

Published on *Office of the Chief Information Officer* (<https://ocio.wa.gov>)

[Home](#) > [Policies](#) > 183.30.20 - Service Modeling Standards

Adopted by the Information Services Board (ISB) on November 9, 2006

Policy No. 183.30.20 Service Modeling Standards

ISB Standards Version 5

November 9, 2006 ISB Standards?Version 5

Table of Contents

[1. Document History](#)

[2. Document Context](#)

[3. Introduction and Purpose](#)

[3.1. Summary of Standards](#)

[4. Compliance Component Information](#)

[4.1. Basic Component Metadata](#)

[4.2. Statutory Authority](#)

[4.3. Scope](#)

[4.4. Relationship to Other Components, Policies, Standards, or Guidelines](#)

[5. Service Modeling Standards and Rationale](#)

[5.1. Standards](#)

[5.1.1. Contextual Modeling Standards](#)

[5.1.2. Conceptual Modeling Standards](#)

[5.1.3. Logical Modeling Standards](#)

[5.1.4. Physical Modeling Standards](#)

[5.1.5. Templates](#)

[5.2. Rationale](#)

[5.2.1. Alignment with Over-Arching Enterprise Architecture Principles](#)

[5.2.2. Encouraging Reuse through Improved Communication and Common Tools](#)

[5.2.3. Conformance with Federal Standards for Information Exchange](#)

[6. References](#)

[Appendix A: Documenter Team](#)

[Appendix B: Review Log](#)

1. Document History

Date

Version

Editor

Change

April 14, 2006	1.0	Kent Andrus Scott Came	Initial Draft
May 12, 2006	1.1	Scott Came	Initial guidelines, rough draft of rationale
May 26, 2006	1.2	Scott Came	Added definitions to scope statement; plain talk
May 31, 2006	2.0	Scott Came	Endorsed by EAC
September 14, 2006	4.0	Trina Regan	Adopted by ISB
October 25, 2006	4.1	Trina Regan	Guidelines to standards Endorsed by EAC
November 9, 2006	5	Paul Douglas	Adopted by ISB as Standards

2. Document Context

This document currently has ISB Standards status. This status signifies that the document was adopted as standards by a vote of the Information Services Board. For more information about the ISB Enterprise Architecture Committee and its initiative, please visit the EA Committee website at: <http://isb.wa.gov/committees/enterprise/Default.aspx>.

3. Introduction and Purpose

This document provides standards to agency architects, developers, and system integrators regarding the modeling and description of services.

The concept of a service is fundamental to the state's overall approach to system integration, as defined in the Conceptual Integration Technical Reference Architecture ([TRA]?). A service is the way in which the provisioner of a capability (for example, an agency that owns and maintains an information system) makes that capability available to others.

By making capabilities available through services, rather than making the capabilities directly available to others, agencies avoid introducing technical dependencies between systems that make them difficult to change.

The [TRA] provides a complete definition and discussion of these concepts; the reader should interpret and understand the standards in this document within the context of the [TRA].

An architect, developer, or system integrator who wishes to use a service to access a capability must have a detailed description of the service. This description must include:

A complete and detailed description of the effect of using the service; that is, what (in business terms) can be accomplished by using the service to access the capability
A description of the actions supported by the service (that is, how does the developer use the service to accomplish the effect?)

A definition of the information exchanged during interaction with the service
The purpose of the standards in this document is to promote consistency in these descriptions across the state enterprise. The rationale section of the document below identifies the benefits expected to result from this consistency in documentation.

3.1. Summary of Standards

This document contains the following standards for services provided and consumed among partners in the state enterprise:

Each service should have a contextual description that establishes the name for the service, provides a brief description of the service's real-world effect, and indicates the business processes in which the service participates

- Each service should have a conceptual description that fully describes the real-world effect, lists the actions that can be performed on the service, and provides brief textual descriptions of the principal information entities involved in consumers' interaction with the service.
- Each service should have a logical description that fully defines, in implementation-independent terms, the actions that can be performed on the service, including full (complete and precise) definitions of the messages involved in consumers' interaction with the service.
- Each service should have a physical description that aligns with the Service Interaction Profiles supported by the service's interfaces

4. Compliance Component Information

This section documents key information required of all compliance components in the architecture.

Abbreviations formatted in this [style] represent citations defined in the References section below.

