



Government of Ontario IT Standard (GO-ITS)

Number 56

OPS Enterprise Architecture:

Principles and Artefacts

***Appendix B – “Corporate Enterprise Architecture Review
Requirements Guidebook”***

Status: Approved

Prepared for the Information Technology Standards Council (ITSC) under the
delegated authority of the Management Board of Cabinet

Note:

- This appendix contains hyperlinks that are intended for use on the OPS intranet only. In particular, hyperlinks that point to artefact templates and examples will not work outside the OPS intranet.
- However, for external accessibility, the artefact templates have been included as separate files in Appendix D – “*Artefact Template Files*”.
- See Appendix C – “*Corporate Enterprise Architecture Artefact Template Information*” for more information and instructions on how to access the included template files.

Corporate Enterprise Architecture Review Requirements Guidebook

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EA Review Requirements Guidebook

Table of Contents

<u>Row 1: Contextual</u>	6
<u>Resource Type</u>	6
<u>Line of Business Profile</u>	8
<u>Program</u>	9
<u>Service</u>	10
<u>Program Profile</u>	11
<u>Location Type</u>	12
<u>Geographical Area Type</u>	14
<u>Party Type</u>	14
<u>Role Type</u>	15
<u>Target Group Type</u>	15
<u>Event Type</u>	17
<u>Cycle Type</u>	17
<u>Need Type</u>	18
<u>Goal</u>	18
<u>Mandate</u>	19
<u>Strategy</u>	20
<u>Target Group / Needs Cross Reference</u>	22
<u>Row 2: Conceptual</u>	24
<u>Information Model</u>	24
<u>Conceptual Data Model</u>	25
<u>Semantic Model</u>	27
<u>Fact and Dimension Matrix</u>	30
<u>Service Life Cycle</u>	32
<u>Business Function Model</u>	33
<u>Service Integration Accountability Model</u>	35
<u>Service Profile</u>	37
<u>Business Process Model</u>	38
<u>SOA Service Description Profile</u>	40
<u>Business Network Model</u>	41
<u>Governance Model</u>	42
<u>Organization Chart</u>	44
<u>Business Scenario</u>	46
<u>State Transition Diagram</u>	47
<u>Service Objectives</u>	48
<u>Performance Matrix</u>	49
<u>Business Rule Source</u>	50
<u>Business Rule Profile</u>	51
<u>Program Logic Model</u>	53
<u>Row 3: Logical</u>	56
<u>Logical Data Model</u>	56
<u>Logical Dimensional Model</u>	58

EA Review Requirements Guidebook

System Functional Requirements (generic version)	60
System Use Case Model	62
Use-Case Specification	63
System Architecture Document	64
Logical Application Design Document	66
Logical Application Design Model	69
Infrastructure Component Placement Diagram	70
Infrastructure Pattern Match	71
Logical Application Deployment Model	72
Functional Group – Application Component Cross Reference	73
Detailed Workflow Specification	73
Logical Operating Schedule	74
Supplementary Specification	74
Row 4: Physical	77
Physical Data Model	77
Database Inventory	78
Physical Dimensional Model	78
Physical Application Design Document	80
Physical Application Design Model	83
Application Implementation Document	84
Application Implementation Model	85
Application Inventory	87
Physical Deployment Model	88
User Interface Design	90
Calendarized Schedule and States	90
Revision History	92

EA Review Requirements Guidebook

The creation of artifacts recorded in the Corporate Architecture Review Requirements document delivers specific project benefits. A decision not to create these artifacts exposes a project to specific risks as outlined in this guide. The following is intended to convey the context in which these artifacts were assigned their optional or mandatory status.

Note: For more information regarding requirements for acquired solutions, consult the separately published document “EA Guidance for Acquired Solutions”.

Row 1: Contextual

Row: 1	WHAT	Column 1
	Artifact Type: Resource Type	
	What/Purpose: This artifact identifies and classifies the types of resources that are required by, or produced by, the government enterprise for a variety of purposes, including planning, budgeting, resource management, and performance measurement.	
	Description: This artifact lists the types of resources that are important to the business that are either “used” by some business processes or produced by them. The list also provides a business definition for each Resource Type. Resource types typically include assets or information. Human resources are not included (see Party Type and Role Type).	
	Each resource type that may contain sensitive or personal information should be classified as such. Resources can also be associated with a process.	
	See Resource Type artifact template. See the Resource Type artifact example.	
	Rank: Mandatory	
	Benefit: This artifact distinguishes the types of resources that are required by, or produced by the government enterprise for a variety of purposes including; planning, budgeting, resource management (for tangible resources it can assist with stock management and order fulfillment) and performance measurement.	

EA Review Requirements Guidebook

Risk: Financial and Public Exposure: resources may not be available when required.

Dependencies: Prerequisites:
- None

Artifacts dependent on this artefact:

- Information Model
- Conceptual Data Model
- Semantic Model
- Business Network Model
- Business Process
- Business Scenarios
- State Transition Model
- Business Rules

**Recommended
Practice:**

EA Review Requirements Guidebook

Row: 1	HOW	Column 2
Artifact Type:	Line of Business Profile	
What/Purpose:	<p>For the OPS, a Line of Business equates to an area of government mandate. The Line of Business description identifies and defines a required business focus (mandate and/or purpose) of government, at a strategic level.</p> <p>The Line of Business Profile is a composite artifact that defines the key elements of a Line of Business. The key elements of a Line of Business are:</p> <ul style="list-style-type: none">- Line of Business name and description- Mandate- Owner- Program Portfolio	
Description:	<p>When implemented, a Line of Business operates at a strategic level, developing and managing a set of strategic goals and priorities. It implements those goals/purposes by creating and managing a series of <i>Programs</i>. The Line of Business Profile documents the key elements that are relevant to its definition.</p> <p>See the Line of Business Profile artifact template. See the Line of Business Profile artifact example.</p>	
Rank:	Optional	
Benefit:	This artifact ensures identification and documentation of individual areas of government mandate and the identification of the programs that are used to implement the mandate.	
Risk:	<p>Public Exposure: Operating without a mandate.</p> <p>Financial Exposure: Lack of an effective means of classifying the areas of government mandate may result in ambiguity and/or duplication of Programs and Services.</p>	
Dependencies:	<p>Prerequisite:</p> <p>Mandate: provides jurisdiction and definition of person responsible for line of business.</p> <p>Artifacts dependent on this artefact:</p> <p>Program: defines areas within line of business.</p>	

EA Review Requirements Guidebook

Governance Model: defines responsibility areas.

Recommended Practice:

Row: 1	HOW	Column 2
--------	-----	----------

Artifact Type: Program

What/Purpose: A program is a mandate conferred from the governors of the enterprise to achieve goals, expressed as outcomes, and impacts that address the identified needs of a target group within a jurisdiction. Programs are delivered through a collection of services that contribute to the program goals and comply with the program strategy. Programs receive allocated funding, or a mechanism is established for program funding and resourcing by the governors.

Description: This artifact describes each program by expressing the name, description, type and owner of the program.

See [Program](#) template.
See [Program](#) example.

Rank: Optional

Benefit: A program is a logical unit for a "services framework" in that a given instance of a public service or internal service is logically and coherently defined by a specific program. Programs set the scope and focus of a given business model.

Risk: Public Exposure: Operating without a mandate.
Financial: Inability to document the appropriate allocation of funds to programs.

Dependencies: Prerequisite:

- Line of Business Profile
- Mandate
- Party Type

Artifacts dependent on this artefact:

- Program Profile
- Corporate Information Model
- Program Logic Model

EA Review Requirements Guidebook

- Business Function Model
- Strategy

Recommended Practice: Please refer to ***GO-ITS 56.1 Defining Programs and Services in the OPS***

Row: 1	HOW	Column 2
--------	-----	----------

Artifact Type: Service

What/Purpose: A Service provides specific results (service outputs) that satisfy the needs of a target group (e.g. the client) and contribute to the achievement of the program goals.

Description: This artifact describes a service by identifying the target group (e.g. client) whose need is being satisfied along with a measurable output (service delivery unit) that has value from the client’s perspective.

See [Service](#) artifact template.
See [Service](#) artifact example.

Rank: Optional

Benefit: The services will satisfy the needs of the client and contribute to the achievement of Program goals.

Risk: Financial and Public Exposure: The initiative may not be aligned with or may be counter to program goals.

Dependencies: Prerequisite:

- Program
- Target Group
- Need Type

Artifacts dependent on this artefact:

- Service Profile
- Corporate Information Model
- Program Logic Model
- Business Function Model
- Service Life Cycle
- SIAM
- Business Process
- Service Objectives
- Performance Matrix

EA Review Requirements Guidebook

- Strategy

Recommended Practice: Please refer to *GO-ITS 56.1 Defining Programs and Services in the OPS*

Row: 1	HOW	Column 2
--------	-----	----------

Artifact Name: Program Profile

What/Purpose: A **Program Profile** is a composite artifact that defines the key elements of a Program. The key elements of a program are:

- Type
- Program name and description
- Mandate
- Target Group
- Target Group Need
- Program Goal(s) described as Outcome(s) and Impact(s)
- Program Owner (Accountable Party)
- Program Management/Delivery Strategy
- Program Classification by Need
- Service Portfolio
- Strategic Goals

Description:

See [Program Profile](#) template.
See [Program Profile](#) artifact example.

Rank: Mandatory

Benefit: Clear and consistent definition of program.

Complete view of all the elements that comprise a program in order to provide a single view for the business owner.

Provides ability to test for potential inconsistencies in the primitive artifacts developed for the program.

Risk: Loss of project time due to the ongoing need to synthesize a complete program view from its constituent elements.

Dependencies: Pre-requisites artefacts are:

- Program
- Program Mandate
- Target Group
- Party Type
- Role Type

EA Review Requirements Guidebook

- Need Type
- Strategy
- Goal
- Service

Artifacts dependent on this artifact:

- None

Recommended Practice:

Recommended view for business validation

Row: 1	WHERE	Column 3
<p>Artifact Type: Location Type</p> <p>What/Purpose: This artifact identifies and classifies the types of business locations that are important and required by a government enterprise. The consistent use of a standard set of location types across all OPS programs assist in identifying and comparing service delivery, logistics, access to supply sources, technology infrastructure opportunities and requirements at the enterprise level (e.g. across ministries, programs and projects).</p> <p>Description: This artifact lists the types of locations of interest to the business. Locations are categorized as being physical in nature. They identify where services are produced and/or consumed, processes are performed, and where resources and parties are located. This artifact does not include channels. Channels are identified in the Service Profile.</p> <p>See Location Type artifact template. See Location Type artifact example.</p> <p>Rank: Mandatory</p> <p>Benefit: From the business perspective, location type helps to identify where services are produced and/or consumed, processes are performed, and where resources and parties are located. From the technology perspective, this artifact supports the logical model task of identifying the technology infrastructure and network connectivity required to support a given location type.</p> <p>Risk: Financial & Public exposure: Business may not understand impact of business changes on geographical coverage of service delivery operations. IT may lack business requirements for technology infrastructure and network connectivity (lack of coverage in access). Security: Lack of identification of secured points of access. Public Exposure: A service may not be offered at a required</p>		

EA Review Requirements Guidebook

location type, or may be offered at an inappropriate location type.

EA Review Requirements Guidebook

Row: 1	WHERE	Column 3
	<p>Artifact Type: Geographical Area Type</p> <p>What/Purpose: This artifact identifies and classifies the types of geographical areas (e.g., regions and districts) that are required by an OPS enterprise to carry out its mandate, deliver its program(s), and distribute its services. The Geographical Area Type is usually based on the type of mandate (e.g., social/ economic/ stewardship) that is providing the authority for the program being delivered, including the various business drivers, logistics, transportation and communications infrastructure, and population centers.</p> <p>Description: This artifact lists the types of geographical areas within which an OPS enterprise administers programs. Geographical area type is a spatial concept that defines types of natural or administrative areas.</p> <p>See Geographical Area Type artifact template. See Geographical Area Type artifact example.</p> <p>Rank: Optional</p> <p>Benefit: Awareness of the types of geographic areas affected by a change initiative. For example, the City of Toronto amalgamation in the year 2000 required the mapping of service delivery from 6 municipalities to 4 administrative areas.</p> <p>Risk: Public Exposure: Lack of knowledge of geographic area types could result in jurisdictional disputes.</p>	

Row: 1	WHO	Column 4
	<p>Artifact Type: Party Type</p> <p>What/Purpose: This artifact identifies and classifies parties of interest to the service, to help ensure that all party types are accounted for when conducting needs analysis for a given ('As Is' or 'To be') service.</p> <p>Description: This artifact lists the types of parties of interest to the enterprise. Types of parties include individuals and organizations. Organizations are further classified into Government of Ontario, Broader Public Sector and Non-Government categories.</p>	

EA Review Requirements Guidebook

See [Party Type](#) artifact template.
 See [Party Type](#) artifact example.

- Rank:** Mandatory
- Benefit:** Classifying parties is essential to understanding roles, needs and accountabilities.
- Risk:** Privacy: Inability to identify FIPPA requirements.
 Financial & Public Exposure: Lack of an effective means of classifying parties may result in ambiguity in roles, responsibilities, authorities and accountabilities.

Row: 1	WHO	Column 4
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Artifact Type: **Role Type**

What/Purpose: This artifact supports analysis and design of service delivery mechanisms and value chains. It assists in analysis of roles, responsibilities, authorities, and accountabilities. It also supports analysis of gaps and overlaps in responsibilities.

Description: This artifact lists the types of roles played by parties (individuals and organization) of interest to the business. A role is defined by a set of functions or relationships played by a party.

See [Role Type](#) artifact template.
 See [Role Type](#) artifact example.

- Rank:** Mandatory
- Benefit:** This artifact supports the analysis of roles, responsibilities, authorities, and accountabilities. It supports the analysis of gaps and overlaps in responsibilities. It also addresses pluralistic nature of government business relationships, if required.
- Risk:** Public Exposure and Security: Lack of an effective means of classifying roles may result in erroneous or incomplete assignment of functions to individuals and organizations.

 Privacy: Improper or inadequate identification for permission management.

Row: 1	WHO	Column 4
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Artifact Type: **Target Group Type**

EA Review Requirements Guidebook

What/Purpose: A target group type is a classification of that part of the population whose needs the program has a mandate to satisfy. By classifying target groups, program owners can make explicit decisions about how the needs will be met.

Description: This artifact lists the types of groups targeted by a program. A target group comprises two (2) sub-groups: client groups and interested parties. The needs of client groups are intended to be met directly from the program outcomes and indirectly through anticipated program impacts. Interested parties are generally intended to benefit indirectly, that is, from program impacts.

See [Target Group Type](#) artifact template.

See [Target Group Type](#) artifact example.

Recommended Practice:

- Identify all of the groups that the program is mandated to serve.
- Classify as interested party or client group. The distinction must be made within the context of the discussion about the services the program will offer. (Identifying services and client groups is an iterative process when defining a program that is influenced by resource availability and other factors.)

Artifact Dependencies:

- Party and role artifact
- Mandate: Provides jurisdiction and authority for the program.

Rank: Mandatory

Benefit: This artifact supports program design. Through the name of the target group, it clearly identifies the characteristics of the targeted group. Not all target groups will be clients of the program's services. By defining target group to include client groups and interested parties, program managers can make deliberate decisions about the services that will be delivered within the resource envelope that is available and the level of maturity of the program.

