United States Department of
Health & Human Services

Office of the Chief Information Officer
Enterprise Architecture

HHS Enterprise Architecture — Framework

Version 12.0
4/20/2007

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List of Exhibits

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Document Change History

Version Number	Release Date	Summary of Changes
0.1		
0.2	12/19/2003	Draft Enterprise Architecture Framework Overview, Release 1
0.3	2/5/2004	Incorporates feedback from HHS re previous draft
1.0	3/31/2004	Updated Enterprise Architecture Framework Overview that reflects current view as of 3/31/04
1.0	5/7/2004	Incorporates feedback from HHS re version 1.0 as per 3/31/04
2.0	6/30/2004	Expanded Framework for a Federated Enterprise Architecture Repository. Key changes include: • The definition of a Federated EA Repository • One common Framework for baseline and target EA • Repository usage scenarios • New, best practice, entity and relationship types • Sections on Framework and Repository governance • New document title to emphasize this is the HHS EA Framework
2.1	8/9/2004	Incorporates feedback from HHS re version 2.0. For further details see document “Review Comments and Disposition of revised HHS Enterprise Architecture — Framework, Version 2.1”
3.0	9/30/2004	This version primarily elaborates on section 3 “HHS Federated Enterprise Architecture Framework. Section 4 “HHS EA Metamodel by Layer,” is updated to reflect recent changes to the metamodel. Section 3.2 is renamed “Modeling Guidelines” and now incorporates, among other things, guidelines which replaces the retired documents “HHS Enterprise Architecture—Data Dictionary and Common Technical Vocabulary Version 1.0 and “HHS Enterprise Architecture—Data Flow Diagrams and Technical Standards Version 1.0” Section 3.3 now elaborates more on the use of the EA Repository from the perspectives of different user groups.
3.1	11/12/2004	Incorporates feedback from HHS re version 3.0. For further details see document “Review Comments and Disposition of revised HHS Enterprise Architecture—Framework, Version 3.1”
3.2	12/2/2004	Replacing references to contractors with functional terms such as the “EA TS-Team”

Version Number	Release Date	Summary of Changes
4.0	12/31/2004	Clarifications on target transition planning. Elaboration on the use of the federated framework. Alignment to the EA Governance Plan. Updated metamodel as presented to the Model Working Group.
4.1	2/4/2005	Incorporates feedback from HHS, regarding version 4.0. For further details see document “Review Comments and Disposition of revised HHS Enterprise Architecture—Framework, Version 4.1”
5.0	3/31/2005	Introduces BPMN for business process modeling into the Framework. The new types Program and Project enable better support for CPIC related information. Enhanced modeling guidelines, particularly in the area of business process modeling. Metamodeling guidelines Enhanced EA repository and model structure descriptions
6.0	6/30/2005	Incorporates feedback from HHS, regarding version 5.0. Feedback response is described in “HHS Enterprise Architecture—Review Comments and Disposition of revised HHS Enterprise Architecture—Framework, Version 5.” Changes to the metamodel, primarily removing redundant types from the Strategy layer. This was driven by the experience gained from modeling for the OMB maturity assessment in Q3 FY2005. Description of Business Layer has been improved. Text on framework governance was replaced with a reference to the configuration management plan.
6.1	8/04/2005	Incorporates feedback from HHS regarding version 6.0. For further details see document “Review Comments and Disposition of revised HHS Enterprise Architecture—Framework, Version 6.”
7.0	9/30/2005	Major revision of the Security Aspect with impact on properties for several objects in the Business, Data and Application layers. Section 3 subsections on Modeling Guidelines and Modeling Scenarios have been removed and will instead be included in a separate “Modeling Guide” document.
8.0	12/31/2005	Added relationship listing per object type. Added highlighting of recommended object properties and relationships. New type taxonomy to be used as the root for various “category” types
8.1	2/9/2006	Incorporates feedback on version 8.0, from HHS. The erroneous strategy layer diagram replaced. Minor corrections and clarifications throughout the document.
9.0	3/31/2006	Renamed “Investment Layer” (formerly Stakeholders and Investments) Updated Data Layer to reflect FEA DRM 2.0 Merged types “Goal” and “Objective” into one type called “Goal” Removed section on reports and views (This material was moved to a separate document.)
9.1	5/12/2006	Incorporates HHS’ feedback on version 9.0. Only minor changes.
10.0	6/30/2006	Relationships for a service oriented aspects of process modeling. Type name “Logical Process HHS” to “Activity”. Minor clarifications

Version Number	Release Date	Summary of Changes
11.0	12/29/2006	Support for the Federal Transition Framework (FTF) metamodel and a number of additional change requests.
12.0	4/20/2007	In draft Enhanced support for modeling of investment related information and of technology information. Incorporation into entity descriptions of elaborated attribute and relationship descriptions provided in the instructions for the FY09 EA critical partner review.

1 Purpose of Document

This document provides an overview of the framework used to structure the HHS Enterprise Architecture Repository. This Overview describes the key concepts of enterprise architecture modeling and how they are applied to the HHS initiative, namely:

- Definition of a metamodel and model elements
- Overview of HHS Eight-Layer, Federated EA Framework
- Iteratively evolving the metamodel
- Detailed descriptions of the metamodel for the following layers of the framework:

  Strategy
  Investment
  Business
  Data
  Service
  Technology
  Workforce
  Facilities

2 Overview

The federated enterprise architecture repository at the Department of Health and Human Services implements a common framework for enterprise information while at the same time allowing distributed maintenance and sharing of relevant information between and within Operating Divisions (OPDIVs) and Staff Divisions (STAFFDIVs)[1].

The fundamental principles of the EA framework can be summarized in the following three points:

- Eight-Layer architecture—provides a common structure for EA information across the entire department. It allows the organization to share and leverage EA information throughout the department.
- Federated Repository—is a repository of federated models that allows for maintenance close to the respective information sources—department, OPDIV, or center/institute/office (C/I/O). It avoids redundancy and duplication of data entry.
- One Model Many Views—captures the fact that there is one model for all EA data, regardless of whether it is target or baseline. Multiple views (such as baseline or target) are then created to support various EA stakeholders.

2.1 Understanding Key Framework Concepts

For an understanding of the Repository framework described in this document, it is important to understand key concepts of enterprise architecture (EA) modeling.

The **framework** provides the concepts and guidance necessary to maintain and use the EA Repository. It includes a **metamodel**, which defines the kinds of information that can be recorded in the repository. The kinds of data the framework describes are called **entity types** (or, sometimes, **object types**). Entity types are analogous to tables in database theory or to classes in object-oriented theory. Conceptually related entities are grouped together into **layers**, described in further detail below.

Entity types represent an important concept or abstraction of the enterprise architecture; they are the "nouns." Each entity contains one or more **attributes** that describe it. Further, each entity type may be conceptually linked to one or more other entity types in a **relationship**. The entity types, attributes, and relationships can be represented in graphic notation using the Unified Modeling Language (UML), as we have done in section 4. Section 4.2.5 has some additional notes on the use of UML in this document.

It is important to distinguish between the metamodel and the **model,** or **repository**. The framework is merely a blueprint that describes what kinds of EA data can be stored in an EA model repository implemented with technologies like Metis or EAMS; the actual data for each instance (called instance data) is contained in the EA model itself. For example, "Organization" is an entity type, while "NIH," "CDC," and "FDA" are instances of the type.

[1] The term OPDIV should be interpreted to also include STAFFDIVs throughout this document, except where a distinction is explicitly made.

A **federated model** is a system of cooperating models that all adhere to common rules, such as, stewardship principles or a common metamodel. Each cooperating model can be updated independently, including relationships to objects in other models.

2.2 The HHS Federated EA Model

The HHS Federated EA Model allows for simultaneous updates of EA information distributed across three levels of the organization, namely, department, OPDIV, and Center/Institute/Office (C/I/O) levels.

The Federated Model also allows information of departmental scope (such as policies, standards, and common reference models) to be maintained in a departmental model, and information of OPDIV scope to be maintained in a model for each OPDIV.

The information will still be shared across the federated models allowing, for instance, a project manager at office-level to relate specific Information Systems to HHS policies and Federal Enterprise Architecture (FEA) reference models defined in the departmental model.

An analogy can be made between the HHS Federated EA Model and the organization of a country. Just as rules can be defined and services performed at national, regional, and local levels, the HHS Federated EA Model allows, for instance, standards to be defined with department-wide scope, but also refined within the scope of an OPDIV.

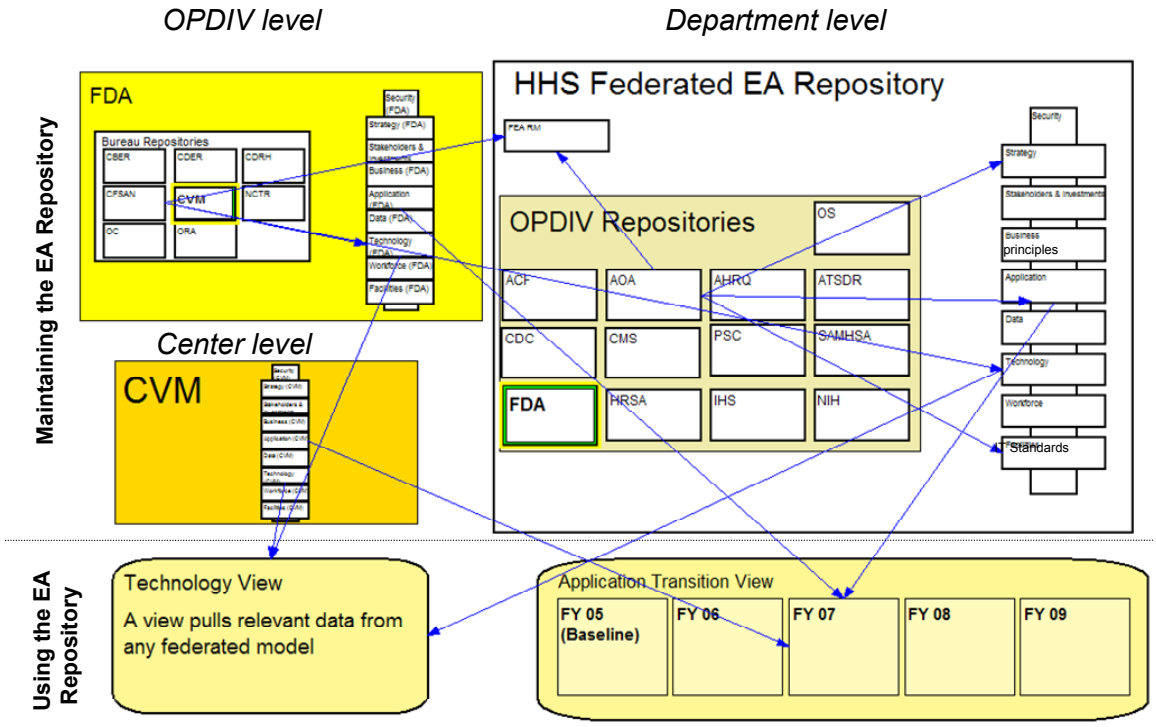


Exhibit 2-1 HHS Federated EA

Exhibit 2-1 illustrates (with an FDA example) the three levels of repository maintenance (upper part). It also shows that entities can be related between submodels within the federated repository. The lower part illustrates how information from various submodels can be presented in views targeted at different stakeholder needs.

It should also be noted that the federated framework allows a submodel at any level to be further decomposed in order to delegate maintenance to the proper subject matter experts. (Disregard illegible picture elements in Exhibit 2-1—its purpose is to illustrate the general principle of the Federated EA at HHS.)

2.3 The HHS Eight-Layer Framework Model

The HHS EA Framework has been organized hierarchically into an eight-layer model where the initial layers represent higher levels of abstraction identifying business and strategic concerns, while subsequent layers focus on more detailed aspects of the architecture typically more technical or detailed in nature. In this way, the definition of the HHS EA Framework follows the paradigm of other widely used EA frameworks such as the Zachman Framework by incorporating levels of abstraction within the architecture.

The HHS framework is also similar to the Federal Enterprise Architecture Framework (FEAF). Four layers of the HHS framework map directly to the FEAF layers of Business, Data, Application (i.e., Service), and Technology; while the other four HHS layers of Strategy, Investment, Workforce, and Facilities also map into the Business layer of the FEAF. The HHS business architecture layer has been defined to delineate the business architecture in order to capture components that are important to the departmental view of HHS.

Security components will also be integrated into all layers of the HHS EA framework, given the importance of security in all components of the metamodel.

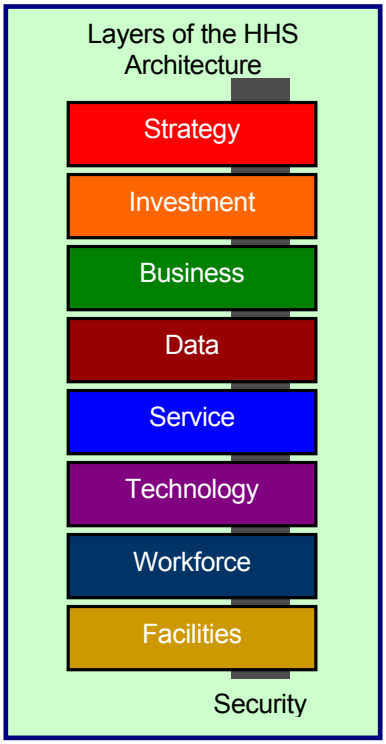


Exhibit 2-2 HHS EA Framework Layers

The entity types defined by the HHS EA Framework constitute the least common denominator that all OPDIV EA Repositories must comply with, in order to support the HHS Federated EA Repository. This means that all entity types and relationship types in the HHS EA Framework, with their respective attributes, must be supported by all OPDIV repositories.

Please note that an OPDIV will have the flexibility to extend the HHS EA Framework to incorporate EA information which is specific for the particular OPDIV.

A detailed description of each layer of the architecture follows in section 4 below. Subsequent releases of this document will be updated to reflect changes to the HHS EA Framework.

2.4 Support for Baseline and Target Architecture

All entity and relationship types in the framework have attributes that allow for the capture of the life span of an instance. This is the foundation which allows as-is and to-be information to be recorded in the same model. Model information can then be used in views and reports to present architecture snapshots from virtually any period or point in time. (Exhibit 2-1 indicates this in the Application Transition View in the lower right corner.) The attributes that provide this capability are “Effective date” and “Expiration date.” For each of the two date fields there is also a status field to indicate whether the date is “confirmed.”

3 HHS Federated Enterprise Architecture Framework

This section elaborates two important aspects of a federated EA framework, namely, the development and enhancements of the framework itself and the features allowing efficient use of the EA model (i.e., the knowledge delivery).

3.1 EA Framework Development

The framework itself must be federated in a federated environment[1]. This means that the department level framework defines a minimum set of model capabilities, which must be applied throughout the entire enterprise. The OPDIVs, even down to C/I/O level, are still allowed to add detail according to their unique needs.

3.1.1 Framework Artifacts

The framework comprises two groups of artifacts. One group is the actual metamodel, which defines the information capture capabilities of the EA Repository. The other group contains artifacts which aid in the use and capture of the knowledge. These are the **knowledge delivery artifacts**, as listed below:

Metamodel Artifacts:
Entity types
Relationship types

Knowledge Delivery Artifacts:
Queries
Views
Reports
Reference models (taxonomy)
Scripts for automated import, export, and other repository maintenance
Documentation, such as this document and training material.

3.1.2 Framework Extensibility

The department level metamodel defines the **minimum set of information** that must be shared across the enterprise. The other framework artifacts at the department level also represent what is common to the entire enterprise (except for some artifacts, e.g., some reports and views that reflect the unique needs of the department level knowledge delivery).

OPDIVs and C/I/Os are allowed to add to the framework according to the unique needs of each component organization. **Metamodel extensions must adhere to the principle of strict extension**, that is, extensions at a lower enterprise level must fully include all the capabilities of the level above. This ensures that the minimum requirements on information sharing, defined at the level above are still met.

[1] This is analogous to how laws are defined at different levels of government.

Knowledge delivery artifacts from a higher level may not be needed at the lower level. For example, some reports or views may be of no interest to the lower level organization. These artifacts are still inherited as part of the framework, but the lower level organization has the option not to use them, thereby offering its staff a more focused, less confusing interface to the EA Repository. It is, of course, possible for an OPDIV to add its own unique knowledge delivery artifacts, such as views, reports, etc.

Consider this framework extensibility example:

- The department level framework defines the entity type Business Process with the attributes "name," "description," "effective date," "expiration date," "modified by," "modified on," "full name," "sensitivity," "security categorization level," and "source."
- CMS needs the additional attributes "automated/manual," "level of abstraction," "trigger event," "process output," "mission-essential," and "trusted."

The extensibility of the federated EA allows CMS to define the type CMS Business Process as a subtype of Business Process and CMS Business Process entities will thus include the combined list of attributes (as illustrated in the figure below).