4.1. Basic Component Metadata

November 9, 2006 ISB Standards-Version 5 Component Identifier:

Adoption Date:

Effective Date:

4.2. Statutory Authority

The provisions of RCW 43.105.041 detail the powers and duties of the Information Services Board (ISB), including the authority to develop statewide or interagency information services and technical policies, standards, and procedures.

4.3. Scope

These standards apply to executive and judicial branch agencies and educational institutions.

Academic and research applications at institutions of higher education are exempted.

In this document, the terms "state agency" and "agency" mean any agency or institution within the scope of the previous paragraph, and the term "state enterprise" means all agencies and institutions (collectively) within the scope of the previous paragraph.

Starting November 9, 2006, the Integration Architecture Standards will govern the planning and construction of all applications that share data with other agencies.

Exemption requests must be submitted to DIS MOSTD and will be forwarded to the ISB for decision. Applications existing or under construction as of November 9, 2006, are not required to immediately comply, but will be required to comply when redesigned or replaced.

4.4. Relationship to Other Components, Policies, Standards, or Guidelines

None.

5. Service Modeling Standards and Rationale

This section documents the solution design standards and the rationale behind them.

5.1. Standards

5.1.1. Contextual Modeling Standards

Each service must exist within the context of at least one business process; a service plays a specific role in accomplishing a business process that achieves demonstrable business value.

The state must maintain a model of each business process that indicates the role played by each involved service. A future release of the statewide enterprise architecture will include standards or guidelines for business process models. This document assumes that these standards will, at a minimum, indicate that business process models clearly indicate the role particular services play in each business process.

The description of each service should include a list of the business process models in which the service plays a role. This list may be maintained manually, or may be generated out of information in the state's service repository (as described in [TRA].)

The description of each service should include a contextual summary that establishes the name of the service and a brief (single paragraph) description of the real-world effect of using the service

5.1.1.1. Service Naming Standards

The name of the service must encapsulate the essential aspects of the real-world effect of the service; that is, the name of the service must represent what the service accomplishes (in business terms), rather than how the service works. In particular, the name shall not indicate the underlying information system that implements the service, nor the agency or organization that provisions the service, nor any technical details about how the implementation works.

5.1.2. Conceptual Modeling Standards

The description of each service must contain a conceptual view that contains the following:

A complete description of the real-world effect of the service (that is, what the service accomplishes)

A list and brief (single paragraph) description of each of the actions that can be performed on the service
A list and brief (single paragraph) description of the principal information entities involved in interaction with the service via its actions
A list of the principal metadata categories and values for the service (a future version of these standards or related guidelines may specify a standard set of metadata categories for services, based on experience implementing the integration architecture)

All aspects of the conceptual description must be free of any implementation details or dependencies. The description shall not refer to particular databases or systems in the description of the real-world effect; rather, the description must describe the business effects of the service.

5.1.3. Logical Modeling Standards

The description of each service must contain a logical view that consists of a Unified Modeling Language (UML) version 2.0 static structure (class) model. This model must contain:

A UML interface that represents the service
A method on the interface for each action that can be performed on the service
A signature for each method on the interface that identifies input and output messages associated with the action
A class or classes representing the components of each message
Attributes on each class and associations between classes representing the structure of each message
Each interface, class, method, attribute, and

association must have a complete definition that captures its semantic meaning. Each attribute must identify its data type and other parameters that specify the range of its values.

Each interface, class, method, attribute, and association must have a set of metadata categories and values, as appropriate, to define the context of the element. A future version of these standards or related guidelines may specify a standard set of metadata categories for services, based on experience implementing the integration architecture. At a minimum, the metadata for a service and for each message must include the agencies that own and govern the structure of the service and messages and the current version of the service and messages.

Washington Enterprise Architecture Program November 9, 2006 Service Modeling Standards ISB Standards?Version 5 The name of each interface, class, method, attribute, and association must encapsulate the meaning of the element in a way free of any reference to implementation detail. Each class and interface must include an identifier in its metadata.

Models of messages must leverage concepts, structures, and semantics from relevant industry-standard models and vocabularies whenever those models and vocabularies cover the content of the messages. That is, message models shall not re-invent content that has already been defined in industry-standard models and vocabularies. Over time, the information architecture within the statewide enterprise architecture will identify industry-standard models and vocabularies to guide the modeling of messages.

5.1.3.1. Conformance to the Federal Enterprise Architecture Data Reference Model The standards in this section conform to the guidance of the Federal Enterprise Architecture Data Reference Model ([FEA DRM])? with respect to the modeling of information exchanged between systems.