Risk: Public Exposure: Lack of identification of a specific target group. Unanticipated impacts could result if interested (affected) parties are not identified.

EA Review Requirements Guidebook

Row: 1	WHEN	Column 5
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Artifact Type: Event Type

What/Purpose: Event types identify and classify events important to the OPS enterprise. An event is a point in time occurrence that may trigger a process. Events may cause changes in state, in the life cycle of a business component (program, service, organization, role, resource, etc.). Trigger events (e.g., requisitioning a commodity) are used to define business scenarios that explore the structure and behaviour of a given business model.

Description: This artifact lists types of events that trigger business processes. An event type is a classification of types of point in time occurrences that result from processes or trigger processes.

See [Event Type](#) artifact template.

See [Event Type](#) artifact example.

Rank: Mandatory

Benefit: This artifact ensures that the business model can respond to each event e.g. Routine response, like requisitioning a commodity or planned event like an emergency response.

Risk: Financial & Public exposure: Lack of an effective means of classifying events may result in the incomplete capture of event instances to which the business model must respond.

Row: 1	WHEN	Column 5
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Artifact Type: Cycle Type

What/Purpose: A cycle type is a classification of recurring internal or external cycles that trigger one or more events. A cycle is a recurring sequence of activities that occur within a preset interval of time.

Description: This artifact lists the types of cycles that affect the business. A cycle type is a classification of recurring internal or external cycles that trigger one or more events. A cycle is a recurring sequence of activities that occur within a preset interval of time.

See [Cycle Type](#) artifact template.

See [Cycle Type](#) artifact example.

Rank: Optional

Benefit: This artifact ensures that business model can address each cycle.

EA Review Requirements Guidebook

Risk: Lack of an effective means of classifying cycles may result in the incomplete capture of cycle instances to which the business model must address.

Row: 1	WHY	Column 6
Artifact Type:	Need Type	
What/Purpose :	This artifact identifies and classifies the needs of a target group that the program intends to satisfy.	
Description:	This artifact lists the type of needs to be satisfied by a program. A need type is a categorization of needs. A need is a condition or situation in which something is required, desirable, or useful for a given target group. It is expressed as a statement of the problem or condition of the target group that the program is intended to address.	
	See Need Type artifact template. See Need Type artifact example.	
Rank:	Mandatory	
Benefit:	Identifies the types of need to be satisfied by a program.	
Risk:	Financial & Public exposure: Incorrect identification of need types may result in programs and services attempting to address inappropriate issues.	

Row: 1	WHY	Column 6
Artifact Type:	Goal	
What/Purpose :	This artifact formalizes programs by defining specific goals, enabling program and service design and performance measurement design (measures of goal-directed change in level of need). It formalizes motivation for change in change initiatives.	
Description:	This artifact expresses a desired change to a target group. Program goals state the desired change to a target group and are expressed as outcomes (measurable results directly attributed to the program) and impacts (results influenced by the program).	

EA Review Requirements Guidebook

See [Goal](#) artifact template.
See [Goal](#) artifact example.

- Rank:** Mandatory
- Benefit:** This artifact explicitly identifies what a program will do. It will assist in the identification of appropriate performance metrics.
- Risk:** Public exposure: Mismanagement of public programs.

Row: 1	WHY	NEW	Column 6
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Artifact Type: **Mandate**

What/Purpose: This artifact is used to:

Articulate:

- A program’s mandate (i.e. authoritative command(s));
- The target group(s)
- The target group’s need(s); and
- The jurisdiction(s) within which it has the right to exercise authority.

Identify the program’s right to exist. The authority source or instrument represents the codification of this right.

Description: This artifact articulates the authoritative command provided by the governing bodies. It lists the source or instrument that provided the program with its right to exist.

See [Mandate](#) artifact template.
See [Mandate](#) artifact example.

Recommended Practices:

- State the program to which this Mandate applies
- State the owner of the program
- Clearly describe the program’s mandate, the target group it will serve, the needs it will address and the jurisdiction within which it has the right to exercise authority
- State and describe the source of the authority that governs the existence of the program
- The target group identified in the mandate statement must correspond to target group identified in Target Group artifact.
- The needs identified in the mandate statement must correspond to target group identified in Needs artifact.
- For all Change Initiatives, the Mandate artifact must be

EA Review Requirements Guidebook

filled in for each program.

- ❑ Abide by the plain language guidelines.
- ❑ A program’s “mission statement” is often a good source for a mandate statement.

Artifact Dependencies:

- ❑ Target Groups / Needs / Jurisdiction make up the substance of a mandate statement
- ❑ Mandate Type lists the types of authority sources and roles of government

Rank: Mandatory

Benefit: This artifact articulates the authoritative commands a program receives from its governors. The mandate instruments provide a source for deriving business rules.

Risk: Financial & Public exposure: Incorrect identification of mandate types may result in an incomplete or incorrect understanding of the mandate instances that articulate what a program or service will and will not do, resulting in an inappropriate response.

Row: 1	WHY	Column 6
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Artifact Type: Strategy

What/Purpose : “Strategies are statements of direction about how the program will achieve its mandate, reduce/manage risk and achieve desired outcomes.”

Description: “Strategy” is a key element of program definition. There are broadly defined types of strategies:

- Strategies that will achieve the priorities and directions established by program governors (program management):
 - Strategies that relate to the manner in which the program will be operated in order to achieve program goals and meet its accountabilities. These strategies are usually achieved by (implementing change to) some program management function. (For example, a strategy may have to be adopted to deal with changes to business planning requirements of Management Board. This would require changes to the “program planning function.”)
- Strategies that meet the needs of the program’s target

EA Review Requirements Guidebook

group (program delivery): set the direction the program will take to achieve the outcomes associated with its primary mandate that is, meeting target group needs. These strategies are achieved through delivery of service. (For example, a “prevention” strategy for the flood management program would evoke a “flood forecasting and warning” service.)

- Strategies on “how” services will be delivered: These strategies articulate the business model and delivery method. (For example, a service may be delivered directly by the program through electronic delivery channels.)

Strategies usually are directed at a “component” of the enterprise. Enterprise components can include one or more of the following:

- Function
- Service
- Process.

Strategies can articulate how an enterprise is currently operating, or will operate in the future (target state). A change in strategy would lead to implementing change through a change initiative or project.

See [Strategy](#) artifact template.

See [Strategy](#) artifact example.

Recommended Practice:

- To facilitate the development of this artifact:
 - Review the program mandate, including the constraints set out in the program mandate artifact.
 - Identify strategies for managing the program (e.g. develop partnerships). Identify the contributing program management function.
 - Determine strategies for achieving program outcomes (e.g. education); identify a service that will contribute to the strategy.
 - Identify how the service will be delivered.
 - Use the Tables provided in the [Strategy](#) artifact example as a starting point.
- Abide by the plain language guidelines.
- This artifact should be built iteratively as new strategies or services are identified during the change initiative.

EA Review Requirements Guidebook

- Artifact Dependencies:*
- Every strategy must have a function or service associated with it. This is how the strategy will be implemented.
 - Strategies are intended to achieve program outcomes and should link, either directly or indirectly, to a program outcome.
 - Target group and needs cross-reference: Highlights the target groups and needs that the program has a mandate to address. Strategies are put in place to address the needs.
 - Mandate: Lists the program’s operational constraints (e.g. privacy). Strategies need to address how the program will be accountable for meeting these constraints.
 - Services: Services achieve program delivery strategies
 - Outcomes: Program outcomes are achieved by strategies
- Rank:** Mandatory
- Benefit:** This artifact articulates how the enterprise will fulfill its mandate and achieve the desired program goals. It also provides direction to architects on the “to be” business models. Identifying and making decisions on strategies at the program definition stage of a change initiative allows business owners to define the scope of change that they are willing to accept. Strategies define the context for identifying services and business rules.
- Risk:** Without specifying the strategies that the enterprise will employ, time and resources can be wasted on developing optional business models that are not relevant.

Row: 1	WHY	Column 6
Artifact Type:	Target Group / Needs Cross Reference	
What/Purpose	A target group type is a classification of that part of the population whose needs the program is intended to satisfy. This artifact matches the target group (client groups and interested parties) to the need, since not all members (sub-types) of the target group have all needs. This allows program managers to define services to meet specific needs of target groups.	
Description:	This artifact cross references the types of groups targeted by a	

EA Review Requirements Guidebook

program to the needs that the program is mandated to meet.

See [Target Group / Needs Cross Reference](#) artifact template.

See [Target Group / Needs Cross Reference](#) artifact example.

*Recommended
Practice:*

- Establish a matrix using the target groups defined in Row 1, Column 4, with the needs identified in Row 1, Column 6. Suggest the following format: Needs on X axis; Target groups on Y axis.

If cross reference matrix is too sparse, look to redefining the needs and target groups; if too full, the target groups may not have been defined specifically enough.

Rank: Mandatory

Benefit: This artifact allows program managers to define services to meet specific needs of target groups. Managers can make explicit decisions about the direction of their program. It provides the basis for defining program outcomes and impacts.

Risk: Without this artifact, needs of specific target groups may be overlooked and unintended impact(s) may result.

EA Review Requirements Guidebook

Row 2: Conceptual

Row: 2	WHAT	Column 1
Artifact Type:	Information Model	
What/Purpose:	An Information Model (IM) describes all the things (terms, facts and concepts) that are important to the enterprise (e.g. ministry, cluster) or a specific domain (e.g. an OPS program), and shows how these things are directly inherited from or related to the OPS enterprise business concepts as articulated in the OPS Corporate Information Model (OPS CIM).	
Description:	This model not only can describe domain specific concepts, terms and information from a pure business perspective, it also describes domain specific high-level requirements with an intention of scoping out and defining data requirements for I&IT solutions.	
	Some of the uses of the IM are:	
	<ul style="list-style-type: none">• To specify, analyze and represent business concepts, and to facilitate common understanding and stakeholder agreement on the meaning of terms and relationships;• To assist the development of new enterprise strategy and planning initiatives either for an entire enterprise or a specific domain within the enterprise;• To identify in-scope entities and their relationships required or involved in support the business activities of an enterprise or a business domain;• For a large project or initiative that has enterprise scope or impact, to show the traceability and semantic alignments of domain specific business concepts to the OPS enterprise business concepts as articulated in the OPS CIM;• To show the link between project or domain specific business architecture and high-level data architecture; and• To serve as a reference model in the creation of a domain specific conceptual data model.	
	The IM must be diagrammed using one of the following notations, and must be accompanied by a level of metadata as specified in GO-ITS 56.0, Information Modelling Handbook (IMH):	
	<ul style="list-style-type: none">• Entity Relationship Diagram, or• Unified Modeling Language (UML) Class Diagram representing only entity classes, without showing any methods on these classes.	

See [Information Model Example 1](#).

EA Review Requirements Guidebook

See [Information Model Example 2](#).

Artifact The terms and concepts in an IM are a representation of the following Row 1 primitives, as articulated in the OPS CIM:

Dependencies:

- Resources (1,1)
- Business Programs, Services and Processes (1,2)
- Business Locations (1,3)
- Parties (1,4)
- Roles (1,4)
- Events (1,5)
- Mandates (1,6) such as statutes

Rank: Optional

Benefit: This model has a number of benefits:

- It clearly specifies, and represents business concepts and their relationships for an entire enterprise or a specific domain.
- It identifies and contains the project scope.
- It shows traceability and business concept alignments from a project to the ministry (or cluster), or from a ministry (or cluster) to the OPS enterprise business concepts.

Risk: The risks of not developing this model include:

- Incompleteness in enterprise strategy and planning due to lack of a holistic view of the enterprise business visions and goals, and the important inter-relationships among business entities within the enterprise.
- Failure to communicate clearly to achieve the common understanding among people within the enterprise about the business goals, objectives, and requirements.
- Failure to show alignment and traceability from a project to the ministry (or cluster), or from a ministry (or cluster) to the OPS enterprise business concepts.
- Failure from a project perspective due to a lack of: scope definition, information sharing requirements, functional requirements, and communication in the event of turnover in the project team.

Row: 2

WHAT

Column 1

Artifact Type: Conceptual Data Model

What/Purpose: A Conceptual Data Model (CDM) represents the structure of the information about in-scope, high-level business entities and their relationships. It gives a formal representation of the data needed to run an enterprise or a business activity. It is used primarily to enhance communication with business staff and to clarify

EA Review Requirements Guidebook

business rules involving the business information.

Description: The Conceptual Data Model is the precursor to the logical data model. It suppresses technical details by including only the business entities that have a business meaning, the important relationships among these entities and the representative attributes of the entities.

A Conceptual Data Model must be diagrammed using one of the following notations, and must be accompanied by detailed metadata as specified in GO-ITS 56.0, Information Modelling Handbook (IMH):

- Entity Relationship Diagram (ERD), or
- Unified Modeling Language (UML) Class Diagram representing only entity classes, without showing any methods on these classes.

See [Conceptual Data Model Example 1](#).

See [Conceptual Data Model Example 2](#).

Artifact Dependencies: The terms and relationships in the Conceptual Data Model are a representation or further elaboration of terms and relationships from the corresponding Information Model, which represents the terms and concepts from the following Row 1 primitive artifacts:

- Resources (1,1)
- Business Programs, Services and Processes (1,2)
- Business Locations (1,3)
- Parties (1,4)
- Roles (1,4)
- Events (1,5)
- Mandates (1, 6) such as statutes.

Rank: Mandatory¹

Benefit: It is used during the planning phase of a project to identify and contain the project scope.

Risk: The risks of not developing this model:

- Failure in achieving the understanding of the common definitions, semantics, information, and knowledge across all business domains within an organization.
- Failure in partitioning the organization's information and scoping subsequent projects.

¹ CDM is required for any project that goes forward to Row 3 and needs to do further business requirement analysis at a more detailed level.

EA Review Requirements Guidebook

- Failure in identifying missing important information needs and their implications.
- Failure in identifying some key functional requirements related to the missing subject area groupings.
- Failure in assessing information sharing requirements across business units or functional areas.
- An incomplete picture of the needs of an organization, a project or an application may result in erroneous recommendations regarding the development of some solution areas.
- Lack of foundation to develop a coherent database strategy.
- Lack of assurance that business goals and objectives will be properly supported.
- Lack of clear project scope and vision may jeopardize requirements definition, data analysis and design effort, project estimation activities. The accuracy of the estimation of subsequent projects may be affected.

Row: 2	WHAT	Column 1
Artifact Type:	Semantic Model	
What/Purpose:	The term “semantic” refers to the model’s use in establishing the vocabulary that will be used by the enterprise to talk about its business.	
Description:	A semantic model is a diagram depicting major things of interest (expressed as Terms) to the business, and how they relate to each other (expressed as Facts). The model represents the basic vocabulary for expressing rules. The purpose of the model is to structure basic knowledge of the business.	
	The OPS Semantic Model defined here is not the same as the “semantic model” described by E.F. Codd, or other definitions in the information modeling literature.	
	Example Semantic Model.doc See Semantic Model artifact example.	

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Recommended Practice:

- The **major things of interest** are the essential ingredients needed to run the business.

A major thing of interest can be a person (referred to in our framework as a Party or the Role the Party plays), a place (referred to in our framework as a business Location where Services are delivered or consumed), an event (referred to in our framework as an Event that triggers a business Process), or a thing (referred to in our framework as a Resource used by or produced by business Processes).