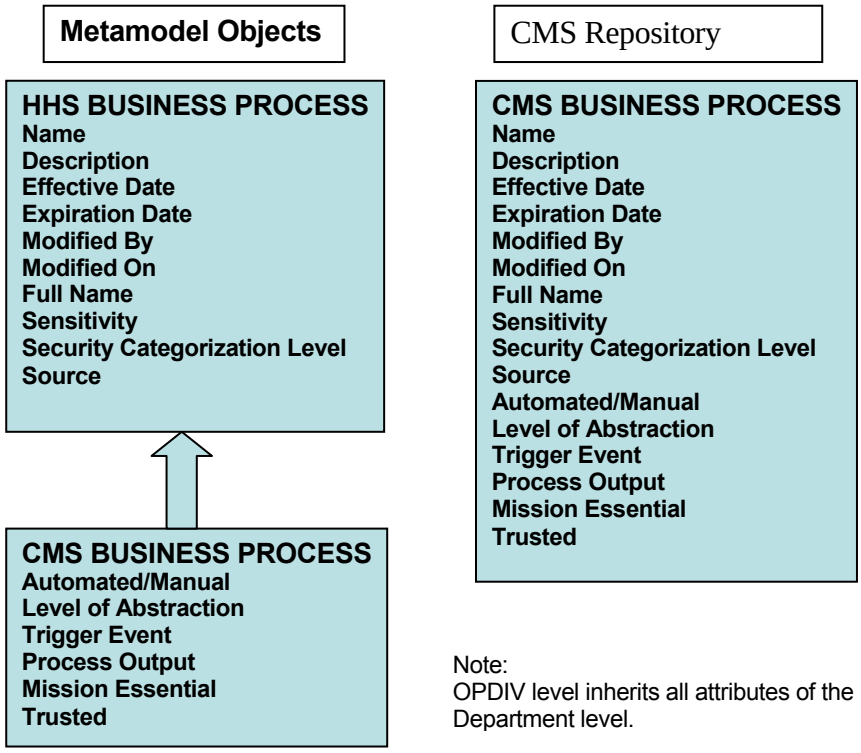


Exhibit 3-1 Metamodel Extension Example

3.1.3 Metis Metamodeling Guidelines

This section is intended for Metis metamodel developers implementing an extended metamodel for an OPDIV or a C/I/O[1].

a) Metamodel naming rule

Metamodels should use the folder structure recommended by Troux (formerly Computas), the Metis vendor. The following naming rule should be used for top level metamodel folders to facilitate the maintenance of the federated framework. The HHS metamodel name pattern is "xml.hhs.gov" The OPDIV metamodel name pattern is "xml.OPDIV.hhs.gov" (e.g., xml.cms.hhs.gov, or xml.samsha.hhs.gov). The C/I/O metamodel name pattern is "xml.C/I/O.OPDIV.hhs.gov" (e.g., xml.cfsan.fda.hhs.gov).

b) Metamodel Overrides and Model Binding

An OPDIV metamodel should always override the HHS metamodel. A C/I/O metamodel should always override its OPDIV metamodel. Override metamodels should specify replacement of the overridden metamodel types which are specialized. The override "Hide" feature should not be used. Specialized types in an OPDIV or C/I/O metamodel should always be defined with the corresponding type in the overridden metamodel as the base type. This ensures that all features from the overridden metamodel are carried forward while at the same time offering modelers a clean customized "palette" of only the entity types they should use.

Models should always bind to the most specialized metamodel and only to that metamodel. That is, a C/I/O model should bind to the C/I/O metamodel, if one exists; or to the OPDIV metamodel, if one exists, or, if not, to the HHS metamodel. The only exception to this rule would be if an organization has additional modeling needs that require features not included in the HHS metamodels. An example of this would be UML modeling. The UML model is part of the HHS Metis license but not included in the HHS metamodel. UML modeling may be valuable for a project and the model for that project may thus bind to both the HHS metamodel and the UML metamodel.

3.1.4 Governance of the Framework

Changes to the HHS EA Repository Framework (HEAR-F) are governed by the process described in the document "HHS Enterprise Architecture - Configuration Management Plan for HHS EA Repository." This process defines the HHS EA Model Working Group (MWG) as the Configuration Control Board (CCB) for HEAR-F. (See that document for details.) The MWG is a subgroup of the HHS Enterprise Architecture Review Board (EARB).

3.1.5 Evolving the Framework

Please note that this framework document will remain dynamic as new information and strategies are integrated into the framework as appropriate.

[1] It is anticipated that all implementation details in this section will be moved to a separate "metamodeling guide" document. The text remains here pending a decision by HHS to maintain such a document.

This release of the framework builds upon the previous releases and expands several framework layers, according to the experience gained. The framework incorporates industry best practices and content available from published HHS sources, such as planning documents and previous architecture efforts. Input sources to the design of the metamodel include:

- Federal Enterprise Architecture
- EARB including the EA Model Working Group
- HHS Strategic Plan/HHS IT Strategic Plan
- HHS IT Architecture (2000/2002)
- OMB Exhibit 300 Schema for FY06
- HHS ITIRB Decisions
- Additional sources such as other agencies EA. (Appendix C lists several references.)

The fidelity of the HHS Metamodel (and the HHS EA Repository content) to the Federal Enterprise Architecture (FEA) Reference Models is maintained such that changes to the content are updated in the HHS EA Repository as they are published by the Office of Management and Budget. It is anticipated that the FEA reference models will include results from the Federal Health Architecture Initiative.[1]

3.2 Knowledge Delivery

The most important acceptance criterion of the EA repository is that it will be used by the organization to meet its business needs. The organization should recognize the EA repository as a valued information tool that aids personnel in solving business problems and in performing daily business functions, as well as improving the performance of the department in meeting its business obligations.

The framework has the potential to describe and thus provide EA knowledge on any area of HHS business. The EA Program uses the term “segment” (or, sometimes, “domain”) to refer to such area of HHS business. The definition of segments and the order in which they are modeled is the responsibility of the HHS Chief Enterprise Architect (CEA). Other documents describe the modeling process to apply for each segment. This will not be repeated here.

It is understood that framework information must be organized in various reports and views to meet the analysis and decision support needs of the different EA information users. The requirements and the implementation approach for the presentation are described in the current version of document “HHS Enterprise Architecture – Metis View Design Guide” and will not be repeated here.

[1] It is the responsibility of the HHS EA program to update information of common scope and to inform the OPDIVs of the changes. It is the responsibility of each OPDIV EA program to maintain the alignment between their repository artifacts and the updated common information such as a FEA reference model.

4 HHS EA Metamodel by Layer

Implemented Change Requests

The following change requests have been implemented compared to the HHS EA Framework, version 11.0.

- CR 070402-000001 - Support for EA Critical Partner Review of FY09 investments and export of Exhibit 300 data to PMT
- CR 070402-000002 - Corrections to Security property roll-up logic
- CR 070402-000004 - Support for improved management of technology information in HEAR
- CR 070402-000005 - Miscellaneous improvements
- CR 070404-000001 - Remove connect rule Technology supports Investment
- CR 070406-000001 - Add Investment Properties to support Exhibit 300 EA Question 2

4.1 Summary of Metamodel Changes

This section is a brief summary of changes for this version. Details regarding the changes and instructions on how to convert existing models to the new framework version are found in document "HHS Enterprise Architecture - Framework, Release Notes for version 12." A detailed description of the current framework follows in the sections below.

4.1.1 Entity Type Changes

No.	Kind of Change	Type Name	Change Description
1.	New	Technology Profile	The type is added to make modeling of technology profiles more efficient [HHS EA Repository CR 070402-000004]
2.	Changed	Investment	A large number of unnecessary properties were removed. [HHS EA Repository CR 070402-000001]
3.	Changed	Investment	Several new properties were added to better support EA Critical Partner Review of investments and to allow capturing of all data required for the EA section of an Exhibit 300. [HHS EA Repository CR 070402-000001] [HHS EA Repository CR 070406-000001]
4.	Changed	Project	The value set for property "Phase" now supports EPLC. [HHS EA Repository CR 070402-000001]
5.	Changed	System Security Profile	New Object Criterion "DRM Data Objects For System Security Profile" was added to the RMBM [HHS EA Repository CR 070402-000002]
6.	Changed	System Service	New Properties: Confidentiality Score, Integrity Score, Availability Score, and FIPS 199 Score [HHS EA Repository CR 070402-000002]
7.	Changed	Container	New Object Method "Remove Problem Characters" was added to the RMBM [HHS EA Repository CR 070402-000003]

No.	Kind of Change	Type Name	Change Description
8.	Changed	HHS EA Container	New Object Method “Remove Problem Characters” was added to the RMBM [HHS EA Repository CR 070402-000003]
9.	Changed	HHS EA Object	New Object Method “Remove Problem Characters” was added to the RMBM [HHS EA Repository CR 070402-000003]
10.	Changed	License Agreement	The value set for property License Type is now [Unspecified, Node locked, Node transferable, Floating, Enterprise, Unlimited] [HHS EA Repository CR 070402-000004]
11.	Changed	Technology	Removed Property “Version”, New Property “Alias” [HHS EA Repository CR 070402-000004]
12.	Changed	Technology Standard Item	New Type Name “Technology Profile Item” New Property “Source” Changed Property: “Status” The value set is now [Unspecified, Emerging, Strategic, Tactical, Containment, Retirement] [HHS EA Repository CR 070402-000004]
13.	Changed	DRM Exchange Package	New Property “Alias” [HHS EA Repository CR 070402-000005]
14.	Changed	Information System	Symbol Change: Property Alias is no shown above the system name [HHS EA Repository CR 070402-000005]
15.	Changed	Data Object (BPMN)	New Property “State” [HHS EA Repository CR 070402-000005]

4.1.2 Relationship Type Changes

No.	Kind of Change	Type Name	Change Description
1.	New	extends/extended by	Allows CPIC extensions to the SRM to be modeled. SRM Service Component [0, *] — extends/extended by → [0, 1] SRM Service Type [HHS EA Repository CR 070402-000001]
2.	New	is subsegment of/has subsegment	Allows further decomposition of a BRM Business Subfunction. Business Process Category [0, *] — is subsegment of/has subsegment → [0, 1] BRM Subfunction [HHS EA Repository CR 070402-000001
3.	New	leverages/leveraged by	Shows that an investment is taking advantage of a cross-agency initiative outcome. Investment [0, *] — leverages/leveraged by → [0, *] Initiative [HHS EA Repository CR 070402-000001]

No.	Kind of Change	Type Name	Change Description
4.	New`	will be part of/will have part	Allows future enhancements to FEA reference models to be modeled. PRM Measurement Grouping [0, *] — will be part of/will have part → [0, 1] PRM Measurement Category PRM Measurement Category [0, *] — will be part of/will have part → [0, 1] PRM Measurement Area BRM Business Subfunction [0, *] — will be part of/will have part → [0, 1] BRM Line of Business BRM Line of Business [0, *] — will be part of/will have part → [0, 1] BRM Business Area SRM Service Component [0, *] — will be part of/will have part → [0, 1] SRM Service Type SRM Service Type [0, *] — will be part of/will have part → [0, 1] SRM Service Domain TRM Service Standard [0, *] — will be part of/will have part → [0, 1] TRM Service Category TRM Service Category [0, *] — will be part of/will have part → [0, 1] TRM Service Area [HHS EA Repository CR 070402-000001]
5.	Changed	aligns to/is context for	Removed Connect Rule: Investment — aligns to/is context for → SRM Service Component Changed Cardinality Investment [0, *] — aligns to/is context for → [1] BRM Business Subfunction [HHS EA Repository CR 070402-000001]
6.	Changed	builds/built by	Removed Connect Rule Project — builds/built by → System Service [HHS EA Repository CR 070402-000001]
7.	Changed	funds/funded by	New property “Funding%” Removed Connect Rule Investment — funds/funded by → Information System Changed Connect Rule Investment [1] — funds/funded by → [1, *] Project New Connect Rules Investment [0, *] — funds/funded by → [0, *] Investment funds/funded by [0, *] — funds/funded by → [0, *] aligns to/is context for [HHS EA Repository CR 070402-000001]

No.	Kind of Change	Type Name	Change Description
8.	Changed	supports/ supported by	Removed Connect Rule Technology — supports/ supported by → Investment [HHS EA Repository CR 070404-000001] New Connect Rules Technology [0, *] — supports/ supported by → [0, *] Service Category [HHS EA Repository CR 070402-000004]
9.	Changed	constrains/constrained by	New Connect Rules SRM Service Component [0, *] — constrains/constrained by → [0, *] Technology Profile Item Service Category [0, *] — constrains/constrained by → [0, *] Technology Profile Item [HHS EA Repository CR 070402-000004]
10.	Changed	identifies/identified by	Removed Connect Rule SRM Service Component— identifies/identified by → Technology Profile Item [HHS EA Repository CR 070402-000004]
11.	Changed	owns/owned by	Removed Connect Rule Organization — owns/owned by → Technology Profile Item New Connect Rules Organization [1] — owns/owned by → [0, *] Technology Profile Organization [1] — owns/owned by → [0, *] Policy [HHS EA Repository CR 070402-000004]
12.	Changed	driven by/drives	New Connect Rules Technology Profile Item [0, *] — driven by/drives → [0, *] Driver [HHS EA Repository CR 070402-000004]
13.	Changed	represents/has HHS	Removed Connect Rule Data Object — Represents/has HHS → DRM Data Objects [HHS EA Repository CR 070402-000005]
14.	Changed	Annotation	Changed Symbol The arrow was removed from the relationship line. The line is laid out in straight line instead of the forced right-angle style. The layout can be edited manually [HHS EA Repository CR 070402-000005]

4.2 Common Modeling Features

4.2.1 Common Entity Attributes

Entity attributes common to all entity types and all relation types in the Enterprise Architecture Repository are:

Attribute	Type	Description
Description	String	Brief description of the entity instance
Effective Date	Date	The date the artifact becomes effective in the enterprise
Effective Date Confirmed	Boolean	Indicates whether the effective date is a planned date or if it has been confirmed.
Expiration Date	Date	The date an artifact is retired or replaced. It is essential that this field is populated as soon as this date is planned.
Expiration Date Confirmed	Boolean	Indicates whether the expiration date is a planned date or if it has been confirmed.
Modified By	String	The name (user id) of the person making the latest modification to the artifact.
Modified On	Date	The date the artifact was last modified.

For all entity types there are one additional attribute:

Attribute	Type	Description
Name	String	Instance name: should be brief and natural to subject matter experts (SMEs) and should uniquely identify the entity instance.
ID	String	Unique ID for the artifact modeled by this entity (object) (e.g., the project ID for a project, objective number for an objective, etc.

The common attributes will not be repeated in the descriptions below, unless there is a special provision for how the attribute is used with a particular entity.

4.2.2 Recommended Properties and Relationships

It is recommended that you populate the properties and relationships highlighted by a **boldface** font in the entity descriptions throughout section 4.

4.2.3 The Replacement Relation

There is one special relationship type, “replaces/replaced by,” that can be inserted between any two entities of the same type. This relationship type provides a basic mechanism for transition planning in the EA Repository. That is, the same EA repository model contains both “as-is” and

"to-be" information. Showing a particular "to-be" state or a particular sequencing plan thus becomes only a matter of applying a view or generating a report, based on a data range or a sequence of entities linked by "replaces/replaced by" relations.

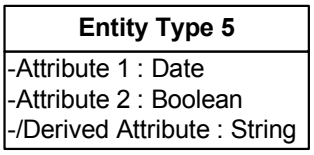
4.2.4 Online Documents

All HHS metamodel entity types can be linked to arbitrary online documents, identified by URIs. This provides a convenient way to make reference documentation available to the users of the EA Repository. Modelers should still use this feature with caution and only provide links to stable sources. The effort of maintaining these links may otherwise be greater than the benefit to the EA Repository users.

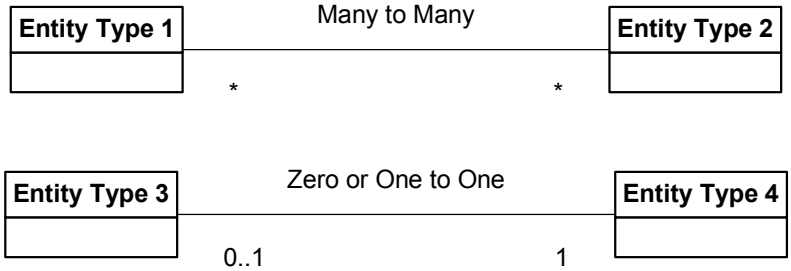
4.2.5 UML

The metamodel diagrams below follow Unified Modeling Language standard (UML), which notation includes the following.

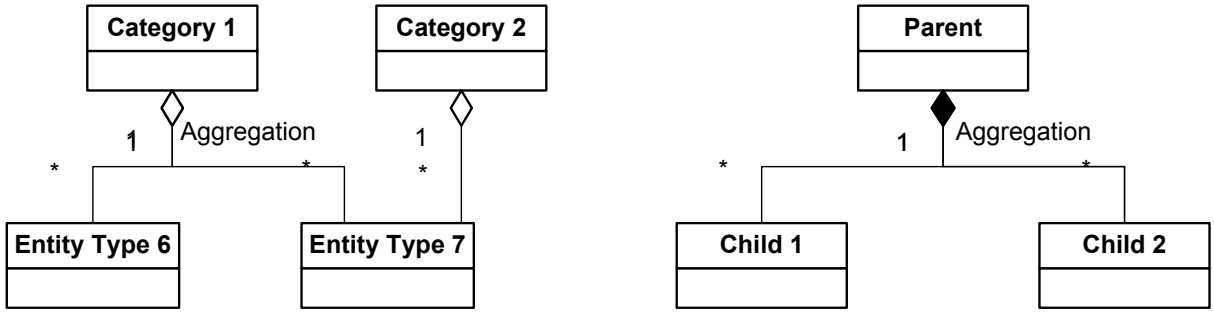
- Entity types (classes) are shown as rectangles. Attributes are listed inside the rectangles. Derived attributes are prefixed with a "/" character



- Relations (associations) are shown as lines. Relationship multiplicity, i.e., one-to-many, many-to-many, etc. is shown with a cardinality symbol at each end of a relationship. Cardinality can be shown as a range ("0..1"), a number ("1"), or as "*" meaning "0 or many."