The following table aligns modeling artifacts with concepts in the Data Description standardization area ([FEA DRM] chapter 3):

DRM Concept	DRM Attribute	DRM Description	Modeling Artifact(s)
	Identifier	A unique string associated with an Entity for identification purposes	UML 2.0 Class identifier metadata
Entity	Name	Name of an entity	UML 2.0 Class name
	Description	Description of an entity	UML 2.0 Class description / definition (as a comment)

	Name	Name of a data type	UML 2.0 DataType
Data Type	Description	Description of a data type	UML 2.0 DataType description (as a comment)
	Name	Name of an attribute	UML 2.0 Property name
Attribute	Description	Description of an attribute	UML 2.0 Property description (as a comment)
Relationship	Name	Name of a relationship	UML 2.0 Association name

The FEA DRM is one of the reference models in the Federal Enterprise Architecture. It is a set of standards to guide the definition of enterprise architectures in individual Federal agencies. It defines a set of concepts that each agency's architecture must address, in the area of information architecture and data exchange.

The ability to define metadata for service and message models and their contents conforms to the general guidance of the Data Context standardization area ([FEA DRM] chapter 4). The model of a message conforms to the concept of an Information Exchange Package as defined in the Data Sharing standardization area ([FEA DRM] chapter 5).

5.1.4. Physical Modeling Standards

These standards do not address the physical modeling of services. A service's physical model is equivalent to the specification of its interfaces. Standards for the structure, form, and content of service interfaces are documented in Service Interaction Profiles, as defined in the [TRA], in particular the profile's satisfaction of Interface Description Requirements and Message Definition Mechanisms.

5.1.5. Templates

The Enterprise Architecture Program expects to develop templates for the contextual, conceptual, and logical views of a service's models in the near future. These templates will support and conform to these standards.

5.2. Rationale

The rationale for these standards is that they:

1. Align system integration efforts with three of the over-arching enterprise architecture principles adopted by the Information Services Board
2. Encourage reuse of common, shared service interfaces through improved communication
Position the state enterprise to adopt common tools for modeling of information exchanged between systems and agencies
3. Conform to Federal information exchange modeling guidelines

5.2.1. Alignment with Over-Arching Enterprise Architecture Principles

This section demonstrates how these standards align system integration efforts with three over-arching enterprise architecture principles adopted by the Information Services Board: Interoperability, External Linkages, and Business Ownership.

5.2.1.1. Alignment with Interoperability Principle

The Interoperability Principle states that interoperability is necessary to support the view of state government as a single enterprise and to enable the consolidation of similar functions across agencies. Interoperability also facilitates the sharing of information, both within state government and with external partners. The automated sharing of information can streamline business processes, which improves service and reduces costs.

These standards promote interoperability by defining common techniques for the modeling of system interfaces (services). Without these common techniques, tools used to model interfaces

will not interoperate?or, conversely, the state enterprise will not be positioned to define requirements that lead to interoperability of modeling tools. In particular, the identification of

Unified Modeling Language (UML) as the basis for logical modeling of service interfaces and messages aligns interface documentation with an established industry standard that has been implemented in a large number of off-the-shelf modeling tools.

These standards also promote interoperability of systems by encouraging clear and precise documentation of system interfaces. This documentation can be used in system procurements and designs to ensure that new systems interoperate with existing systems.

5.2.1.2. Alignment with External Linkages Principle

The External Linkages Principle states that the state enterprise should facilitate linkages with external partners, such as local and Federal government and private sector organizations. The rationale for this principle is that these linkages can improve services to citizens and

businesses,
and can streamline business processes that cross levels of government or include the private sector.

The principle identifies three implications that are relevant to these standards:

- External linkages may require migration to open industry standards
- External linkages may require enterprise-level metadata
- Systems should be constructed with clearly defined interfaces

These standards address all three of these implications.

The adoption of Unified Modeling Language (UML) as the standard for logical description of interfaces and messages establishes an industry standard for interface description. This will improve the ability for external partners to understand what they need to do in order to interact with state government systems. It is also more likely that external partners will define their interfaces in terms of open standard notation rather than proprietary notation. By adopting open standards like UML, the state enterprise will align its modeling practices with the likely practices of its partners.

These standards establish an initial core of enterprise metadata for services and messages, and set an expectation for managing metadata at the enterprise level. Initially, the metadata consist of a description of the service's real-world effect, the owner agencies, and versioning information.

These standards promote the clear definition of interfaces between systems.

