterprise information environment.

Agencies should consider the use of XML for all projects, and should implement XML, unless there are compelling business reasons not to do so. XML should always be considered when undertaking new work or when beginning a major overhaul of an existing system. Agencies should always consider the fact that an XML solution will result in greater long-term benefits for the agency and the enterprise as a whole.

RELEVANT STANDARDS ORGANIZATIONS

- **W3C** - The World Wide Web Consortium was created in October 1994 to lead the World Wide Web to its full potential by developing common protocols that promote its evolution and ensure its interoperability. W3C has around 400 Member organizations from all over the world and has earned international recognition for its contributions to the growth of the Web. More information about W3C can be found at http://www.w3.org
- **WS-Interoperability –** The Web Services Interoperability Organization is an open industry effort chartered to promote Web Services interoperability across platforms, applications, and programming languages. More information about WS-I can be found at http://www.ws-i.org.

STAKEHOLDERS/ROLES

- designers and implementers of Commonwealth information services
- external and internal users of government information
- enterprise application and data architects
- software development service providers
- business strategists and analysts
- system owners
- project managers

ROADMAP

Currently XML is just beginning to be used by agencies to create XML-aware applications. The Mass.gov portal content management solution uses XML to separate content from presentation. The Enterprise Open Standards policy requires compliance with open standards for prospective IT acquisitions however government records are currently captured in a variety of proprietary and open formats. The target state includes the ubiquitous use of XML for Data Interoperability in application development and content management as well as the use of open formats for displaying and storing data files.

ENTERPRISE TECHNOLOGY SOLUTION

Not applicable

ASSOCIATED TECHNOLOGY AREAS

- XML Specifications
- Community of Interest XML

Domain: Information

Discipline: Data Interoperability

Technology Area: XML Specifications

DESCRIPTION

What is commonly referred to as “XML” is actually a large collection of specifications that rely on XML-encoded packets or instructions. The set of specifications includes: XML Schema, XSLT, XPath, and XQuery to name a few. But all have one requirement in common: all of these XML specifications require an SOA infrastructure that can parse, transform and process XML at network speeds.

Being text-based, XML more readily supports incremental development, debugging, and logging. Other XML benefits include:

- Long-term reuse of data, with no lock-in to proprietary tools or undocumented formats
- The use of inexpensive off-the-shelf tools to process data
- Reduced training and development costs by having a single format for a wide range of uses
- Increase reliability, because applications can automate more processing of documents
- Businesses and governments can now define platform-independent protocols for the exchange of data
- Information presentation flexibility, under style sheet control

TECHNOLOGY SPECIFICATION: EXTENSIBLE MARKUP LANGUAGE (XML)

Description – XML is a self-describing, extensible markup language that encodes the description of a document’s storage layout and logical structure. XML provides a mechanism to impose constraints on this logical structure. XML is text-based, so XML fragments are easily created, edited, and managed using common utilities. Originally designed to meet the challenges of large-scale electronic publishing, XML is playing an increasingly important role in the exchange of a wide variety of data on the Web and elsewhere. XML is a meta-language, which enables interchange of information with any kind of application, in various presentations, for different target groups and different purposes.

Guidelines -

- *Stay with open standards:* To insure maximum interoperability it is recommended that proprietary extensions to any XML specifications be avoided.
- *Partner with industry and other government jurisdictions:* There is a tremendous amount of work being done on vertical specific vocabularies and there are additional initiatives that tend to be more horizontal in their approach. Many government agencies have begun working with these initiatives and they are helping to create a standard they can use with their industry partners.
- *Publish the work that is being developed:* This is a tremendous step toward interoperability and also allows other organizations to share in the benefits. This can lower costs and accelerate usage of the specification.
- *Maintain extensibility:* XML design can be a complicated task but can allow agencies to model a process to gain efficiencies. Creating an extensible architecture can allow schemas to be versatile and dynamic by design.
- *Start small:* Look for a specific area that you can begin in and then expand the scope. Starting with the entire framework of an organization's data can be overwhelming and prohibitively expensive. A smaller pilot project can get XML introduced in a production setting and it will grow as the opportunity and resources are available.

Standards and Specifications –

- XML v. 1.0: XML 1.0 has been fully ratified by the W3C, and is included in the WS-Interoperability Basic Profile 1.0. XML 1.0 can be validated against the formal definition of the protocol specification.

