Domain: Access and Delivery

DESCRIPTION

The Access and Delivery Domain addresses how information, transactions and services are delivered to and accessed by the Commonwealth's constituents and business partners.

STRATEGIC IMPORTANCE

The manner in which government information, transactions and services are delivered constitutes the public face of the Commonwealth. Accuracy, timeliness and efficiency are as important as consistent look and feel, ease of navigation and accessibility.

RELATED TRENDS

- Separation of content from presentation allowing the same content to be delivered through a variety of access mechanisms providing a consistent look and feel
- Ubiquitous secure access to information, transactions and services anywhere, any time
- Distributed content management allowing content to be developed and refreshed by the most appropriate content owners throughout the organization instead of technical experts

VISION

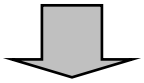
The majority of government information, services and transactions can be accessed through web technologies using a variety of access mechanisms such as web browsers, Personal Digital Assistants (PDAs), cell phones, and interactive voice response systems. Information, services and transactions are available to government's constituents and business partners at the time and location most convenient to them.

ROADMAP

Current State

- A majority of agency applications are mainframe or client-server based limiting access to transactions and data.
- Content is still largely organized and presented by agency organization versus user intention.
- The Mass.Gov portal includes both HTML-based agency sites where content and display are bound together with no distributed content management, and XML-based agency sites where content in separated from display and content management is distributed to the content owner.

- Agency web applications incorporate their own inconsistent presentation layers.



Target State

- The majority of government applications can be accessed using web technologies.
- Content is organized and presented in a variety of ways to accommodate users' navigation preferences using a "no wrong door" approach.
- Content is separated from presentation and is delivered in a consistent fashion through the Mass.gov portal or Secretariat sub portals organized by community of interest.
- The Mass.gov portal and Secretariat sub portals provide a consistent presentation layer for all agency web-based applications.

BOUNDARY

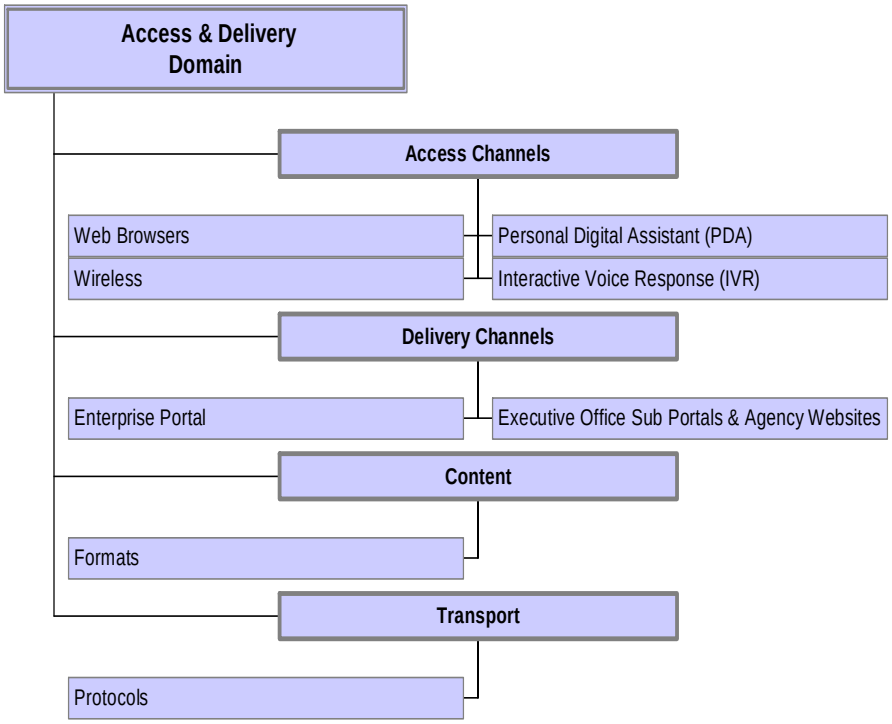
The Access and Delivery Domain includes the mechanisms through which government information and services can be accessed and the delivery channels used to present them. The domain also addresses specifications for content and its transport. Security considerations for Access and Delivery are addressed in the Security Domain.

