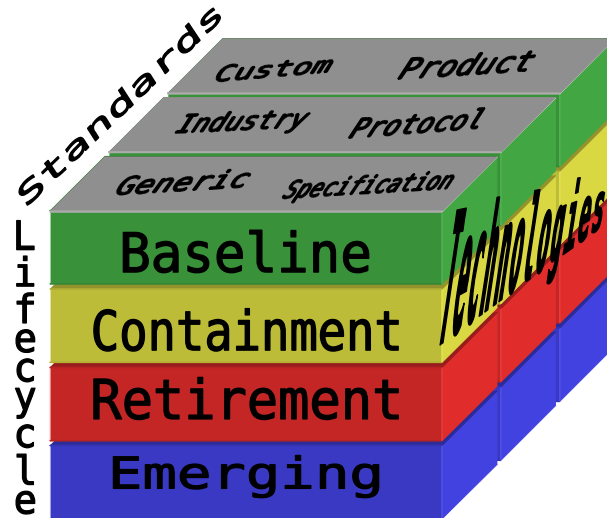# Government of Manitoba

Information and Communications Technologies Standards

Prepared by ICT Architecture

Version 1.2.3

April 18, 2005

**Manitoba
Energy, Science
& Technology**

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1. Introduction

1.1 Purpose

This document is a vehicle for communicating standards, standards definitions, categories of standards, the alignment of standards to the Government of Manitoba Enterprise Architecture (EA), the relationship between standards, and the current status of identified standards in terms of efficacy, applicability, stability, maturity, and adoption.

1.2 Scope

The scope of this document includes all technical, information and communications technologies used by the Government of Manitoba.

Software licensing is beyond the scope of this document. The government has a number of licence agreements that should be consulted when using products.

1.2.1 Approach

To accommodate the broad scope of addressing standards in the myriad aspects of information and communications technologies, this document will be organized in the same systems layers identified in the EA. The organization of individual layer sections will be further broken down as required to maintain a rational organization, and to facilitate ease of targeted research.

This document begins by defining standards concepts, then it describes the EA at the Conceptual level, this is followed by the labels and domains used to provide additional categorizations of the technologies that are finally listed in the final section.

The list of standards includes most aspects of Information and Communications Technologies (ICT), from concepts to specific products. At the top level of organization, the categories are aligned with the technology pillars of the Government of Manitoba Enterprise Architecture (EA), and more specifically within those categories. While it is not possible to maintain a comprehensive list of every technology and practice employed within Government of Manitoba systems, it is the goal of this document to provide sufficient specific references and references to concepts that, when combined with the EA and EA Principles, provides the reader with strong sense of the correct application of ICT within and for the Government of Manitoba.

When in doubt, please use the processes outlined in section on Governance Processes.

1.3 Related Documents

The following are a list of related or relevant documents that would provide additional context and related information.

These are:

Enterprise Architecture 2004 (or later)

W:\Oit\400 - OIT\444 - Enterprise Architecture\Release Candidate 1 (September 2004)

Government of Manitoba Application Classification Structure v1.0 (or later)

W:\Oit\400 - OIT\444 - Enterprise Architecture\Application Classification Structure.doc

MICT Standards Process v1.0 (or later)

(Under Development)

1.4 Overview

This is a document to provide definitions and organization of information and communication standards used by the Government of Manitoba. This overview will describe what a standard is, where standards originate, what are the different types of standards, why standards and standards adoption is important, and the approach this document takes in organizing standards.

1.4.1 What is a Standard?

A standard is a usable, well defined, and acknowledged measure of comparison for either qualitative or quantitative value. It stipulates criterion within a defined body of knowledge. It might be a practice or product that is widely accepted, recognized or adopted, in particular due to its excellence. A standard represents a model of authority that is in common use, or has been regularized; thereby deriving conformity. It also provides a benchmark, ideal or set of criterions which denote a point of reference for making comparisons, judgements and evaluations. Standards may be established as a rule or model by authority, custom or general consent, and have a recognized and permanent value. Standards gain their greatest value through ubiquity.

1.4.2 Types of Standards

Standards may be divided into several broad categories: industry, generic, and custom. These may be further qualified into: products, protocols, and specifications, creating the specific nine types of standards of industry product, custom specification and so on.   The types of standards are defined and described in section 2.

Use of the term "open standards" has been specifically avoided in this document. Most standards that are considered open are generally reflected in the generic standards category of this document.

1.4.3 Benefits of Standards

Standards and standards adoption will benefit the Government of Manitoba by:

- Harmonizing nomenclature and terminology. A common language makes communication more effective and less error prone.

- Providing a baseline. Establishing target zones within technology life cycles, quality and durability levels, and other aspects permits better planning and better resource management.

▪ Establishing Transferability. Targeted investments in technology will permit skills, tools, and knowledge to more easily permeate and migrate through out the Government of Manitoba.

1.4.4 Why Standards Adoption is Important

In the technical computer and networking realm, the myriad of competing standards can often become a source of confusion, division, obsolescence, and duplication of effort instead of enhancing the usefulness of products. This aspect of standards can be summed up by the quote: ""The nice thing about standards is that there are so many of them to choose from.[1]" Although this quote is tongue in cheek, it also provides the solution to the dilemma presented, namely to identify the standards selections from the wide variety of choice.

Therefore, to permit the efficacy of the many available standards to be realized, it becomes very important to choose wisely, and limit and describe which standards have been adopted by the Government of Manitoba

1.4.5 Approach to Document Organization

The list of standards is categorized based on a conceptual view of the Enterprise Architecture (EA) and is aligned with divisions of the EA into Privacy, Security, Systems Management, Application and Integration, Information and Data, and Technical Architectures. Further granularity is provided by breaking down application and technical architecture into logical tiers or technology stacks. Domain and sub-domain categorization is provided for domain specific subset views. The standards categories provide the ability to view the standards list by type of standard.

Technologies listed as Baseline represent the pre-approved technologies to be employed when maintaining and developing Government of Manitoba systems.

Section two provides the additional detail and descriptions for the standards list.

1.4.6 Governance Process

Standards adoption is a moving target as:

• New standards are constantly emerging

• Existing standards may no longer be supported or are replaced by newer ones, and

• The needs of the organization are constantly evolving.

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[1] This quote is usually attributed to Andrew Tanenbaum, from his seminal book Computer Networks.

Therefore, by necessity, the MICT Standards document is a living document and will require continuous stewardship to maintain its efficacy. This section sets out some guidance for governing the stewardship of this document.

Technologies not listed as baseline (see section 2.2) require escalation through an inclusion process, which may or may not result in the addition of the requested technology to the appropriate category. It is recommended that periodically (at least annually), technical and business requirements are solicited from throughout the enterprise to establish a candidacy list of changes. The list may be populated from systems plans, departmental interviews, vendor solicitation, direct feedback, industry research and trends, and/or recent Architectural Decision Requests (ADR). The candidacy list will then be escalated through the ADR process. At the discretion of the Chief Technology Officer (CTO), depending on the nature of the deviation from baseline standards, the ADR may be escalated through a formal Change Review Board.