  Refer to: http://www.w3.org/xml

Migration Strategy - Agencies should begin to use XML for Data Interoperability requirements. Agency or Secretariat-specific XML specifications and policies must be compliant with the enterprise XML specifications detailed in the ETRM.

TECHNOLOGY SPECIFICATION: XML SCHEMA

Description – The purpose of an XML Schema is to define the valid structure of an XML document. An XML Schema:

- defines elements that can appear in a document
- defines attributes that can appear in a document
- defines which elements are child elements

- defines the order of child elements
- defines the number of child elements
- defines whether an element is empty or can include text
- defines data types for elements and attributes
- defines default and fixed values for elements and attributes

Schemas express shared vocabularies and provide a means for defining the structure, content and semantics of XML documents.

Guidelines – All schema need to be compliant with the WS-Interoperability Basic Profile, to insure interoperability with SOAP, WSDL and UDDI.

Standards and Specifications –

- XML Schema Part 1: Structures and XML Schema Part 2: Data types – These XML Schema specifications have been published as open standards by the W3C, and are included in the WS-Interoperability Basic Profile 1.0.

  Refer to: http://www.w3.org/TR/2004/REC-xmlschema-1-20041028/structures.html for Part 1: Structures and http://www.w3.org/TR/2004/REC-xmlschema-2-20041028/datatypes.html for Part 2: Data types.

Migration Strategy - XML Schemas should be used, in most Web applications, as a migration strategy away from DTDs.

TECHNOLOGY SPECIFICATION: EXTENSIBLE STYLE SHEET LANGUAGE (XSL)

Description – This specification defines the features and syntax for the Extensible Style Sheet Language (XSL), a language for expressing style sheets. It consists of two parts:

1. a language for transforming XML documents, and
2. an XML vocabulary for specifying formatting semantics.

An XSL style sheet specifies the presentation of a class of XML documents by describing how an instance of the class is transformed into an XML document that uses the formatting vocabulary.

Guidelines– Given a class of arbitrarily structured XML documents or data files, designers use an XSL style sheet to express their intentions about how that structured content should be presented; that is, how the source content should

be styled, laid out, and paginated onto some presentation medium, such as a window in a Web browser or a hand-held device, or a set of physical pages in a catalog, report, pamphlet, or book.

Standards and Specifications –

- XSL v. 1.0: XSL v. 1.0 is an open standard ratified by W3C that defines a language for expressing style sheets.

  Refer to: http://www.w3.org/TR/xsl/

Migration Strategy – While CSS can be used to style HTML documents XSL, is able to transform documents. For example, XSL can be used to transform XML data into HTML/CSS documents on the Web server. This way, the two languages complement each other and can be used together. Both languages can be used to style XML documents.

TECHNOLOGY SPECIFICATION: XML QUERY LANGUAGE (XQUERY)

Description –XQuery for XML is like SQL for relational databases. Compared to SQL, it is designed to be a language in which queries are concise and easily understood. It is also flexible enough to query a broad spectrum of XML information sources, including both databases and documents. XQuery 1.0 uses the structure of XML to express queries across all these kinds of data, whether physically stored in XML or viewed as XML via middleware. XQuery operates on the abstract, logical structure of an XML document, rather than its surface syntax. This logical structure is known as the data model.

Guidelines – XQuery should be used for integration and transformations. With transformation powers that rival XSLT, XQuery not only provides query results, but can also prepare those results for presentation. XQuery is more efficient than XSLT when transforming the results of a database query. Use XQuery when you have requirements to search multiple back-end systems and combine results, effectively integrating multiple sources of information.

Standards and Specifications – XQuery v. 1.0 is not yet ratified as an open standard, i.e. XQuery 1.0 is still a W3C Working Draft. However, XQuery 1.0 is being widely implemented so it is included in the ETRM as an emerging standard. The specification describes a query language called XQuery, which is designed to be broadly applicable across many types of XML data sources. XQuery 1.0 has been defined jointly by the XML Query Working Group and the XSL Working Group. The XPath 2.0 and XQuery 1.0 Working Drafts are generated from a common source. These languages are closely related, sharing much of the same expression syntax and semantics, and much of the text found

in the two Working Drafts is identical. For more information go to http://www.w3.org/TR/xquery/

Migration Strategy – When evaluating XML products, agencies should include XQuery support in selection criteria. It is expected that XQuery will soon be ratified as a W3C open standard.