- A semantic diagram has two basic components: terms and facts.

Term: a term is a basic word or word phrase in plain language that business (program) owners recognize and share in the business. Terms are always nouns or qualified nouns. (Nouns may be singular or plural, to make the relationships read naturally.) Terms represent things that are indivisible – that is, not composite. Terms that have a collective sense such as inventory, personnel etc., should be decomposed. Terms must always represent things we can know something about.

Each term must have a written definition. This catalogue of terms and definitions is the basis for dialog with the business.

Fact: a fact is a simple declarative sentence that relates terms. Facts represent common or shared verbs or verb phrases of the business. Every fact must always be expressed using a complete sentence. Facts follow a strict subject-verb-object structure.

- For all Change Initiatives, the semantic models being developed should be set in the context of the OPS business architecture methodology, which is based on the “Public Sector Reference Model” and defined in the “Defining Programs and Services in the Ontario Public Service” handbook. For example, a semantic model could be developed to support the understanding of the delivery of each service.
- A semantic model may be made up of one or many

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1. semantic diagrams.
- 2.
3. • Each semantic diagram shows any or all three known
4. structural relationships – Generalization, Aggregation and
5. Association.
- 6.
- 7.
8. ○ **Generalization:** Generalization relationships show
9. how different but similar pieces can be generalized
10. into a common type. Generalization shows “is-a”
11. relationships, also known as inheritance or
12. subtyping. A line with a large, hollow arrowhead
13. pointing from a sub-type to a super-type is used to
14. represent this type of relationship.
- 15.
16. ○ **Aggregation:** Aggregation relationships show
17. components that are either included as part of
18. other components, or contained in other
19. components. An aggregation relationship is
20. sometimes called a “Whole-Part” relationship. A line
21. with a hollow diamond head pointing from the part
22. to the whole is used to represent this type of
23. relationship.
- 24.
25. ○ **Association:** Association relationships show
26. components that relate to each other in some way
27. other than generalization or aggregation.
28. Associations may describe actions, processes,
29. structures or rules. A line with a small filled-in
30. arrowhead is used to represent this type of
31. relationship. The form of the relationship is “Noun –
Verb - Noun” where the verb characterizes a
relationship between the two components and tends
to allow the model to read like a series of natural
language sentences. The direction of the arrow
identifies how the relation must be read.

Artifact Dependencies:

- The Terms in the Semantic Model are a representation of the following Row 1 primitives:
 - Resources (1,1)
 - Business Locations (1,3)
 - Parties (1,4)
 - Roles (1,4)
 - Events (1,5)
 - Mandates (1,6) such as statutes
- The Facts in a semantic model are a source for identifying

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Business Rule Statements (2, 6).

Rank: Optional

Benefit: The semantic model has a number of benefits:

- It is a powerful management tool for clarifying business concepts
- It establishes a common business vocabulary
- It clarifies the relationships between business components
- It clarifies the understanding between Business and IT participants
- It provides clearer handoffs between architects and between architects and developers
- It provides a foundation for subsequent models, including the conceptual data model, high-level business object model and class model.

Risk:

- Misunderstanding of business
- Miscommunication between business and IT
- Data and class models developed at the logical level may not support business requirements

Row: 2

WHAT

Column 1

Artifact Type: Fact and Dimension Matrix

What/Purpose: The Fact and Dimension Matrix represents a high-level, enterprise-wide view of business information requirements that are within the scope for a decision support solution. The matrix illustrates different data analysis perspectives (i.e. dimensions) and may lead to the development of a data warehouse and/or data mart to support business intelligence initiatives.

This artifact is used to:

- Present different views of business decision support information requirements.
- Identify areas in the Conceptual Data Model where additional details related to decision support type of information requirements are needed.
- Identify the scope of information requirements for a decision support project
- Assist in prioritizing the dimensions in which the solution should be designed and data be analyzed first.

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Description: The Fact and Dimension Matrix provides information about the in-scope, high-level facts (known as fact groups), the perspectives for performance measures (known as dimensions), and the relationships between the facts and perspectives that will be implemented in the decision support system.

This artifact will be developed by leveraging data definitions from existing conceptual or/and logical data models of the source data stores.

Rank: Optional

This artifact is considered as **mandatory** for a project that develops or acquires data warehouse and/or data mart based solutions for decision support initiatives.

Benefit: This artifact illustrates an understanding of the scope and content of the information requirements as set out by the business, at a high level, for the decision support solution.

Risk: If this artifact is not developed, it will result in:

- An inability to properly support the business goals and objectives
- Missing key information requirements as set out by the business
- The construction of separate data marts that lack a framework to tie the data together.
- Missing a foundation for partitioning the organization's data and scoping the breadth of the decision support solution.

Format: A matrix that represents the common or potential dimensions (i.e., performance measurements) used across the enterprise against the fact groups (i.e. primary business processes of the organization). Intersections are marked where a dimension may exist for a fact group.

Artifact

Example: See [Fact and Dimension Matrix](#) artifact example

Artifact Conceptual Data Model (2, 1) and/or Logical Data Model (3, 1)

Predecessors

List:

Artifact Logical Dimensional Model (3, 1)

Successors List:

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Row: 2	How	Column 2
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Artifact Type: Service Life Cycle

What/Purpose: A service life cycle identifies all the processes required to manage and deliver a service. It provides a standard mechanism to record processes. The result of analyzing the processes may uncover common processes.

Description: The service life cycle identifies all the processes required to manage and deliver a service. These processes are organized into the following six cycles:

- a. **Plan:**
 - Plan service goals, establish delivery strategy, forecast demand, plan capacity etc.
- b. **Design:**
 - Design delivery processes, ensure compliance with applicable policy, standards and rules
 - Design products and instruments (e.g. licence cards)
 - Design service agreements
- c. **Develop:**
 - Promote service to client
 - Acquire new client
 - Execute client service level agreements
 - Establish supply arrangements
 - Provision delivery infrastructure
- d. **Operate:**
 - Includes all processes required to accept and fulfill a service request
 - Manage client inquiries
- e. **Monitor:**
 - Monitor effectiveness, efficiency and quality of service
 - Ensure compliance with service level agreements
 - Account for service delivery against program mandate
- f. **Decommission:**
 - Merge service instance with another service
 - Decommission service delivery infrastructure
 - Phase out service

See [Service Life Cycle](#) artifact template.

See [Service Life Cycle](#) artifact example.

Rank: Optional

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Benefit: Facilitates the identification of candidate processes for redesign or automation.

Risk: Without having a detailed list of processes associated with each service you may not be able to justify redesign.

Row: 2	How	Column 2
--------	-----	----------

Artifact Type: **Business Function Model**

What/Purpose: The business function model identifies and displays both graphically and textually, in a structured format, the processes that the business performs. Functions provide context and a high-level or strategic view that allows key stakeholders to focus on the critical business without getting caught up on details such as organizational units or data flows. The business function model therefore highlights what the business ought to be doing in order to deliver services.

Description: A hierarchical diagram and a table describing business processes which are typically grouped by business functions. Business functions are at the top level of the diagram with the descriptions in the table, and do not imply any sequential order, precedence or dependence. Functions are defined as a collection/grouping of ongoing processes, which, together, completely support the business. Note that functions represent major organizational actions that may cross-organizational or departmental boundaries. Business functions, which describe what work an organization does, can therefore be decomposed or detailed into processes that describe how the work is accomplished. Business Processes can be either delivery or management processes. Management processes are internal and administer the resources and operations of the organization. Delivery processes are client facing and supply the outputs of services. The function model indicates whether each process is a management or a delivery process. The model is therefore a useful means for further detailed analysis for mapping requirements and resources.

See [Business Function Model](#) artifact template.

See [Business Function Model](#) artifact example.

Rank: Mandatory

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- Benefit:**
- Provides a clear understanding of the types of actions that the organization needs to perform, without the complexities of *who, when, where* and *how*.
 - Helps to identify and analyze functions that are not supported by core business capabilities (or resources) which may be candidates for out-sourcing.
 - Serves as a solid starting point to identify and decompose the detailed processes that comprise the business.
 - Helps uncover common functions and the key processes they include.
 - Clarifies which processes deliver output and which, provide internal support and management
 - Provides a means for mapping/tracing functional requirements to business processes.
 - Useful for project scoping and roadmap definition
 - Assists in grouping or categorizing complex business actions into manageable and logical pieces

Recommended Practice: A Business Function Model is a structured hierarchy with detailed description of the function in a table, similar in format to an organizational chart, which involves identifying 3 components.

- 1) Functions: A logical set of ongoing cross-organizational actions that a business must perform in order to meet its business objectives and continue in existence.
- 2) Processes: What must be done to perform the functions. Processes are separated into management processes and delivery processes.
- 3) Connectors: Represent hierarchical relationships between functions and processes.

Guidelines and Syntax Checklist:

- All functions and processes are connected to at least one other function or process (i.e., no orphans)
- Label names are descriptive
- Name a function with a noun or wording ending in "ing." For example, "Communications" or "Licensing"
- Begin the name of a process with an active verb to construct a simple imperative statement that will describe the intent of the activity. For example, "Approve Order" or "Create Notice."
- Connectors are not named (assumed to be read as "consists

EA Review Requirements Guidebook

of”).

- Artifact Dependencies:** Pre-requisite artifacts are:
- Program Profile: To identify program goals and strategies that will define needed business functions and processes.
- Co-requisite artifacts are:
- Service Profile: To identify the services for which business functions and processes are needed. To utilize the processes identified as ‘key processes’.
- Artifacts dependent on this artifact:
- Business Process Model - details how the business carries out work
 - Business Scenario - describes the sequence of events for which the processes are carried out
- Risk:** Not doing a Business Function Model runs the risk of orphaning or overlooking functions or processes.

Row: 2	How	Column 2
Artifact Type:	Service Integration Accountability Model	
What/Purpose:	A Service Integration Accountability Model (SIAM) is a diagram that shows how services are integrated in order to deliver the final deliverable to the end client. The power it provides is that it illustrates the required horizontal accountability relationships between service providers in the delivery of services. It illustrates the inter-relationships of services, their providers and the party role consuming the service. It will show how the output of one service is the input of another service.	

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Horizontal accountability describes the relationship that a service provider has to target group members for the provision of the service's output. The definition of "service" is provided in the document GO-ITS 56.1, "Defining Programs and Services in the Ontario Public Service".

Description: A SIAM is an analytical tool that:

- **Ensures** that the final valued service output meets the target group needs and identifies all intermediate outputs and the services producing them so as to ensure the highest possible degree of enterprise performance in producing the final outputs.
- **Enables** the business designer to confirm that all the necessary services (along with appropriate service outputs for accomplishing the service objectives) have been identified.
- **Is useful** in setting the context for forming service level agreements (SLA) between service providers. The model supports the determination of who the provider of the services will be. It can also be used to make explicit and identify the nature of the accountability (i.e., formal agreement such as a SLA or Memorandum of Understanding (MOU) or informal agreement such as a handshake).
- **Provides** the basis for workflow modeling. It can be translated using a straightforward procedure into models showing work and material flow used in other methodologies, e.g. RUP use cases and activity diagrams. It ensures consistent and levelled process integration across all organizational boundaries.

There are two forms of the model: Service Integration Model (**SIM**) and Service Integration and Accountability Model (**SIAM**).

- A **SIM** portrays the linkage between services and output types, without reference to organization structure or physical locations. The services can range from very abstract (e.g. Channel Service) to very specific (e.g. Ontario Driver License Counter Channel Service). This is a representation of the "service value chain" and aligns with the industry-accepted concept of "supply chain management". The output from one service represents an input that supports an essential process or processes in another service. Moving "upstream" in the value chain results in more granular inputs and the model provides the basis for an SOA strategy.
- A **SIAM** portrays all the information of a SIM plus the

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organizational assignments for services. The services and output types must be defined with sufficient specificity to assign each service in the model to an organization.

See [Service Integration and Accountability Model](#) artifact example.

- Recommended Practice:**
- Business Functions and/or processes are not represented on the SIAM model. The SIAM portrays only accountability relationships with external service providers and clients. See the Business Function and Business Process models.
 - A service that provides its service output to another service in general should provide it to two or more services. While this may generally be the case, it does not always hold true.
 - If a service depicted on a SIAM is in scope for the project, then a Service Profile must be created. If a service depicted on a SIAM is not in the project's scope and has been included in the SIAM to set context, then a Service artifact must be created.
 - Each organization must be included in the Party Type artifact located in row 1 column 4.
 - Each role must be included in the Role Type artifact located in row 1 column 4.
 - All services are peers.
 - Each service contains all the processes required to produce its output.
- Artifact Dependencies:**
- Services need to be profiled.
 - Performance model – Using SIAM effectively requires modeling performance of various services in order to determine horizontal accountabilities.
 - Role / Party / Target Group all appear in the SIAM model.
- Rank:** Mandatory

Row: 2	HOW	Column 2
Artifact Name:	Service Profile	
What/Purpose:	<p>A Service Profile is a composite artifact that defines the key attributes of a service. The key elements of a service are:</p> <ul style="list-style-type: none"> • Service Name and Description • Type of Service (Public or Support) • Service Output • Service Output Type Classification • Contribution to Program Goal 	

EA Review Requirements Guidebook

- Service Owner
- Service Provider
- Strategy (Service Delivery Model)
- Client Group
- Needs Addressed
- Performance Measures
- Key Service Feature
- Key Service Processes

Description: Example Service Profile.doc

See [Service Profile](#) template

See [Service Profile](#) example

Rank: Mandatory

- Benefit:**
- Clear and consistent definition of service
 - Complete view of all the elements that comprise a service in order to provide a single view for the business owner
 - Provides ability to test for potential inconsistencies in the primitive artifacts developed for the service

Risk: Loss of project time due to the ongoing need to synthesize a complete service view from its constituent elements.

Dependencies: Pre-requisites artefacts are:

- Service
- Client Group
- Client Group Need
- Strategy (Service Delivery)
- Role (Service Provider)
- Performance Measure

Recommended Practice:

- Recommended view for business validation.

Row: 2

HOW

Column 2

Artifact Name: **Business Process Model**

What/Purpose: A Business Process Model is a diagram or a series of diagrams, which describe the operational aspect of a business. It describes how tasks are structured, what their relative order is, how they are synchronized and could include who performs them.

This model helps to understand accountabilities of different roles involved in the business process and brings clarity to work that crosses and/or within organizational boundaries.

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Description: A **business process** is a linked sequence of activities or tasks that delivers a service, manages a resource, or operates an organization. Business processes are a set of repeatable, coordinated activities with inputs and outputs, which could interact with people or organizations, contribute to achieving business goals. There are two types of **business processes**:

1. A **Service Delivery Process** directly supports or enables the delivery of one or more service outputs.
2. A **Management Process** supports the management of an organization, including the planning, design, provision and monitoring/evaluation of programs and services

Rank: Mandatory

- Benefit:**
1. Supports business process redesign or re-engineering exercises by
 - a. providing a crosscheck of responsibilities for each identified role and can be used to identify redundancies, bottlenecks and inefficiencies;
 - b. providing a mechanism to discover opportunities for automation; and
 - c. Identifying common processes or tasks across multiple services through the analysis of this model.
 2. Facilitates the analysis and transformation to system functional requirements and non-functional requirements including mapping of data to processes for CRUD (Create, Read, Update, Delete) analysis.
 3. Supports the placement/cross-reference of business rules in relation to business processes

- Risk:**
1. Missing or incorrectly defined business processes lead to:
 - a. incomplete designs and missed opportunities;
 - b. ambiguity and confusion about role responsibilities, sequencing of processes and key hand-offs.