RELATED POLICIES

- Web Accessibility Standards

ASSOCIATED DISCIPLINES

- Access Channels
- Delivery Channels
- Content
- Transport


Access & Delivery Domain
Access Channels
Web Browsers
Wireless
Personal Digital Assistant (PDA)
Interactive Voice Response (IVR)
Delivery Channels
Enterprise Portal
Executive Office Sub Portals & Agency Websites
Content
Formats
Transport
Protocols

Domain: Access and Delivery

Discipline: Access Channels

DESCRIPTION

Access channels are mechanisms by which a user or a system is able to access the online information and services offered by the Commonwealth. A service maybe exposed through one or more access channels and each channel may comprise one or more technologies conforming to open standards.

STAKEHOLDERS / ROLES

- external and internal users of government information and services
- content managers
- application developers

ROADMAP

While there's a significant amount of government information and services currently available online, most of it can only be accessed through the use of a web browser. The target state is to support various standards-compliant access mechanisms, such as PDAs and cell phones, in addition to browsers. This will enable the end user to make use of the standards-based access mechanism of their choice from any location.

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.
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- **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.
- **OMA** -The mission of the Open Mobile Alliance is to facilitate global user adoption of mobile data services by specifying market driven mobile service enablers that ensure service interoperability across devices, geographies, service providers, operators, and networks, while allowing businesses to compete through innovation and differentiation. More information about OMA can be found at http://www.openmobilealliance.org.

ASSOCIATED TECHNOLOGY AREAS

- Web Browsers
- Personal Digital Assistants (PDAs)
- Wireless
- Interactive Voice Response (IVR)

Domain: Access and Delivery
Discipline: Access Channels
Technology Area: Browser

DESCRIPTION

Web Browsers are software programs that allow users to navigate the Web and access text, hyperlinks, graphics, audio, video and other multimedia. Browsers translate the hypertext markup language (HTML) to display Web pages.

TECHNOLOGY SPECIFICATION: BROWSER TYPES

Description - Although most of the generally available browsers provide standard functionality for basic features, they may offer proprietary extensions for particular platforms. Use of proprietary extensions can make the site less accessible and less functional for those that are not running the same type and exact version of the browser.

Guidelines – Web sites should not include features that are tightly coupled with a specific type and version of browser. Sites should be tested to make sure they work appropriately with the browsers identified below.

Standards and Specifications – Web sites must support the following minimum versions or higher for the most frequently used browsers:

- Microsoft Internet Explorer v. 5.5
- Netscape Communicator v. 6.2
- Mozilla Navigator v. 1.5
- Lynx v. 2.8.5 (text browser)

TECHNOLOGY SPECIFICATION: SECURITY FUNCTIONALITY

Description – Certain versions of browsers incorporate security functionality such as being able to recognize digital certificates and being able to encrypt browser sessions that are required for many government services.

Standards and Specifications –Browsers must support 128-bit encryption and X.509 v.3 digital certificates. The minimum browser versions listed above support this functionality.

Domain: Access and Delivery
Discipline: Delivery Channels

DESCRIPTION

Delivery channels are mechanisms through which the Commonwealth exposes informational and transactional services.

STAKEHOLDERS / ROLES

- external and internal users of government information and services
- content managers
- application developers

ROADMAP

Most state agencies today have their own self-designed websites. Most of these websites have different ways to group and present information, different ways to navigate each site, and do not provide state constituents and business partners with a consistent user experience.

The Mass.Gov Portal was developed to serve as the Commonwealth's enterprise gateway to state information and services. The creation of the portal was the first step towards creating a consistent user experience for our constituents and business partners. Currently, Mass.Gov aggregates information from different agency websites into topics, subtopics, and categories and presents it to the user by constituency (resident, business, visitor, public employee). The next step in providing users with a consistent user experience is to organize and present information from agency websites in a consistent manner using the portal technologies.