- An aggregation is a one-to-many relationship, symbolized by a line with a diamond in the aggregate end. A black diamond represents containment, which is a strict part of relation. An open diamond is the general aggregation, which allows aggregates to share elements.



Each diagram below is focused on one specific layer, but it also includes related entity types from other layers. Entity and relationship types added to the framework during the past quarter are shown outlined in red[1] and a colored background is used to clearly indicate objects from other layers. Objects from other layers also have their names prefixed with their layer name.

- Derived relationships: Some diagrams in the sections below show relationship names with a derived-prefix (a "/," e.g., /support). This is an indicator that this particular relationship could also be derived from more fundamental relationships. Modeling the fundamental relationships is always preferred to modeling a "derived" relationship. The derived relationships are included as a compromise, recognizing that for a young EA program, it may be hard to quickly gather all fundamental data.

4.2.6 The Taxonomy Type

A special type "Taxonomy" can serve as the root of several "category" types. The taxonomy type can thus appear in several layers. This type emphasizes the importance of taxonomies in the analysis of EA information.

Entity Name	Taxonomy	
Entity Description	The Taxonomy type serves as the root for various "category" types. A Taxonomy object should always have an "owns/owned by" relation to an organization.	
Examples		
Entity Source		
Unique Attributes	**Type**	**Description**
No additional attributes		
relation: Organization [0, *] — owns/owned by → Taxonomy [0, 1]		

[1] The TSS Team is aware that color coding is not ideal. However the UML standard applies significance to line shapes and this is the best compromise we have been able to devise so far.

4.3 Strategy Layer

4.3.1 Strategy Layer Description

The Strategy Layer includes entities and relationships that pertain to HHS enterprise planning, such as:

- Motivation (goals, objectives and commitments)
- Plans (planning documents, initiatives, and action plans)
- Forces and requirements shaping HHS strategy (departmental vision and mission, external forces, trends, and strategic drivers)
- Performance indicators (including performance categories, goals, and measurements)

The Strategy layer represents the requirements to which the enterprise architecture, and the initiatives that are evaluated against it, must conform. All investments should ultimately be traceable to one or more entities within the Strategy layer. The entities within the Strategy layer are modeled in Exhibit 4-1.

4.3.2 Relationship to the FEA Reference Models

The Strategy layer incorporates all entities from the FEA Performance Reference Model (PRM). The PRM describes the general categories and classes of performance measurements, while leaving the description and implementation of specific metrics to agencies. Exhibit 4-1 shows all entity types and all supported relationships for those types.

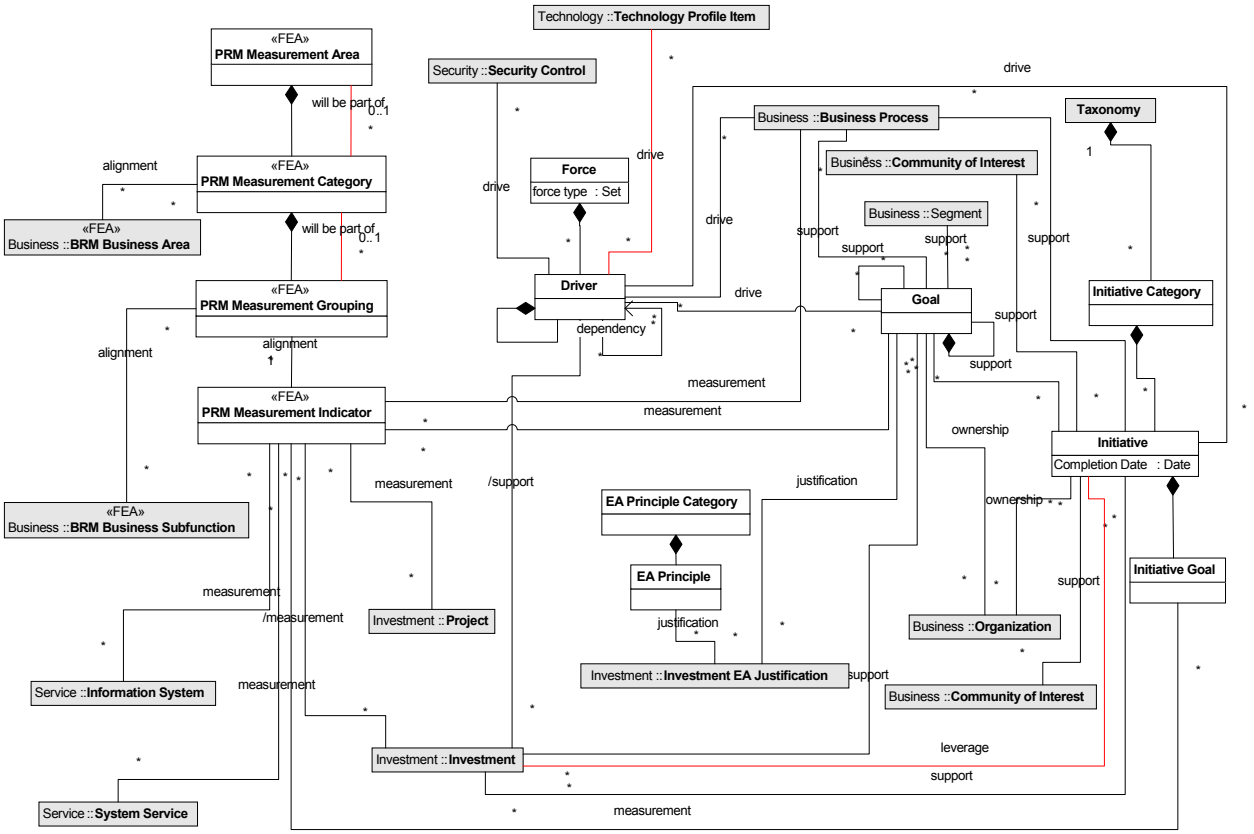


Exhibit 4-1 Strategy Layer Metamodel Overview Diagram

4.3.3 Entity Descriptions

Entity Name	PRM Measurement Area	
Entity Description	Provides general groupings of measurement indicators within the Performance Reference Model	
Examples	Mission and Business Results Measurement Area	
Entity Source	Federal Enterprise Architecture Performance Reference Model	
Unique Attributes	**Type**	**Description**
No additional attributes		

Entity Name	PRM Measurement Category	
Entity Description	Provides general classifications of measurement indicators within the Performance Reference Model	
Examples	Health, Information and Technology Management	
Entity Source	Federal Enterprise Architecture Performance Reference Model	
Unique Attributes	**Type**	**Description**
No additional attributes		
Relationships:		
part of: PRM Measurement Area		
has part: PRM Measurement Grouping		
*PRM Measurement Category [0, *] — aligns to/is context for → BRM Business Area [0, *]* Relationships of this type reflect the relationships defined by the OMB reference models. There is no need for additional relationships of this kind.		
*PRM Measurement Category [0, *] — will be part of/will have part → PRM Measurement Area [0, 1]* Relationships of this type support modeling of future enhancements to reference models, e.g., by FHA		

Entity Name	PRM Measurement Grouping	
Entity Description	Provides general indicia for performance measurements that must be refined with agency-specific operational measurement indicators (formerly named PRM Generic Measurement Indicator)	
Examples	Illness Prevention, Public Health Monitoring	
Entity Source	Federal Enterprise Architecture Performance Reference Model	
Unique Attributes	**Type**	**Description**
No additional attributes		
Relationships:		
part of: PRM Measurement Category		
*PRM Measurement Indicator [0, *] aligns to/is context for → PRM Measurement Grouping [1]* All measurement indicators must be aligned to a measurement grouping		
*PRM Measurement Grouping [0, *] — will be part of/will have part → PRM Measurement Category [0, 1]* Relationships of this type support modeling of future enhancements to reference models, e.g., by FHA		
*relation: PRM Measurement Grouping [0, *] — aligns to/is context for → BRM Business Subfunction [0, *]* Relationships of this type reflect the relationships defined by the OMB reference models. There is no need for additional relationships of this kind.		

Entity Name	PRM Measurement Indicator	
Entity Description	Provides agency-specific indicators of operational performance (formerly PRM named Operational Measurement Indicator)	
Examples	(specific HHS performance objectives to be determined)	
Entity Source	Federal Enterprise Architecture Performance Reference Model	
Unique Attributes	**Type**	**Description**
Name	String	Try to keep it short and focus on the qualitative aspect, the Why and What of the measurement
Description	Text	Provide a brief description that elaborates on the qualitative aspect and defines the quantitative aspect, That is, describe what, why (in terms of benefit to the business) and how
ID	String	Leave blank, unless your organization unit has a formal identification scheme for measurement indicators
Effective Date	Date	Enter the expected start date for measuring according to this indicator
Expiration Date	Date	Enter the expected end date for measuring according to this indicator
Relationships:		
part of: Strategy Layer Container		
PRM Measurement Indicator [1] — aligns to/is context for → PRM Measurement Grouping [0, *] There must be one and only one association to the appropriate grouping as defined in the PRM.		
*PRM Measurement Indicator [0, *] — measures/measured by → Initiative Goal [0, *]* An association of this kind should only used when it reflects an indicator approved by the owner of the initiative		
PRM Measurement Indicator [0, *] — measures/measured by → Information System [0, *] Use associations of this kind, unless measurements for the current object are fully defined by measurements for subsystems and measurements for provided system services		
PRM Measurement Indicator [0, *] — measures/measured by → Goal [0, *] An association of this kind should only used when it reflects an indicator approved by the owner of the goal		
*PRM Measurement Indicator [0, *] — measures/measured by → Investment [0, *]* Remove eventual associations of this kind. They introduce ambiguities in the model and the association will be removed in a future EA Framework release.		
PRM Measurement Indicator [0, *] — measures/measured by → Project [0, *] Use associations of this kind, unless measurements for the current project are fully defined by the Information Systems being built and their subsystems; and the Business Process supported and System Services provided by these systems		
PRM Measurement Indicator [0, *] — measures/measured by → Business Process [0, *] An association of this kind should only used when it reflects an indicator approved by the process owner		
PRM Measurement Indicator [0, *] — measures/measured by → System Service [0, *] An association of this kind should only used when it reflects an indicator approved for the service by the owner of the system providing the service		

Entity Name	Driver
Entity Description	Drivers are requirements imposed on HHS policy, planning, and operations that initiatives and investments must address. Drivers can be decomposed hierarchically so that specific paragraphs or sub-sections can be related to, from other EA entities.
Examples	HHS Security Policy, Secure One IT Security Program and Strategy

Entity Source	HHS IT Strategic Plan, OMB 300s	
Unique Attributes	**Type**	**Description**
Name	String	Enter the official full name of the driver
Description	Text	Enter a brief description of the driver
ID	String	Leave blank, unless you know of an official identifier other than the name
Effective Date	Date	Enter the expected start date when the driver becomes operative. Leave blank if the date is unknown. This property is useful if you are modeling a planned driver change
Expiration Date	Date	Enter the expected end date when the driver no longer is valid. Leave blank if the date is unknown This property is useful if you are modeling a planned driver change
Relationships:		
part of: Force, or Driver		
has part: Driver Divers can be decomposed into as many hierarchical levels as necessary. This is useful, for instance, if your driver is a specific section of some legislation.		
*Driver [0, *] — depends on/has dependent → Driver [0, *]* It may sometimes be useful to show that there exist dependencies between drivers		
*Goal [0, *] — driven by/drives → Driver [0, *]* Relevant drivers should be identified when modeling a goal		
*Investment [0, *] — driven by/drives → Driver [0, *]* Relevant drivers should be identified when modeling an investment		
Business Process [0, *] — driven by/drives → Driver [0, *] Relevant drivers should be identified when modeling a business process		
Initiative [0, *] — driven by/drives → Driver [0, *] Relevant drivers should be identified when modeling an initiative		
*Security Control [0, *] — driven by/drives → Driver [0, *]* This association is unlikely to be of use in an OPDIV model, but it is modeled in the HHS Common model.		
*Technology Profile Item [0, *] — driven by/drives → Driver [0, *]* Relevant drivers may be identified when modeling a technology profile		

Entity Name	Force	
Entity Description	An environmental force (either internal, external, or a larger trend) that influences HHS strategic planning. Forces are often manifested as architectural drivers.	
Examples	OMB Directives and Guidance, OPDIV Business Needs, FISMA, and Presidential Decision Directive 63 (PDD 63)	
Entity Source	HHS IT Strategic Plan	
Unique Attributes	**Type**	**Description**
Force type	Set	Internal, External, or Trend

Entity Name	Goal

Entity Description	The type Goal models departmental or OPDIV strategies established by a Strategic Plan. Different kinds of goals can be modeled, such as, strategic goals for the business and IT goals. A top level Goal provides a general direction and can be decomposed into sub-goals, representing more precise and measurable objectives. A goal may support other goals, showing, e.g., how an IT goal supports a strategic goal, or how an OPDIV goal supports an HHS goal.	
Examples	Achieve excellence in management practices, Improve the quality of health care services	
Entity Source	HHS Strategic Plan	
Unique Attributes	**Type**	**Description**
Name	String	Use the name as defined in the planning process, include the word “Goal” if the planning process uses that term. Include the word Objective, or perhaps “Outcome” if those terms are used.
Description	Text	The goal / objective/ outcome, as approved by the owner of the goal
ID	String	Leave blank, unless your organization unit has a formal identification scheme for goals and objectives
Effective Date	Date	Enter the expected start date when the goal becomes operative
Expiration Date	Date	Enter the expected end date when the goal will be replaced. Leave blank if the date is unknown
Relationships:		
part of: Strategic Layer Container, or Goal		
has part: Goal The Goals type can be decomposed into an arbitrary number of levels. It can therefore be used to model a hierarchy of goals, objectives, or outcomes, etc. Whatever the planning terminology may be.		
*Initiative [0, *] — supports/supported by → Goal [0, *]* Use this association for the objects at the lowest level of the goal hierarchy (objectives).Create one association for every OPDIV initiative that supports this objective.		
*Organization [0, 1] — owns/owned by → Goal [0, *]* All top level goal objects must have an association to the owning organization. It must be possible to trace the owning organization object to the HHS organization hierarchy (Unless you are capturing goals for an external organization)		
*Goal [0, *] — driven by/drives → Driver [0, *]* It is possible to use this kind of relationship to show drivers for a goal.		
*Goal [0, *] — supports/supported by → Goal [0, *]* Objects in different goal hierarchies can have a support association to one another. This can be used to show, e.g., that an OPDIV objective supports a specific HHS objective.		
*PRM Measurement Indicator [0, *] — measures/measured by → Goal [0, *]* An association of this kind should only used when it reflects an indicator approved by the owner of the goal/ objective.		
*Investment [0, *] — supports/supported by → Goal [1, *]* Create one association for every OPDIV or HHS objective explicitly addressed by the investment documentation.		
*Goal [0, *] — justifies/justified by → Investment EA Justification [0, *]* Do not use this kind of association, unless you receive further instructions from the HHS EA Team		

*Segment [0, 1] — supports/supported by → Goal [0, *]* There should be no need to model associations of this kind in OPDIV models. It should be possible to derive the applicable segment(s) through the associated HHS objectives and goals
*Business Process [0, *] — supports/supported by → Goal [0, *]* Associations of this type should be created as part of business process modeling, not when the goal itself is created.

Entity Name	Initiative	
Entity Description	HHS Strategic Initiatives are defined by the IT Strategic Plan. This entity type allows other EA artifacts to be related to the initiatives.	
Examples	UFMS, Active Directory	
Entity Source	HHS IT Strategic Plan	
Unique Attributes	**Type**	**Description**
Name	String	The official full name of the initiative
Description	Text	A brief description of the initiative
ID	String	Leave blank, unless your organization unit has a formal identification scheme for initiatives
Effective Date	Date	The expected date when the initiative becomes operative. Leave blank if the date is unknown. This property is useful if you are modeling a planned initiative change
Expiration Date	Date	The expected date when the initiative will be completed or replaced. Leave blank if the date is unknown This property is useful if you are modeling a planned initiative change
Completion Date	Date	The date the initiative is expected to be completed. Do not use this property. It is likely to be dropped in a future EA framework version. Use Expiration Date instead.
Relationships:		
part of: Initiative Category		
*Initiative [0, *] — supports/supported by → Business Process [0, *]* Associations of this kind should be used to show the processes that benefit from this initiative		
*Initiative [0, *] — supports/supported by → Goal [0, *]* Insert associations to relevant objectives (OPDIV or HHS)		
*Initiative [0, *] — aggregates/component of → Program [0, *]* Associations of this kind should be used to show what programs are part of this initiative		
*Initiative [0, *] — driven by/drives → Driver [0, *]* Associations of this kind should be used to show important drivers for the initiative		
*Investment [0, *] — supports/supported by → Initiative [0, *]* Investments should show a support association to every initiative the investment supports. This should be modeled as part of investment modeling.		
*Investment [0, *] — leverages/leveraged by → [0, *] Initiative* Use this relationship to show that the investment will take advantage of outcomes from a cross-agency initiative		
*Organization [0, 1] — owns/owned by → Initiative [0, *]* Associations of this kind are typically not needed, but can be used to override the ownership implied by the ownership of the taxonomy of which the initiative is a part.		