- Dependencies:** Pre-requisites artefacts are:
- Program Profile (to provide context)
 - Service Profile (to provide context)
 - Goals
 - Strategy
 - Business Function Model
 - Role Type (where role is architecturally significant)
 - Party Type (where party is architecturally significant)
 - Resource Type
 - Event Type
 - Service Integration Accountability Model

EA Review Requirements Guidebook

Artifacts dependent on this artefact:

- Business Scenarios
- Business Rule Profile
- Service Objectives
- Business Network Model

Recommended Practice:

1. A business process model must be created using one of the three following notations:
 - Swimlane process flow diagram
 - UML Activity Diagram, see <http://www.omg.org>
 - Business Process Modeling Notation (BPMN) see <http://www.bpmi.org/> for more details

See [Swimlane Diagram](#) and [Activity Diagram](#) artifact examples.

2. Begin the name of a business process with an active verb to construct a simple imperative statement that will describe the intent of the process. For example, "Approve Order" or "Create Notice".
3. When process mapping, the process steps should be decomposed to their level of usefulness, that is, to understand the problem or issue at hand. If a process is not decomposed to a sufficient level of granularity, it may not be useful. If it is decomposed too much, the detail may make it incomprehensible and it may cost too much in time and money.
4. For "As-Is" process modeling, focus on the processes actually practiced, rather than formally documented procedures that may or may not be followed.
5. avoid introducing system activities / constraints and focus on what the user does.
6. Recommend graphical notation:
 - Business Process Modeling Notation (BPMN) see <http://www.bpmi.org/> for more details.
7. Recommend re-use:
 - Business process patterns based on best practices can be (re) used to design new processes.

Row: 2

HOW

Column 2

Artifact Name: SOA Service Description Profile

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What/Purpose: The SOA Service Description Profile is a specification detailing the characteristics and capabilities of a business service, process or function to assess its potential to be designed as a candidate SOA service.

Description: The SOA Service Description Profile is a composite artifact that provides information about a single candidate business service. The profile is made up of:

1. **Candidate Service Specification:** Illustrates the business process model for which the system function(s) will support.
2. **Function Specification(s):** Describes the system function(s) to be designed. It provides the information passed into and out of the system function along with the associated business rules that applies to the system function.

See [SOA Service Description Profile](#) template.

See [SOA Service Description Profile](#) example.

Rank: **Optional (required for all candidate SOA Services)**

- Benefit:**
- Provides a single point of information for Application Architecture.
 - Eases transformation in application design.

Risk: Loss of project time due to the ongoing need to synthesize a complete view from its constituent elements

- Dependencies:**
- Service Profile
 - Conceptual Data Model
 - Business Rules Profile
 - Business Process Model

Recommended Practice:

Row: 2

WHERE

Column 3

Artifact Type: **Business Network Model**

What/Purpose: To understand the major flows of information, and provide a framework for analysis of volumes, frequencies, service levels, and other scaling factors for the enterprise represented in the framework.

Description: Business network models show the flow of information,

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resources and material between business location types.
See [Business Network Model](#) artifact example.

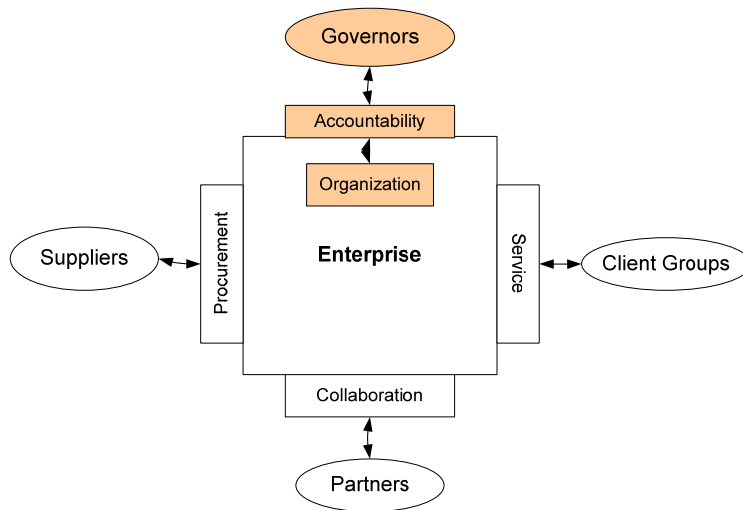
Rank: Mandatory

Benefit: Provides an understanding of the major flows of information, resources and materials. It may assist in the analysis of volumes, frequencies and service levels.

Risk: Inadequate availability and flow of resources.
The business model may not reflect all of the necessary business requirements. This could result in network designs and implementations that would not support existing or future business requirements.

Row: 2	WHO	Column 4
Artifact Name:	Governance Model	
What/Purpose:	A Governance Model represents interactions between enterprise governors (external to the enterprise) and the organizations that make up the enterprise (see the enterprise model below). These include management and governance organizations and service providers	
Description:	Identifies the external entities, to which the enterprise (organization/program/service) is accountable for results, resource usage and compliance with rules. The Governance Model leads to the identification of internal management processes required to produce the above.	

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See [Governance Model](#) example 1.
See [Governance Model](#) example 2.

Rank: Optional

Benefit:

- Identifies accountability /reporting relationships, management functions and related processes that business initiatives have to implement
- Directives from the governing body provide mandates and constraints needed for program management.

Risk: If this model is missing, incomplete or inaccurate, the project team for a business initiative may fail to understand the governance relationships. Failure to identify reporting structures will lead to gaps in information management, reporting or the identification of processes needed for governance purposes. These failures may lead to an underestimation of the resources, effort and time needed to develop and implement programs and services.

Dependencies: Pre-requisite artefacts are:

- Program/Service Profile
- Organization Chart
- Mandate

Artifacts dependent on this artefact:

- Party Type
- Business Process

Recommended Practice: Governance model is an important artifact when undertaking a horizontal business transformation initiative since it ensures that

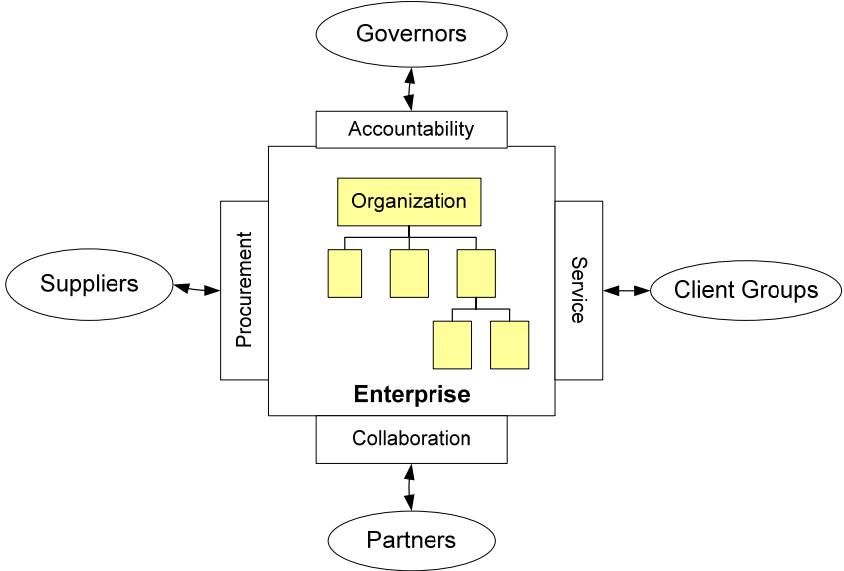
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accountability (in the target state) is explicit.

The scope of the enterprise should be clearly defined so that the context for the governance model is clear.

Business processes that are classified as “Governance Management” should be identified. External governing/regulatory entities must correspond to a “party type”.

Row: 2	WHO	Column 4
Artifact Name:	Organization Chart	
What/Purpose:	An Organization Chart represents the internal accountabilities of an enterprise.	
Description:	Organization represents a view of the enterprise (see the following figure of the enterprise model). The organization is defined within the larger enterprise context.	



An **organizational chart** is a chart which represents the structure of an organization reporting relationships. The chart usually shows the management and staff positions that make up an organization. The chart also shows relationships between

EA Review Requirements Guidebook

staff in the organization which can be:

- **Line** - direct relationship between superior and subordinate.
- **Lateral** - relationship between different departments on the same hierarchical level.
- **Staff** - relationship between a managerial assistant and other areas. The assistant will be able to offer advice to a line manager. However, they have no authority over the line manager actions.
- **Functional** - relationships between specialist positions and other areas. The specialist will normally have authority to insist that a line manager implements any of their instructions.

There are three different types of organization charts:

- **Hierarchical:** A **hierarchical organization** is an organization structured in a way such that every entity in the organization, except one, is subordinate to a single other entity. This is the dominant mode of organization among large organizations; most corporations, governments, and organized religions are hierarchical organizations.
- **Matrix:** Large organizations often use **matrix management**. Large projects are organized with teams that work on a functional, rather than a project, basis. Under matrix management, all people who do one type of work are in a pool. For example, all architects may be in one architect department and report to an architect manager. These same architects may be assigned to different projects and report to a project manager while working on that project. Therefore, each architect may have to work under several managers to get his or her job done.
- **Flat organization** (also known as *horizontal organization*) refers to an organization structure with few or no levels of intervening management between staff and managers. The idea is that well-trained workers will be more productive when they are more directly involved in the decision making process, rather than closely supervised by many layers of management.

See [Organization Chart](#) example 1.

EA Review Requirements Guidebook

See [Organization Chart](#) example 2.

Rank: Optional

Benefit: A quick way to identify what organization units and managers need to be involved (for input, advice or approval purposes) in business initiatives that will affect their program, services, business processes or resources.

Risk: A missing or incorrect Organization Chart requires project staff to find out who needs to be involved through informal methods. This method may lead to gaps in information and approvals through the exclusion of key parties.

Dependencies: Artifacts dependent on this artefact:

- Role Types
- Party
- Service Integration and Accountability Model
- Contribution to workflow model

Recommended Practice: An Organization Chart may be prepared and used without reference to any other artifacts. However, it is desirable that the terms used in organizational unit names are the same words used to identify programs, services, business processes and resource types

In order to accommodate the fluid nature of organizations do not include the names of individuals in positions.

Generally speaking, when undertaking a major business transformation, organization structure would be developed after determining the strategies and services and processes. In this way, organization structure would best reflect "how to carry out the business of the enterprise".

Row: 2

When

Column 5

Artifact Name: **Business Scenario**

What/Purpose: A **business scenario** is a description of an event or a series of events. It is also an account of a projected course of action, events or situations that is used to check for completeness of the business model. Scenarios describe ways that work processes are carried out in a business.

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Description: A **business scenario** is a textual description of expected and alternate sequences of events. It is used to test and elaborate designs and is the basis for defining business requirements.

A Business Scenario must be created using one of the two following notations:

- OPS Business Scenario
- UML Business Use Case, see <http://www.omg.org>

See OPS [Business Scenario](#) template.

See OPS [Business Scenario](#) example.

See UML [Business Scenario](#) example.

Rank: Mandatory

Benefit: Helps understand different ways that events could unfold, by providing a narrative description. Using plain language, it describes what the business does in response to an event.

Risk: Missing or incorrect Business Scenarios increases the risk that the business is not able to respond effectively to plausible situations (expected and alternate).

Dependencies: Pre-requisites artefacts are:

- Business Process Model
- Semantic Model
- Event Type
- Business rule statements
- Workflow

Artifacts dependent on this artifact:

- Business Rule Statement / Process Cross Reference
- System Functional Requirements
- Detailed Workflow Specifications

Row: 2

WHEN

Column 5

Artifact Type: State Transition Diagram

What/Purpose: State transition diagrams support discovery, analysis and illustration of "state-based" business rules (e.g., if current state of driver's licence is suspended, driver's licence cannot be renewed). It shows change in components of business models

EA Review Requirements Guidebook

over time in response to business events.

State Transition Diagrams are very useful for describing the behaviour of individual objects over the full set of business or system use cases that affect those objects. State Transition Diagrams are not useful for describing the collaboration between objects that cause the transitions.

Description: A State Transition Diagram (a.k.a. State Diagram) describes all of the states that an object can have, the events under which an object changes state (transitions), the conditions that must be fulfilled before the transition will occur (guards), and the activities undertaken during the life of an object (actions).

See [State Transition Diagram](#) artifact example.

Recommended Practice: Refer to UML modeling guidelines (www.omg.org)

Artifact Dependencies: The following questions address the fact that elements used in the state transition diagram are either derived from or created in other architecture artifacts. In other words, they relate to the traceability between various artifacts.

Prerequisites:

- Resources
- Events
- Business Rules

Artifacts dependent on this artefact:

- Business Rules
- Business Process

Rank: Optional

Benefit: Can facilitate the discovery of state-based business rules. May help to discover business processes, scenarios, events.

Risk: Business rules may be missed, and the effects of change may not be accounted for when designing the 'to be' business.

Row: 2

WHY

Column 6

Artifact Type: Service Objectives

What/Purpose: Check for alignment of business objectives with

EA Review Requirements Guidebook

business/program/policy goals for the enterprise represented in the framework.

Description: Service objectives quantify or qualify the extent to which a service output contributes to program goals (effectiveness), quantify compliance with service standards (quality) and quantify relationships between units of service delivery and consumption of resources required to deliver service (efficiency).

See [Service Objectives](#) artifact template.

See [Service Objectives](#) artifact example.

Rank: Mandatory

Benefit: Provides the metadata required for supporting performance measurement.

Risk: Performance measurement will not be a rigorous top-down process resulting in static or declining quality. Acceptance of the 'to be' business model may be problematic without the means of measuring performance.

Row: 2

WHY

Column 6

Artifact Type: Performance Matrix

What/Purpose: Ensure that the information for determining the success of the enterprise is understood.

Description: The performance matrix maps the service objectives to the program goals. Performance indicators are placed at each intersection to show how effectiveness, quality and efficiency may be measured.

See [Performance Matrix](#) artifact example.

Rank: Optional

Benefit: Provides the metadata required to support performance measurement.

Risk: Performance measurement will not be a rigorous top-down process resulting in static or declining quality. Acceptance of the 'to be' business model may be problematic without the means of measuring performance.

EA Review Requirements Guidebook

Row: 2	WHY	Column 6
Artifact Type:	Business Rule Source	
What/Purpose:	<p>This artifact is used to document the authoritative sources of Business Rules and provide information about those sources. It is important to document the source of a business rule because it provides the rationale for its existence and makes it easier to manage change.</p> <p>An enterprise articulates business rules to meet specific objectives including:</p> <ul style="list-style-type: none">• Meeting program management accountabilities (e.g. constraints such as privacy).• Achieving program strategies (to achieve program outcomes).• Enabling the delivery of effective, efficient and quality services.	
Description:	<p>Business Rule Source types include:</p> <p>Authoritative instruments that articulate the authority of the program. One or more of these sources is listed in the Mandate Artifact (Row 1, Column 6).</p> <p>Authoritative instruments that articulate constraints of the program. Program constraints can be OPS operational policy, legislation such as FIPPA etc.</p> <p>See Business Rule Source artifact template. See Business Rule Source artifact example.</p>	
Recommended Practice:	<ul style="list-style-type: none">• This artifact is developed incrementally as the business architecture is built.• The source should be the actual source used. That is, a program may have a specific policy that was put in place to implement a legislative requirement. The assumption would be made that the policy accurately reflects the requirement of the legislation and it is not necessary to go to the original source document.• Business rules for the “as is” description of the program are codified in sources such as existing policy, legislation etc.• The business architecture for the “to be” description of the program may identify the need for new business rules. However, the business architecture does not represent an	

EA Review Requirements Guidebook

“authoritative” source. This artifact lists only authoritative sources. (see Business Rule Profile artifact for explanation of how to handle “notional business rules.”)