The Office of Mass.Gov is currently undertaking a portal migration project to convert Executive Office (EO) websites into sub portal sites. The plan is that each EO that has been portalized will have the tools to migrate additional agency websites into that EO's sub portal; thereby reducing the total number of agency websites throughout the state. In the target state, each agency will not necessarily have their own website anymore, however, they will have an "About Us" page that will be accessible from the EO's agency index. The "About Us" page will have information and links about the agency's leadership, services and programs it provides, branch offices, and how it can be contacted.

In addition to hosting static content, it is envisioned that the Mass.Gov portal and EO sub portals will be able to serve as the presentation layer for agency web applications and services.

ENTERPRISE TECHNOLOGY SOLUTION

Mass.Gov (http://www.mass.gov/) is the Commonwealth's enterprise portal. The portal is managed by ITD's Mass.Gov Office and provides agencies with a shared solution for portal functionality, delegated content management, search functionality and event calendaring.

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.
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ASSOCIATED TECHNOLOGY AREAS

- Enterprise Portal
- Executive Office Sub-Portals and Agency Web Sites

Domain: Access and Delivery
Discipline: Delivery Channels
Technology Area: Enterprise Portal

DESCRIPTION

The Commonwealth's enterprise portal, Mass.Gov, is the state's gateway to government information and services. The portal provides a one-stop shop for citizens, residents, businesses, and public employees.

The Mass.Gov Portal makes available the following functionality:

- **Aggregation of information by constituency, topic, and subtopic** – specifically, the Mass.Gov portal aggregates information by Resident, Business, Visitor, and Public Employee. Within each constituency information is presented by topic (e.g., Health, Safety, etc.) and further by subtopic (e.g., Protection and Patient Rights). This aggregation of information makes it easier for users to find information and services according to their specific needs without the need to understand government bureaucracy.
- **Conduct Business** – Mass.Gov provides context-sensitive access to state-provided online transactions. The Conduct Business module (or online services page) provides users with fingertip access to all state transactions that can be done online, e.g., renew your driver's license, reserve a campsite.
- **Find Information** - Mass.Gov provides context-sensitive look-up access to state databases. The Find Information module (or online services page) provides users with fingertip access to all state databases that are web-enabled, e.g., physicians' lookup, childcare lookup.
- **State Agency Listing** – Mass.Gov provides a list of agencies that link to their website enabling one place for users to find any website owned by a state entity.
- **News and Updates** – Mass.Gov provides a place for agencies to highlight newsworthy information focused towards specific constituencies (i.e, residents, businesses, visitors, and public employees)
- **Feature Story** – Mass.Gov provides a place on the state homepage for agencies to feature high-interest stories that need to reach a wide audience.
- **Calendar** – State entities can use the portal calendar application as a single source to communicate state event information to the public. Sorting and search functionality are automatic enabling customers to find information about an event quickly.
- **Search** – Mass.Gov provides an enterprise search capability. Mass.Gov's search engine indexes state-owned websites.

- **Delegated content management** – Mass.Gov provides subject matter experts at agencies that have been migrated into the portal technology the ability to create, edit, and publish their own content on their website.
-

TECHNOLOGY SPECIFICATION: PORTAL

Description – The Mass.Gov portal uses enterprise portal software that provides a variety of features and functionality.

Guidelines – Agencies that are migrated to the portal with the assistance of the Mass.Gov office will use the enterprise portal software. Agencies do not have to use the enterprise portal software to link to the portal.

Standards and Specifications –

- Epicentric v. 3.5 – Java-based enterprise portal software. Epicentric has been acquired by Vignette
  Refer to: http://www.vignette.com/contentmanagement/0,2097,,00.html

Migration Strategy – The Mass.Gov office plans to migrate to Vignette Application Portal 4.5 in 2005.

TECHNOLOGY SPECIFICATION: CONTENT MANAGEMENT

Description – Enterprise content management allows for the delegated development, management, and deployment of agency web content. The software features include delegated administration, versioning, workflow and templating for XML based content.