Entity Name	Initiative
*Community of Interest [0, *] — supports/supported by → Initiative [0, *]* Associations of this kind can be used to show what COI exist in support of this initiative	
*PRM Measurement Indicator [0, *] — measures/measured by → Initiative [0, *]* Associations of this kind should be used to model measurements that have been defined by the initiative owner	

Entity Name	Initiative Category	
Entity Description	General grouping of initiatives. Categories can be defined by modelers to support a categorization which may be used in the decision making process.	
Examples	IT Security Program, Common Administrative Systems	
Entity Source	HHS IT Strategic Plan	
Unique Attributes	**Type**	**Description**
No additional attributes		
part of: Taxonomy		

Entity Name	Initiative Goal	
Entity Description	Individual goals of specific initiatives are defined by the IT Strategic Plan. This entity type allows other EA artifacts to be related to the goals.	
Examples	Develop and implement an IT Portfolio Management Methodology integrated with CPIC.	
Entity Source	HHS IT Strategic Plan	
Unique Attributes	**Type**	**Description**
No additional attributes		
part of: Initiative **relation: PRM Measurement Indicator [0, *] — measures/measured by → Initiative Goal [0, *]**		

Entity Name	EA Principle	
Entity Description	EA Principles govern the EA process and the implementation of the architecture. Architectural principles for the EA process affect development, maintenance, and use of the EA. Architectural principles for EA implementation establish the first tenets and related decision-making guidance for designing and developing information systems. The EA Principles for HHS are defined in the Key Concepts document and this entity type allows other EA artifacts to be related to the principles.	
Examples	Will be provided when artifacts of this type are added to the model	
Entity Source	Key Concepts document	
Unique Attributes	**Type**	**Description**
No additional attributes		
part of: EA Principle Category relation: EA Principle [0, *] — justifies/justified by → Investment EA Justification [0, *]		

Entity Name	EA Principle Category

Entity Description	This entity type allows EA Principles to be grouped as guided by the Key Concepts document. This is a tentative type which may not be needed if the final set of EA principles is sufficiently small.	
Examples	Will be provided when artifacts of this type are added to the model	
Entity Source	Key Concepts document	
Unique Attributes	**Type**	**Description**
No additional attributes		

Entity Name	Strategy Layer Container	
Entity Description	This type allows grouping of other strategy layer types. Together with other “layer container” types, it allows (and, to some extent restricts) a modeler to structure the model according to the HHS framework. (This type is not shown on the diagram above.)	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
No additional attributes		

4.4 Investment Layer

4.4.1 Investment Layer Description

The Investment Layer includes entities and relationships that pertain to HHS enterprise planning, such as:

- Key investment and initiative entities, including OMB 300 investments, accounts, and relationships to strategic initiatives
- Programs and Projects

The Investment layer represents the financial aspect of an enterprise. It includes concepts that allow the EA information to be reconciled with investment and project control information. The entities within the Investment layer are modeled in Exhibit 4-2.

4.4.2 Relationship to the FEA Reference Model

The Investment Layer does not directly incorporate any FEA reference model entity types. The layer overview diagram below shows all entity types and all supported relationships for those types.

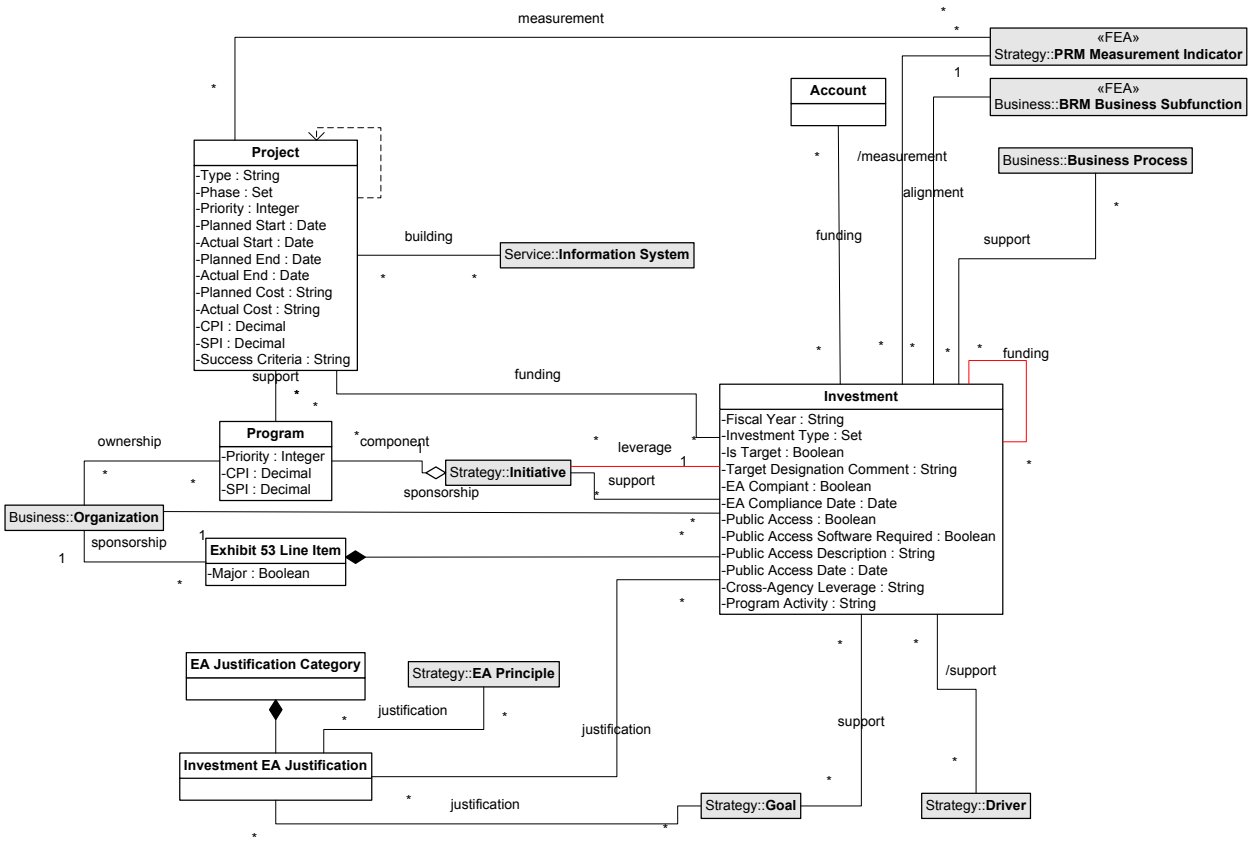


Exhibit 4-2 Investment Layer Metamodel Overview Diagram

4.4.3 Entity Descriptions

Entity Name	Account	
Entity Description	HHS Budget account proposed to fund an investment	
Examples	HHS General Fund	
Entity Source	OMB 300 submissions	
Unique Attributes	**Type**	**Description**
No additional attributes		
relation: Account [0, *] — funds/funded by → Investment [0, *]		

Entity Name	EA Justification Category

Entity Description	Grouping of Investment EA Justifications according to The Key Concepts document	
Examples	Will be provided when artifacts of this type are added to the model	
Entity Source	TBD	
Unique Attributes	**Type**	**Description**
No additional attributes		

Entity Name	Exhibit 53 Line Item	
Entity Description	Represents one line item on the Exhibit 53 document submitted to OMB. Each line item represents one or more investments.	
Examples	Will be provided when artifacts of this type are added to the model	
Entity Source	Prosight	
Unique Attributes	**Type**	**Description**
/Major	Boolean	Derived from the associated investment(s)
relation: Organization [0, *] — sponsors/sponsored by → Exhibit 53 Line Item [0, *]		

Entity Name	Investment	
Entity Description	Individual investment decision as defined in the CPIC process. May or may not have a corresponding to OMB 300 submission. An investment that runs for several years will be modeled as a sequence of investment objects, one for every new funding decision.	
Examples	HHS Enterprise Architecture, UFMS, Email Consolidation	
Entity Source	OMB 300, Prosight	
Unique Attributes	**Type**	**Description**
Name	String	This must be the same name as in PMT
Description	Text	Update as appropriate. There should be a brief explanatory description, but it is not required that the description reads exactly the same as in PMT.
ID	String	This must be the “UPI” used in PMT
Effective Date	Date	The date when funding per this investment decision is (expected to be) available.
Expiration Date	Date	The date funding is no longer (expected to be) available.
Fiscal Year	string	The fiscal year for which the investment decision. It must be written as the capital letters “FY”, immediately followed by two digits, e.g., FY05, or FY16.
Investment Type	Set	Must be assigned on of the values [Supporting, Tactical, Major]
Is Target	Boolean	Check this if the project is included in the HHS transition plan. The value is used for question 1 in the EA section on the Exhibit 300.

Entity Name	Investment	
Target Designation Comment	Text	Leave blank if “Is Target” is checked. Enter an explanation if “Is Target” is not checked. The value is used for question 1.a in the EA section on the Exhibit 300.
In Transition Strategy	Boolean	Check this if the investment is included in the current transition plan. This value is used for question 2 in the EA section on the Exhibit 300.
Transition Strategy Comment	Text	If “In Transition Strategy” is checked, but the investment is described under a different name in the transition plan, then enter the name used in the plan and nothing else. The text will be used for question 2.a of the EA section on the Exhibit 300. If “In Transition Strategy” is not checked, enter an explanation why. The text will be used for question 2.b in the EA section on the Exhibit 300.
EA Compliant	Boolean	Check this if the Chief Enterprise Architect for the investment sponsor has reviewed this investment and found it in compliance with EA principles. This value is used for EA Critical Partner Review.
EA Compliance Date	Date	If “EA Compliant” is checked, enter the date of the decision. The value is used for EA Critical Partner Review.
Cross-Agency Leverage	Text	If the investment is leveraging the outcome of cross-agency initiatives, then describe how. The value is used for question 5.a in the EA section on the Exhibit 300. (The answer to question 5, i.e., whether there is leverage or not, is determined by the existence of leverage associations from the investment.)
Public Access	Boolean	Check this property if the investment is funding one or more Information Systems that offers public access. The value is used for question 6 in the EA section on the Exhibit 300.
Public Access Software Required	Boolean	Check this box if you checked “Public Access” and there are specific requirements on software to be used by public users. The value is used for question 6.a in the EA section on the Exhibit 300.
Public Access Description	Text	If you checked “Public Access Software Required”, enter product name(s) and version(s) for the public access software. The value is used for question 6.a.1 in the EA section on the Exhibit 300.
Public Access Date	Date	If you checked “Public Access Software Required”, enter the date when public access will be available. The value is used for question 6.a.1 in the EA section on the Exhibit 300.

Entity Name	Investment	
Program Activity	string	Associated program activity for investment. This legacy property is likely to be removed from the type definition in a future version of the framework. Associated Programs are better modeled as associations between project and program objects.
Relationships:		
part of: Exhibit 53 Line Item, or Investment Layer Container Avoid modeling investments as parts of exhibit 53 line items, unless the HHS EA Support Team issues explicit instructions regarding it. The framework currently allows you to model investments as part of an exhibit 53 line item. This is a part of the framework that may be changed in the near future.		
Organization [0, *] — sponsors/sponsored by → Investment [1] You must define the sponsor organization for every investment object		
Investment [0, *] — aligns to/is context for → BRM Business Subfunction [1] This defines the primary BRM alignment reported on an Exhibit 300.		
Investment [0, *] — supports/supported by → Goal [1, *] There should be at least one association to a HHS or OPDIV objective (represented by an object of type goal)		
Investment [1] — funds/funded by → Project [1, *] Use to identify the project(s) funded by this investment decision.		
*Investment [0, *] — supports/supported by → Business Process [0, *]* Should not be used for normal IT investments, since the set of supported processes can be derived from other objects associated with the investment. Can be used to model a business improvement investment.		
*Investment [0, *] — supports/supported by → Initiative [0, *]* Use this relationship to show what initiatives will benefit from this investment		
*Investment [0, *] — leverages/leveraged by → Initiative [0, *]* Use this relationship to show that the investment will take advantage of outcomes from a cross-agency initiative		
*Investment [0, *] — funds/funded by → Investment [0, *]* *funds/funded by [0, *] — funds/funded by → [0, *] aligns to/is context for* These relationships are used to model funds transfer between projects.		
*Investment [0, *] — driven by/drives → Driver [0, *]* Use this to show important drivers for the investment		
*Account [0, *] — funds/funded by → Investment [0, *]* Avoid relationships of this kind. They do not represent core EA information and may not be supported in future versions of the framework.		
*Investment EA Justification [0, *] — justifies/justified by → Investment [0, *]* Avoid using this relationship. The type Investment EA Justification is a legacy part of the framework that may be removed in a future version.		
*PRM Measurement Indicator [0, *] — measures/measured by → Investment [0, *]* Do not use this association. Relevant measurement indicators can be derived from other objects associated with the investment		

Entity Name	Investment EA Justification	
Entity Description	Documents which EA Principles and IT Goals an investment is aligned to.	
Examples	Will be provided when artifacts of this type are added to the model	
Entity Source	TBD	
Unique Attributes	**Type**	**Description**
No additional attributes		

part of: EA Justification Category relation: Investment EA Justification [0, *] — justifies/justified by → Investment [0, *] relation: Goal [0, *] — justifies/justified by → Investment EA Justification [0, *] relation: EA Principle [0, *] — justifies/justified by → Investment EA Justification [0, *]

Entity Name	Program	
Entity Description	A program, within the HHS business, designed to meet the goals of an Initiative.	
Examples	HHS Enterprise Architecture Program	
Entity Source		
Unique Attributes	**Type**	**Description**
Priority (1-100)	Percentage	A program's relative priority, compared to other programs performed by the same owner organization
CPI [- 5.0, + 5.0]	Float	Cost Performance Index (use value in the interval [-5.0, +5.0])
SPI [- 5.0, + 5.0]	Float	Schedule Performance Index (use a value in the interval [-5.0, +5.0])
relation: Organization [0, *] — owns/owned by → Program [0, 1] **relation: Project [0, *] — supports/supported by → Program [0, *]** relation: Initiative [0, *] — aggregates/component of → Program [0, *]		

Entity Name	Project	
Entity Description	A project with a well defined duration and outcome, performed at HHS or one of its OPDIVs.	
Examples		
Entity Source		
Unique Attributes	**Type**	**Description**
Name	String	You should use same name as in PMT
Description	Text	There should be a brief explanatory description, but it is not required that the description reads exactly the same as in PMT.
ID	String	You should use the same ID as in PMT
Effective Date	Date	The (expected) start date of the project phase
Expiration Date	Date	The (expected) end date of the project phase
Type	String	Source document or authority for information on process
Phase	Set	The EPLC phase. If the project covers more than one phase during the fiscal year, enter the phase at the end of the fiscal year. Enter the EPLC phase that best corresponds to the phase in your OPDIV project management methodology in case the OPDIV uses a different life cycle model. EPLC phases are: [Initiation, System Concept Development, Planning, Requirements Analysis, Design, Development, Integration and Testing, Implementation, Steady State, Disposition]

Entity Name	Project	
Priority [1,100]	Percentage	Project's relative priority, compared to other projects performed by the same owner organization
Planned Start	Date	Start date as per project charter or baseline
Actual Start	Date	Best estimate updated as of modification date
Planned End	Date	End date as per project charter or baseline
Actual End	Date	Best estimate updated as of modification date
Actual Cost	Float	Best estimate updated as of modification date
Planned Cost	Float	Planned cost as per project charter or baseline
CPI [- 5.0, + 5.0]	Float	Cost Performance Index (use value in the interval [-5.0, +5.0])
SPI [- 5.0, + 5.0]	Float	Schedule Performance Index (use value in the interval [-5.0, +5.0])
Success Criteria	Text	Describes the criteria for successful completion of the project based on successfully meeting the business need the project is to address (preferably metric-based)
Relationships:		
Investment [1] — funds/funded by → Project [1, *] There must be one and only one funding association for a project.		
Project [1, *] — builds/built by → Information System [1] All relevant relationships of this kind should be captured in the architecture		
Project [0, *] — supports/supported by → Program [0, *] It is recommended that you model program support.		
*Project [0, *] — depends on/has dependent → Project [0, *]* Use this to model other dependencies than funding. The nature of the dependency can be captured in the relationship description.		
*PRM Measurement Indicator [0, *] — measures/measured by → Project [0, *]* Consider if you want to express measurements at the project level at all. The framework allows measurement indicators to be defined for many types, and indicators for relevant instances will be rolled up to project and investment level.		

Entity Name	Investment Layer Container	
Entity Description	This type allows grouping of other Investment layer types. Together with other "layer container" types, it allows (and, to some extent restricts) a modeler to structure the model according to the HHS framework. (This type is not shown on the diagram above.)	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
No additional attributes		

4.5 Business Layer

4.5.1 Business Layer Description

The Business Layer includes entities and relationships that pertain to HHS business activities, such as:

- Business responsibilities (business areas, lines of business, and business subfunctions) within the FEA
- Business processes, including the related participants (Business Roles), business objects (data), process rationale (relation to drivers), and the organizational context (organizational units)
- Business process workflows can be modeled, using the Business Process Modeling Notation (BPMN).