- The source type would list the type of instrument:
 - Legislation
 - Policy
 - Treaty
 - Contract etc.
 - The Name would list the name of the specific source instrument, for example, a specific Act.
 - The reference would include:
 - location of the source;
 - specific sections of the source that are relevant.
- Artifact Dependencies:** • The “Program Mandate” artifact lists one or more business rule sources.

Rank: Mandatory

Benefit: The business rule sources govern the existence of a business rule. It is important to document the source of a business rule because it provides the rationale for its existence. It is important to document the source of a business rule because it links a business rule to an authoritative instrument. When the instrument changes (e.g. legislative change) it is easier to manage change.

Risk: Business rules are only authoritative when linked to an authoritative source. The rationale for the business rule may be lost. Change in a business rule source will not be easy to manage.

Row: 2	WHY	Column 6
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Artifact Type: Business Rule Profile

What/Purpose: Business Rules govern, constrain or influence behaviour in order to:

- Achieve program strategies (to achieve program outcomes)
- Meet program management accountabilities (e.g. constraints such as privacy)

EA Review Requirements Guidebook

- Enable the delivery of effective, efficient and quality services.

Description: A business rule statement is a plain language statement which describes/documents a business rule. It is atomic, that is, cannot be subdivided. Business rule statements are associated with their source (an authority identified in the business rule source artifact), the process to which they apply, and an identifier for each rule. Business rules either already exist, are modified, or are new (proposed).

If a proposed business rule does not have a source, it will be identified as "Unassigned". A Business Rule Source must be identified as part of the initiative.

Business rules should be made explicit so they can be managed independently of process and application. Business rules represent a starting point for identifying business requirements and system rules for an automation project.

See [Business Rule Profile](#) artifact template.

See [Business Rule Profile](#) artifact example.

Recommended Practice:

- Business rule statements should follow the Plain Language guidelines:
 - Uses terms and wording that is clear and acceptable to both the Business and IT
 - Is complete, readily usable, readily understandable, simple
- Business rule statements conform to "Subject, Verb, Object, Constraint /Permission".
 - **Subject** and **Object** must be a valid Term as per the definition in the Semantic Model
 - **Action/Verb Phrase** must include one of CAN/MAY/MUST or one of CAN NOT/MAY NOT/MUST NOT.
 - **Constraint/Permission** must use Terms for any measures or targets (e.g. "by Fiscal Year End" as opposed to "by March 31st").

Artifact Dependencies:

- Prerequisites:
- Business Rule Source
 - Strategy
 - Mandate
 - Resources

EA Review Requirements Guidebook

- State Transition
- Business Process

Artifacts dependent on this artefact:

- State Transition
- Business Scenario
- Business Process

Rank: Mandatory

Benefit: Making business rules explicit allows them to be managed independently of process and provides a business with agility when changes occur.

Documenting business rules as part of a change initiative allows managers to explicitly approve the set of rules. These rule statements can then be encoded in applications and represent explicit instructions to developers.

When business rules are made explicit they can be reused.

Risk: The program may not be operating in accordance with government direction.

When business rules are not explicit, application developers must infer the rules. The rules are then encoded in applications and are not explicitly known to the business.

The implications of changing legislation or government direction are not easily understood.

Row: 2	WHY	Column 6
Artifact Name:	Program Logic Model	
What/Purpose:	The program logic model is a diagrammatic representation that helps design Programs. It is used to test that each service contributes to the achievement of at least one of the Program's goals and that the program goals contribute to the Government's strategic goals or directions. Therefore ensuring that the correct services are in place to achieve the stated program goals and that the correct program goals have been stated to achieve the strategic direction set by Government	
Description:	A model that provides a visual representation of the alignment of services to programs as it shows how outputs produced by services contribute to program outcomes, program outcomes	

EA Review Requirements Guidebook

support program impacts and impacts support strategic outcomes of Government. Alignment occurs when the output of a service contributes to the outcome of a program. The output must demonstrate a measurable impact on reducing the target group needs.

Note that other (peer) programs may be required to achieve the strategic goals.

See [Program Logic Model](#) example.

Rank: Optional

Benefit: Supports results-based planning and the development of performance measures.

Helps define program and services that align with government priorities.

Allows program manager is able to map services and their outputs to the strategic direction set by Government.

Targeting Outcomes of Programs focuses on outcomes in planning, implementing, and evaluating programs.

Facilitates program planning and delivery.

Enhances buy-in and team building among program stakeholders and participants by promoting participation and ownership.

Aides' stakeholders in understanding the goals, expectations and outcomes associated with the program.

Demonstrates how different components of a program, such as program goals, program impact and service outputs are linked.

Assists in identifying unintended consequences of the program.

Risk: If these linkages are not analyzed, there is a risk that new Program designs will not further the strategic priorities of the government or that continuing Programs will fall out of alignment with them.

Dependencies: Pre-requisite artifacts are:

- Program Goals (outcomes and impacts)
- Service (Names and Service Outputs)
- Government Strategic Goals (sourced from Results Based Planning)

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**Recommended
Practice:**

- Ensure that you have access to Government Strategic Goals and Priorities

EA Review Requirements Guidebook

Row 3: Logical

Row: 3	WHAT	Column 1
Artifact Type:	Logical Data Model	
What/Purpose:	A Logical Data Model (LDM) represents in full detail all the in-scope business entities, their relationships, and their attributes. It is used to describe the data requirements and needs in support of the in-scope business activities in as much detail as possible without any regard to the physical implementation environment or performance considerations.	
Description:	The Logical Data Model is a fully attributed and normalized data model with detailed definition of the data entities, relationships, and attributes. This model is independent of physical constraints and considerations, such as organizational ownership, geographic location, or technology of implementation. It can be used: <ul style="list-style-type: none">• To enhance communication between IT and business;• To discover, uncover, and clarify business rules involving the business information;• To understand all the required business information and data;• As a common reference to describe how business activities (functions) in the scope to produce their respective outcome by manipulating data (CRUD) and exchanging messages (flows); and• To provide the underlying structure of a physical data model (PDM). A Logical Data Model should be directly traceable to the corresponding Conceptual Data Model. A Logical Data Model must be diagrammed using one of the following notations, and must be accompanied by detailed metadata as specified in GO-ITS 56.0, Information Modeling Handbook (IMH): <ul style="list-style-type: none">• Entity Relationship diagram, or a• Unified Modeling Language (UML) Class Diagram representing only entity classes, without showing any methods on these classes. See Logical Data Model artifact example 1. See Logical Data Model artifact example 2.	

EA Review Requirements Guidebook

Artifact The Conceptual Data Model in (2, 1).

Dependencies:

Rank: Mandatory

Benefit: This model has the following benefits:

- It facilitates a complete understanding of in scope business entities and associated information requirements.
- It provides assistance and enablement for further technical analysis, design, and physical implementation.
- It is authoritative and provides a formal data definition of business concepts.
- It can be used as a reference when integrating data from multiple data sources.
- To further elaborate business information requirements and establish a baseline for the creation of a physical data model with verifiable traceability.
- It can be used to assess the alignment of existing physical data models with business requirements.

Risk: The risks of not developing this model include:

- Lack of full data analysis leads to data definition ambiguities and inaccuracies.
- Lack of data normalization leads to data redundancies, and inefficient solution design and implementation later.

Artifact Type: **Logical Data Model - Guidance for Acquired Solution**

Guidance: The purpose of the Logical Data Model for acquired solutions is neither to document proprietary aspects of a solution nor to produce a physical data model. Its purpose in this context is to specify the data content and structural requirements at a sufficient level of detail to inform the RFP. Such specification will reduce post-acquisition systems integration efforts.

Required:

- All data entities (or entity classes) must be identified, defined, and fully attributed.
- All business relevant data attributes must be identified, and defined.
- Business unique identifiers must be specified.
- The data model must be normalized to 3rd normal form.
- Relationship optionality and cardinality (i.e. multiplicity in UML) must be clearly specified.

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- Many-to-many relationships that have additional underlying business data requirements must be resolved into associative entities with all the additional data attributes identified and defined.
- Associative entities must be identified and defined.
- Domains of attributes with significant business values must be defined or at least described in the description of the attribute.

Not Required:

- Data types and sizes for all data attributes.
- Resolution of many-to-many relationships for technical implementation purposes.
- Associative entities that contain only foreign keys but without additional data attribute(s).
- Definition of constraints related to implementation such as Domain, Referential Integrity, etc.

Row: 3

WHAT

Column 1

Artifact Type: Logical Dimensional Model

What/Purpose: This artifact provides information about the logical design of the data mart being built. It includes the details of the fact entities, facts, dimensions, dimension attributes, and the relationships connecting the facts with the dimensions.

The Logical Dimensional Model is used to illustrate the capability of the data mart design to meet the decision support requirements and to address the specific information requirements. The Logical Dimensional Model also illustrates the traceability from the high-level business information requirements, as presented in the Fact and Dimension Matrix, to the data mart design.

It is also used to visually communicate the appropriate level of granularity and business hierarchy of the information required for decision support reporting.

Description: The Logical Dimensional Model constitutes the logical design of a solution for the decision support needs. It includes sufficient details of the data mart design without addressing the particular technology implementation.

The Logical Dimensional Model should be built from the Fact and Dimension Matrix and re-use as much as possible the existing

EA Review Requirements Guidebook

data definitions and inherent business hierarchical relationships from existing Logical Data Model(s) (i.e. data sources) to achieve the consistency of data across the business domain.

Rank: Optional

This artifact is considered as **mandatory** for a project that develops or acquires data warehouse and/or data mart based solutions for decision support initiatives.

Benefit: This artifact illustrates a clear understanding of the business information requirements. In particular, it assists in:

- Creating sufficient detail for a solution design that can be used for future planning and implementation.
- Explaining the contents of the decision support requirements and solution to the business sponsor.

Risk: If this artifact is not developed, it will result in:

- An increased risk that a decision support solution will not meet the business needs nor can be integrated into a longer-term solution.
- The subsequent solution model (i.e. physical dimensional model) being defined directly from the source system data and metadata leading to a lack of conformed dimensions hence impacting opportunities for data integration.
- The lack of a unified view of conformed dimensions and the increased risk of creating non-additive facts, mixing fact granularity or missing an important dimension.

Format: **Logical Dimensional Model Diagram:** A model diagram in which each decision support solution is represented as a star schema(s) with the fact entity consisting of quantitative and/or qualitative measurements and being joined to a set of dimension entities which include descriptive attributes. The entire decision support solution set is represented as a series of interconnected star schemas. The interconnection is based on conformed dimensions.

Artifact

Example: See [Logical Dimensional Model](#) artifact example

Artifact Predecessors List: Fact and Dimension Matrix (2, 1), Logical Data Model (3, 1)

Artifact Successors List: Physical Dimensional Model (4, 1)

EA Review Requirements Guidebook

Row: 3	HOW	Column 2
Artifact Type:	System Functional Requirements (generic version)	
What/Purpose:	This artifact captures and presents information that defines the required functional capabilities of the system. The object-oriented way of presenting this information is the Use-Case Model.	
Description:	<p>Functional requirements capture the intended behaviours of the system. These behaviours may be expressed as services, tasks or functions the system is required to perform.</p> <p>The System Functional Requirements described by using non-UML notation should be documented using clear, specific, well-articulated statements and/or detailed mathematical functional descriptions. Non-UML techniques may be used for small systems with minimum enterprise architecture impact and for non-OO systems.</p> <p><u>Recommended Content:</u> It might include:</p> <ul style="list-style-type: none">• Introduction• Requirements Overview• Specific requirements• Functional Requirement 1...n• Supporting information <p><u>Dependency and Traceability:</u></p> <ul style="list-style-type: none">• Business Functions or Business Use-Case Model• System Functional Requirements• System Architecture Document• Logical and Physical Application Design Documents <p><u>Recommended Template:</u> System Functional Requirements</p> <p>The UML Version of this artifact is System Use Case Model (see example) and the associated Use-Case Specification (see template).</p>	
Rank:	Mandatory (either generic or UML version)	
Benefit:	This artifact captures the functional requirements used to architect and design the software system. It specifies the system's intended functions and its environment, and serves as a contract between the customer and the developers. This	

EA Review Requirements Guidebook

information is an essential input to activities in system architecture, design, and test.

- Risk:** Failure to capture this information can result in:
- Requirements mismanagement
 - Missing functional requirements
 - Incapacity of tracing business functions to functional requirements to the source code that realize them
 - Difficult to understand system requirements
 - Project delays or failure

Artifact Type:	System Functional Requirements - Guidance for Acquired Solution
Guidance:	<p>Provides the minimum high-level functional capabilities required of the intended Acquired Solution.</p> <p>Functional requirements capture the intended behaviours of the Acquired Solution. These behaviours may be expressed as services, tasks or functions the system is required to perform. This specification informs the requirements section of the RFP.</p>
Required:	Document sections: <ul style="list-style-type: none">IntroductionRequirements OverviewSpecific requirementsFunctional Requirement 1...nSupporting information
Not Required:	System Use Case Model Use-Case Specification

EA Review Requirements Guidebook

Row: 3

HOW

Column 2

Artifact Type: System Use Case Model

What/Purpose: It captures the functional requirements of the system to be developed using UML diagrams. It is the foundation for the system to be built.

Description: The System Use-Case Model artifact is the foundation for most of the Analysis and Design artifacts and it describes the system interactions with the clients and / or with other external systems. It captures the functional requirements of the system to be developed and includes a collection of packages containing mainly use-case diagrams traceable to the corresponding business use-cases and use-case realizations. The System Use-Case Model is correct only when it describes nothing else but the system's functionality.

Each system use-case must have an associated Use-Case Specification document that should include a brief description, flow of events, special requirements, pre-conditions and post-conditions.

The System Use-Case Model is generally used in all phases of the development cycle and is an essential input to designing and testing the system.

Recommended Content:

It may include (diagrams should be supported by descriptions):

- Use-Case Package diagram
- Use-Case diagram
- Actors diagram
- Class diagrams to show traceability

Diagrams Model	UC	O	C	S /C	S	A	Com	D
Use-Case	M		m		m	M		

UC=Use-Case; O=Object; C=Class; S/C = Sequence/Collaboration
 S=Statechart; A= Activity; Com=Component; D=Deployment; M=Major; m=minor

Dependency and Traceability:

- Business Use-Case Model
- System Use-Case Model
- System Architecture Document

EA Review Requirements Guidebook

- Logical Application Design Document
- Physical Application Design Document

See [System Use Case Model](#) artifact – diagram example.

Rank:

Mandatory (either generic or UML version)

Benefit: The System Use-Case Model is a model of the system's intended functions and its environment, and serves as a contract between the customer and the developers. The use-case model is used as an essential input to activities in analysis, design, and test.