Guidelines– Agencies that are migrated to the portal with the assistance of the Mass.Gov office will use the enterprise content management software. Agencies that do not use the portal's content management software will be able to feed content to the portal using acceptable formats to be defined in a future version of the ETRM.

Standards and Specifications –

- Interwoven TeamSite v. 5.0 -
  Refer to: http://www.interwoven.com/products/content_management/index.html

Migration Strategy - The Mass.Gov office plans to migrate to TeamSite 5.5 in 2005.

TECHNOLOGY SPECIFICATION: SEARCH

Description – Enterprise Search provides search functionality for web sites at the state and agency levels. Spell-checking, stemming, thesaurus look-ups, recommended links, and multiple query options are part of the functionality provided.

Guidelines – Agencies that are migrated to the portal with the assistance of the Mass.Gov office will use the enterprise search functionality. Agencies not yet migrated that are interested in using the enterprise search functionality should contact the Mass.Gov office.

Standards and Specifications –

- AltaVista v. 5.0 -
  Refer to: http://www.altavista.com/about

Migration Strategy - AltaVista has been acquired by FAST. The Mass.Gov office plans to evaluate migrating to FAST or another enterprise search product in 2005.

Domain: Access and Delivery
Discipline: Delivery Channels
Technology Area: Executive Office Sub Portals and Agency Websites

DESCRIPTION

Executive Office (EO) sub portals use portal technologies to manage and present agency content and services. EO sub portals are consistent in style and navigation with the Mass.Gov enterprise portal. Agency web sites will be migrated into their respective EO sub portals.

TECHNOLOGY SPECIFICATION: GRAPHICAL USER INTERFACE (GUI)

Description – The aspects of a computer system or program that can be seen or otherwise perceived by the human user, and the commands and mechanisms the user uses to control its operation and input data. Most agencies have designed their own GUI's for providing information to their users. These GUI's are not necessarily consistent.

Guidelines - As Executive Department agency websites are portalized they will automatically adopt the Mass.Gov portal look and feel. For Executive Offices and agencies that are not yet portalized, they should adopt the Mass.Gov agency banner available for download at http://www.state.ma.us/webmass/portal/massgov2banner.htm. For the benefit of our state constituents and business partners, it is strongly recommend that agencies which are not part of the Executive Department also adopt the Mass.Gov look-and-feel including the banner design at the top and the general layout for displaying information.

Standards and Specifications – GUI standards will be documented as part of the portal migration project.

Migration Strategy - Agencies that have a need to redesign their websites should contact their EO's for guidance.

TECHNOLOGY SPECIFICATION: PORTLETS

Description - One of the standard ways of exposing the presentation tier of services (applications) to clients is through Portlets. Portlets are web components like Servlets and are specifically designed to be aggregated in the context of a composite page. In general, many Portlets are invoked within a single request of a Portal page to form the composite view for the client. In some cases the view maybe dependant on user preferences or security permissions.

Guidelines - For J2EE based applications, agencies should use Portlets compliant with Java Specification Request (JSR) 168. A number of major vendors and open source products comply with JSR 168 specifications for Portlets. Agencies may also use C# portlets for exposing .NET services. Agencies should consider the use of Web Services for Remote Portal (WSRP) specification if they intend to expose the functionality as a Web

Service through the Portal. WSRP provides a platform-neutral standards-based method of exposing Portlets but results in an additional layer of abstraction.

Standards and Specifications –

- Java Specification Request (JSR) 168 for J2EE based applications
  Refer to: http://www.jcp.org/en/jsr/detail?id=168
- C# Portlets for .Net based applications
  Refer to: http://msdn.microsoft.com/vcsharp
- Web Services for Remote Portal (WSRP) v 1.0 for web services
  Refer to: http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=wsrp

Migration Strategy - As agencies consider procuring or developing web applications, they should ensure that these applications support the standards listed above so that they will be able to integrate with the Enterprise Portal or the EO Sub Portal.

Domain: Access and Delivery
Discipline: Content

DESCRIPTION

This discipline addresses the guiding principles for organizing the content that is exposed by the application or service to internal and external users.