Domain: Information

Discipline: Data Interoperability

Technology Area: Community of Interest XML

DESCRIPTION

Extensible Markup Language (XML) and XML-based schema languages provide a strong, yet easy to adopt, set of technologies for achieving service interoperability within specific communities of interest, e.g. justice, health, finance, education. Standardized Community of Interest XML specifications enable the exchange of structured information between different applications, agencies and/or business partners in a platform-independent way.

As a result, Community of Interest groups and standards bodies have started to adopt XML to specify both their vocabularies and schema. These schemas are becoming widely published and implemented to facilitate communication between both governments and businesses. Wide support of XML has also resulted in independent solution providers developing solutions that enable the exchange of XML-based information with other third-party or custom-developed applications.

To avoid confusion, please be aware that other documents and the trade press may also refer to Community of Interest XML as:

- Domain specific XML
- Industry specific XML
- Vertical XML standards

TECHNOLOGY SPECIFICATION: GLOBAL JUSTICE XML DATA MODEL (GLOBAL JXDM)

Description –The Global JXDM is a comprehensive product that includes a data model, a data dictionary, and an XML schema. The Global JXDM is sponsored by the Federal Government's OJP (Office of Justice Programs), with development supported by the Global XML Structure Task Force (XSTF), which works closely with researchers at the Georgia Tech Research Institute. The XSTF is composed of government and industry-domain experts, technical managers, and engineers.

The Global JXDM is an XML standard to be used specifically for criminal justice information exchanges, providing law enforcement, public safety agencies, prosecutors, public defenders, and the judicial branch with a tool to effectively share data and information in a timely manner. The Global JXDM removes the burden from agencies to independently create exchange standards, and because of its extensibility, there is more flexibility to deal with unique agency requirements and changes. Global JXDM is endorsed by the Federal Government, the National Association of State CIO's (NASCIO) and the National Governor's Association (NGA) among others.

Guidelines-

- All instances must be validated against the Global JXDM reference schema.
- If the appropriate component (type, element, or attribute) required for the application exists in the Global JXDM, use that component (i.e., do not create a duplicate of one that already exists).
- Be semantically consistent. Use Global JXDM components in accordance with their definitions. Do not use a Global JXDM element to represent data other than what its definition describes.
- Apply XML Schema rules correctly and consistently.

Standards and Specifications–

- Global JXDM v. 3.0.2: This latest release of the Global JXDM series is enhanced to increase the ability of justice and public safety communities to share justice information at all levels, laying the foundation for local, state, and national justice interoperability.

  Refer to: http://www.it.ojp.gov/topic.jsp?topic_id=43

Migration Strategy – Agencies engaged in criminal justice information exchanges should migrate to XML that utilizes the Global JXDM data model.

Domain: Information

Discipline: Data Management

DESCRIPTION

Data Management standards for the Commonwealth are intended to improve data:

- Conformity - What data is stored in a non-standard format?
- Consistency - What data values give conflicting information?
- Accuracy - Does the data accurately represent reality or a verifiable source?
- Duplication - What data records are duplicated?
- Integrity - What data is missing important relationship linkages?

Data Management problems can occur in many different ways. The most common include:

- A lack of enterprise standards and policies
- Inadequate data entry procedures
- Errors in the migration process from one system
- Data coming from outside may not adhere to standards
- Data received may be of dubious quality

Agencies need to share information visibility across the Commonwealth, regardless of how far along they are in their plans to implement a Service-Oriented Architecture (SOA). Without visibility into the workings of the systems, applications, and other elements of their IT infrastructure, agencies are unable to manage or improve their IT environment, eliminate stove pipes, and most importantly, meet their business requirements.

A key to the enterprise visibility issue is metadata: information about shared services. To provide adequate IT visibility, agencies must follow basic metadata best practices for discovering and organizing metadata, encapsulating business logic in metadata, managing with metadata, and modeling with metadata.

A significantly underused mechanism for working with Web services is the services metadata repository. At present, these repositories primarily store only the interfaces for services. However, for Web services to be supportive of fusion, additional metadata is necessary. Service metadata includes sequencing

information to properly order service execution, parameters and exception handling information for the process model, and data to manage services into usable assemblies. Content metadata, such as user interface elements, and the connection of Web services to multiple portlets must be stored in metadata to allow modification of the system without code changes. For Services to be searchable across applications they must be versioned and represent processes that are independent of a single-application model.