Investments evaluated by the EA process should ultimately support one or more business processes within HHS. The entities within the Business layer are modeled in Exhibit 4-3.

4.5.2 Relationship to the FEA Reference Models

The Business Layer incorporates all entities from the FEA Business Reference Model (BRM). The BRM describes the general categories and classes of business services offered by agencies. The HHS EA augments this by breaking large-scale services into individual business processes. The layer overview diagram below shows all entity types and all supported relationships for those types.

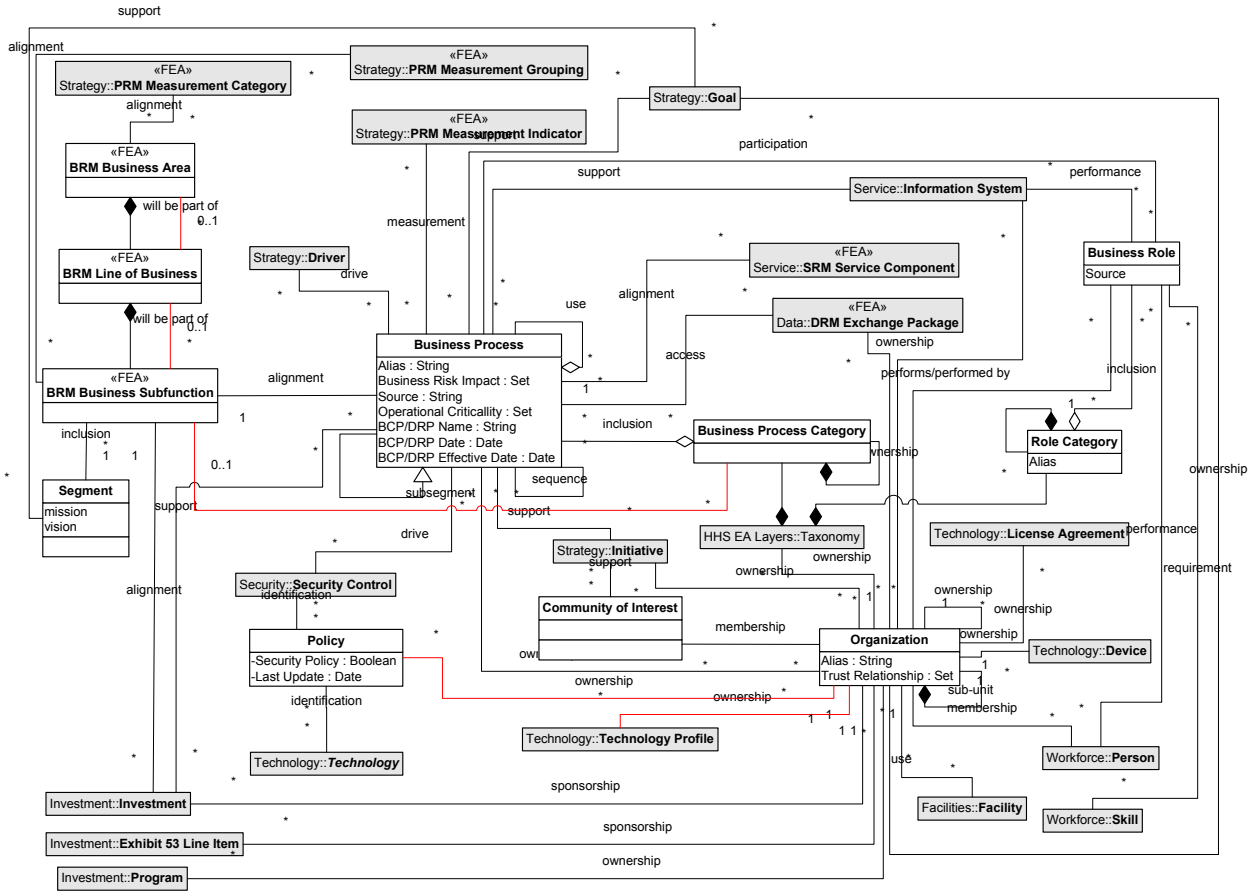


Exhibit 4-3 Business Layer Metamodel Overview Diagram

4.5.3 Entity Descriptions

Entity Name	BRM Business Area	
Entity Description	Provides general classifications of business service areas within the Business Reference Model	
Examples	Services for Citizens, Mode of Delivery	
Entity Source	Federal Enterprise Architecture – Business Reference Model	
Unique Attributes	**Type**	**Description**

Entity Name	BRM Business Area	
ID	String	Use the ID property to capture the unique identity code assigned by FEA to each business area
relation: PRM Measurement Category [0, *] — aligns to/is context for → BRM Business Area [0, *]		

Entity Name	BRM Line of Business	
Entity Description	Provides a description of specific governmental lines of business	
Examples	Health, Homeland Security	
Entity Source	Federal Enterprise Architecture Business Reference Model	
Unique Attributes	**Type**	**Description**
ID	String	Use the ID property to capture the unique identity code assigned by FEA to each line of business
Relationships:		
part of: BRM Business Area		
has part: BRM Business Subfunction		
BRM Line of Business [0, *] — will be part of/will have part → [0, 1] BRM Business Area Relationships of this type support modeling of future enhancements to reference models, e.g., by FHA		
*BRM Business Subfunction [0, *] — will be part of/will have part → [0, 1] BRM Line of Business* Relationships of this type support modeling of future enhancements to reference models, e.g., by FHA		

Entity Name	BRM Business Subfunction	
Entity Description	Breaks a line of business down into smaller, more concrete functions	
Examples	Public Relations, Record Retention	
Entity Source	Federal Enterprise Architecture – Business Reference Model	
Unique Attributes	**Type**	**Description**
ID	String	Use the ID property to capture the unique identity code assigned by FEA to each Subfunction
Relationships:		
part of: BRM Line of Business		
Business Process [0, *] — aligns to/is context for → BRM Business Subfunction [0, *] All processes should be aligned to a BRM Subfunction, but the alignment can be indirect, so not all process objects will have an alignment relation. This is typically determined as part of process modeling.		
Investment [0, *] — aligns to/is context for → BRM Business Subfunction [1] There must be one, and only one, relationship of this kind. It represents the primary BRM alignment for the investment		
*Business Process Category [0, *] — is subsegment of/has subsegment → BRM Business Subfunction [0, 1]* Modelers of business segments can use this kind of relationship to add detail to the BRM taxonomy. It allows BRM Business Subfunctions to be decomposed to a granularity required by the modeling task.		
*BRM Business Subfunction [0, *] — will be part of/will have part → [0, 1] BRM Line of Business* Relationships of this type support modeling of future enhancements to reference models, e.g., by FHA		
*Segment [0, 1] — includes/included by → BRM Business Subfunction [0, *]* Relationships of this type reflect the HHS Segments. There is no need for additional relationships of this kind.		

Entity Name	BRM Business Subfunction
*PRM Measurement Grouping [0, *] — aligns to/is context for → BRM Business Subfunction [0, *]* Relationships of this type reflect the relationships defined by the OMB reference models. There is no need for additional relationships of this kind.	

Entity Name	Business Process	
Entity Description	A business process is an activity performed by HHS that yields a result of measurable value to one or more stakeholders. Each BRM Business Subfunction can be further decomposed into multiple business processes	
Examples	Develop Enterprise Architecture	
Entity Source	HHS IT Architecture (present), Federal Health Architecture (future)	
Unique Attributes	**Type**	**Description**
Alias	string	Enter an acronym or abbreviated name for the process, if appropriate
Name	String	The official (or generally accepted) full name of the process, (ending with a version identifier if relevant)
Description	Text	Enter a brief description of the process. The process should summarize purpose and resulting artifacts. If this is hard to describe in a few sentences, it is probably an indicator that the process boundary is not well defined or that you are describing a broader area of business, rather than a particular process.
ID	String	Leave blank, unless the process owner has a formal identification scheme for processes
Effective Date	Date	Enter the expected start date when the process becomes operative. Leave blank if the date is unknown. This property is useful if you are modeling a planned process change
Expiration Date	Date	Enter the expected end date when the process will be replaced. Leave blank if the date is unknown This property is useful if you are modeling a planned process change
Business Risk Impact	Low moderate high	This value identifies the impact to a business process should there be operational loss or a large disruption. This risk level and the business process operational criticality should be used during disaster recovery and business continuity planning.
Source	String	Source document or authority for information on process
Operational Criticality	Operational criticality	Security attribute that identifies whether the entity is mission critical, supportive, or important.
BCP/DRP Name	String	The name of the document that describes the steps taken to recover business operations, should there be operational loss or a major disruption. If there isn't a Business Continuity Plan or Disaster Recovery Plan (BCP/DRP) specifically for this particular process, please identify the name of the plan that the business process falls under.

Entity Name	Business Process	
BCP/DRP Date	Date	The issuing date of the Business Continuity Plan/Disaster Recovery Plan
BCP/DRP Effective Date	Date	The date the plan went into effect, i.e., the date it was authorized
Relationships:		
part of: Business Layer Container		
has part: Workflow Box A process can include a Workflow Box, which is a container for a Swimlane Diagram		
*Business Role [0, *] — executes/executed by → Business Process [0, *]* Associations of this type can be used to add detail to a generic process. It provides less detail than swimlane diagram modeling, but it also requires much less effort.		
*Organization [1] — owns/owned by → Business Process [0, *]* There should be one, and only one, ownership association. The process owner is the organization in control of the process definition.		
*Business Process [0, *] — recovers/recovered by → Business Process [0, 1]* Associations of this type can be used to model emergency preparedness for a business process. That is to show that recovery procedures have been identified.		
*Business Process [0, 1] — specializes/specialized by → Business Process [0, *]* Associations of this type can be used to capture variants of a generic process.		
*Business Process [0, *] — uses/used by → Business Process [0, 1]* Associations of this type can be used to add detail to a generic process. It provides less detail than swimlane diagram modeling, but it also requires much less effort.		
*Business Process [0, *] — precedes/preceded by → Business Process [0, *]* Associations of this type can be used to add detail to a generic process. It provides less detail than swimlane diagram modeling, but it also requires much less effort.		
Business Process [0, *] — aligns to/is context for → BRM Business Subfunction [0, *] A process must be aligned to the BRM, unless the BRM alignment can be derived from the alignment of sub-processes or process specializations, or if the process has an inclusion association to a business process category that is a sub-segment of a BRM Business Subfunction.		
Business Process [0, *] — aligns to/is context for → SRM Service Component [0, *] A process is a service and should be aligned to the SRM, unless the SRM alignment can be derived from the alignment of sub-processes or process specializations.		
Business Process Category [0, *] — includes/included by → Business Process [0, *] Associations of this kind can be used to classify processes beyond the BRM taxonomy. They should be used if the business process category defines a sub-segment.		
Information System [0, *] — supports/supported by → Business Process [0, *] Proper modeling of an IT investment requires that all possible associations of this type are modeled.		
*Initiative [0, *] — supports/supported by → Business Process [0, *]* Initiatives should model the processes they support		
*Investment [0, *] — supports/supported by → Business Process [0, *]* This association need typically not be used.		
Business Process [0, *] — accesses/accessed by → DRM Exchange Package [0, *] Important information exchanges should be modeled with this association, unless they are modeled in more detail in a swimlane diagram or are already associated with a sub-process or process specialization		
*Business Process [0, *] — driven by/drives → Driver [0, *]* The drivers of importance to a process can be modeled with this association.		
*Security Control [0, *] — driven by/drives → Business Process [0, *]* Specific security control requirements for a process can be modeled by inserting an association to a security control object in the HHS Common model.		

Entity Name	Business Process
PRM Measurement Indicator [0, *] — measures/measured by → Business Process [0, *] Approved indicators for process performance should be modeled with this association.	
relation: Activity [0, *] — represents/has → Business Process [0 1	
Business Process [0, *] — supports/supported by → Goal [0, *] Objectives (modeled by type goal) supported by a process should be modeled by this association	

Entity Name	Business Process Category	
Entity Description	This type offers a way of categorizing Business Processes in other ways than what is given by the BRM alignment. Its use is optional, as determined by the business needs of the respective OPDIV.	
Examples	Post Market, Pre market, Science	
Entity Source	Per OPDIV Decision	
Unique Attributes	**Type**	**Description**
No additional attributes		
***part of**: Taxonomy*		
*Business Process Category [0, *] — is subsegment of/has subsegment → BRM Business Subfunction [0, 1]* Modelers of business segments can use this kind of relationship to add detail to the BRM taxonomy. It allows BRM Business Subfunctions to be decomposed to a granularity required by the modeling task.		
*Business Process Category [0, *] — includes/included by → Business Process [0, *]* Relationships of this type can be used to classify processes separately from the BRM or as an elaboration to the BRM		

Entity Name	Community of Interest	
Entity Description	The type allows modeling of "virtual organizations" such as the communities of interest supporting federal cross-agency initiatives.	
Examples	TBD	
Entity Source	FTF and other	
Unique Attributes	**Type**	**Description**
No additional attributes		
relation: Community of Interest [0, *] — has member/is member of → Organization [0, *] relation: Segment [0, 1] — supports/supported by → Goal [0, *] relation: Community of Interest [0, *] — supports/supported by → Initiative [0, *]		

Entity Name	Organization	
Entity Description	Describes an organizational entity, within or external to HHS. Organizations can be organized in hierarchies, thus allowing, for instance, the entire HHS organization structure to be modeled.	
Examples	Office of the General Counsel, Public Health Practice Program Office, Dept. of Homeland Security, Congress, etc.	
Entity Source	Analysis	
Unique Attributes	**Type**	**Description**
Name	String	Enter the official full name of the organization unit
Description	Text	Enter a brief description of the organization unit

Entity Name	Organization	
ID	String	Leave blank, unless your organization unit has a formal identification scheme for organization units
Effective Date	Date	Enter the expected start date when the organization becomes operative. Leave blank if the date is unknown. This property is useful if you are modeling a planned organization change
Expiration Date	Date	Enter the expected end date when the organization will be replaced. Leave blank if the date is unknown This property is useful if you are modeling a planned organization change
Alias	String	Use this field for an alternate short name form (e.g., an acronym or abbreviation).
Trust Relationship	Set	This value is used to determine the trust relationship between an external organization and HHS. Choose one of [Low, Moderate, High]
Relationships:		
part of: Business Layer Container, or Organization		
has part: Organization Use decomposition (an organization is part of another organization) to represent the organization hierarchy for your OPDIV in as many levels as required for your OPDIV EA modeling		
Organization [0, 1] — owns/owned by → Organization [0, *] Associations of this kind are logically equivalent to the "part-of" decomposition. It should be used to connect an organization object to its parent when the parent and child objects are part of different submodels. Associations of this kind should be used when a branch of an organization tree is maintained in a model separate from the rest. It ensures traceability between organization objects contained in different models. Insert an association from the parent organization object to the root object of the new branch.		
*Community of Interest [0, *] — has member/is member of → Organization [0, *]* Membership in a Community of Interest can be modeled with associations of this kind.		
*Organization [1] — owns/owned by → Business Process [0, *]* Business Process objects must have their ownership modeled.		
Organization [1] — owns/owned by → Device [0, *] Device objects must have their ownership modeled.		
*Organization [1] — owns/owned by → Information System [0, *]* Ownership must be modeled for all information systems (unless it can be derived from a parent information system)		
*Organization [1] — owns/owned by → License Agreement [0, *]* License Agreement objects must have their ownership modeled.		
*Organization [1] — owns/owned by → [0, *]* Technology Profile objects must have their ownership modeled.		
Organization [1] — owns/owned by → Program [0, *] Program objects must have their ownership modeled.		
*Organization [1] — owns/owned by → Taxonomy [0, *]* Taxonomy objects must have their ownership modeled.		
*Organization [0, 1] — owns/owned by → Initiative [0, *]* Ownership must be modeled for all initiatives, unless it can be derived from the ownership of the taxonomy object containing the initiative		
*Organization [1] — sponsors/sponsored by → Investment [0, *]* Sponsorship must be modeled for all investments		

Entity Name	Organization
*Organization [1] — owns/owned by → Policy [0, *]* Policy objects must have their ownership modeled.	
*Organization [0, 1] — owns/owned by → Goal [0, *]* Goal objects must have their ownership modeled.	
*Organization [1] — owns/owned by → DRM Exchange Package [0, *]* DRM Exchange Package objects must have their ownership modeled.	
*Organization [1] — sponsors/sponsored by → Exhibit 53 Line Item [0, *]* Do not use relationships of this kind without further instructions from the HHS EA Support Team.	
*Organization [0, *] — located in/location of → Facility [0, *]* Facilities utilized by an organization can be modeled with associations of this kind.	
Organization [0, *] — performs/performed by → Business Role [0, *] It is possible to show what business roles an organization is capable of.	
Person [0, *] — belongs to/includes → Organization [0, 1] It is possible to model what organization a person belongs to.	