Risk: The failure of creating this artifact can result in:

- Missing functional requirements.
- Incapacity of tracing requirements from Business Use-Cases to Use-Case Realizations.
- Difficult to understand system requirements.
- Project delays or failure.

Row: 3	HOW	Column 2
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Artifact Type: Use-Case Specification

What/Purpose: To provide detail information for each use-case included in the System Use-Case Model. Each use-case should have an associated Use-Case Specification file whose internal structure follows the provided template.

Description: Each System Use-Case should include descriptions, which are stored in separate files called Use-Case Specification. These descriptions must be very detailed and a template is provided to assist the analyst and to ensure a consistent collection of these descriptions.

Use-Case Specifications contains a description of the flow of events describing the interaction between actors and the system. The specification also typically contains other information such as preconditions, post-conditions, special requirements and key scenarios.

The detailed descriptions associated with a system use-case are based on the detailed business descriptions associated with business use-cases. If the Business Use-Case Model was not created then the detailed descriptions of the system use-cases are based on the knowledge of the business domain experts.

EA Review Requirements Guidebook

Recommended Content:

The Use-Case Specifications may include:

- The name of the use case
- Basic Flow of Events
- Alternative Flows
- Sub flows
- Key Scenarios
- Pre-conditions
- Post-conditions
- Extension Points
- Special Requirements
- Business Rules Specification

Recommended Template:

[Use-Case Specification](#)

Rank: Mandatory when the System Use-Case Model was created

Benefit: Use-Case Specification captures the required system behaviour from the perspective of the end-user in achieving one or more desired goals

Risk: The failure of creating this artifact can result in:

- Incomplete System Use-Case Model
- Incomplete description of the system's functionality.
- Failure to optimize the Application Design Model and to identify all reusable design elements.

Row: 3

HOW

Column 2

Artifact Type: System Architecture Document

What/Purpose: The System Architecture Document provides a comprehensive overview of the solution, using a number of different architectural views to depict various aspects of the system.

Description: The System Architecture Document describes the architecturally significant decisions, which have been made on the project. It defines a complete, high-level overview of the system, by including all UML and non-UML architectural views to describe different aspects of the system, and by emphasizing the logical partitioning and the functional components.

The document also contains criteria used to partition the

EA Review Requirements Guidebook

application's functionality, architectural patterns. The application building blocks and components description are the most important sections of this document.

Recommended Content:

It might include:

- Introduction
- Architectural Representation
- Architectural Goals and Constraints
- Use-Case or Requirements View
- Logical View
- Implementation View
- Process View
- Deployment View
- Data View

Dependency and Traceability:

- System Functional Requirements or System Use-Case Model
- Logical Application Design Document or Logical Application Design Model
- Physical Application Design Document or Physical Application Design Model

Recommended Template:

[System Architecture Document](#)

Rank: Optional

Benefit: The System Architecture Document serves as a communication medium between the software architect and other project team members or clients, regarding architecturally significant decisions, which have been made on the project.

Risk: The failure of creating this artifact can result in:

- Missing the big picture
- Incapacity of aligning the software solution to enterprise best practices
- Incapacity of identifying and using common components
- Additional costs

EA Review Requirements Guidebook

Row: 3	HOW	Column 2
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Artifact Type: Logical Application Design Document

What/Purpose: The high-level Logical Application Design Document provides a view for representing the transformation of the functional requirements. It specifies and illustrates how the functional requirements are transformed and mapped onto classes and their interrelationships. Logical design is intentionally platform independent and provides an accurate, detailed, and complete description of the logical design for the entire application.

Description: The design must document how each of the requirements specified in the System Functional Requirements and Supplementary Specifications will be logically accomplished or realized as a well-defined set of interactions between various objects. The design also identifies interfaces, reflects details such as scalability, availability, and security, and leverage existing system designs whenever possible.

The design should reflect the application architecture principles, practices, and standards; ensure the requirements traceability by cross-referencing the system requirements with logical design elements e.g. subsystems, modules; and align all aspects of the information, application, technology, security, and integration architecture, to solve specific business requirements.

Logical design is platform independent; it does not have any details of any implementation technology.

When a service-based approach is being used to assemble an application, use the Service Model template to articulate and illustrate the architectural design for *each* discrete "Service" being proposed or developed.

See [Service Model artifact template](#).

Recommended Content:

It might include:

- Introduction
- High-level Logical Application Design Goals and Considerations
- High-level Logical Application Design Overview
- High-level Logical Application Design Descriptions and

EA Review Requirements Guidebook

- Diagram
- Subsystem Design
- Module Design
- System Interface Design
- Requirement Traceability
- Domain Architecture Alignment

Dependency and Traceability:

- System Functional Requirements
- System Architecture Document

See [Logical Application Design Document](#) template.

See [Logical Application Design Document](#) example.

UML version of this artifact is the high-level Logical Application Design Model.

Rank: Mandatory (either generic or UML version)

Benefit: The high-level Logical Application Design Document captures the most essential design elements. It reflects some of the more common choices as well as important items that should be considered during the design phase.

Risk: The failure of creating this artifact can result in:

- Incorrect and inconsistent abstractions.
- Failure to use design patterns.
- Failure to properly spread the system knowledge across the identified classes.
- Failure to identify reusable objects.
- Project failure.

EA Review Requirements Guidebook

Artifact Type:	Logical Application Design Document - Guidance for Acquired Solution
Guidance:	<p><i>Provide a concise description of the logical design for the entire application. The design must document how each of the requirements specified in the System Functional Requirements and Supplementary Specifications will be logically accomplished.</i></p>
	<p><i>Some sections of the LADD may not be relevant to an acquired solution implementation. Those components can be viewed as “black-boxes” or self-contained solutions and their internal logical designs do not need to be documented. The logical design should be at a level of granularity suitable for Acquired Solutions, more coarse grain than the artifacts needed for custom designed/developed solutions.</i></p> <p><i>The integration architecture needs to be well documented with close attention to all connectivity and interface points. Document, at a high-level, the structures that can be “seen”, configured, or changed (integration and connectivity points, API’s, Protocols, and standards).</i></p> <p><i>Connectivity points and interface requirements to external sources need to be well understood and documented to provide the vendor with sufficient information to respond to the integration requirements. <u>Any custom interface design requirements must be reflected in this document.</u></i></p> <p><i>The following items will be high-level at the pre-RFP stage and more refined post-RFP.</i></p>
Required:	<p>Logical Application Design Descriptions and Diagram Logical Application Design Goals and Considerations Logical Application Design Overview Component Model High-level Integration design Interface specifications (or requirements) System Interface Design (custom interfaces) Requirement Traceability (to functional requirements)</p>
Not Required:	<p>Components and sub-systems design Detailed</p> <ul style="list-style-type: none"> ▪ Subsystem Design ▪ Module Design
Comments:	<p>This document should provide the overall logical design of the integrated solution.</p>

EA Review Requirements Guidebook

Row: 3

HOW

Column 2

Artifact Type: Logical Application Design Model

What/Purpose: The high-level Logical Application Design Model is a comprehensive artifact that defines and describes the static and the dynamic aspects of the system in terms of collaborating objects.

Description: The high-level Logical Application Design Model includes the static model (class packages and diagrams) and the dynamic model (realization of use-cases) and hides those modeling elements (classes and packages) specific to the programming language that implements the model. It is a comprehensive artifact that includes all design classes, subsystems, packages, collaborations, and their relationships.

The Logical Application Design Model is a result of the evolutionary process of the Analysis Model. It is a platform-independent model. It provides essential input to activities in implementation and testing. The Application Design Model is continuously kept consistent with the System Use-Case Model, the Implementation Model, the Logical Data Model and Physical Data Model.

It is recommended to create the Logical Application Design Model by using an UML Modeling Tool and then export the model into HTML format. The Ms Word version can be created by extracting the document from the Logical Application Design Model. If you use Rational Rose as the object-oriented modeling tool, then you can use Rational SoDA to extract information and create MS Word documents.

Additionally, when a service-based approach is being used to assemble an application, use the Service Model template to articulate and illustrate the architectural design for *each* discrete "Service" being proposed or developed.

See [Service Model](#) artifact template.

Recommended Content:

It might include (diagrams should be supported by descriptions):

- Static Model
- Package diagram
- Class Diagrams
- Statechart / Activity Diagrams
- Dynamic Model (Use-Case Realization)

EA Review Requirements Guidebook

- Interaction diagrams: Sequence and Collaboration diagrams
- Trace (class) diagram to use-cases

Diagrams Model	UC	O	C	S /C	S	A	Com	D
Design		m	M	M	M	m		

UC=Use-Case; O=Object; C=Class; S/C = Sequence/Collaboration
 S=Statechart; A= Activity; Com=Component; D=Deployment; M=Major; m=minor

Dependency and Traceability:

- System Use-Case Model
- System Architecture Document
- Physical Application Design Model

The [Logical Application Design Document](#) (see template) is a **generic** design artifact that can be used when UML is not employed as a modeling notation.

More details regarding this artifact can be found in the *OPS Application Architecture Guidebook*.

Rank: Mandatory (either generic or UML version)

Benefit: The high-level Logical Application Design Model describes the realization of use cases, and serves as an abstraction of the implementation model and its source code. Because this model is technology independent it is essential when applications are migrated from one platform to another.

Risk: The failure of creating this artifact can result in:

- Incorrect and inconsistent abstractions
- Failure to use design patterns
- Failure to properly spread the system knowledge across the identified classes
- Failure to identify reusable objects
- Project failure

Row: 3

WHERE

Column 3

Artifact Type: Infrastructure Component Placement Diagram

What/Purpose: To indicate the relationship between infrastructure components or services and their placement.

EA Review Requirements Guidebook

- Description:** High/medium level annotated diagrams providing a listing and placement of logical infrastructure component or service types necessary for the system technology infrastructure. (Note: infrastructure components/services and their definitions appear in the “Infrastructure Component Catalogue” [ICC]. Should a required component or service not be available as per the descriptions in the ICC, updates to the ICC should be proposed.) The placement of infrastructure components should be depicted on a
- Geographical;
 - Organizational;
 - Virtual/network/security;
 - Administrative;
 - Other relevant placement basis.
- See [template](#).
- Rank:** Mandatory
- Benefit:** Part of normal design process indicating relationship between infrastructure components and their placement.
- Risk:** Failure to identify and place components correctly could result in performance and/or functionality failure. It could also lead to unacceptable security risks.

Row: 3	WHERE	Column 3
Artifact Type:	Infrastructure Pattern Match	
What/Purpose:	To identify the most suitable infrastructures on which to run applications. This allows for common design based on OPS best practices and the opportunity for rationalizing infrastructure. It also provides an opportunity for the Architectural Review Process to identify, capture and reuse patterns developed by projects, or improve and update those that are already in the Services Library.	
Description:	<p>Matches: Tables and high level annotated diagrams illustrating the match between the target system (or sub-system) functionality and service levels with those provided by an existing authoritative pattern or chain of patterns. (An “authoritative pattern” is one that already exists in the Patterns, Templates and Reusable Components Library: at a minimum, matches against the “starter kit” of patterns should be done.)</p> <p>Patterns: Improvements to existing patterns or entirely new patterns may also be proposed for adoption as authoritative artifacts.</p>	

EA Review Requirements Guidebook

See [template](#).

Rank: Mandatory

Benefit: This will identify the most suitable infrastructures on which to run the applications. This allows for common design and the opportunity for rationalizing infrastructure. It also provides an opportunity for the Architectural Review Process to identify gaps and deficiencies in the Architect's Library.

Risk: Inappropriate designs may be deployed resulting in a failure to meet required service level metrics. Opportunities for infrastructure rationalization may be missed resulting in increased costs.

Row: 3	HOW	Column 3
	Artifact Type: Logical Application Deployment Model	
What/Purpose:	To depict the logical design at a sufficient level of detail so that: <ul style="list-style-type: none"> ▪ Other groups (especially operations) can verify that their concerns are being taken into account and can input into the design before proceeding to implementation. ▪ Transformation (row 3 to row 4) issues can start to be addressed. 	
Description:	Low level, detailed, annotated logical technology diagrams that depict system software, hardware and network components that address system functional requirements as well as non-functional requirements such as: Security (e.g. VPN, firewall, IDS, security domains and zones, authentication/ non-repudiation mechanisms, access control, etc.) as well as privacy features (e.g. separation of data stores, encryption, etc.). Business continuity/ disaster recovery strategy. Operationally significant aspects (e.g. indication of scale out/scale up strategy, system management/monitoring servers/agents, etc.). A Quality Level Metrics section (with its own template) that defines a set of metrics under the headings Conventional, Extended and Adaptiveness/Modifiability. See Logical Application Deployment Model template .	
Rank:	Mandatory	
Benefit:	Provides a starting point to engage other groups, especially operations, to input early into the design.	

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Risk: Danger of producing a design that does not fit with the chosen pattern(s) and therefore may not represent best practices. The result may be a suboptimal under-performing design. There is also the danger of proceeding too far without taking essential security/privacy/operational concerns into account.

Row: 3	WHO	Column 4
Artifact Type:	Functional Group – Application Component Cross Reference	
What/Purpose:	A table or matrix that captures the relationships undertaken by functional groups (actors) and logical (application/software) components.	
Description:	Under a structured methodology this matrix maps roles to the business processes they perform. Under an object-oriented methodology this matrix maps roles to business objects. See Functional Group – Application Component Cross Reference artifact example.	
Rank:	Mandatory	
Benefit:	This matrix is useful in determining what application/software components might be impacted by a change to a functional group/actor.	
Risk:		

Row: 3	WHO	Column 4
Artifact Type:	Detailed Workflow Specification	
What/Purpose:	An activity diagram and accompanying text that in detail captures actions, who, or what is performing those actions, and the results of the actions. See Detailed Workflow Specification artifact example.	
Description:	It is used to depict the process flow within a use case.	
Rank:	Optional	
Benefit:		
Risk:		

EA Review Requirements Guidebook

Row: 3	WHEN	Column 5
Artifact Type:	Logical Operating Schedule	
What/Purpose:	This operating schedule ensures completeness of analysis in terms of timeliness and resource requirements over time to carry out processes, respond to events, etc.	
Description:	Describes the sequencing, timing, duration and other time-related characteristics of events and processes/activities/tasks, etc. See Logical Operating Schedule artifact example.	
Rank:	Operational Sequence Diagram: Mandatory Use Case Sequence Diagram: Optional	
Benefit:	Aids in the understanding of the sequencing of events and activities.	
Risk:	Insufficient understanding of the order of events to create a useful application.	

Row: 3	WHY	Column 6
Artifact Type:	Supplementary Specification	
What/Purpose:	This document captures system requirements that are not captured in use cases or the System Functional Requirements. It focuses on the non-functional requirements of the proposed solution.	
Description:	The Non-functional requirements include Logical Data Specification, Physical Data Specification, Logical Infrastructure and Deployment Specification, Physical Infrastructure and Deployment Specification, User Interface Specification, Performance Specification, Design Specification and Development Specification. It also captures special requirements, which are not captured in the System Functional Requirements artifact and other non-functional requirements artifacts. These requirements may include: <ul style="list-style-type: none">• Legal and regulatory requirements and application standards.• System and development environment requirements,	

EA Review Requirements Guidebook

- compatibility requirements, and design constraints.
- Integration with existing systems

Recommended Content:

It might include:

- Introduction
- Logical Data Specification
- Physical Data Specification
- Logical Infrastructure and Deployment Specification
- Physical Infrastructure and Deployment Specification
- Interfaces Specification
- Design Specification
- Development Specification
- Reused Component Requirements
- Purchased Components Requirements
- Licensing Requirements, Legal and Regulatory, Copyright, Other Notices, and Standards

Dependency and Traceability:

- High-level (logical) Application Design Document or High-level (logical) Application Design Model
- Detailed (Physical) Application Design Document or Detailed (Physical) Application Design Model

Recommended Template:

[Supplementary Specification](#)

Rank: Mandatory

Benefit: To identify and describe the non-functional requirements regarding system performance and reliability, standards, integration, development and design constraints, volume and sizing, databases, special hardware, network architecture, network connections, availability, disaster recovery, security and assumptions and issues.