BOUNDARY

The Content Discipline is limited to the content delivery aspects of the application or service. It does not cover architectural and design specifications that are addressed in the Application Domain.

STAKEHOLDERS/ROLES

- external and internal users of government information and services
- content managers
- application developers

ROADMAP

The presentation of content is currently closely coupled with and dictated by the individual application. By using standards-based presentation frameworks and formats as part of a Service Oriented Architecture, the presentation of content can be abstracted from the application allowing the content to be re-used and delivered through multiple access channels.

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.
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ASSOCIATED TECHNOLOGY AREAS

- Formats

Domain: Access and Delivery
Discipline: Content
Technology Area: Formats

DESCRIPTION

Content formats are standard specifications used to present information and services on the web. Formats can be used to present either static or dynamic content.

TECHNOLOGY SPECIFICATION: HTML

Description - Hypertext Markup Language (HTML) is the lingua franca for publishing hypertext on the World Wide Web. It is a non-proprietary format that can be created and processed by a wide range of tools, from simple plain text editors to sophisticated authoring tools. The term hypertext alludes to the non-linear nature of hyperlinks which allow you to search the Web in the order that you like and markup is what HTML tags do to format or display the text inside them, for example, display the text as italicized or bold.

Guidelines – Agencies should be aware that certain HTML authoring tools may use proprietary extensions to the HTML open standard. To ensure compatibility with multiple browsers, agencies should avoid using proprietary HTML extensions.

Standards and Specifications –

- HTML v. 4.01: Latest W3C recommendation; a sub-version of HTML v. 4.0 that is an SGML application conforming to international standard ISO 8879.
  Refer to: http://www.w3.org/TR/html4

TECHNOLOGY SPECIFICATION: XML

Description - Extensible Markup Language (XML) is a simple, very flexible text format derived from ISO 8879. Originally designed to meet the challenges of large-scale electronic publishing, XML is also 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 a general availability and interchange of information that is structured according to its content--with any kind of application, in various presentations, for different target groups and different purposes.

Guidelines – Use of XML as a content format provides agencies with significant flexibility regarding the potential uses of the same content. It can facilitate the exchange of information between heterogeneous applications, databases, and enterprises. It can enable styling and presentation of the same information on multiple output devices and/or for different purposes and audiences. And it can serve as a storage format for long-lived or structurally rigorous document-centric information.

Standards and Specifications –

- XML v. 1.0 (Third Edition): Latest W3C recommendation
  Refer to: http://www.w3c.org/XML/Core/#Publications

- XML v. 1.1: W3C recommendation that updates XML so that it no longer depends on the specific Unicode version: you can always use the latest. It also adds checking of normalization, and follows the Unicode line ending rules more closely. You are encouraged to create or generate XML 1.0 documents if you do not need the new features in XML 1.1; XML Parsers are expected to understand both XML 1.0 and XML 1.1

Domain: Access and Delivery
Discipline: Transport

DESCRIPTION

The transport discipline addresses the various protocols that can be used to carry requests, responses and data for services exposed by the Commonwealth.

BOUNDARY

The Transport Discipline addresses higher level protocols that applications and services use to communicate with each other. It does not cover lower level protocols like TCP/IP that are addressed in the Integration Domain. Security issues related to this Discipline are addressed in the Security Domain.

STAKEHOLDERS/ROLES

- external and internal users of government information and services
- content managers
- application developers

ROADMAP

Moving toward a Service Oriented Architecture requires consideration of newer higher-level protocols such as Simple Object Access Protocol (SOAP) used to transport data between services. These protocols have to be safely accommodated within an enabling enterprise security architecture.

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.
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ASSOCIATED TECHNOLOGY AREAS

- Protocols

Domain: Access and Delivery
Discipline: Transport
Technology Area: Protocols

DESCRIPTION

Protocols are sets of formal rules describing how to transmit data. This technology area addresses high level protocols that deal with the data formatting, including the syntax of messages, metadata, character sets, sequencing of messages, etc.