Technologies listed as contained (see section 2.2) should not be considered for new investment. However, this is not an absolute. There is an escalation process for demonstrating a business case for employing technology outside of the guidance presented here. The burden of demonstration, however, remains with the project owner, who will be required to submit an ADR to the CTO.

A plan must be in place for any projects, systems or service delivery that uses technologies listed as retired (see section 2.2). This plan should present a roadmap that describes the evolution towards baseline, or in consultation with ICT Architecture, towards emerging technologies, how the retired technologies will be decommissioned, and a timeline that encompasses this migration.

The inclusion and ADR processes will be used to evaluate and consider any technologies for standards adoption. The Office of the Chief Technology Officer provides final arbitration.

Comments on listed technologies or suggestions for additions are encouraged. This represents an opportunity for community involvement. Please direct comments and questions to the MICT Architecture team.

Projects must be correctly classified (see section 2) and may only employ technologies of the appropriate class.

Since technology standards will remain a moving target, it remains the responsibility of project sponsors and stewards to ensure that the latest standards are applied on projects.

2 Standards Descriptions

This section of the document provides a description for all the categorizations employed in the list of technology standards. Each subsection represents a column descriptor in the table of standards. Third level headings describe the entries in each of the associated subsections.

2.1 Enterprise Architecture

The EA is based on a layered model. Layers are further subdivided into additional tiers or sub layers, and organized into pillars, which will span or encompass layers. The coverage and relationship of standards for the EA is presented in the following conceptual diagram.
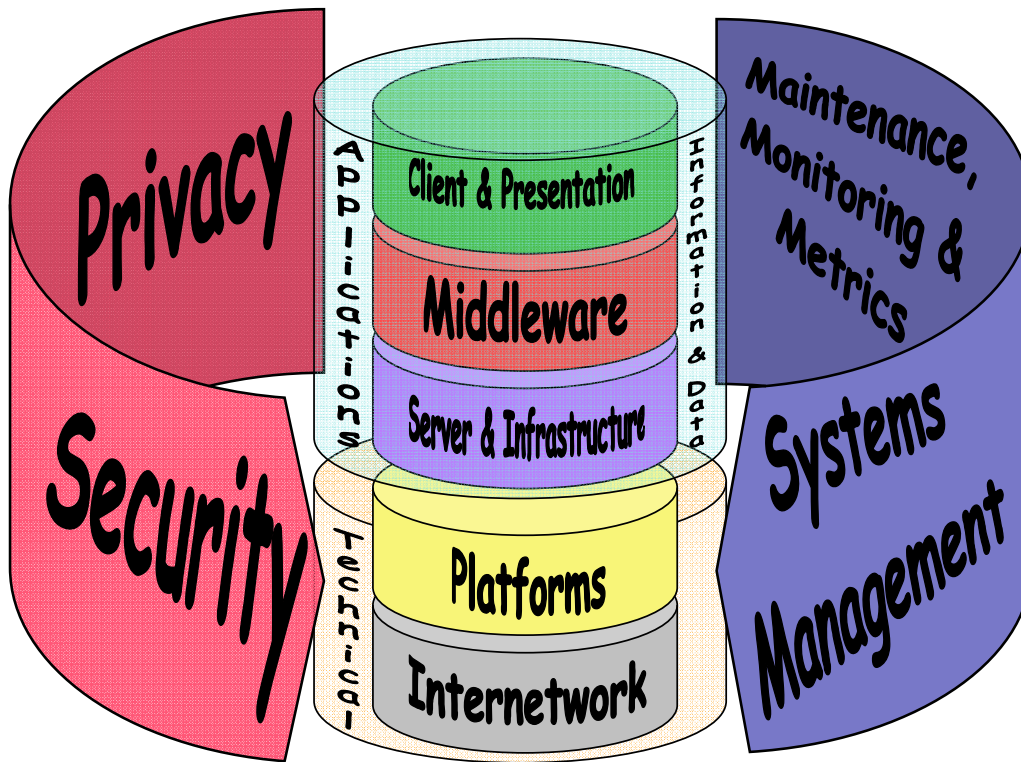

Figure 1 Conceptual Enterprise Architecture

The layers comprising the technology stack both stipulate and are defined by service abstractions. The EA overview and the individual architectures provide a much greater depth and breadth of description for the architectures and should be consulted for complete coverage. These brief descriptions are provided here for context and to frame the standards list.

2.1.1 Application & Integration

Applications development (AD) for Applications is undertaken when requirements and analysis processes indicate a custom solution. Particularly in n-tier development, software is targeted for deployment to the server, middleware and client software layers. AD describes the standard methods, tools, and infrastructure identified to deliver Government of Manitoba software assets. Integration is required to add applications to an existing environment or to establish interactions amongst systems.

Best practice for software development suggests that applications are further organized into layers or tiers. As well, certain software is designed to only be deployed at specific tiers.

2.1.1.1 Client and Presentation

Client software includes office productivity suites, software tools, and the user interface portion of an n-tier application deployment.

2.1.1.2 Middleware

Middleware is all the integrating "glue" and supporting software required for modern distributed systems.

2.1.1.3 Server & Infrastructure

Database, Web, Applications servers, the "backend" for office productivity tools, and other software services provide the business and software infrastructure for developing and deploying applications.

2.1.2 Technical

The technical architecture includes the hardware, operating system and basic connectivity upon which all modern distributed systems are created and deployed.

2.1.2.1 Platform

Hardware platforms are the aggregate hardware pieces that software runs on and accesses and the software that directly interacts with the hardware. This includes central processing units, memory, disk storage, device drivers and operating systems.

2.1.2.2 Internetwork

All of the network hardware and software employed in providing connectivity to all Government of Manitoba computers and connections to all external agencies.

2.1.3 Privacy

Privacy regulations encompass the protection and controlled sharing and disclosure of data held by GoM computer systems. Privacy should not be added as an afterthought, and is best addressed in advance as prime requisite in any systems deployment.

2.1.4 Security

Many security elements are required through out the EA to ensure the integrity and privacy of data held by GoM computer systems. Security should not be added as an afterthought, and is best addressed in advance as prime requisite in any systems deployment.

Security product standards may not be released to the public without the written approval of the Government of Manitoba Information Protection Centre.

2.1.5 Systems Management

Systems Management is needed to configure, monitor and operate the entire platforms application infrastructure and internetworks that comprise GoM computer systems.

2.1.6 Maintenance, Monitoring and Metrics

Once computer systems entire the deployment phase of their lifecycle they require a certain amount of care and feeding. This takes the form of application maintenance to correct defects, add functional enhancements, and support the software vitality effort imposed by changes to the operating environment, for example, an upgrade to a database engine. Ongoing monitoring of the systems and operating environment are needed to ensure the continued correct operation of systems, and metrics are used to provide empirical measures of performance and usage patterns.
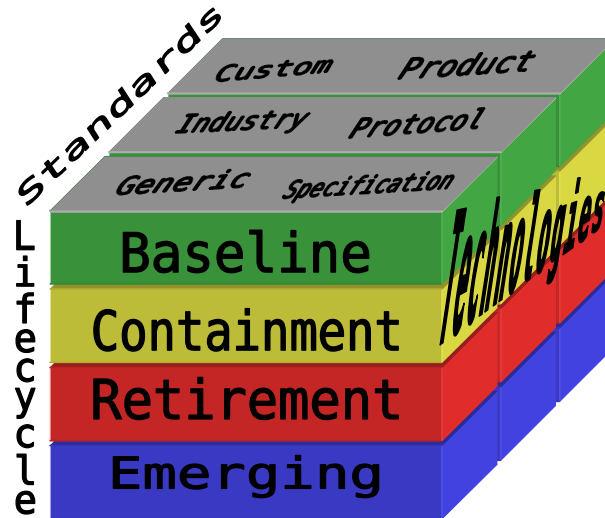
2.2 Standards Relationships

Figure 2 Standards Relationship and Lifecycle

The standards cube presents the relationships between the standards categories, the life cycle of standards and the technologies that are organized within the cube.