RELEVANT STANDARDS ORGANIZATIONS

- **W3C** - The World Wide Web Consortium was created in October 1994 to lead the World Wide Web to its full potential by developing common protocols that promote its evolution and ensure its interoperability. W3C has around 400 Member organizations from all over the world and has earned international recognition for its contributions to the growth of the Web. More information about W3C can be found at http://www.w3.org
- **WS-Interoperability –** The Web Services Interoperability Organization is an open industry effort chartered to promote Web Services interoperability across platforms, applications, and programming languages. More information about WS-I can be found at http://www.ws-i.org.

STAKEHOLDERS/ROLES

- designers and implementers of Commonwealth online services
- external and internal users of government information
- enterprise application and data architects
- external software development service providers
- business strategists, system owners, and project managers

ROADMAP

Currently there is a lack of cross-agency data management standards. As the need for cross-agency interoperability increases, the need for metadata visibility becomes critical. The target state is a profusion of metadata design artifacts, such as XML Schemas and Web Services Definition Language (WSDL) documents as well as an Enterprise Web Service Registry to help discover and manage schema, policies, WSDLs, etc.

ENTERPRISE TECHNOLOGY SOLUTION

- Web Service Registry (see Integration Domain)

ASSOCIATED TECHNOLOGY AREAS

- Metadata

Domain: Information

Discipline: Data Management

Technology Area: Metadata

DESCRIPTION

Web services use metadata to describe what other endpoints need to know to interact with them. Specifically, WSDL describes abstract message operations, concrete network protocols, and endpoint addresses used by Web services; XML Schema describes the structure and contents of XML-based messages received by and sent by Web services.

Metadata provides a means for defining, obtaining and organizing the data obtained from endpoints, as well as propagating data to endpoints. A Registry can actively pull metadata from endpoint services, and the endpoints (or hosting environments) can actively pull the metadata from the Registry.

Using metadata provides the following advantages:

- It provides a mechanism for locating reusable components when they need to be reused
- The taxonomy in metadata will help the Commonwealth create a reference model of the services provided
- It facilitates good governance via well-defined processes that identify and maintain high-quality information and services
- Leads to having a team responsible for the management of the service metadata repository

It is also essential to have a standards-based development framework (SODA) that encourages reuse of these metadata.

TECHNOLOGY SPECIFICATION: WEB SERVICE DESCRIPTION LANGUAGE (WSDL)

Description – The Web Service Description Language (WSDL) can be used to describe a service so that individuals and businesses can provide or consume those services electronically. A WSDL (pronounced wiz-dill) is a document written in XML that describes a Web Service. It specifies the location of the service and the operations (or methods) the service exposes.

Guidelines – There is a clear process that developers need to follow to effectively develop an interoperable Web Service. The WSDL interface should be generated first, before the functionality of the Web Service is written. There are two major ways to generate a WSDL. The "WSDL First" practice consists of writing the WSDL by hand and then creating the service code from the WSDL. This practice affords the most flexibility in WSDL design and is best for creating interoperable WSDLs because it allows language-independent development, leverages the power of XML, and leverages standard markup languages to define types.

The alternative way to create a WSDL is to have a Web Service toolkit automatically generate the WSDL from the service code. Using this method, it is important to choose a good interoperable toolkit and render the WSDL from a skeletal interface. The business functionality should not be written until after the interface is stable, and the WSDL is determined to be free of interoperability problems. This way, business functionality will not have to be reworked when it is discovered that the interface is not interoperable. Checking the WSDL is the first line of defense in preventing interoperability problems. By generating the WSDL as soon as possible, problems can be caught early, saving time and money. It is important to keep the structure of the data being passed between the Web Service Consumer and Provider as simple as possible. Not every toolkit will handle all of the XML Schema data types, and keeping the data structures simple will increase interoperability.

Standards and Specifications –

- WSDL v. 1.1 - This specification has been ratified by the W3C as an open standard, and is included in the WS-Interoperability Basic Profile 1.0. To address any interoperability concerns, the Web Services Interoperability Organization (WS-I) has recommended using a restricted subset of WSDL, in the Basic Profile 1.0, which allows the Commonwealth to focus on fewer issues, for greater compatibility. By restricting possible interpretations, the WS-I provides a greater assurance of interoperability.