TECHNOLOGY SPECIFICATION: HYPERTEXT TRANSFER PROTOCOL (HTTP)

Description - The Hypertext Transfer Protocol (HTTP) is an application-level protocol for distributed, collaborative, hypermedia information systems. The HTTP protocol is a request/response protocol. A client sends a request to the server in the form of a request method, URI, and protocol version, followed by a MIME-like message containing request, modifiers, client information, and possible body content over a connection with a server. The server responds with a status line, including the message's protocol version and a success or error code, followed by a MIME-like message containing server information, entity metadata, and possible entity-body content.

Guidelines – HTML is the de facto standard for internet communications and should be used for delivering content and services over the internet.

Standards and Specifications –

- HTTP/1.1: HTPP is now considered a stable specification recommended by the WC3 and given RFC status by the Internet Engineering Task Force (IETF).
  Refer to: http://www.w3.org/Protocols/#IETF

TECHNOLOGY SPECIFICATION: HYPERTEXT TRANSFER PROTOCOL OVER SECURE SOCKET LAYER (HTTPS)

Description - HTTPS is Hypertext Transfer Protocol over Secure Socket Layer or HTTP over SSL. HTTPS encrypts and decrypts the page requests and page information between the client browser and the Web Server. HTTPS uses port 443 instead of the HTTP port 80 and usually uses a 40/128bit encryption algorithm from the client to the server.

SSL, developed by Netscape Communications Corporation, is the industry-standard method for protecting web communications. The SSL security protocol provides data encryption, server authentication, message integrity, and optional client authentication for a TCP/IP connection. Because SSL is built into all major browsers and web servers, simply installing a digital certificate turns on their SSL capabilities.

Guidelines – Since the Internet is an open network, agency services should not communicate confidential or otherwise sensitive information such as Social Security numbers or credit card transactions without encrypting the communication session via SSL.

Standards and Specifications –

- HTTPS (SSL-128 bit key length): Server certificates should be configured to a minimum 128 bit key length for secure agency communications.
  Refer to: http://wp.netscape.com/security/techbriefs/ssl.html?cp=sciln

TECHNOLOGY SPECIFICATION: SIMPLE OBJECT ACCESS PROTOCOL (SOAP)

Description – SOAP is a standard that defines application-level structure for messages. For two applications to integrate, they must agree upon an explicit message structure. SOAP provides an application-level message structure for use over numerous transport protocols. Applications that speak SOAP can easily exchange information with other applications that speak SOAP, facilitating integration between disparate systems. The SOAP message structure consists of a body that contains the request content and headers that contain extended information for security, routing, transactions, etc.

Guidelines – When using SOAP 1.1 an application can expose its data over one of several transport protocols, such as HTTP or MQ, and provides a standard request and response structure as defined by the SOAP specification. This structure allows other SOAP-enabled applications to easily integrate.

Standards & Specifications –

- Simple Object Access Protocol (SOAP) 1.1 - The SOAP 1.1 standard consists of three parts:
  - The SOAP envelope construct defines an overall framework for expressing what is in a message; who should deal with it, and whether it is optional or mandatory.
  - The SOAP encoding rules defines a serialization mechanism that can be used to exchange instances of application-defined data types.
  - The SOAP RPC representation defines a convention that can be used to represent remote procedure calls and responses.

  Although these parts are described together as part of SOAP 1.1, they are functionally orthogonal. In particular, the envelope and the encoding rules are defined in different namespaces in order to promote simplicity through modularity.

  Refer to:
  http://www.w3.org/TR/2000/NOTE-SOAP-20000508/

Migration Strategy – SOAP 1.2 has now been ratified by the W3C and supports the binding of SOAP with multiple transport protocols. However, it has not yet been included in the WS-I Basic Profile. Therefore, the latest SOAP version has not yet been tested for interoperability. Use of this new standard will require agencies to do their own interoperability testing until such time as the WS-I Basic Profile is updated. The ETRM standards will be revised to reflect revisions to the WS-I Basic Profile.