2.2.1 Lifecycle

In order to manage technology within the government, the Enterprise Architecture outlines technology standards in each major ICT architecture area. This provides guidance to government departments, other organizational units, and service providers on current and long-term direction for technology standards. Colours are used to indicate each stage in the lifecycle of the standard.

This provides a view of the various current standards, mid-term transition standards, and future direction. In addition, the need to limit development and deployment of technologies that are at the end of their lifecycle are included in the containment and retirement areas.

Where the Government of Manitoba has not yet identified any specific technologies, the category will have a placeholder stating "None Identified." Considerations for additions to such categories will business driven. Should a project identify a technology that falls into one of these categories, either the inclusion or ADR process will be followed. Please see section 1.4.6, Governance Processes.

Please note that most standards will evolve through numerous versions through their applicable lifespan. Versions are included wherever possible in the list of standards, and typically take the form of ratification or publishing date or some dot-based number scheme.

2.2.1.1 Baseline

The baseline category, coloured green in the list of technologies, includes technologies and processes that are currently in use by the Government of Manitoba and are endorsed by ICT Architecture. Green technologies have reached an acceptable level of maturity and are deemed to provide good value to the Government of Manitoba. Baseline technologies are the target for new and ongoing activities.

2.2.1.2 Emerging

The emerging category, coloured blue in the list of technologies, includes technologies and processes that the Government of Manitoba views as a long-term strategic direction and may or may not be integrated into the target architecture.

2.2.1.3 Containment

The containment category, coloured yellow in the list of technologies, includes technologies and processes that should only be targeted for limited investment (e.g. maintenance) or are necessary to meet specific service delivery needs for the Government of Manitoba that are not achievable using baseline elements. Specific emergent technologies may also be placed in the contained category to indicate that they have been evaluated but should not be considered for general deployment and require an ADR for any project which considers such technologies essential for successful project delivery.

2.2.1.4 Retirement

The retirement category, coloured red in the list of technologies, includes technologies and processes that the Government of Manitoba has targeted for retirement from production and should not be included in current or future development.

It is incumbent upon the technology consumers to provide a business case and seek annual approval for continued use of retired technologies. Annual systems plans must address any retired technologies.

2.2.2 Standards Category

Standards categories are formed from the combination of custom, generic, and industry standards sources with product, specification and protocol derivations to produce the nice combinations: Custom Product, Generic Product, Industry Product, Custom Specification, Generic Specification, Industry Specification, Custom Protocol, Generic Protocol, and Industry Protocol.

2.2.2.1 Generic Standards

Generic standards are non-proprietary and may evolve out of Industry Standards or through a prescriptive standards creation process or government regulation of industry. Examples of standards bodies includes: ANSI, ISO, IEEE, and W3C. See Appendix B: Standards Defining Bodies and Organizations, for a more complete list of standards bodies consulted in creating this document and the list of ICT standards for the Government of Manitoba. For example, HTML is a generic standard that is stewarded by the World Wide Web Consortium (W3C).

2.2.2.2 Industry Standards

Industry standards are typically developed by a single commercial enterprise in support of a particular branch of trade or goods, or in support of a particular technology. Industry standards tend to evolve naturally through maturation, continual improvement, and striving for improved efficiencies. Industry standards are usually self limiting in value and need to be transformed into or promoted to continue on the path of improved efficacy and value. This may be through establishing industry consortia or through promotion to a generic standard. Exceptions may only emerge through ubiquitous market penetration. Very successful examples of ubiquitous industry standards would include the Microsoft® family of operating systems and office productivity file formats, and the Adobe® Portable Document Format (PDF). Ubiquitous industry standards may achieve sufficient market penetration and industry adoption to become de facto standards.

Industry standards are typically wholly owned, proprietary, and protected by patents, copyrights, and restrictive license agreements. Use of industry standards often involves the payment of licensing fees to the standard owner; either directly or through product acquisition.

2.2.2.3 Custom Standards

Custom standards are usually derived from, combining, and/or extending multiple generic standards to meet a specific business or technical need. Custom standards are not open or generic standards and usually have a very narrow focus and lifespan. A custom standard is usually defined for the scope of a specific project deployment. For example, a custom XML schema is defined for all integration interactions for specific middleware. This was done for the Manitoba Business Links (common business identifier) project integration effort, as no such schema was available or in use by HRDC or other Canadian jurisdiction.

2.2.2.4 Product

A product is a complete saleable solution for a problem domain (although the domain may be fairly narrow – vertically or horizontally.) For example, the MS Word document format is a product standard.

2.2.2.5 Specification

A specification is a template, instructions, or process for creating a system or aspect thereof. For example, the MS Word document format is also a specification. Therefore, in the standards list, it is categorized as an industry specification.

2.2.2.6 Protocol

A protocol defines a process or format for interaction. For example, the HyperText Transfer Protocol (HTTP) is a generic (from W3C) protocol employed by all web servers and browsers.

2.3 Domain

This section is in process and will be populated as the appropriate domains for the Government of Manitoba are identified and finalized.

2.4 Sub-Domain

In most cases the sub domains describe the individual technologies described in the list of standards.

2.5 Class

Class is an assessment of the applicable application and project technology classification and target service levels within degrees of risk and impact assessment. Technologies may span multiple classes. Applications are categorized according to their usage and the groups using the application. The four categories used are:

- Public applications

- Enterprise applications

- Departmental applications

- Personal applications.

Each application is assigned to a classification designation, which is dependent upon a combination of impact and risk criteria (see appendix C: Application Classification – Risk versus Impact Matrix) associated with the information used and processed by the application. These classifications are:
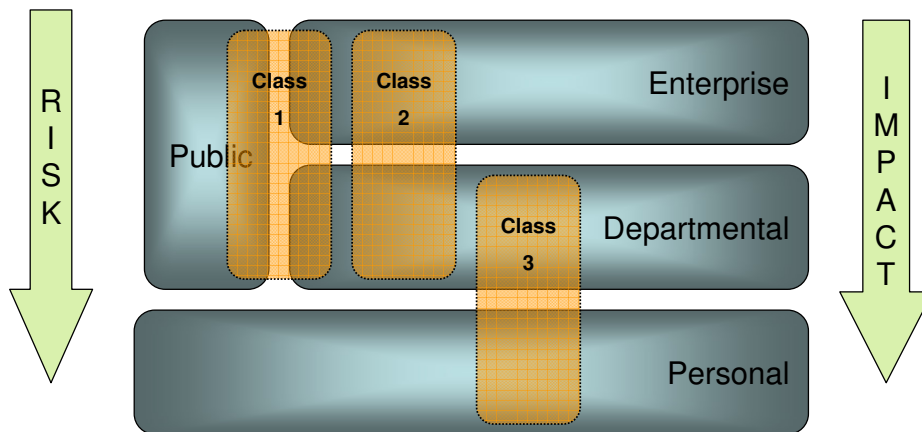
- Class 1

- Class 2

- Class 3

Figure 3 Project Classification Relationships

2.5.1 Class 1 Applications & Projects†

Class 1 applications are typically Enterprise Applications by nature and have broad corporate scope. Class 1 applications typically require complete integration efforts.