5.2.1.3. Alignment with Business Ownership Principle

The Business Ownership Principle states that enterprise technology assets, such as system interfaces, should have a clear business owner. The rationale for this principle is based on change management, in that an understanding of who owns an asset helps to ensure that those most affected by a change to the asset are involved in the management of the change.

By promoting the clear and precise description of system interfaces (services) in a standard way, and by identifying owning agencies for each interface and message, these standards support the management of changes to interfaces and messages. The contextual description of a service includes all of the business processes (integration scenarios) that involve the service, which assists in identifying stakeholders who should be involved in the management of changes to service interfaces.

5.2.2. Encouraging Reuse through Improved Communication and Common Tools

Reuse of system interfaces (services) is a key factor in the reduction of the costs and risks of information technology projects. For project decision-makers to reuse services, they need to know that those services exist, what the services do, and how to interact with the services. The conceptual integration architecture defined in [TRA] recognizes these information needs in the concepts of visibility and awareness.

- These standards support reuse by encouraging service descriptions that:
 - Define clearly what a service does
 - Define clearly the messages involved in the information exchange between systems via the service
 - Define metadata used to discover the service

Use a standard notation that reduces ambiguity and improves common understanding of the structure and semantics of service interfaces and messages

These standards also improve communication by establishing a single modeling notation as a common language for discussion of integration requirements. This will allow the state enterprise to economize on training and modeling tools, and will improve the efficiency and effectiveness of multi-agency project teams. It will improve the ability for vendors to participate on multiple projects without having to learn a new approach and new standards on each.

5.2.3. Conformance with Federal Standards for Information Exchange

As demonstrated in section 5.1.3.1 above, these standards conform to the relevant aspects of the Federal Enterprise Architecture Data Reference Model (FEA DRM).

Alignment with the FEA DRM results in the following benefits:

- Improved alignment with Federal government partners that fund state government programs and initiatives, especially those that involve system integration with the Federal government
- Improved communication with vendors, who will be increasingly aware of FEA concepts through engagements with the Federal government and other states that have adopted the FEA
- Increased stakeholder confidence in the viability of the state's integration architecture and modeling standards, through alignment with an accepted model endorsed by the Federal government

6. References

FEA

United States Office of Management and Budget, Federal Enterprise Architecture Program (2005).

DRM

Data Reference Model, version 2.0.

TRA

Washington State Information Services Board, Enterprise Architecture Committee (2006).
Conceptual Integration Technical Reference Architecture, Enterprise Architecture Committee Document.

Appendix A: Documenter Team

This document was developed through the Integration Architecture enterprise architecture initiative, chartered December 14, 2005. The following individuals were members of the Documenter Team for this initiative, and participated in review of this document.

Kent Andrus, Office of Financial Management

Lori Bame, LEAP Committee

Jerry Britcher, Department of Social and Health Services

Scott Came, Department of Information Services

Gary Dubuque, Department of Revenue

Jim Eby, Department of Fish and Wildlife

Brian Everson, Washington State Patrol

Laura Graham, Legislative Service Center

Robin Griggs, Department of Licensing

John Hanson, Commission on Trade and Economic Development Tom Henderson,
Department of Labor & Industries

Paul Hubert, Department of Information Services

Debbie Johnson, The Higher Education Coordinating Board Lorraine Louderback, Department
of Corrections

Dan Mercer, Department of Labor & Industries

Miles Neale, Department of Ecology

Bill Norris, Department of Health

Laura Parma, Department of Information Services

Mike Rohrbach, Administrative Office of the Courts

Jeff Sharp, Office of the State Treasurer

Matt Stevens, Department of Information Services

Lyle Tillett, Department of Retirement Systems

Laura Parma Department of Information Services Enterprise Architecture Committee Steward

Information Services Board

Enterprise Architecture Committee

Bill Kehoe, Department of Licensing Co-chair

Cathy Munson, Legislative Service Center Co-Chair

Department of Information Services
1110 Jefferson Street SE
P.O. Box 42445
Olympia, WA 98504-2445
Phone 360/902.3519 Fax 360/902.2982

Appendix B: Review Log

The following feedback on this document was received by the Enterprise Architecture Program;
the response to each contribution is noted below.

Review by whom and when	Contribution	Response
ISB September 14, 2006	Adopted as Guidelines	Adopted and posted as Guidelines
EA Committee October 25, 2006	Added Grandfather language to Scope section Changed Guidelines to Standards	Endorsed as Standards

Source URL: <https://ocio.wa.gov/policies/1833020-service-modeling-standards>