Entity Name	Policy	
Entity Description	A document, formally defining certain rules regarding business within HHS or one of its components.	
Examples	HHS Security Policy	
Entity Source	TBD	
Attributes	**Type**	**Description**
Security Policy	Boolean	Indicates that this policy is a security policy
Last Update	String	Date policy was last updated
Relationships:		
part of: Business Layer Container		
Policy [0, *] — identifies/identified by → Security Control [0, *]		
Policy [0, *] — identifies/identified by → Technology [0, *]		
Organization [1] — owns/owned by → Policy [0, *]		

Entity Name	Business Layer Container	
Entity Description	This type allows grouping of other business layer types. Together with other “layer container” types, it allows (and, to some extent restricts) a modeler to structure the model according to the HHS framework. (This type is not shown on the diagram above.)	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
No additional attributes		

Entity Name	Business Role
Entity Description	Describes a participant role within a business process
Examples	Drug companies, Congress, Inspector General, Chief Enterprise Architect, CIO, COTR
Entity Source	OMB 300 submissions; Analysis

Entity Name	Business Role	
Unique Attributes	**Type**	**Description**
Source	String	Source document or authority for information on process
relation: Business Role [0, *] — executes/executed by → Business Process [0, *] relation: Role Category [0, *] — includes/included by → Business Role [0, *] relation: Business Role [0, *] — requires/required by → Skill [0, *] relation: Person [0, *] — performs/performed by → Business Role [0, *] **relation: Organization [0, *] — performs/performed by → Business Role [0, *]** relation: Information System [0, *] — performs/performed by → Business Role [0, *] relation: Swimlane [0, *] — represents/has → Business Role [0, 1]		

Entity Name	Role Category	
Entity Description	Classification of Business Roles of interest to the enterprise. Role Categories can be structured hierarchically.	
Examples	Government to Business, Government to Citizen	
Entity Source	DRAFT HHS Enterprise Architecture Data Collection Template	
Unique Attributes	**Type**	**Description**
No additional attributes		
Part of: Taxonomy relation: Role Category [0, *] — includes/included by → Business Role [0, *]		

Entity Name	Segment	
Entity Description	The segment type identifies a business segment. Each segment object defines its segment as a set of associated BRM Business Subfunctions.	
Examples	Access to Care, Health Care Research & Practitioner Education	
Entity Source	The HHS EA Program	
Unique Attributes	**Type**	**Description**
Mission	Text	Mission statement for a business segment.
Vision	Text	Vision statement for a business segment.
relation: Segment [0, *] — supports/supported by → Goal [0, *] relation: Segment [0, 1] — includes/included by → BRM Business Subfunction [0, *]		

4.5.4 Workflow Related Types

The types in this section are the types used in business process workflow diagrams. Relevant relations to other types are included in the descriptions below.

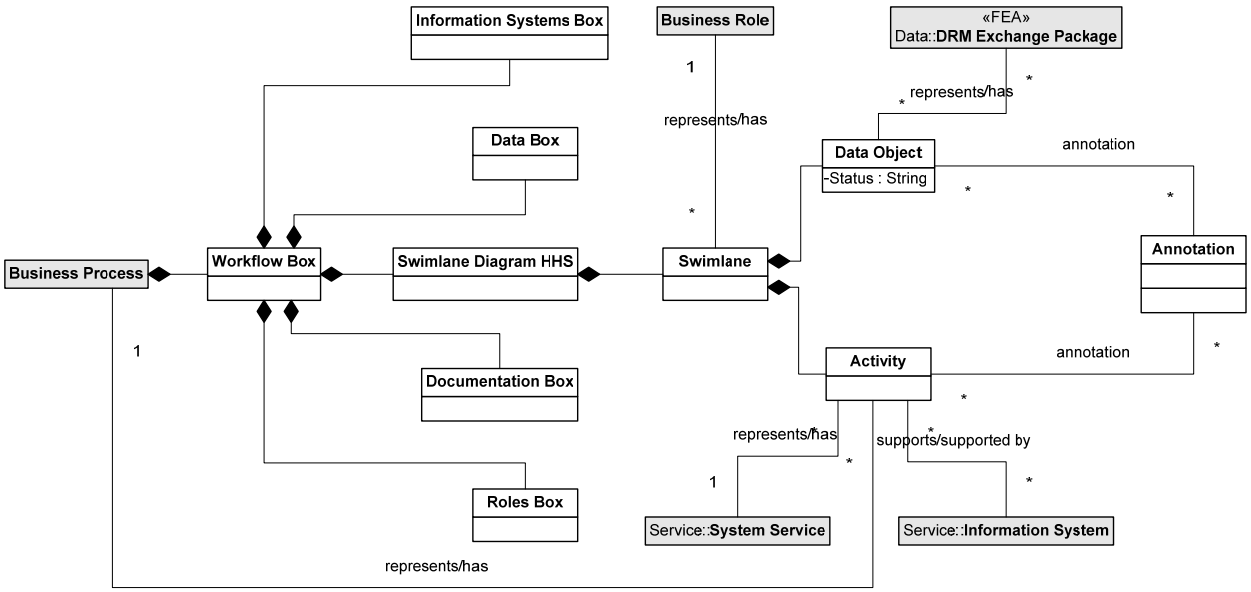


Exhibit 4-4 Business Layer Workflow Related Types

Entity Name	Annotation	
Entity Description	The Annotation type implements the BPMN Text Annotation type, which is a mechanism for a modeler to provide additional information for the reader of a BPMN Diagram.	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
No additional attributes		

Entity Name	Information Systems Box	
Entity Description	An Information Systems Box can only be used as a part of a Workflow Box. It is intended to hold duplicate views of Information Systems and Services of relevance to the Swimlane Diagram, which is also a part of the same Workflow Box.	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
No additional attributes		

Entity Name	Data Box
Entity Description	A Data Box can only be used as a part of a Workflow Box. It is intended to hold duplicate views of DRM Data Object and DRM Exchange Packages of relevance to the Swimlane Diagram, which is also a part of the Workflow Box.
Examples	N/A
Entity Source	N/A

Unique Attributes	Type	Description
No additional attributes		

Entity Name	Data Object	
Entity Description	A Data Object can only be used as part of a Swimlane. This type represents information used in a Business Process and can be linked to DRM Exchange Packages and DRM Data Objects with the “represents/has” relationship type.	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
State	String	An exchange package, such as a form may be passed on through many steps in a work flow. It will often help the understanding of a swimlane diagram if Data Object are annotated with a state, such as, “adjusted”, “approved”, etc.
Relationships:		
part of: Swimlane		
*Data Object [0, *] — represents/has → DRM Exchange Package [1, *]* All data objects should be associated with exchange packages		
*Data Object [1, *] — flow association → Message Flow [0, *]* All message flows should have a Data Object associated with it.		
*Data Object [0, *] — flow association → Sequence Flow [0, *]* If data objects, internal to a swimlane are modeled, they should be associated with a sequence flow. It should be decided for every modeling activity if this level of detail is required.		

Entity Name	Documentation Box	
Entity Description	A Documentation Box can only be used as a part of a Workflow Box. It is intended to hold references to documentation relevant to a business process workflow. Standard Metis document objects types are used for document references.	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
No additional attributes		

Entity Name	Activity	
Entity Description	This type represents a BPMN Activity. This type is used inside a Swimlane. It can be linked to a Business Process with the “represents/has” relationship type. It can also be linked to an Information System with the “supports/supported by” relationship type. From an implementation point of view, it is a specialization of the type provided with Metis BPMN template version 1.0. It was created to correct an error in the Metis-provided type definition, in that it correctly displays a collapsed sub-process marker when a logical process instance denotes a sub-process (and not a task).	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
Prefix	String	The first part of the Identification, e.g. Node A3.2.1, here “Node A” is the prefix. This property will automatically propagate to parts. If you enter a Prefix on a part, a new numbering scheme will start there.
Punctuation Mark	String	The character(s) separating the numbers in the Identification, e.g. Node A3.2.1, here the period (.) is the punctuation mark. This property will automatically propagate to parts.
Sequence Number	Integer	The sequence number of a subprocess relative to its parent, e.g. Node A3.2.1, here “1” is the sequence number of the current process.
relation: Activity [0, *] — represents/has → Business Process [0, 1] relation: Activity [0, *] — represents/has → System Service [0, 1]		

Entity Name	Roles Box	
Entity Description	A Roles Box can only be used as a part of a Workflow Box. It is intended to hold duplicate views of Business Roles of relevance to the Swimlane Diagram, which is also a part of the Workflow Box.	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
No additional attributes		

Entity Name	Swimlane	
Entity Description	A Swimlane represents the behavior if a Business Role. This type is used inside a swimlane diagram and can be linked to a Business Role with the “represents/has” relationship type. A Swimlane will include other BPMN symbols.	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
relation: Swimlane [0, *] — represents/has → Business Role [0, 1]		

Entity Name	Swimlane Diagram HHS	
Entity Description	A Swimlane Diagram allows the modeler to describe a Business Process workflow. It can only be used as part of a Workflow Box. This type is an adaptation of the Swimlane Diagram object provided in the Metis BPMN package. The adaptation provides the necessary integration with the HHS metamodel.	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
No additional attributes		

Entity Name	Workflow Box	
Entity Description	A Workflow Box can only be used as part of a Business Process. This type presents a swimlane diagram surrounded by associated EA artifacts, such as Information Systems, Business Roles and DRM Exchange Packages.	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
No additional attributes		

4.6 Data Layer

4.6.1 Data Layer Description

The Data Layer includes entities and relationships that pertain to HHS data, such as:

- General classification of data according to the FEA DRM guidelines
- Enterprise data objects representing key domain entities
- Information exchange formats

4.6.2 Relationship to the FEA Reference Models

The Data Layer incorporates entities from the FEA Data Reference Model (DRM 2.0). However, concepts for detailed data modeling are not included in the EA Framework. The benefit of EA modeling lays in showing interdependencies between different aspects of an enterprise. Details of the respective aspects are better handled by the respective subject matter experts using the optimal tools. The layer overview diagram below shows all entity types and all supported relationships for those types.

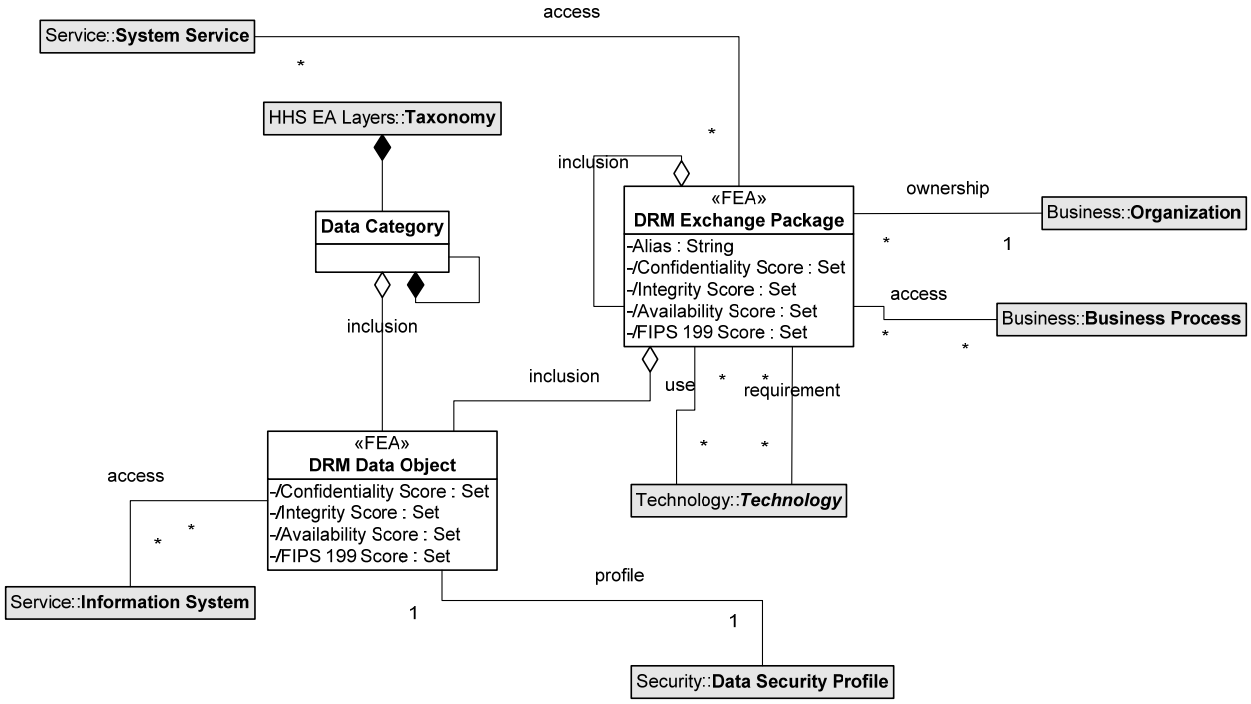


Exhibit 4-5 Data Layer Metamodel Overview Diagram

4.6.3 Entity Descriptions

Entity Name	Data Category	
Entity Description	This type allows a modeling organization unit, e.g., HHS or an OPDIV, to categorize DRM Data Objects according to their own needs. Data Category can be decomposed hierarchically.	
Examples	T.B.D.	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
No additional attributes		
Part of: Taxonomy relation: Data Category [0, *] — includes/included by → DRM Data Object [0, *]		

Entity Name	DRM Data Object	
Entity Description	A set of ideas, abstractions, or things in the real world that can be identified with explicit boundaries and meaning and whose properties and behavior follow the same rules. DRM Data Objects represent information which can be accessed by Information Systems and can also show a breakdown of data in DRM Exchange Packages.	
Examples	Will be provided when artifacts of this type are added to the model	
Entity Source	FEA DRM 1.0	
Unique Attributes	**Type**	**Description**
/Confidentiality Score	low moderate high N/A	The Confidentiality Score as defined in an associated Data Security Profile.
/Integrity Score	low moderate high	The Integrity Score as defined in an associated Data Security Profile.
/Availability Score	low moderate high	The Availability Score as defined in an associated Data Security Profile.
/FIPS 199 Score	low moderate high	This value is derived as the highest of the confidentiality, integrity, and availability scores for the current DRM Data Object.
Relationships:		
part of: Data Layer Container		
*DRM Exchange Package [0, *] — includes/included by → DRM Data Object [0, *]*		
Information System [0, *] — accesses/accessed by → DRM Data Object [0, *]		
Data Security Profile [0, 1] — profiles/profiled by → DRM Data Object [1]		

Entity Name	DRM Exchange Package
Entity Description	Information that is generated or required by a business process and is subsequently passed to other business process participants. THAT is, DRM Exchange Packages model the data sharing aspect of data. The details of a DRM Exchange Package can be expressed as a set of smaller exchange packages, or a set of related DRM Data Objects.

Entity Name	DRM Exchange Package	
Examples	Medicare Advantage Rates File, Food Facility Registration under BT Act	
Entity Source	Business process modeling	
Unique Attributes	**Type**	**Description**
Name	String	The official (or generally accepted) full name for the exchange package
Description	Text	Enter a brief description of the DRM Exchange Package
ID	String	Leave blank, unless your organization unit has a formal identification scheme for DRM Exchange Packages
Alias	String	The official or generally accepted acronym or abbreviated name form.
Effective Date	Date	The expected start date when the Exchange Package becomes operative. Leave blank if the date is unknown. This property is useful if you are modeling a planned change
Expiration Date	Date	The expected end date when the Exchange Package will be replaced. Leave blank if the date is unknown This property is useful if you are modeling a planned change
/Confidentiality Score	Set (read-only)	The highest confidentiality value defined for any subordinate DRM Data Object
/Integrity Score	Set (read-only)	The highest integrity value defined for any subordinate DRM Data Object
/Availability Score	Set (read-only)	The highest availability value defined for any subordinate DRM Data Object
/FIPS 199 Score	Set (read-only)	This value is derived as the highest of the confidentiality, integrity and availability scores for the current DRM Exchange Package.
Relationships:		
Organization [0, *] — owns/owned by → DRM Exchange Package [0, 1] The organization in control of the exchange package definition should be modeled		
*DRM Exchange Package [0, *] — includes/included by → DRM Data Object [0, *]* When known, describe the payload of an exchange package as a set of (logical) DRM Data Objects		
*DRM Exchange Package [0, *] — includes/included by → DRM Exchange Package [0, *]* When known, describe the payload of an exchange package as a set of smaller exchange packages		
*DRM Exchange Package [0, *] — uses/used by → Technology [0, *]* Describe the technologies used for this kind of exchange, e.g., a messaging protocol		
*DRM Exchange Package [0, *] — requires/required by → Technology [0, *]* Describe the technologies required for this kind of exchange, e.g., a messaging protocol		
*Business Process [0, *] — accesses/accessed by → DRM Exchange Package [0, *]* Describe all exchange packages of importance to a process. This is typically done as part of business process modeling.		
*System Service [0, *] — accesses/accessed by → DRM Exchange Package [0, *]* Describe all exchange packages of importance to a system service. This is typically done as part of information system modeling. This is typically done as part of detailed business process modeling.		

Entity Name	DRM Exchange Package
*Data Object [0, *] — represents/has → DRM Exchange Package [0, *]* All Data Objects identified in a completed BPMN swimlane diagram should have associated exchange packages.	

Entity Name	Data Layer Container	
Entity Description	This type allows grouping of other data layer types. Together with other "layer container" types, it allows (and, to some extent restricts) a modeler to structure the model according to the HHS framework. (This type is not shown on the diagram above.)	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
No additional attributes		

4.7 Service Layer

4.7.1 Service Layer Description

The Service Layer includes entities and relationships that pertain to HHS Information Systems, such as:

- Deployed (as-is) and future (to-be) HHS Information Systems
- Service components and their associated types and domains from the FEA Service Component Model

4.7.2 Relationship to the FEA Reference Models

The Service Layer incorporates all entities from the FEA Service Component Reference Model (SRM). The SRM describes general categories and classes of Information System services, as well as individual service components (e.g., Customer Relationship Management) that may be fulfilled by one or more Information Systems. The layer overview diagram below shows all entity types and all supported relationships for those types.