Provides an understanding of the limitations of the environment in which a system will be implemented.

Risk: The failure of creating this artifact can result in:

- Missing special requirements.
- Application failure to achieve expected performance.
- Project delays and additional costs.

EA Review Requirements Guidebook

Artifact Type:	Supplementary Specification - Guidance for Acquired Solution
Guidance:	Initially this artifact informs the RFP. Later it is refined to contribute to system integration by providing the non-functional requirements for the automation solution.
Required:	Document sections: <ul style="list-style-type: none">• Reused Component Requirements (if applicable)• Purchased Components Requirements• Licensing Requirements, Legal and Regulatory, Copyright, Other Notices, and Standards
Not Required:	<ul style="list-style-type: none">• Physical Data Specification• Logical Data Specification Logical Infrastructure and Deployment Specification• Physical Infrastructure and Deployment Specification• Interfaces Specification• Design Specification• Development Specification

EA Review Requirements Guidebook

Row 4: Physical

Row: 4	WHAT	Column 1
Artifact Type:	Physical Data Model	
What/Purpose:	A Physical Data Model (PDM) defines the physical implementation of the logical data requirements using a particular technology within an intended implementation platform and environment. It shows how each data element will be implemented and stored on the data store.	
Description:	<p>The Physical Data Model is primarily concerned with physical limitations, performance and space requirements. For implementation purposes, objects that appear in the conceptual or logical data models may be combined or subdivided, and new objects may be introduced in order to reduce response time, to accommodate the physical limitations of the computing environment, and to improve maintainability.</p> <p>For example, it may introduce new implementation objects, such as database triggers, primary key and foreign key constraints, and check constraints in the RDBMS environment to ensure that business rules in the logical data model are fulfilled during the physical implementation.</p> <p>It may also introduce new implementation objects such as indexes that do not contribute to the business information requirements of the system application. These new objects may be created in order to speed up response time, ensure that the application fits within the physical limitations of the computing environment, improve maintenance turnaround, etc.</p> <p>A Physical Data Model should be directly traceable to the corresponding Logical Data Model.</p> <p>A Physical Data Model must be diagrammed using one of the following notations, and must be accompanied by detail level of metadata as specified in GO-ITS 56.0, Information Modeling Handbook (IMH), and a mapping or design document which provides traceability back to the LDM:</p> <ul style="list-style-type: none">• Relational diagram, or• Other formal graphical representations (e.g. tree diagram for XML model) <p>See Physical Data Model artifact example 1. See Physical Data Model artifact example 2.</p>	

EA Review Requirements Guidebook

See [Physical Data Model](#) artifact example 3.

Artifact The Logical Data Model in (3, 1).

Dependencies:

Rank: Mandatory

Benefit: Provides an opportunity to address physical implementation issues independent of the business meaning of the data.

Risk: The risks of not developing this model include:

- Poor system performance.
- Difficulty maintaining the database.
- Lack of utilization of some functions and features offered by a specific technology.
- Loss of productivity.

Row: 4	WHAT	Column 1
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Artifact Type: Database Inventory

What/Purpose: This is a list that provides an account of existing data states (i.e., files, databases, datamarts, etc.) and their pertinent characteristics. This list facilitates the further analysis of data conversion and data conversion strategies from current to target platforms.

Description: A listing of all of the files and physical databases within the area of the project, problem domain, or area of investigation. The area of interest could be defined along organizational, functional, or systems lines.

See [Database Inventory](#) artifact example.

Rank: Optional

Benefit: This listing provides information about the physical data environment.

Risk: The ability to support data and the ability to ensure security and privacy may be compromised by insufficient knowledge about its implementation.

Row: 4	WHAT	Column 1
--------	------	----------

Artifact Type: Physical Dimensional Model

EA Review Requirements Guidebook

What/Purpose: This artifact describes the internal data structures used by the data warehouse or a data mart.

The Physical Dimensional Model provides information about the physical implementation of the data mart using a specified database management system (relational or multi-dimensional). It is primarily concerned with physical limitations, performance and space requirements.

Description: The Physical Dimensional Model is used to show how and where each data element will be implemented and stored on the database. The relationships in the Logical Dimensional Model are transformed and presented by the primary keys in the dimension tables and the corresponding foreign keys as a part of the multi-part key in the fact table.

The Physical Dimensional Model should be built from the Logical Dimensional Model.

Rank: Optional

This artifact is considered as **mandatory** for a project that develops or acquires data warehouse and/or data mart based solutions for decision support initiatives.

Benefit: This artifact focuses on meeting a specific set of information retrieval and analysis requirements by designing the database in such a way as to be easy and efficient to query.

Risk: Not creating this artefact may result in inefficient query processing and handling, slower response times, or under-utilization of the decision support solution.

Format: **Physical Dimensional Model Diagram:** A model diagram which presents / describes the internal data structures. It consists of one or more fact tables(s) each with a multi-part key, and a set of smaller dimension tables, each with a single-part primary key that corresponds exactly to a component of the multi-part key in the fact table.

Artifact

Example: See [Physical Dimensional Model](#) example

Artifact Predecessors Logical Dimensional Model (3, 1)

List:

Artifact Successors List: N/A

EA Review Requirements Guidebook

Row: 4	HOW	Column 2
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Artifact Type: **Physical Application Design Document**

What/Purpose: The detailed Physical Application Design Document provides a comprehensive view for representing the transformation of the high-level Logical Application Design constructs into detailed application design specifications. It takes into account the technology platform and provides an accurate, detailed, and complete description of the detailed physical design for the entire application.

Description: The design must present how the high-level logical application design specified in the [Logical Application Design Document](#) will be physically accomplished based on selected implementation technology and platform.

This document must illustrate, in greater detail, the physical application architecture/design describing how to physically accomplish the system requirements described in the logical application design. It should provide a clear understanding of the structure of the application including custom applications and integration interfaces. This should be sufficiently detailed to guide developers in understanding the architectural foundation upon which to construct/assemble the solution.

Almost all details should be known at this point in the design process. Detailed physical design describes how to utilize the identified implementation environment on a selected platform to physically implement the subsystem's logical design, module design, and system interface design. Design objectives such as Reliability, Availability, Scalability, Interoperability, and use of Common Components/Services should be adequately reflected in the physical design. Leverage existing system designs whenever possible.

The detailed design must align with application architecture principles, practices, and standards and ensure traceability with requirements. It must align all aspects of the information, application, technology, security, and integration architecture to solve specific business requirements.

The Physical Application Design Document is implementation technology and platform specific.

EA Review Requirements Guidebook

When a service-based approach is used to assemble an application, use the Service Model template to articulate and illustrate the architectural design for *each* discrete “Service” being proposed or developed.

See [Service Model](#) artifact template.

Recommended Content:

It might include:

- Introduction
- Physical Design Goals and Considerations
- Physical Design Overview
- Physical Design Descriptions and Diagram
 - Subsystem Design
 - Module Design
 - System Interface Design
- Requirement Traceability
- Domain Architecture Alignment

Dependency and Traceability:

- System Functional Requirements
- System Architecture Document
- Logical Application Design Document

See [Physical Application Design Document](#) template.

See [Physical Application Design Document](#) example.

The **UML version** of this artifact is the Physical Application Design Model.

Rank: Mandatory (either generic or UML version)

Benefit: The Physical Application Design Document is a platform-specific design describing how to physically accomplish the system requirements realized in the high-level Logical Application Design Document, and provides a clear understanding of the structure of an application. It is used as essential input to activities in implementation and test.

Risk: The failure of creating this artifact can result in:

- Confusion in implementing the design.
- Misuse of the development language packages or third party packages.
- Project delays and additional costs.

EA Review Requirements Guidebook

Artifact Type:	Physical Application Design Document - Guidance for Acquired Solution
Guidance:	<p>The Physical Application Design Document provides an accurate, detailed, and complete description of the physical design for the entire solution including the Acquired Solution components.</p> <p>It describes how to utilize the identified implementation environment on a selected platform to physically implement the Acquired Solution components and sub-systems design, integration design, and interface specifications.</p>
Required:	<p>Physical Design Descriptions and Diagram Physical Design Goals and Considerations Physical Design Overview Requirement Traceability Domain Architecture Alignment (HL) High-level Integration design System Interface Design (custom interfaces)</p>
Not Required:	<p>Components and sub-systems design Detailed</p> <ul style="list-style-type: none">▪ Subsystem Design▪ Module Design
Comments:	<p>This document should provide the overall physical design of the integrated solution.</p>

EA Review Requirements Guidebook

Row: 4

HOW

Column 2

Artifact Type: **Physical Application Design Model**

What/Purpose: The detailed Physical Application Design Model is an abstraction of the implementation model and it can be used to generate source code. It elaborates the high-level Logical Application Design Model. In addition, it incorporates development environment classes that are specific to technologies and languages used to implement the model.

Description: The detailed Physical Application Design Model is a platform-specific model. Create the Physical Application Design Model by using an UML Modeling Tool and make the language-specific packages visible. In the event these packages were not added when the model was created, add them by using modeling tool specific instructions.

When a service-based approach is being used to assemble an application, use the Service Model template to build upon the logical design and articulate the physical architectural design for *each* discrete "Service" being proposed or developed.

See [Service Model](#) artifact template.

Recommended Content:

It might include (diagrams should be supported by descriptions):

- Static Model
- Package diagram
- Class Diagrams
- State-Transition Diagrams
- Component Diagrams
- Implementation Diagrams
- Dynamic Model (Use-Case Realization)
- Interaction diagrams: Sequence and Collaboration diagrams
- Statechart / Activity diagrams
- Trace (class) diagram to use-cases

Diagrams Model	UC	O	C	S /C	S	A	Com	D
Design		m	M	M	M	m		

EA Review Requirements Guidebook

UC=Use-Case; O=Object; C=Class; S/C = Sequence/Collaboration
S=Statechart; A= Activity; Com=Component; D=Deployment; M=Major; m=minor

Dependency and Traceability:

- System Use-Case Model
- System Architecture Document
- Logical Application Design Model

The [Physical Application Design Document](#) is **generic design** artifact that can be used when UML is **not used** as a modeling notation. More details regarding this artifact can be found in the *OPS Application Architecture Guidebook*.

Rank: Mandatory (either generic or UML version)

Benefit: The detailed Physical Application Design Model provides a clear understanding of the physical structure of an application.

Risk: Failure to create this artifact can result in:

- Confusion in implementing the design;
- Misuse of the development language packages or third party packages; and
- Project delays and additional costs.

Row: 4	HOW	Column 2
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Artifact Type: **Application Implementation Document**

What/Purpose: The Application Implementation Document provides detailed information regarding the physical realization (files) of the logical design elements (classes, components)

Description: The Application Implementation Document provides all the information needed to construct a system and to put it into operation. It captures the physical realization (files) of the logical components (packages). These files are both deliverable components, such as executables, and components from which the deliverables are produced, such as source code files. The Application Implementation Document also includes information about the physical realization of the language specific and third party components used in the application.

Recommended Content:

It might include:

EA Review Requirements Guidebook

- Introduction
- Implementation Overview
- Implementation Design
- Subsystem Overview
- Detailed Subsystem Design

Dependency and Traceability:

- System Functional Requirements
- System Architecture Document
- Logical Application Design Document

Recommended Template:

[Application Implementation Document](#)

The **UML version** of this artifact is the *Implementation Model*.

Rank: Mandatory (either Generic or UML version)

Benefit: Ensure physical implementation elements match to high-level logical application design elements.

Risk: Failure to create this artifact can result in:

- Lack of synchronization during Elaboration and Construction phases, between the logical design and physical implementation.
- Difficulties during testing, debugging and bugs fixing.
- Difficulties in maintaining and enhancing the product
- Project delays and additional costs.
- Failure to optimize the application distribution.
- Performance issues.
- Ineffective communication between various components.

Row: 4

HOW

Column 2

Artifact Type: **Application Implementation Model**

What/Purpose: The Application Implementation Model captures the physical realization (files) of the logical components (packages) and elements presented in the high-level Logical Application Design Model.

Description: The Application Implementation Model maps the high-level logical application design elements to their physical implementation. It also includes information about the physical realization of the language specific and third party components used in the application.

These files are both deliverable components, such as

EA Review Requirements Guidebook

executables, and components from which the deliverables are produced, such as source code files.

The Implementation Model provides all the information needed to construct a system and to put it into operation. It recommends the order in which these components should be implemented, tested and assembled.

The model might include:

- Logical components.
- Implementation subsystems and correspondent physical components. The subsystems are implemented as directories, which include the components (files).
- Both deliverable components, such as executables, and components from which the deliverables are produced, such as source code files.
- Mapping of logical components to physical components.
- Third party physical components (file names).
- Programming language specific libraries (files).

Diagrams Models	UC	O	C	S /C	S	A	Com	D
Implement ation				m			M	

UC=Use-Case; O=Object; C=Class; S/C = Sequence/Collaboration

S=Statechart; A= Activity; Com=Component; D=Deployment; M=Major; m=minor

Dependency and Traceability:

- System Use-Case Model
- System Architecture Document
- High-level Logical Application Design Model

The *Implementation Document* is a **generic design** artifact that can be used when UML is **not employed** as a modeling notation.

Rank: Mandatory (either Generic or UML version)

EA Review Requirements Guidebook

- Benefit:**
- Provides a clear understanding of the physical structure of an application.
 - Ensure physical implementation elements match to high-level logical design elements.
 - Ensure proper component integration.
- Risk:** The failure of creating this artifact can result in:
- Lack of synchronization between the logical design and physical implementation;
 - Difficulties during testing, debugging and bugs fixing;
 - Difficulties in maintaining and enhancing the product; and
 - Might result in project delays.

Row: 4	HOW	Column 2
Artifact Type:	Application Inventory	
What/Purpose:	This is a systematic capturing of information and its related attributes or information. It can be used for a great variety of applications, with varying levels of detail, and for different types of audiences.	
Description:	<p>A grouping of automated functions into a package called an application or application portfolio helps people understand the purpose of the application, who is responsible for it, what part of the business it supports, etc. In a more formal analysis, application portfolios are defined in packages aligned with technology requirements. As a result of grouping analysis, different server technologies, locations of applications, application distribution strategies, etc. may be chosen for different packages or groups of automated function.</p> <p>The following criteria is often used to partition automated functions in an application architecture:</p> <ul style="list-style-type: none"> • Common middleware components—industry guidelines used to define packaging of many automated functions such as message handlers • Characterization of business process behaviours—grouping automation functions that support similar business behaviours such as event driven vs. collaborative vs. information retrieval <p>Functional characteristics of similar processes—grouping functions that support similar business tasks such as planning, research, dispatch, and enrolment.</p>	

EA Review Requirements Guidebook

Recommended Content:

It might include:

- Introduction
- Purpose
- Application Inventory List

Dependency and Traceability:

- System Functional Requirements
- System Architecture Document

Recommended Template: [Application Inventory](#)

Rank: Mandatory

Benefit: This listing provides information about the application environment.