  Refer to: http://www.w3.org/TR/wsdl.html

Migration Strategy – Use of WSDL is an essential part of any migration to Web Services. Initially WSDL is typically used for static use cases, with eventual migration to more dynamic use cases. All Web Service Providers and Consumers must migrate to WSDL standards. Service Providers should be

developed based on these standards and Service Consumers must be able to understand WSDL.

Domain: Information

Discipline: Data Formats

DESCRIPTION

Information can be captured and exposed via a variety of data types. For example, information can be captured as text, numbers, maps, graphics, video and audio. The software used to create data files stores these files in different data formats. These formats can be proprietary and therefore controlled and supported by just one software developer. Formats can also be non-proprietary or open.

The Commonwealth defines ***open formats*** as specifications for data file formats that are based on an underlying open standard, developed by an open community, affirmed and maintained by a standards body and are fully documented and publicly available. **It is the policy of the Commonwealth of Massachusetts that all official records of the Commonwealth be created and saved in an acceptable format as detailed below.**

BOUNDARY

The Data Formats Discipline addresses the acceptable formats in which data can be presented and captured. Data formats for the long term conservation of files will be addressed in the Records Management Discipline.

STAKEHOLDERS/ROLES

- application developers
- content developers
- end users of government information and services

ROADMAP

Information that traditionally has been presented in text form is increasingly being enriched through the use of multimedia data types such as graphics, audio and

video. The variety of data formats used however raises concerns regarding interoperability and accessibility. Given that XML is the cornerstone of the Commonwealth's Service Oriented Architecture (SOA) vision of a unified enterprise information environment, it is crucial that the schema used to create XML files meet the open format definition as well. The target state is the ubiquitous use of open formats to capture and store data within applications and in individual data files.

ENTERPRISE TECHNOLOGY SOLUTION

Not applicable

RELEVANT STANDARDS ORGANIZATIONS

- **IETF** - The Internet Engineering Task Force (IETF)is a large open international community of network designers, operators, vendors, and researchers concerned with the evolution of the Internet architecture and the smooth operation of the Internet. It is open to any interested individual. The actual technical work of the IETF is done in its working groups, which are organized by topic into several areas (e.g., routing, transport, security, etc.). More information on the IETF can be found at http://www.ietf.org/home.html.
- **ISO** - In 1946, delegates from 25 countries decided to create an international organization "to facilitate the international coordination and unification of industrial standards". The new organization, ISO, officially began operations on 23 February 1947. The International Standards Organization is a network of the national standards institutes of 148 countries with a Central Secretariat in Geneva, Switzerland, that coordinates the system. More information about ISO can be found at http://www.iso.org.
- **OASIS** – Organization for advancement of structured information standards is a not-for-profit, international consortium that drives the development, convergence and adoption of e-business standards. Members themselves set the OASIS technical agenda, using a lightweight, open process expressly designed to promote industry consensus and unite disparate efforts. OASIS produces worldwide standards for security, Web services, conformance, business transactions, supply chain, public sector, and interoperability within and between marketplaces. More information about OASIS can be found at http://www.oasis-open.org.
- **W3C** - The World Wide Web Consortium was created in October 1994 to lead the World Wide Web to its full potential by developing common protocols that promote its evolution and ensure its interoperability. W3C has around 400 Member organizations from all over the world and has earned international recognition for its contributions to the growth of the Web. More information about W3C can be found at http://www.w3.org.

ASSOCIATED TECHNOLOGY AREAS

- Open Formats
- Other Acceptable Formats

Domain: Information

Discipline: Data Formats

Technology Area: Open Formats

DESCRIPTION

The Open Formats Technology Area addresses open standards and specifications for the presentation of data as office documents, text, numbers, maps, graphics, video and audio. The selection of format must consider the access channel being used (Web, PDA, cell phone), the nature of the data and structure (legal requirements that address preservation of document structure), and ease of accessibility for users.

The open formats identified below do not yet address all data types. Future versions of the ETRM will address open formats for map, graphics, video and audio data.

TECHNOLOGY SPECIFICATION: OASIS OPEN DOCUMENT FORMAT FOR OFFICE APPLICATIONS (OPENDOCUMENT)

Description – The OASIS Open Document Format for Office Applications (OpenDocument) is a standardized XML-based file format specification suitable for office applications. It covers the features required by text, spreadsheets, charts, and graphical documents. The specification was recently approved by OASIS as an open standard. OASIS has also submitted the standard to ISO for consideration as an international standard for office document formats.