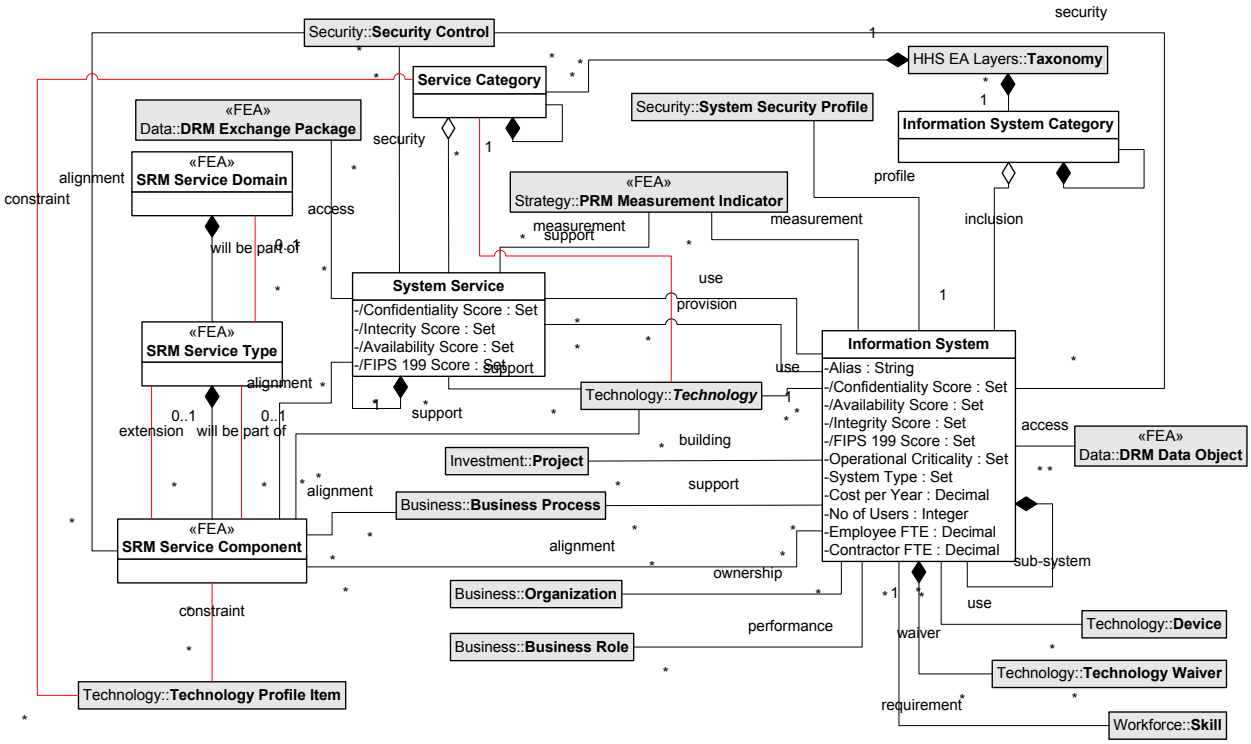


Exhibit 4-6 Service Layer Metamodel Overview Diagram

4.7.3 Entity Descriptions

Entity Name	SRM Service Domain	
Entity Description	Provides a top-level categorization of the service capabilities and categories from a business perspective	
Examples	Customer Services, Process Automation Services	
Entity Source	FEA SRM 1.0	
Unique Attributes	**Type**	**Description**
No additional attributes		

Entity Name	SRM Service Type	
Entity Description	Defines the second level of detail that describe a business-oriented service	
Examples	Tracking and Workflow, Routing and Automation	
Entity Source	FEA SRM 1.0	
Unique Attributes	**Type**	**Description**
No additional attributes		
Relationships:		
***part of**: SRM Service Domain*		
has part: SRM Service Component		
*SRM Service Component [0, *] — extends/extended by → [0, 1] SRM Service Type* This relationship models optional SRM extensions as described in the CPIC instructions from OMB		
*SRM Service Type [0, *] — will be part of/will have part → [0, 1] SRM Service Domain* Relationships of this type support modeling of future enhancements to reference models, e.g., by FHA		
*SRM Service Component [0, *] — will be part of/will have part → [0, 1] SRM Service Type* Relationships of this type support modeling of future enhancements to reference models, e.g., by FHA		

Entity Name	SRM Service Component	
Entity Description	Logical “building blocks” of a business or Information System service component	
Examples	Online Help, Scheduling	
Entity Source	FEA SRM 1.0	
Unique Attributes	**Type**	**Description**
No additional attributes		
Relationships:		
part of: SRM Service Type, or Service Layer Container		
*Information System [0, *] — aligns to/is context for → SRM Service Component [0, *]* This is typically modeled as part of information system modeling		
*Business Process [0, *] — aligns to/is context for → SRM Service Component [0, *]* This is typically modeled as part of process modeling		
*Security Control [0, *] — aligns to/is context for → SRM Service Component [0, *]* This is typically modeled as part of security control modeling		
*System Service [0, *] — aligns to/is context for → SRM Service Component [0, *]* This is typically modeled as part of information system modeling		
*Technology [0, *] — supports/supported by → SRM Service Component [0, *]* This is typically modeled as part of technology modeling		

Entity Name	SRM Service Component
*SRM Service Component [0, *] — extends/extended by → [0, 1] SRM Service Type* This relationship models optional SRM extensions as described in the CPIC instructions from OMB	
*SRM Service Component [0, *] — will be part of/will have part → [0, 1] SRM Service Type* Relationships of this type support modeling of future enhancements to reference models, e.g., by FHA	
*SRM Service Component [0, *] — constrains/constrained to → Technology Profile Item [0, *]* The applicability of a recommendation can be constrained in terms of SRM Service Components	

Entity Name	Information System	
Entity Description	Information System, including custom-built and COTS. An Information System may be decomposed into parts where the top node represents a system family and each component a sub-system.	
Examples	UFMS, Person Finder	
Entity Source	2002 ITA, FY05 OMB 300s	
Unique Attributes	**Type**	**Description**
Name	String	The official (or generally accepted) full name of the system, (ending with a version identifier if relevant)
Description	Text	Provide a brief description that captures the essence of the system
ID	String	Leave blank, unless your organization unit has a formal identification scheme for Information Systems
Alias	String	The official (or generally accepted) system acronym or abbreviated name form (ending with a version identifier if relevant)
Effective Date	Date	Enter the expected start of operation date for the system (version)
Expiration Date	Date	Enter the expected end of operation date for the system (version), or leave blank if not planned yet
/Confidentiality Score	low moderate high N/A	The Confidentiality Score as defined by an associated System Security Profile
/Integrity Score	low moderate high	The Integrity Score as defined by an associated System Security Profile
/Availability Score	low moderate high	The Availability Score as defined by an associated System Security Profile
/FIPS 199 Score	low moderate high	This value is derived as the highest of the confidentiality, integrity and availability scores for the current Information System.
Operational Criticality	operational criticality	Identifies whether the entity is mission critical, supportive, or important
System Type	system type	Identifies the Information System as a “Minor Information System,” “Major Information System,” “General Support System” or “National Security System”
Cost per Year	Integer	The estimated average cost per year (in thousands of dollars)

Entity Name	Information System	
No of Users	Integer	The estimated number of users
Employee FTE	Float	The number of government employees supporting the Information System
Contractor FTE	Float	The number of contractors supporting the Information System
Relationships:		
part of: Service Layer Container, or Information System Information system can be decomposed into sub-systems		
has part: Information System Information system can be decomposed into sub-systems		
Organization [0, 1] — owns/owned by → Information System [0, *] There must be one, and only one, association of this kind for every system hierarchy.		
Information System [0, *] — aligns to/is context for → SRM Service Component [0, *] There must be at least one alignment for every information system object,		
Information System [0, *] — supports/supported by → Business Process [0, *] An information system object must show support of at least one business process, unless support can be derived from sub-systems associated to processes. Associations of this type are important. They, for instance, make up the set of secondary BRM alignments for an investment.		
Information System [0, *] — uses/used by → Technology [0, *] All relevant technologies used by a system should be modeled. You need not repeat a use association if it is already defined for a provided system service or a sub-system.		
System Security Profile [1] — profiles/profiled by → Information System [1] It is strongly recommended that every system object has an associated system security profile		
Project [1] — builds/built by → Information System [0, *] There must be one, and only one, associated project for any given information system hierarchy.		
Information System [1] — provides/provided by → System Service [0, *] Providing a service means that the system is exposing an interface that other systems may use. There must be one, and only one, association of this kind for every service hierarchy provided by this system.		
*Information System [0, *] — uses/used by → System Service [0, *]* Make sure that all use-associations point to a System Service provided by another Information System object There should be one relationship for every service used by a system. (That is, every service provided by another system.)		
*Information System Category [0, *] — includes/included by → Information System [0, *]* This kind of relationship can be used to define system taxonomies in addition to the SRM.		
*Information System [0, *] — requires/required by → Skill [0, *]* The skills required to manage an information system can be identified with this kind of relationship.		
*Information System [0, *] — uses/used by → Device [0, *]* The actual server instances (and other hardware depending on the system) can be identified by this kind of relationship.		
*Information System [0, *] — uses/used by → Technology Waiver [0, *]* All technology waivers that exist for a system should be modeled, but a direct association for an information system object is only required if a waiver cannot be derived through replacement associations to other information system objects.		
*Information System [1, *] — accesses/accessed by → DRM Data Object [0, *]* There should be a relationship for every logical data entity of importance to the system. For all associations, check the appropriate C, R, U, D, and S checkboxes		
relation: Security Control [0, *] — secures/secured by → Information System [0, *] Applicable security controls can be identified with this kind of relationship.		
*PRM Measurement Indicator [0, *] — measures/measured by → Information System [0, *]* There should be a relationship for every measurement indicator of importance to the system. Indicators reflected in funding requests must absolutely be modeled.		

Entity Name	Information System
*Information System [0, *] — performs/performed by → Business Role [0, *]* Relationships of this kind can be used in detailed business process modeling, to show that a process participant role has been automated.	

Entity Name	Information System Category	
Entity Description	Category in addition to the SRM, e.g., according to the HHS EA Key Concepts document. Categories may be organized into sub-categories.	
Examples	Enterprise Wide Service.; Information System External Usage Type (Direct External Usage, No External Users, External Submissions)	
Entity Source	TBD	
Unique Attributes	**Type**	**Description**
No additional attributes		
part of: Taxonomy relation: Information System Category [0, *] — includes/included by → Information System [0, *]		

Entity Name	Service Category	
Entity Description	The Service Category type allows the modeler to define taxonomy of Services. It is intended as a complement when the when the FEA SRM taxonomy is insufficient. The root level category objects must be created as parts of a Taxonomy object. Service objects are categorized by inserting categorizes/categorized by relations between the Service object and the appropriate Service Category object.	
Examples	Will be provided when artifacts of this type are added to the model	
Entity Source	TBD	
Unique Attributes	**Type**	**Description**
No additional attributes		
part of: Taxonomy		
*Technology [0, *] — supports/supported by → Service Category [0, *]* This reflects a technology's capability to support a certain kind of service.		
*Service Category [0, *] –includes/included by → System Service [0, *]* Allows classification of system services other than the Service Reference Model		
*Service Category [0, *] — constrains/constrained to → Technology Profile Item [0, *]* The applicability of a technology recommendation can be constrained in terms of Service Categories		

Entity Name	Service Layer Container	
Entity Description	This type allows grouping of other Service Layer types. Together with other "layer container" types, it allows (and, to some extent restricts) a modeler to structure the model according to the HHS framework. (This type is not shown on the diagram above.)	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
No additional attributes		

Entity Name	System Service	
Entity Description	A service provided by or used by an Information System; must be aligned to a SRM Service Component	
Examples	Will be provided when artifacts of this type are added to the model	
Entity Source	TBD	
Unique Attributes	**Type**	**Description**
Name	String	The official (or generally accepted) full name of the system service, (ending with a version identifier if relevant)
Description	Text	A brief description that captures the essence of the service
ID	String	Leave blank, unless your organization unit has a formal identification scheme for System Services
Effective Date	Date	The (expected) start of operation date for the service (version)
Expiration Date	Date	The (expected) end of operation date for the service (version), or leave blank if not planned yet
/Confidentiality Score	Set	The maximum confidentiality score, derived from associated DRM Exchange Packages
/Integrity Score	Set	The maximum integrity score, derived from associated DRM Exchange Packages
/Availability Score	Set	The maximum availability score, derived from associated DRM Exchange Packages
/FIPS 199 Score	Set	This value is derived as the highest of the confidentiality, integrity and availability scores for the current object.
Relationships:		
part of: Service Layer Container, or System Service A service may be decomposed into sub-services.		
has part: System Service		
Information System [1] — provides/provided by → System Service [0, *] There must be one and only one association of this kind for every service hierarchy.		
System Service [0, *] — aligns to/is context for → SRM Service Component [0, *] There must be at least one association of this kind, unless alignment can be derived from child objects. A parent service object is aligned to all SRM Service components aligned to by its children.		
System Service [0, *] — uses/used by → Technology [0, *] There must be at least one association of this kind, unless all use for a service object can be derived from its children. Insert associations to technologies of importance to the service, e.g., communication protocols.		
System Service [0, *] — accesses/accessed by → DRM Exchange Package [0, *] All important information exchanges should be identified.		
*Service Category [0, *] — includes/included by → System Service [0, *]* Allows classification of system services other than the Service Reference Model		
*Information System [0, *] — uses/used by → System Service [0, *]* Associations of this type are typically created when the using information system is modeled. Only include systems that are truly using the service, not the system providing it.		
*Security Control [0, *] — secures/secured by → System Service [0, *]* Use this to model security controls that are required for a system service		

*PRM Measurement Indicator [0, *] — measures/measured by → System Service [0, *]* Review existing associations. Create new measurement indicators if performance goals have changed. Add, remove, and redirect associations as appropriate. Remember, an indicator defined for a system service is also relevant for the information system providing it, the project building the system and the investment funding the project
*Activity [0, *] — represents/has → System Service [0, 1]* Use this in swimlane diagrams to show that an activity is automated.

4.8 Technology Layer

4.8.1 Technology Layer Description

The Technology Layer includes entities and relationships that pertain to HHS technologies, such as:

- Technology specifications, both from the FEA TRM and HHS-specific standards
- Information about deployed technologies at HHS

4.8.2 Relationship to the FEA Reference Models

The Technology Layer incorporates all entities from the FEA Technical Reference Model (TRM). The layer overview diagram below shows all entity types and all supported relationships for those types.