2.5.2 Class 2 Applications & Projects†

Class 2 systems are standardized, departmental, and are not shared by many but could potentially do so in the future. Class 2 applications typically have integrations requirements for a narrow range of information that needs to be shared broadly and a broader range of information that has a limited audience.

2.5.3 Class 3 Applications†

Class 3 systems support unique departmental and work group business needs and handle information that does not need to be shared outside the department or workgroup. The technologies used do not need to be scalable or portable. Class 3 systems are not deemed critical to government. Conversely, if a system handles private information or is critical to the operation of government, then it may not be classified as a class 3 system.

† For a more complete discussion of the application classes, categories and processes please refer to the Application Classification Structure document.

	Industry Specification	1/2/3	Domino[2]	.Net Framework version 1.1 COM/DCOM	PowerBuilder; .Net Framework version 1.0 COM/DCOM	Microsoft Solutions Framework
	Custom Product	1/2/3	MICT Java Application Framework;	MICT Domino Forms Submission Framework[3]	None Identified OR Not Applicable	None Identified OR Not Applicable
Integrated Development Environment	Generic Product	1/2/3	Eclipse 3.x	Eclipse based derivative products other than those specifically listed	Eclipse 2.x	None Identified OR Not Applicable
	Industry Product	1/2	IBM WebSphere Application Developer; Domino Designer	Visual Age for Java, PowerBuilder; Jbuilder; SAP; Oracle Forms	Visual Basic; COBOL; Telon; dBase; xBase; MS Access; CA OpenRoad	Visual Studio .NET; SAP NetWeaver IDE
		3	Visual Studio .NET	MS Access	dBase; xBase; CA OpenRoad	Eclipse, LAMP
Modeling	Generic Specification	1/2/3	OO A&D; UML; DDL; XMI	None Identified OR Not Applicable	None Identified OR Not Applicable	Non Identified
	Industry Product	1/2/3	Enterprise Architect	Rational Rose (Suite); TogetherSoft; Rational XDE[4]	None Identified OR Not Applicable	Eclipse based plug-in; Visual Studio Enterprise Architect
Project Management	Industry Product	1/2/3	MS Project;	None Identified OR Not Applicable	None Identified OR Not Applicable	Microsoft Project Server
Source and Version Control		1/2	CVS	MS Visual SourceSafe	Envy	None Identified OR Not Applicable
		3	Native repository, e.g. Excel Macro in Excel spreadsheet; File System	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable

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[2] Under Review
[3] Under Review
[4] Under Review

			Level				
	Testing	Generic Specification	1/2/3	Unit; Integration; Functional; Regression; Load; Performance	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
		Generic Framework	1/2/3	jUnit	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
		Industry Product	1/2/3	Under Development	WebLoad	None Identified OR Not Applicable	Various Open Source; Sanctum AppScan DE; MS Application Centre Test
	User Interface and Presentation Layer	Custom Specification	1/2	MICT UI Guidelines	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
			3	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
		Generic Product	1/2	Struts; Struts-Menu	None Identified OR Not Applicable	None Identified OR Not Applicable	Server Faces, ASP
		Industry Product	3	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable	Eclipse based plug-in; ASP .NET
		Custom Product	1/2	MICT Struts extensions	FSH Struts Extensions[5]	None Identified OR Not Applicable	None Identified OR Not Applicable
Data Management	Encryption	Generic Specification	1/2	AES (FIPS-197); SHA1; MD5	Triple DES (FIPS 46-3); Blowfish; native DB encryption	40 & 56 bit encryption (or less)	None Identified OR Not Applicable
Data Management	Encryption	Generic Specification	3	Not Applicable	Not Applicable	Not Applicable	Not Applicable

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[5] Under Review

Data Management	Modeling	Industry Product	1/2/3	ERWIN	Rational Rose (Suite) Oracle Designer[6]; PowerDesigner[7]	None Identified OR Not Applicable	Enterprise Architect
Distributed Services	Accounting	Industry Product	1	SAP R/3	None Identified OR Not Applicable	None Identified OR Not Applicable	mySAP
			2/3	Great Plains Dynamics; Accpac; QuickBooks; Quicken	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
	Content Management	Industry Product	1/2/3	None Identified OR Not Applicable	Bricolage CMS	None Identified OR Not Applicable	WSAD; Open source; Microsoft SharePoint; CMS
	Distribution & Manufacturing	Industry Product	1/2/3	Great Plains Dynamics	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
	Document Management	Industry Product	1/2/3	Under Development	Visual Info; Image Plus	None Identified OR Not Applicable	PCDOCS; Domino.Doc; Hummingbird DM; MS Windows SharePoint Services & SharePoint Portal Server; MICT Document Archival Service
	Enterprise Resource Management	Industry Product	1/2/3	SAP	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
	Knowledge Management	Industry Product	1/2/3	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable	Microsoft SharePoint Portal Server
	Record Management	Industry Product	1/2/3	Tivoli Storage Manager [8]	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable

[6] Under Review
[7] Under Review
[8] Under Review

	Thick Client, client side integration	Generic Specification	1/2/3	CCOW	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
Graphics	CAD Tools	Industry Product	1/2/3	AutoCAD; Intergraph; Bentley	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
	GIS	Industry Product	1/2/3	ESRI; Intergraph	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
Output	Page Description Language	Industry Protocol	1/2/3	PCL6; PostScript Level 2; PDF 1.5	PCL5; PostScript Level 1; Windows Print System; GDI; PDF 1.4	All others; ASCII; PCL4; PCL 3	Adobe PrintGear for Class 3 printing
	Reporting	Industry Product	1/2/3	Crystal Decision; Crystal Enterprise; Adobe JetForms Central Pro	None Identified OR Not Applicable	None Identified OR Not Applicable	SQL Reporting Services
Programming Language	Programming Language	Generic Specification	1/2/3	Java (JDK 1.4.2)	C; C++; JavaScript	Fortran; COBOL; PL/1	Java (JDK 1.5); PHP; Perl; Python;
		Industry Specification	1/2/3	Under Development	LotusScript; Visual Basic; ASP.NET; Natural	Clipper	C# .NET