Guidelines – The OpenDocument format must be used for office documents such as text documents (**.odt**), spreadsheets (**.ods**), and presentations (**.odp**).

The OpenDocument format is currently supported by a variety of office applications including OpenOffice.org, StarOffice, KOffice, and IBM Workplace.

Standards and Specifications –

- OpenDocument v. 1.0 – Defines an XML schema for office applications and its semantics. The schema is suitable for office documents, including text documents, spreadsheets, charts and graphical documents like drawings and presentations, but is not restricted to these kinds of documents.

  Refer to: http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=office

Migration – Given the majority of Executive Department agencies currently use office applications such as MS Office, Lotus Notes and WordPerfect that produce documents in proprietary formats, the magnitude of the migration effort to this new open standard is considerable. Agencies will need to develop phased migration plans allowing them to configure existing applications to save office documents by default in the OpenDocument format with an implementation date of January 1, 2007. Any acquisition of new office applications must support the OpenDocument format natively.

Agencies should begin to evaluate office applications that support the OpenDocument specification to migrate from applications that use proprietary document formats. As of January 1, 2007 all agencies within the Executive Department will be required to [1]:

C. Use office applications that provide conformance with the OpenDocument format, and

D. Configure the applications to save office documents in OpenDocument format by default.

TECHNOLOGY SPECIFICATION: PLAIN TEXT FORMAT

Description – Plain Text refers to textual data in American Standard Code for Information Exchange (ASCII) format. Plain text is the most portable format because it is supported by nearly every application on every machine. It is quite limited, however, because it cannot contain any formatting commands.

Guidelines – Because of its limitations, Plain Text should not be used for documents where formatting is important or is part of the official record. Use of Plain Text for formatting email messages reduces the likelihood of email client

interoperability issues and reduces download time for clients with dial-up connections.

Standards and Specifications –

- Plain Text Format – Documents are presented as **.txt** files

Migration Strategy – Documents created in proprietary document formats can be saved as .txt files when formatting is not important.

TECHNOLOGY SPECIFICATION: HYPERTEXT DOCUMENT FORMAT

Description – Hypertext documents contain links to other documents and data files that allow the reader to easily move from one document/data file to another with the aid of an interactive browser program.

Guidelines – Hypertext document format is the preferred format for documents that will be accessed through the Internet/Intranet or using a web browser.

***Standards and* Specifications** –

- Hypertext Document Format – Hypertext authoring or conversion software must support HTML v. 4.01. Documents are presented as **.html** files.

Migration Strategy – Many documents created in proprietary formats can be saved as **.html** files.

Domain: Information

Discipline: Data Formats

Technology Area: Other Acceptable Formats

DESCRIPTION

The Other Acceptable Formats Technology Area addresses de facto formats and specifications for the presentation of data as text, numbers, maps, graphics, and video and audio that are also acceptable for use with official records of the Commonwealth. These formats, while not affirmed by a standards body, meet the other criteria of openness and are therefore considered acceptable at this time.

The acceptable formats identified below do not yet address all data types. Future versions of the ETRM will address acceptable formats for map, graphics, video and audio data.

TECHNOLOGY SPECIFICATION: PORTABLE DOCUMENT FORMAT

Description – Portable Document Format (PDF) is a file format specification developed by Adobe Systems. PDF is a universal file format that preserves the fonts, images, graphics, and layout of any source document, regardless of the application and platform used to create it.

Guidelines – The PDF format may be used for documents whose content and structure will not undergo further modifications and need to be preserved. Agencies can use a number of proprietary and open source products to create PDF files. Application developers can also build in PDF creation functionality into their applications using the latest reference specification published by Adobe. PDF readers are freely available for download.

Standards and Specifications –

- Portable Document Format – Must be based on, at a minimum, PDF Reference v. 1.5 that supports XML functionality. Documents are presented as **.pdf** files.

  Refer to: http://www.adobe.com/products/acrobat/adobepdf.html

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[1] Agencies are permitted to take actions for the purpose of ensuring that the rights of persons with disabilities are respected. ITD, in consultation with the community of persons with disabilities, will develop a plan to address any accessibility concerns.

EXHIBIT C

EXAMPLE OF DRAFT STRATEGIC PLAN, NOT ADOPTED BY ITD

ITD Strategic Plan -
v3 - application priori