Risk: The ability to support applications and the ability to outsource them may be severely restricted.

Row: 4	WHERE	Column 3
Artifact Type:	Physical Deployment Model	
What/Purpose:	The Physical deployment Model depicts the physical technology infrastructure implementation at a sufficient level of detail so that: <ul style="list-style-type: none">▪ All stakeholders (business, architects, application developers, technology infrastructure developers, operations, security/privacy, etc.) can verify that their concerns have taken into account by the system technology infrastructure implementation.▪ Transformation (row 4 to row 5) issues can start to be addressed.	
Description:	Technology constrained, detailed, annotated physical technology infrastructure diagrams that depict the system's software, hardware and network components that address high/medium level annotated diagrams providing a listing and placement of logical infrastructure component or service types necessary for the system technology infrastructure.	
	(Note: infrastructure components/services and their definitions appear in the "Infrastructure Component Catalogue" [ICC].)	

EA Review Requirements Guidebook

Should a required component or service not be available as per the descriptions in the ICC, updates to the ICC should be proposed.)

The placement of infrastructure components should satisfy both system and non-system functional requirements, and also show system technology constraints such as:

Technology standards e.g., SMTP, J2EE, MAPI, LDAP, ATM, TCPIP, X.509, SNMP etc.

Product choices e.g., Servers-"R"-Us Application Server 4.1, Tachyon Systems LANBlinder switch, Big Desktop Co. Word Processor Suite 5.5, HUGENet DSL Service, Acme Access Control, Ace SNMP Server Monitor 1.5, etc.

Provisioning and sizing information e.g., 100 Mbps ATM link, 3 clustered Application Servers, 100 MB RAM + 100 GB RAID Level 5 disk, 100 UTP ports, etc.

Service level metric related details e.g., 750 ms server response time, 920 tps per application server, 10000 hours MTBF, 99.99% uptime, etc.

Infrastructure numbering and naming schemes e.g., server naming scheme, LAN subnet IP address ranges, etc.

Security information e.g., 128 bit SSL, MD5 hashing, access list configuration scheme, etc.

Location details e.g., Contingency site: Disaster Co, 13th Floor, 4444 Volcano Road, Antarctica Printer 23456, Floor 8, Ferguson Block, etc.

See [Physical Deployment Model](#) template.

See template for [Quality Level Metrics](#) section.

Rank: Mandatory

Benefit: If the deployment environment does not yet exist, the information provided in this artifact allows the hardware procurement and installation effort to run in parallel with the software development effort. Existence of this artifact allows final hardware purchase commitment to be delayed as long as possible thereby mitigating performance risk and enabling the project to take advantage of potential price/performance improvements.

EA Review Requirements Guidebook

- Risk:** Failure to create this artifact can result in:
- Inappropriate system performance
 - Lack of integration with other enterprise applications
 - System instability
 - Deployment failure
 - Project delays

Row: 4	WHO	Column 4
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Artifact Type: **User Interface Design**

What/Purpose: The point at which a user interacts with an application. The term “User Interface refers to the methods and devices that are used to accommodate interaction between machines and the human beings who use them (users). User interfaces can take on many forms, but always accomplish two fundamental tasks: communicating information from the machine to the user, and communicating information from the user to the machine. The objective of any user interface developer should be to design and implement quality user interfaces that is intuitive, easy to use, and allows the users to maximize their efficiency and effectiveness when using it.

Description: This design artifact may take the form of a simple screen print or a prototype. The best way to ensure quality user interface design is to use an orderly and well-defined design process that is specifically geared to producing quality results. This applies to the design of the application that the user interface supports as well as the design of the user interface itself. The best user interface in the world will not be well received if the application itself is poorly designed.

See [User Interface Design](#) artifact example.

Rank: Optional

Benefit: Facilitates ensuring that the user interface meets requirements.

Risk: Failure to satisfy user requirements.

Row: 4	WHEN	Column 5
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Artifact Type: **Calendarized Schedule and States**

What/Purpose: To be supplied in a future release.

EA Review Requirements Guidebook

Description: This artifact describes the execution sequence of time-related processes and activities. It also specifies their duration and schedule.

Rank: Mandatory: Calendarized Schedule or Sequence Diagram
Optional: State Transition Diagram

Benefit: Ensures completeness of analysis in terms of timeliness and resources required over time to perform processes and respond to events.

Risk: Failure to create this artifact can result in:

- Incomplete requirements specifications
- Incomplete understanding of the execution process
- Project delays

Row: 4

WHY

Column 6

Artifact Type:

What/Purpose:

Description:

Rank:

Benefit:

Risk:

EA Review Requirements Guidebook

Revision History

Revision	Approval Date YYYY-MM-DD	Effective Date YYYY-MM-DD	Row & Column	Type	Remarks
1.0	2003-01-15		All	New	
1.01	2003-01-29		Row 2 Column 1	Edit	Semantic Model rank changed from M to O as defined in the Checklist for Change Initiatives Document.
1.02	2003-05-05		Row 2 Column 6	Edit	The last word in the paragraph for the description of Service Objectives has been changed from (effectiveness to (efficiency).
1.1	2003-06-23		Various	Edit	Addition of many new artifact examples and improved artifact descriptions.
2.0	2005-01-03		All Artifacts	Add	What/Purpose category from EAPM has been added to artifacts.
			Row 1 & 2 Columns 1, 4, 6	Edit	Mandate Type changed to Mandate (Program) 1,6, Target Group 1,4 and Semantic Model 2,1 artifacts
			Row 1 Column 4	Edit	Target Group artifact contents updated with standardized definitions and new artifact examples.
			Row 1 Column 6	Edit	Mandate Type artifact contents updated with new content categories, improved and standardized contents and new artifact examples.
			Row 1 Column 6	New	Strategy artifact created to Reduce risk / meet goals / fulfill mandate using a standardized approach.
			Row 1 Column 6	New	Target Group / Need Cross Reference artifact created to map target group to needs.
			Row 2 Column 1	Edit	Semantics Model artifact updated with new contents, clear definitions and new artifact examples.
			Row 2 Column 2	New	Service Integration & Accountability Model artifact created for use as a valuable analytical tool.
			Row 2 Column 2	New	Business Rule Statement / Process Cross Reference artifact cross-references a specific business rule statement to its source.

EA Review Requirements Guidebook

Revision	Approval Date YYYY-MM-DD	Effective Date YYYY-MM-DD	Row & Column	Type	Remarks
			Row 2 Column 6	New	New artifacts resulting from Business Rules COE: <ul style="list-style-type: none"> • Business Rules Statement • Business Rule Source • Business Rule Statement / Source Cross Reference
2.2	2006-05-08		Row 3 Column 2	Edit & New	The existing artifacts have been restructured into the following: <ul style="list-style-type: none"> • System Functional Requirements / System Use- Case Model & Use-Case Specifications • System Architecture Document • Logical Design Document / Model
			Row 3 Column 6	New	<ul style="list-style-type: none"> • Supplementary Specification
			Row 4 Column 2	Edit & New	The existing artifacts have been restructured into the following: <ul style="list-style-type: none"> • Physical Design Document / Model • Implementation Document / Model • Application Inventory
3.0	2007-02-07		Row 2 Rows 2, 3, 4; Col. 1	Edit & New	Addition of new and revised business and information artifact types approved by ACT January 18 and February 1, 2007 respectively. Addition of a link in each example to return user to artifact type definition.
3.1	2007-03-02		Row 2	Edit	Correct cell assignment for Program Logical Model from (2, 2) to (2, 6). Change rank of Service Value Chain Process Model from mandatory to optional.
3.2	2007-12-04		Rows 3 & 4	New	Updated for Acquired Solutions
3.21	2007-06-01		Rows 1 & 2, Column 2	Edit	In examples section, correct cell assignment of Program Profile from (2, 2) to (1, 2).
3.22	2007-06-08		n/a	Edit	Remove "Implementation View" from the required sections of the System Architecture Document for Acquired Solutions.

EA Review Requirements Guidebook

Revision	Approval Date YYYY-MM-DD	Effective Date YYYY-MM-DD	Row & Column	Type	Remarks
3.3	2007-06-30		Row 2, Columns 4 & 5	Edit	Revised Workflow Model and Business Scenario artifacts.
			n/a	Edit	Inclusion of the artifact names in the table of contents
3.4	2007-11-30		Rows 3 & 4, Column 3	Edit	Inclusion of new Technology Architecture templates
1.0	2008-07-24	2008-08-25		New	Reset version number to 1.0 so that Corporate Enterprise Architecture Review Requirements document and this guide bear the same version number. Replace internal examples with links to external documents.
			Rows 1 & 2, all columns	Edit	Delete the following artifact types: <ul style="list-style-type: none"> • Core Business • Service Value Chain • Program/Service Cross Reference • Business Rule Statement • Business Rule Statement/Source Cross Reference • Business Rule/Process Cross Reference • Program Service Alignment Model • Location Type/Geographic Area Type Cross Reference • Service by Role Type Cross Reference • Service by Event Type and Cycle Type Cross Reference

EA Review Requirements Guidebook

Revision	Approval Date YYYY-MM-DD	Effective Date YYYY-MM-DD	Row & Column	Type	Remarks
				New	<p>Add the following new artifact types:</p> <ul style="list-style-type: none"> • Line of Business Profile • Business Rule Profile <p>Create the following artifact templates:</p> <ul style="list-style-type: none"> • Line of Business • Program • Program Profile • Service • Service Profile • Resource Type • Cycle Type • Business Rule Profile • Location Type • Party Type • Role Type • Target Group Type • Event Type • Need Type • Goals • Strategy • Target Group/Need Cross Reference • Business Scenario • Service Objectives • Mandate <p>Create the following artifact examples:</p> <ul style="list-style-type: none"> • Business Rule Profile • Line of Business Profile

EA Review Requirements Guidebook

Revision	Approval Date YYYY-MM-DD	Effective Date YYYY-MM-DD	Row & Column	Type	Remarks
				Edit	<p>Update the following artifact type definitions:</p> <ul style="list-style-type: none"> • Service Integration and Accountability Model • Business Function Model and example • State Transition Model renamed to State Transition Diagram. Update definition and example. • Program. Status changed to Optional. • Program Profile. Status changed to Mandatory. • Service. Status changed to Optional. • Service Profile. Status changed to Mandatory. • Resource Type • Cycle Type. Status changed to Optional.

EA Review Requirements Guidebook

Revision	Approval Date YYYY-MM-DD	Effective Date YYYY-MM-DD	Row & Column	Type	Remarks
				Edit	<p>Update the following artifact examples:</p> <ul style="list-style-type: none"> • Business Function Model • Business Rule Source • Business Scenario • Business Use Case • Cycle Type • Event Type • Goal • Location Type • Need Type • Party Type • Program • Program Logic Model • Program Profile • Resource Type • Role Type • Service • Service Profile • State Transition Diagram • Strategy • Target Group Needs Xref • Target Group Type <p>Change the status of the following artifact types:</p> <ul style="list-style-type: none"> • Program Profile is now mandatory • Program is now optional • Service Profile is now mandatory • Service is now optional • Cycle Type is now optional
	2008-07-24	2008-08-25	Row 2, Column 1	New	New artifact added: Fact and Dimension Matrix
			Row 2, Column 1	Edit	Artifact name change: from "Corporate Information Model" to "Information Model".
			Row 3, Column 1	New	New artifact added: Logical Dimensional Model
			Row 3, Column 1	Edit	Refined Logical Data Model requirements for projects implementing an Acquired Solution.
			Row 4, Column 1	New	New artifact added: Physical Dimensional Model
1.1	2008-09-04	2008-10-06	Row 1, Column 3	Edit	<i>Location Type</i> : Revised definition, new template, new example

EA Review Requirements Guidebook

Revision	Approval Date YYYY-MM-DD	Effective Date YYYY-MM-DD	Row & Column	Type	Remarks
				Edit	Delete the artifact type <i>Service/Location Cross Reference</i>
			Row 1, Column 6	Edit	<i>Mandate</i> : Revised definition, new template, new example
			Row 2, Column 2	Edit	<i>Business Function Model</i> : Revised definition, new template, new example, change status from optional to mandatory
				Edit	<i>Business Process Model</i> : Revised definition, new examples
			Row 2, Column 4	Edit	Delete the artifact type <i>Workflow Model</i>
			Row 2, Column 6	Edit	<i>Business Rule Source</i> and <i>Business Rule Profile</i> : Revised definitions, new templates, new examples
1.2			Row 2, Column 2	New	New artifact added: SOA Service Description Profile
			Row 3, Column 2	New	Added Service Model Template as part of the Logical Design Document and Logical Design Model.
			Row 4, Column 2	New	Added Service Model Template as part of the Physical Design Document and Physical Design Model
			Row 2, Column 2		Service Life Cycle template and example to refer to "process" instead of "function".
1.3	2008-12-11	2009-05-29	Row 3, Column 6	Edit	Supplementary Specification: <ul style="list-style-type: none"> Removed quality factors
			Row 3, Column 3	Edit	Logical Application Deployment Model: Added quality factors from the Supplementary Specification and System Architecture Document to the Quality Level Metrics Template.
			Row 3, Column 2	Edit	Logical Design Document: <ul style="list-style-type: none"> Changed name to "Logical Application Design Document" Updated the description Included the Component Model section of the System Architecture Document Logical Design Model: Changed the name to "Logical Application Design Model."

EA Review Requirements Guidebook

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			Row 4, Column 2	Edit	Physical Design Document: <ul style="list-style-type: none"> • Changed name to “Physical Application Design Document” • Updated the description • Included the Component Model section of the System Architecture Document Physical Design Model: Changed the name to “Physical Application Design Model.”
			Row 3, Column 2	Edit	System Architecture Document: <ul style="list-style-type: none"> • Changed the status from Mandatory to Optional • Removed the quality factors and Component Model
			Row 4, Column 2	Edit	Implementation Document: <ul style="list-style-type: none"> • Changed the name to “Application Implementation Document”
			Row 4, Column 2	Edit	Implementation Model: Changed the name to “Application Implementation Model.”
			Various, see under Remarks	Edit	Updated examples: <ul style="list-style-type: none"> • Business Function Model (2,2) • Logical Application Design Document (3,2) • Physical Application Design Document (4,2)

EA Review Requirements Guidebook

Revision	Approval Date YYYY-MM-DD	Effective Date YYYY-MM-DD	Row & Column	Type	Remarks
			Various, see under Remarks	Edit	Updated templates: <ul style="list-style-type: none"> • Resource Type (1,1) • Geographic Area Type (1,3) • Location Type (1,3) • Target Group Type (1,4) • Role Type (1,4) • Party Type (1,4) • Cycle Type (1,5) • Event Type (1,5) • Goal Type (1,6) • Need Type (1,6) • Business Function Model (2,2) • Business Scenario (2,5) • Logical Application Design Document (3,2) • Quality Level Metrics (3,3) and (4,3) • Supplementary Specification (3,6) • Application Implementation Document (4,2) • Application Inventory (4,2) • Physical Application Design Document (4,2)