3.1.1 Client and Presentation

Domain	Sub-Domain	Standards	Class	Baseline	Containment	Retirement	Emerging
Data Access Language	Database	Generic Specification	1/2/3	ANSI SQL	PLSQL	None Identified OR Not Applicable	XQL
Data Management	Database - Non-Transactional	Industry Product	3	None Identified OR Not Applicable	File system folders	None Identified OR Not Applicable	None Identified OR Not Applicable
	Database - Transactional	Industry Product	3	SQL Server	Sybase; IMS; Paradox; Sybase; Ingres; Xbase	None Identified OR Not Applicable	OODBMS; Open Source; SQL Server; MySQL
Graphics	3-D & Animation	Industry Product	1/2/3	Macromedia Flash; Adobe LiveMotion[9]	None Identified OR Not Applicable	None Identified OR Not Applicable	GIMP
Graphics	Drawing	Industry Product	1/2/3	Adobe Illustrator; MS Visio; MS PowerPoint	None Identified OR Not Applicable	None Identified OR Not Applicable	OpenOffice.org v1.1: Draw
Graphics	Painting	Industry Product	1/2/3	Adobe Photoshop; Paintshop Pro	None Identified OR Not Applicable	MS Paint	OpenOffice.org v1.1: Draw; GIMP; MacroMedia FireWorks
Internet [BASE-IMAGE]	Web Browser	Industry Product	1/2/3	Internet Explorer 6.0.2, Service Pack 2, 128 bit	IE 5.x; Netscape 5.x	Netscape 6.x	Mozilla FireFox
Multimedia	Streaming Media Player	Industry Product	1/2/3	MS Windows Media Player 9.x	None Identified OR Not Applicable	RealNetworks RealPlayer; QuickTime	None Identified OR Not Applicable
Office Productivity	Collaboration	Industry Product	1/2/3	Office 2003	None Identified OR Not Applicable	None Identified OR Not Applicable	MS NetMeeting;
Office Productivity	Database	Industry Product	3	MS Access 2003 (Single User ONLY)	MS Access XP; MS Access 2000	All Earlier versions of MS; All other Personal DataBase software	mySQL

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[9] Under Review

Domain	Sub-Domain	Standards	Class	Baseline	Containment	Retirement	Emerging
Office Productivity	Document Systems Management	Industry Product	1/2/3	None Identified OR Not Applicable	PC-DOCS[10]	None Identified OR Not Applicable	Hummingbird DM
Office Productivity	E-mail & Groupware (Instant Messaging)	Industry Product	1/2/3	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable	Under Development
Office Productivity	Non-workstation	Industry Product	3	Office CE 2003	None Identified OR Not Applicable	None Identified OR Not Applicable	MS Mobile Explorer; Pocket IE; Action Names Datebook
Office Productivity [BASE-IMAGE]	E-mail & Groupware	Industry Product	1/2/3	MS Office 2003	MS OutLook XP; MS OutLook 2000	All Earlier versions of MS OutLook; All other Personal Information Manager software	None Identified OR Not Applicable
Office Productivity [BASE-IMAGE]	Presentations	Industry Product	1/2/3	MS PowerPoint 2003	MS PowerPoint XP; MS PowerPoint 2000	All Earlier versions of MS PowerPoint; All other Presentation software	OpenOffice.org v1.1: Impress
Office Productivity [BASE-IMAGE]	Spreadsheet	Industry Product	1/2/3	MS Excel 2003	MS Excel XP; MS Excel 2000; MS Excel 97	MS Excel 95; All Earlier versions of MS Excel; All other SpreadSheet software	OpenOffice.org v1.1: CALC
Office Productivity [BASE-IMAGE]	Word Processing	Industry Product	1/2/3	MS Word 2003	MS Word XP, MS Word 2000, MS Word 97	MS Word 95; All Earlier versions of MS Word; All other Word Processing software	OpenOffice.org v1.1: Writer
Publishing	Desk top publishing	Industry Product	1/2/3	Adobe Framemaker; Adobe inDesign; Quark Xpress	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable

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[10] Under Review

Domain	Sub-Domain	Standards	Class	Baseline	Containment	Retirement	Emerging
Publishing	Scanning & OCR	Industry Product	1/2/3	OmniPage	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
Publishing	Web Authoring	Industry Product	1/2/3	Microsoft FrontPage; MacroMedia Dreamweaver;	Adobe goLive; IBM WebSphere Studio Homepage Builder[11]	Text Editors	VS.NET; ASP.NET
Publishing	Web Content Systems Management	Industry Product	1/2/3	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
Publishing [BASE-IMAGE]	Document Viewer	Generic Specification	1/2/3	Adobe Acrobat 6.x	None Identified OR Not Applicable	Acrobat 5.x	None Identified OR Not Applicable
User Interface	Language	Generic Specification	1/2/3	English (Canada) [en-CA,]; as-required: French (Canada) [fr-CA	English (U.S.) [en-US]	None Identified OR Not Applicable	English (Canada) [eng-CA,]; as-required: French (Canada) [fra-CA
User Interface	Web Browser	Generic Specification	1/2/3	W3C Accessibility level 2;	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
Utility [BASE-IMAGE]	File Compression	Industry Product	2/3	WinZip 9.0; MS Windows XP	WinZip 8.1;	All Earlier versions; All other software in this category	None Identified OR Not Applicable
Utility [BASE-IMAGE]	File Encryption	Industry Product	2/3	WinZip 9.0; MS Windows XP	RSA	None Identified OR Not Applicable	None Identified OR Not Applicable
Utility	3270 Terminal Emulation	Industry Product	1/2/3	IBM Host on Demand	Attachmate	None Identified OR Not Applicable	Browser-based

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[11] Under Review

Domain	Sub-Domain	Standards	Class	Baseline	Containment	Retirement	Emerging
Utility [BASE-IMAGE]	Terminal Emulation	Industry Product	1/2/3	ProComm	PLS Neterm	None Identified OR Not Applicable	Browser-based

3.1.2 Middleware

Domain	Sub-Domain	Standards	Class	Baseline	Containment	Retirement	Emerging
Application Server	Application Manager	Industry Product	1/2	IBM WebSphere	Oracle Forms Server[12]	None Identified OR Not Applicable	Tomcat; jBOSS; MS .NET EnterpriseA SP.NET
Application Server	Application Access Manager	Industry Product	1/2	Not Applicable	Citrix Metaframe	None Identified OR Not Applicable	Web enabled application development
Application Server	TP Monitor	Industry Product	1/2	WebSphere Application Server	Microsoft Transaction Server; IBM CICS; IMS; BEA Tuxedo	None Identified OR Not Applicable	.Net Enterprise Services
Application Server	Web Server	Industry Product	1/2	IBM HTTP Server; Apache	MS IIS	None Identified OR Not Applicable	None Identified OR Not Applicable
Application Server	Web Server	Industry Product	2	Apache	MS IIS	None Identified OR Not Applicable	None Identified OR Not Applicable
Distributed Services	Data Exchange	Generic Specification	1/2/3	JMS	FTP; SOAP/XML[13];	Flat Files	Web Services
Distributed Services	Directory Service	Generic Specification	1/2	LDAP; JNDI	X.500	None Identified OR Not Applicable	None Identified OR Not Applicable
Distributed Services	Directory Service	Industry Product	1/2	Tivoli Directory Manager; MS Active Directory	Lotus Domino Directory	Oracle Internet Directory; Lotus Notes Address Book	None Identified OR Not Applicable
Distributed Services	Integration Framework	Industry Product	1/2	None Identified OR Not Applicable	BEA Tuxedo	None Identified OR Not Applicable	None Identified OR Not Applicable

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[12] Under Review
[13] Under Review

Domain	Sub-Domain	Standards	Class	Baseline	Containment	Retirement	Emerging
Distributed Services	Document Systems Management	Custom Product	1/2	MICT Distribution Service	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
Distributed Services	Message Queuing	Industry Product	1/2	IBM MQ Series	None Identified OR Not Applicable	None Identified OR Not Applicable	MS MQ
Distributed Services	Message Translation & Routing	Industry Product	1/2	Under Development	None Identified OR Not Applicable	None Identified OR Not Applicable	Various Open Source; IBM MQ Integrater/Message Broker; Tamino; MS BizTalk
Distributed Services	Message Translation & Routing	Custom Product	1/2	Manitoba Business Links	None Identified OR Not Applicable	None Identified OR Not Applicable	Various Open Source
Distributed Services	Remote Procedure Calls	Generic Specification	1/2	Java RMI; RMI/IIOP; IIOPS	CORBA; SAP BAPI	Unix RPC; DCE;	W3C SOAP;
Distributed Services	Remote Procedure Calls	Industry Specification	1/2	None Identified OR Not Applicable	COM/DCOM/COM+; CORBA; SAP BAPI	MS RPC; SAP RFC	None Identified OR Not Applicable
Distributed Services	Terminal Services	Industry Product	1/2	Under Development	Citrix; MS Terminal Services	None Identified OR Not Applicable	None Identified OR Not Applicable
Internet	Data Exchange	Generic Specification	1/2/3	HTTP; HTTPS; SL SMTP; MOM;	SFTP; Telnet; SMB	FTP	HTTPR; RSVP
Internet	E-mail & Groupware	Generic Protocol	1/2/3	SMTP	None Identified OR Not Applicable	None Identified OR Not Applicable	iCalendar;
Internet	Web Browser	Generic Protocol	1/2/3	HTTP; HTTPS; HTML; CSS; XHTML; FTP	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable

Domain	Sub-Domain	Standards	Class	Baseline	Containment	Retirement	Emerging
Internet	Web Browser	Generic Specification	1/2/3	MacroMedia Flash; Adobe PDF; GIF; JPEG; MIME; TIFF	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
ISO Network Layer	Protocol Stack	Generic Protocol	1/2/3	IP; IP Sec	SNA	RIP	IPv6
ISO Transport Layer	Protocol Stack	Generic Protocol	1/2/3	TCP/UDP	IPX/SPX	ArcNet; Token Ring	None Identified OR Not Applicable
Runtime Environment [BASE-IMAGE]	.NET	Industry Product	1/2/3	.Net Framework version 1.1	.Net Framework version 1.0	All Earlier versions; All other software in this category	.NET Framework 2.0
Runtime Environment [BASE-IMAGE]	Java	Generic Specification, Generic Product, Industry Product	1/2/3	Java Runtime Environment 1.4.2	JRE 1.3.x	JRE 1.2.x and below	JRE 1.5.x

3.1.3 Server & Infrastructure

Domain	Sub-Domain	Standards	Class	Baseline	Containment	Retirement	Emerging
Application Server	Transactional Container	Industry Product	1/2	IBM WebSphere	BEA Tuxedo	None Identified OR Not Applicable	jBoss; MS .NET Enterprise
Data Management	Aggregate Database	Industry Product	1/2	DB2 Warehouse Manager; Oracle[14]	None Identified OR Not Applicable	None Identified OR Not Applicable	mySQL; SQL Server
Data Management	Database - Non-Transactional	Industry Product	1	Lotus Notes/Domino;	File system folders	None Identified OR Not Applicable	None Identified OR Not Applicable
Data Management	Database - Non-Transactional	Industry Product	2	Lotus Notes/Domino; MS Exchange;	File system folders	None Identified OR Not Applicable	mySQL; XML database
Data Management	Database - Transactional	Industry Product	1	DB2	Oracle[15]; Sybase; Delphi; ADABAS	Access; Xbase; Paradox; Ingres; IMS; Wang; VSAM	OODBMS; Open Source; SQL Server[16]; MySQL
Data Management	Database - Transactional	Industry Product	2/3	DB2; SQL Server; Oracle[17];	ADABAS; Delphi; Paradox; Sybase; IMS; Xbase; Sybase; Ingres; mySQL[18]	VSAM; Wang; MS Access	OODBMS; Open Source;
Data Management	Database - Warehouse	Industry Product	1/2	IBM DB2 Warehouse Manager	Oracle[19]	Predict	SQL Server
Database	Programming Language	Generic Specification	1/2/3	ANSI SQL 92	All previous versions of ANSI SQL; Stored Procedures	None Identified OR Not Applicable	ANSI SQL 2001
Database	Programming Language	Industry Specification	1/2/3	None Identified OR Not Applicable	PLSQL; Stored Procedures	None Identified OR Not Applicable	None Identified OR Not Applicable

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[14] Under Review
[15] Under Review
[16] Under Review
[17] Under Review
[18] Under Review
[19] Under Review

Domain	Sub-Domain	Standards	Class	Baseline	Containment	Retirement	Emerging
Office Productivity	E-mail & Groupware Server	Industry Product	1/2/3	MS Exchange 2003	Lotus Notes/Domino	None Identified OR Not Applicable	None Identified OR Not Applicable

3.2 Information & Data

Domain	Sub-Domain	Standards	Class	Baseline	Containment	Retirement	Emerging
ISO Application Layer	Application Configuration	Generic Specification	1/2/3	XML	properties files	.ini files	None Identified OR Not Applicable
ISO Application Layer	Data Exchange	Generic Specification	1/2/3	XML	None Identified OR Not Applicable	EDI	None Identified OR Not Applicable
ISO Application Layer	Data Translation / Transformation	Generic Specification	1/2/3	XSLT	None Identified OR Not Applicable	EDI	None Identified OR Not Applicable
ISO Application Layer	Meta Data and Schema	Generic Specification	1/2/3	Under Development	HL7 v2.x; custom	None Identified OR Not Applicable	ebXML; Dublin Core; HL7 v3.x; XHTML; SVG;
Office Productivity	Document Distribution	Industry Specification	1/2/3	PDF 1.5	PDF 1.4	None Identified OR Not Applicable	None Identified OR Not Applicable
Office Productivity	E-mail & Groupware	Industry Specification	1/2/3	MS OutLook 97: .ost, .pst	None Identified OR Not Applicable	All Earlier versions of MS OutLook; All other Personal Information Manager software	XML - Schema TBD; iCalendar; vCard
Office Productivity	Presentations	Industry Specification	1/2/3	MS PowerPoint 97: .ppt	None Identified OR Not Applicable	MS PowerPoint 95; All Earlier versions of MS PowerPoint; All other Presentation software	XML - Schema TBD; PDF
Office Productivity	Spreadsheet	Industry Specification	1/2/3	MS Excel 97: .xls	None Identified OR Not Applicable	MS Excel 95; All Earlier versions of MS Excel; All other SpreadSheet software	XML - Schema TBD; PDF

Domain	Sub-Domain	Standards	Class	Baseline	Containment	Retirement	Emerging
Office Productivity	Word Processing	Industry Specification	1/2/3	MS Word 97: .doc	WordPerfect	MS Word 95; All Earlier versions of MS Word; All other Word Processing software	XML - Schema TBD; PDF

3.3 Systems Management

Domain	Sub-Domain	Standards	Class	Baseline	Containment	Retirement	Emerging
Distributed Services	Data Exchange	Generic Specification	1/2	SNMP v3; RFC 3410; RFC 3411;	SNMP v2; RFC 2570; RFC1157; RFC 2571	SNMP v1.x	None Identified OR Not Applicable
Distributed Services	Application Management	Industry Product	1/2	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
Distributed Services	Configuration Management	Custom Specification	1/2	MICT AD&D Change Management Process	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
Distributed Services	Storage Management	Industry Product	1/2	Tivoli Storage Manager	None Identified OR Not Applicable	Adstor	None Identified OR Not Applicable
Distributed Services	Systems Management	Generic Specification	1/2	ITIL	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
Distributed Services	Systems Management	Industry Product	1/2	Under Development	OpenView; NetView; IBM Tivoli	None Identified OR Not Applicable	None Identified OR Not Applicable
Distributed Services	Systems Management Attributes	Generic Specification	1/2	RFC 1213; RFC 1215; RFC 3413;	RFC 2573	None Identified OR Not Applicable	None Identified OR Not Applicable

3.4 Technical

3.4.1 Internetwork

Domain	Sub-Domain	Standards	Class	Baseline	Containment	Retirement	Emerging
Infrastructure Services	Voice	Combination		N/A	None Identified OR Not Applicable	None Identified OR Not Applicable	VoIP
ISO Application Layer	Place holder	Place holder		Under Development	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
ISO Data Link Layer	LAN	Generic Specification	1/2/3	100 BaseTX (IEEE 802.3u); 802.1x; 802.1P; 802.1Q	10BaseT (IEEE 802.3l); 100BaseT4; 100BaseFX;	10Base5; 10Base2; 802.5; 10BaseF; Shared Ethernet 10/100 (Hubs)	Full-Duplex; 1000BaseT
ISO Data Link Layer	LAN	Industry Product	1/2/3	Cisco Ethernet 10/100/1000; Dell Ethernet 10/100/1000; EtherChannel 200 to 800Mbps; Gigabit Ethernet backbone; NICs with PowerOn LAN	Hubs; Repeaters; Transceivers	All non-standard, non MECL hardware	None Identified OR Not Applicable
ISO Data Link Layer	SAN	Generic Specification	1/2	Fiber Channel Protocol (FCP)	None Identified OR Not Applicable	None Identified OR Not Applicable	FC-SW2
ISO Data Link Layer	SAN	Industry Product	1/2	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
ISO Data Link Layer	WAN	Generic Protocol	1/2	Satellite; Frame Relay; Ethernet; High Speed xDSL; MPLS; Sonet; Frame Relay; X.25	Bridge to Bridge Wireless	ATM	None Identified OR Not Applicable

Domain	Sub-Domain	Standards	Class	Baseline	Containment	Retirement	Emerging
ISO Data Link Layer	WAN	Industry Product	1/2	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
ISO Data Link Layer	Wireless LAN Access Point	Generic Protocol	1/2	IEEE 802.11d; 802.11a/g; 802.11i; AES; 802.3af; 802.1x	P2P; Bridge to Bridge Wireless; TKIP	802.11b;	802.16a; 802.11e; EAP-TLS
ISO Data Link Layer	Wireless LAN Access Point	Industry Product	1/2	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
ISO Data Link Layer	Wireless LAN Device	Generic Protocol	1/2	802.11a/g; 802.11i; AES; 802.1x	TKIP	802.11b	802.11x, 802.11w; BlueTooth; EAP-TLS; 802.11e
ISO Data Link Layer	Wireless LAN Device	Industry Product	1/2	Under Development	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
ISO Data Link Layer	Wireless Cellular Data Device	Generic Protocol	1/2	Under Development	None Identified OR Not Applicable	None Identified OR Not Applicable	1X; Edge
ISO Data Link Layer	Wireless Cellular Data Device	Industry Product	1/2	Under Development	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
ISO Network Layer	LAN	Industry Product	1/2/3	Cisco	All non-standard, non-MECL hardware	All non-standard, non MECL hardware	None Identified OR Not Applicable
ISO Physical Layer	Cabling	Generic Specification	1/2/3	CCIA Cat5 UTP, Fibre	Cat4	Cat3,Coax	Cat6, Cat7
ISO Physical Layer	Cabling	Generic Specification	1	CCIA Cat5e UTP	Cat4	Cat3,Coax	Cat6, Cat7
ISO Physical Layer	Connector	Generic Specification	1/2/3	RJ-45	None Identified OR Not Applicable	RJ-11; RJ-12; TRS; BNC;	None Identified OR Not Applicable

Domain	Sub-Domain	Standards	Class	Baseline	Containment	Retirement	Emerging
ISO Physical Layer	Structured Cabling	Generic Specification	1/2/3	EIA/TIA 568A	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
ISO Physical Layer	Structured Cabling	Generic Specification	1/2/3	EIA/TIA 606	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
ISO Physical Layer	Structured Cabling Plant	Generic Specification	1/2/3	EIA/TIA 569	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
ISO Presentation Layer	Under Development	Generic Specification	1/2/3	Under Development	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
ISO Session Layer	Under Development	Generic Specification	1/2/3	Under Development	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
ISO Transport Layer	VPN	Industry Product	1/2	Cisco VPN Concentrator; Aventail SSL	None Identified OR Not Applicable	All other products	None Identified OR Not Applicable

3.4.2 Platform

Domain	Sub-Domain	Standards	Class	Baseline	Containment	Retirement	Emerging
Hardware	Application Server	Industry Product	1/2/3	HP Intel, Dell Intel, Compaq Intel, IBM Intel, HP RISC, Sun RISC, IBM RISC, Mainframe	Mainframe; 32 bit Technical - Platforms; Pentium II & III	< 1 GHz processor clock speed	AMD 64 Opteron; other 64 bit Technical - Platforms
Hardware	Application Server - Internet	Generic Specification	1/2/3	Centre for Internet Security Standards	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
Hardware	Desktop	Industry Product	1/2/3	See MECL for Hardware;	All non-standard, non-MECL hardware	All non-standard, non-MECL hardware	None Identified OR Not Applicable
Hardware	Monitor	Industry Product	1/2/3	See MECL for Hardware; (XGA, SXGA, UXGA, WXGA)	All non-standard, non-MECL hardware	Non Energy efficient; resolution < 1024x768; VGA and below	None Identified OR Not Applicable
Hardware	Desktop/Notebook Computer	Industry Product	1/2/3	See MECL for Hardware	All non-standard, non-MECL hardware; Pentium II	Pentium < 300 MHz	AMD 64
Hardware	E-mail & Groupware Server	Industry Product	1/2/3	HP Intel, Dell Intel, Compaq Intel, IBM Intel, HP RISC, Sun RISC, IBM RISC, Mainframe	All non-standard, non-MECL hardware	None Identified OR Not Applicable	AMD 64 Opteron
Hardware	File Server	Industry Product	1/2/3	HP Intel, Dell Intel, Compaq Intel, IBM Intel, HP RISC, Sun RISC, IBM RISC, Mainframe	None Identified OR Not Applicable	None Identified OR Not Applicable	AMD 64 Opteron
Hardware	Network Attached Storage	Industry Product	2/3	Under Development	None Identified OR Not Applicable	None Identified OR Not Applicable	SMART capable drives
Hardware	Non-workstation	Industry Product	3	See MECL for Hardware	Palm, HP Jornada, Compaq IPAQ	None Identified OR Not Applicable	None Identified OR Not Applicable
Hardware	Optical, Tape and solid state	Industry Product	1/2/3	see MECL	None Identified OR Not Applicable	None Identified OR Not Applicable	USB storage devices

Hardware	Print Server	Industry Product	1/2/3	See MECL for Hardware	All non-standard, non-MECL hardware	None Identified OR Not Applicable	AMD 64 Opteron; Print Appliance
Hardware	Printers	Industry Product	1/2	See MECL for Hardware	Thermal; < 300 dpi; < 1 ppm; LED printers	Dot Matrix	Multifunction Device
Hardware	Printers	Industry Product	3	See MECL for Hardware	Dot Matrix	None Identified OR Not Applicable	None Identified OR Not Applicable
Hardware	Server Attached Storage	Industry Product	2/3	None Identified OR Not Applicable	Server Attached Storage	None Identified OR Not Applicable	SAN; SMART capable drives
Hardware	Storage Area Networks	Industry Product	1/2	Under Development	None Identified OR Not Applicable	None Identified OR Not Applicable	Solid state storage
ISO Data Link Layer	Peripheral Connectivity	Generic Protocol	1/2/3	Firewire 400 (IEEE 1394), USB 2.0	USB 1.1, Parallel, SCSI	Serial; Proprietary; PS2	Bluetooth, Firewire 800, HyperTransport (release 2.0)
ISO Data Link Layer	Storage Connectivity	Generic Protocol	1/2	Fibre Channel; ATA-6; RAID 5; SATA	SCSI; RAID 0	None Identified OR Not Applicable	FCIP; iSCSI
ISO Data Link Layer	Storage Connectivity	Generic Protocol	3	ATA-6; RAID 1 or none; SATA	SCSI; RAID 0	None Identified OR Not Applicable	FCIP;
Office Productivity	Non-workstation	Industry Product	1/2/3	OutLook 2003	None Identified OR Not Applicable	None Identified OR Not Applicable	None Identified OR Not Applicable
Operating System	Application Server - UNIX based	Industry Product	1/2/3	HP/UX, Solaris [20], IBM AIX; Redhat Linux Enterprise[21]	z/OS; Microsoft Windows Services for Unix	None Identified OR Not Applicable	64 bit enabled OS
Operating System	Application Server - Windows based	Industry Product	1/2/3	Windows 2003 Server (Under Development)	Windows 2000	Windows NT	64 bit enabled OS; Longhorn
Operating System	Desktop/Notebook	Industry Product	1/2/3	Windows XP Professional	Windows 2000; MacOS	Windows 95, NT	Linux

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[20] Under Review
[21] Under Review

Operating System	E-mail & Groupware Server	Industry Product	1/2/3	Windows 2003 Server	Windows 2000	Windows NT	Linux
Operating System	File Server	Industry Product	1/2/3	Windows 2003 Server	Windows 2000	Windows NT	Linux; NFS; AFS
Operating System	Non-workstation	Industry Product	3	Windows Mobile; Blackberry	None Identified OR Not Applicable	Palm	Linux
Operating System	Print Server	Industry Product	1/2/3	Windows 2003 Server	Windows 2000	Windows NT	Linux
Operating System	Print Server	Industry Product	1/2/3	Windows 2003 Server	None Identified OR Not Applicable	NT	Print Appliance

Appendix A: Glossary

The following are used in this document:

API	Application Programming Interface; synonymous with System Interface
EJB	Enterprise Java Bean as described in the J2EE model
FLS	French Language Support
HSM	Hierarchical Storage Management
J2EE	Java 2 Enterprise Edition, which includes J2SE and enterprise extensions
J2SE	Java 2 Standard Edition, the core java language specification
JavaMail	An abstracted API for accessing SMTP, POP and IMAP services from Java
OS	Operating System (e.g.: Windows 2000, UNIX, Linux, and AIX)
PCL	Printer Control Language
PDF	Portable Document Format readable by the Adobe Acrobat viewer
RMI	Remote Method Invocation is a Java distributed computing model
SMTP	Simple Mail Transfer Protocol specifies a socket level store and forward message protocol

European Computer Manufacturing Association	www.ecma.ch	Standardization of information and communication systems, including programming languages
Dublin core Metadata Initiative	www.dublincore.org	Open forum dealing with the development of interoperable online metadata standards
Unified Modeling Language	www.uml.org	Standards for modeling applications
Rational Unified Process	www.rational.com	Software engineering best practices (not a standards body)
International Telecommunication Union	www.itu.int	International organization under the auspices of the UN. Defines standards for global telecom networks and services, including the X series (x.400 for message handling, x.500 for directories, x.509 for PKI, etc.)
Accredited Standards Committee X12	www.x12.org	Standards for cross-industry exchange of business info.
Universal Description Discovery and Integration	www.uddi.org	Registration and discovery of web services.
Wireless Application Protocol Forum	www.wapforum.org	Industry association that supports and gives input to standards bodies on WAP issues.

A more complete and up-to-date list of standards organizations may be found at
http://en.wikipedia.org/wiki/Standards_organization .

Appendix C: Application Classification – Risk versus Impact Matrix

Legend: ■ High Applicability ❑ No Applicability	Public Application			Enterprise			Departmental			Personal/Desktop		
	Class 1	Class 2	Class 3	Class 1	Class 2	Class 3	Class 1	Class 2	Class 3	Class 1	Class 2	Class 3
Impact												
High Risk												
High Risk, Critical Impact	■	■	❑	■	■	❑	■	■	❑	❑	❑	❑
High Risk, Medium Impact	■	■	❑	■	■	❑	■	■	❑	❑	❑	❑
High Risk, Low Impact	❑	❑	■	❑	❑	■	❑	❑	■	❑	■	■
High Risk, No Impact	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Medium Risk												

Medium Risk, Critical Impact	■	■	☐	■	■	☐	■	■	☐	☐	☐	☐
Medium Risk, Medium Impact	■	■	☐	■	■	☐	■	■	☐	☐	☐	☐
Medium Risk, Low Impact	☐	☐	■	☐	☐	■	☐	☐	■	☐	■	■
Medium Risk, No Impact	☐	☐	■	☐	☐	■	☐	☐	■	☐	■	■
Low Risk												
Low Risk, Critical Impact	■	■	☐	■	■	☐	■	■	☐	☐	☐	☐
Low Risk, Medium Impact	■	■	☐	■	■	☐	■	■	☐	☐	☐	☐
Low Risk, Low Impact	☐	☐	■	☐	☐	■	☐	☐	■	☐	■	■
Low Risk, No Impact	☐	☐	■	☐	☐	■	☐	☐	■	☐	■	■