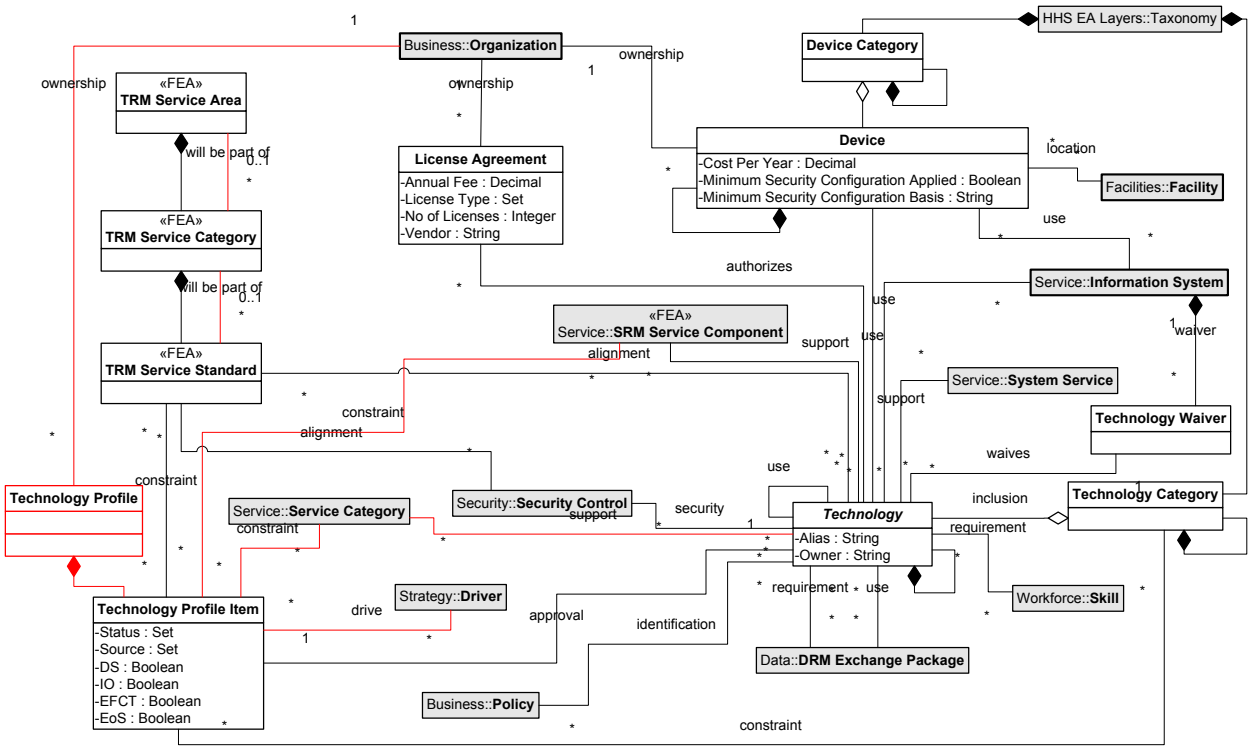


Exhibit 4-7 Technology Layer Metamodel Overview Diagram

4.8.3 Entity Descriptions

Entity Name	TRM Service Area	
Entity Description	Service Areas represent a technical tier supporting the secure construction, exchange, and delivery of Service Components.	
Examples	Service Access and Delivery, Service Platform, and Infrastructure	
Entity Source	FEA TRM 1.1	
Unique Attributes	**Type**	**Description**
No additional attributes		

Entity Name	TRM Service Category	
Entity Description	Used to classify lower levels of technologies, standards, and specifications with respect to the business or technology function they serve	
Examples	Access Channels, Service Transport	
Entity Source	FEA TRM 1.1	
Unique Attributes	**Type**	**Description**
No additional attributes		
Relationships:		
part of: TRM Service Area		
TRM Service Category [0, *] — will be part of/will have part → [0, 1] TRM Service Area Relationships of this type support modeling of future enhancements to reference models, e.g., by FHA		
TRM Service Standard [0, *] — will be part of/will have part → [0, 1] TRM Service Category Relationships of this type support modeling of future enhancements to reference models, e.g., by FHA		

Entity Name	TRM Service Standard	
Entity Description	Used to define the standards and technologies that support the Service Category	
Examples	Web Browser, Wireless/PDA	
Entity Source	FEA TRM 1.1	
Unique Attributes	**Type**	**Description**
No additional attributes		
Relationships:		
part of: TRM Service Category		
*Technology [0, *] — aligns to/is context for → TRM Service Standard [1 *]* All technology objects should be aligned to TRM Service Standards		
*TRM Service Standard [0, *] — constrains/constrained to → Technology Profile Item [0, *]* The scope of a technology recommendation can be limited by relationships of this type		
*TRM Service Standard [0, *] — will be part of/will have part → [0, 1] TRM Service Category* Relationships of this type support modeling of future enhancements to reference models, e.g., by FHA		
*Security Control [0, *] — aligns to/is context for → TRM Service Standard [0, *]*		

Entity Name	Device
Entity Description	Physical technical devices that can be organized in hierarchies

Entity Name	Device	
Examples	Computer, PBX, Laboratory Equipment	
Entity Source	TBD	
Unique Attributes	**Type**	**Description**
Cost Per Year	integer	Estimated total cost per year (including personnel, licensing, hardware, etc) (in thousands of dollars)
Minimum Security Configuration Applied	Boolean	Yes/No
Minimum Security Configuration Basis	string	This property provides the basis for the minimum security configuration.
part of: Device **relation: Organization [0, *] — owns/owned by → Device [0, 1]** relation: Device Category [0, *] — includes/included by → Device [0, *] **relation: Information System [0, *] — uses/used by → Device [0, *]** **relation: Device [0, *] — uses/used by → Technology [0, *]** **relation: Device [0, *] — located in/location of → Facility [0, *]**		

Entity Name	Device Category	
Entity Description	Categorization of device usage. New categories can be added according to HHS needs. Can be organized in category/subcategory hierarchies.	
Examples	Database server, application development server, etc.	
Entity Source	TBD	
Unique Attributes	**Type**	**Description**
No additional attributes		
part of: Taxonomy relation: Device Category [0, *] –includes/included by → Device [0, *]		

Entity Name	License Agreement	
Entity Description	Represents license agreements held by an Organization.	
Examples	Will be provided when artifacts of this type are added to the model	
Entity Source	TBD	
Unique Attributes	**Type**	**Description**
Annual Fee	integer	The annual license fee
License Type	Set	Describes the type of license, i.e., [Node locked, Node transferable, Floating, Enterprise, Unlimited]
No of Licenses	integer	The number of licenses held
Vendor	string	Name of the license vendor
Relationships:		
Organization [0, *] — owns/owned by → License Agreement [0, 1] Shows the license holder		
License Agreement [0, *] — licenses/licensed by → Technology [0, *] Shows the technologies covered by the license		

Entity Name	Technology

Entity Name	Technology	
Entity Description	Represents any product or specification that may be of relevance within HHS; can be organized in technology family hierarchies. The HHS EA Team maintains a department wide technology inventory. Inform the HHS EA Helpdesk if you identify a technology not yet included in the HHS inventory.	
Entity Source	TBD	
Unique Attributes	**Type**	**Description**
Name	String	The official (or generally accepted) trade name used by the Technology owner, (ending with a version identifier if relevant). Target and transition planning requires that all relevant versions of a technology are identified as unique objects.
Description	Text	Provide a brief description that captures the essence of the technology.
ID	String	Leave blank, unless the technology owner provides formal identification scheme such as a model and version ID
Alias	String	The official (or generally accepted) acronym or abbreviated name.
Owner	String	The organization in control of the Technology (e.g., a manufacturer or standardization body).
Relationships:		
***part of**: Technology Layer Container, Technology*		
has part: Technology Technology families can be modeled as hierarchies of technology objects		
Technology [0, *] — aligns to/is context for → TRM Service Standard [1, *] Provide at least one association of this kind		
Technology [0, *] — supports/supported by → SRM Service Component [1, *] Provide at least one association of this kind. This reflects a technology's capability to support a certain kind of service.		
*Technology [0, *] — supports/supported by → Service Category [0, *]* This reflects a technology's capability to support a certain kind of service.		
DRM Exchange Package [0, *] — uses/used by → Technology [0, *] Shows technologies known to be used for exchanges described by the exchange package. This should be modeled when the information system is described.		
DRM Exchange Package [0, *] — requires/required by → Technology [0, *] Shows technologies that are required to be used for exchanges described by the exchange package. This should be modeled when the information system is described.		
Information System [0, *] — uses/used by → Technology [0, *] Shows technologies known to be used by the system. This should be modeled when the information system is described.		
System Service [0, *] — uses/used by → Technology [0, *] Shows technologies known to be used by the system service. This should be modeled when the system service is described.		
*Technology Category [0, *] — includes/included by → Technology [0, *]* Provides a mechanism to define technology taxonomies other than the TRA and SRM.		
*Technology [0, *] — requires/required by → Skill [0, *]* Provides a mechanism do define that a certain skill is required for a particular technology.		

Entity Name	Technology
*Device [0, *] — uses/used by → Technology [0, *]* Shows technologies known to be used by a device (i.e., installed on the device). This should be modeled when the device is described.	
*Security Control [0, *] — uses/used by → Technology [0, *]* Shows that a technology can be used to implement a particular security control.	
*License Agreement [0, *] — licenses/licensed by → Technology [0, *]* Shows technologies covered by a license agreement. This should be modeled when the agreement is described.	
*Technology Profile Item [1, *] — standardizes/standardized in → Technology [1]* Provides a mechanism to define sets of technology recommendations for an organization	
*Technology Waiver [0, *] — waives/waived by → Technology [0, *]* Provides a mechanism to that a non-standard technology was formally approved for a specific use. This should be modeled when an information system is described.	
*Technology [0, *] — uses/used by → Technology [0, *]* Provides a mechanism to show technology dependencies (e.g., Metis Team Server 6 uses Oracle 9i	
*Policy [0, *] — identifies/identified by → Technology [0, *]* This relationship was primarily intended to model technologies identified in a security policy. The relationship is a candidate for retirement, since technology profile and technology profile item can be used for the same purpose	

Entity Name	Technology Category	
Entity Description	Provides a mechanism for technology classification as a complement to the FEA TRM. Can be organized in category/subcategory hierarchies.	
Examples	Telecommunications technology	
Entity Source	TBD	
Unique Attributes	**Type**	**Description**
No additional attributes		
part of: Taxonomy relation: Technology Category [0, *] — includes/included by → Technology [0, *] relation: Technology Category [0, *] — constrains/constrained to → Technology Profile Item [0, *]		

Entity Name	Technology Layer Container	
Entity Description	This type allows grouping of other technology layer types. Together with other “layer container” types, it allows (and, to some extent restricts) a modeler to structure the model according to the HHS framework. (This type is not shown on the diagram above.)	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
No additional attributes		

Entity Name	Technology Profile	
Entity Description	This type represents a set of technology recommendations for an organization. The strength of a recommendation is defined separately for each item in the set.	
Examples	HHS Technology Standards Profile 2007	
Entity Source	EA Program	
Unique Attributes	**Type**	**Description**
No additional attributes		
Relationships:		
Organization [1] — owns/owned by → Technology Profile [0, *] One and only one relationship of this type must be defined for every Technology Profile		
part of A technology profile can contain any number of technology profile items		

Entity Name	Technology Profile Item	
Entity Description	This type represents a recommendation regarding one technology. Objects of the type are items in a technology profile. A Technology Profile Item is owned by the Organization owning the parent profile. Recommendation constraints can be expressed by relationships to technology and service taxonomies.	
Examples		
Entity Source	EA Program	
Unique Attributes	**Type**	**Description**
/Technology	String	The name of a profile item is irrelevant. The name of the associated technology is sufficient for a technology profile item
Status	Set	Determines the strength of the recommendation. Valid values are [emerging, strategic, tactical, containment, retirement,]
DS	Boolean	Data Sharing — A standard or technology that enables systems to electronically exchange data (e.g., a public standard XML schema for exchanging health information)
IO	Boolean	Interoperability — A standard or technology that enables software and hardware on different machines from different vendors to communicate and share services (e.g., standards for web services)
EFCT	Boolean	Overall efficiency and effectiveness of the department as a whole — A standard or technology that enables the department to operate more efficiently and effectively (e.g., a unified email and calendaring package)
EOS	Boolean	Economies of Scale — A standard or technology that is in use at multiple OPDIVs and may be less expensive to buy in bulk (e.g., a database or application server)
Source	Set	Indicates if the recommendation was made due to an external requirement or if it was an internal decision. Valid values [External, Internal]
part of A technology profile item must be part of a technology profile		
Technology Profile Item [0, *] — standardizes/standardized in → Technology [1] Every profile item must define one, and only one, recommended technology for an organization		
*TRM Service Standard [0, *] — constrains/constrained to → Technology Profile Item [0, *]* The applicability of a recommendation can be constrained in terms of TRM Service Standards.		
*Technology Category [0, *] — constrains/constrained to → Technology Profile Item [0, *]* The applicability of a recommendation can be constrained in terms of Technology Categories		
*SRM Service Component [0, *] — constrains/constrained to → Technology Profile Item [0, *]* The applicability of a recommendation can be constrained in terms of SRM Service Components		
*Service Category [0, *] — constrains/constrained to → Technology Profile Item [0, *]* The applicability of a recommendation can be constrained in terms of Service Categories		

Entity Name	Technology Profile Item
*Technology Profile Item [0, *] — driven by/drives → Driver [0, *]*	

Entity Name	Technology Waiver	
Entity Description	Documents the approval to use a non-standard Technology for a particular Information System	
Examples	Will be provided when artifacts of this type are added to the model	
Entity Source	TBD	
Unique Attributes	**Type**	**Description**
No additional attributes		
relation: Information System [0, *] — uses/used by → Technology Waiver [1] **relation: Technology Waiver [1, *] — waives/waived by → Technology [0, *]**		

4.9 Workforce Layer

4.9.1 Workforce Layer Description

The Workforce Layer includes entities and relationships that pertain to the HHS workforce, such as Skills and Associated Training Courses.

4.9.2 Relationship to the FEA Reference Models

The Workforce Layer does not directly incorporate any FEA reference model entity types. The layer overview diagram below shows all entity types and all supported relationships for those types.

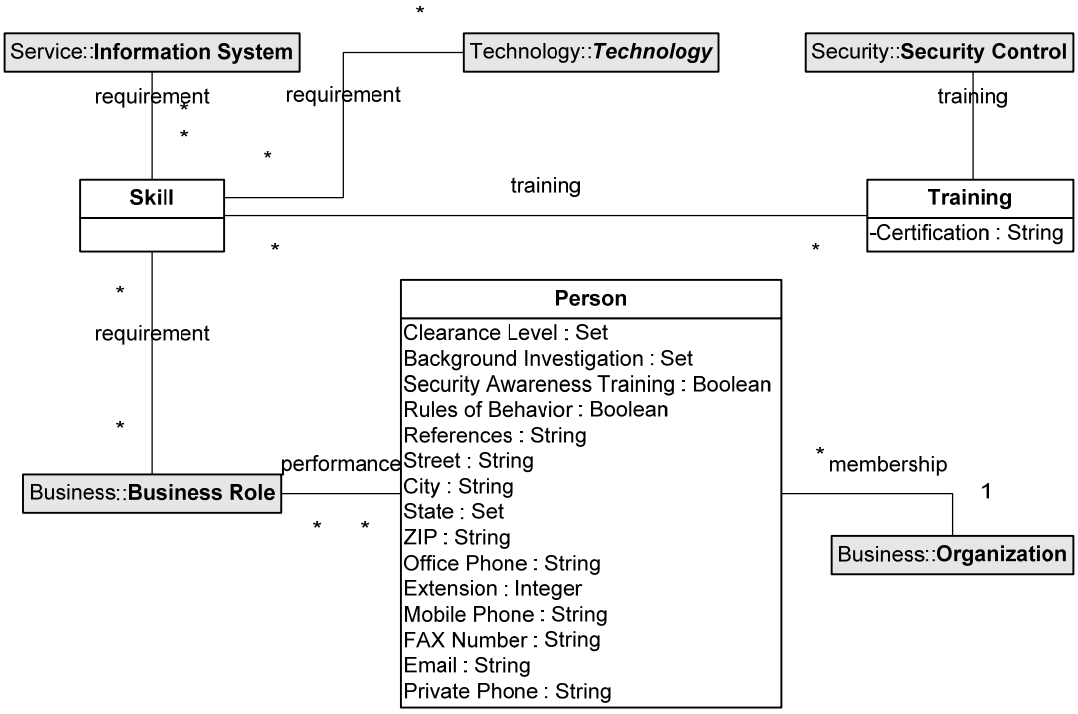


Exhibit 4-8 Workforce Layer Metamodel Overview Diagram

4.9.3 Entity Descriptions

Entity Name	Person
Entity Description	An individual by name, such as a specific HHS employee, a contractor, or any other individual of interest to EA modeling. This is a person filling one or more roles, not the role itself.
Examples	Will be provided when artifacts of this type are added to the model
Entity Source	TBD

Entity Name	Person	
Unique Attributes	**Type**	**Description**
Clearance Level	High Risk Public Trust (Level 6) Moderate Risk Public Trust (Level 5) Top Secret Access (Level 3 or 4) Secret/Confidential Access (Level 2) Low Risk/Non-Sensitive (Level 1)	Provides the clearance level assigned to the person
Background Investigation	BI NACIC (LBI) SSBI LBI NACI	Provides the type of background investigation performed
Security Awareness Training	Boolean	Has the person received annual security training?
Rules of Behavior	Boolean	Has the person signed a copy of the HHS Rules of Behavior?
References	string	Where the information about this person was derived from
Street	string	Street address
City	string	City
State	Set	State code (including territories with a non-voting congressional delegate)
ZIP	string	ZIP code
Office Phone	string	Office phone number
Extension	string	Office phone extension
Mobile Phone	string	Mobile phone number
FAX Number	string	FAX phone number
Email	string	email address
Private Phone	string	Private phone number
relation: Person [0, *] — performs/performed by → Business Role [0, *] **relation: Person [0, 1] — belongs to/includes → Organization [0, *]**		

Entity Name	Skill	
Entity Description	Ability relevant to a business process, IT service, or Technology	
Examples	Will be provided when artifacts of this type are added to the model	
Entity Source	TBD	
Unique Attributes	Type	Description

Entity Name	Skill
No additional attributes	
relation: Technology [0, *] — requires/required by → Skill [0, *] relation: Information System [0, *] — requires/required by → Skill [0, *] relation: Business Role [0, *] — requires/required by → Skill [0, *] relation: Training [0, *] — teaches/taught by → Skill [0, *]	

Entity Name	Training	
Entity Description	Educational offering that teaches skills	
Examples	Will be provided when artifacts of this type are added to the model	
Entity Source	TBD	
Unique Attributes	**Type**	**Description**
Certification	String	Certification achieved through successful completion of course
relation: Training [0, *] — teaches/taught by → Skill [0, *] relation: Training [0, *] — teaches/taught by → Security Control [0, *]		

Entity Name	Workforce Layer Container	
Entity Description	This type allows grouping of other workforce layer types. Together with other “layer container” types, it allows (and, to some extent restricts) a modeler to structure the model according to the HHS framework. (This type is not shown on the diagram above.)	
Examples		
Entity Source		
Unique Attributes	**Type**	**Description**
No additional attributes		

4.10 Facilities Layer

4.10.1 Facilities Layer Description

The Facilities Layer includes entities and relationships that pertain to HHS locations, such as:

- Physical HHS facilities and their locations
- HHS offices located within these facilities

4.10.2 Relationship to the FEA Reference Models

The Facilities Layer does not directly incorporate any FEA reference model entity types. The layer overview diagram below shows all entity types and all supported relationships for those types.

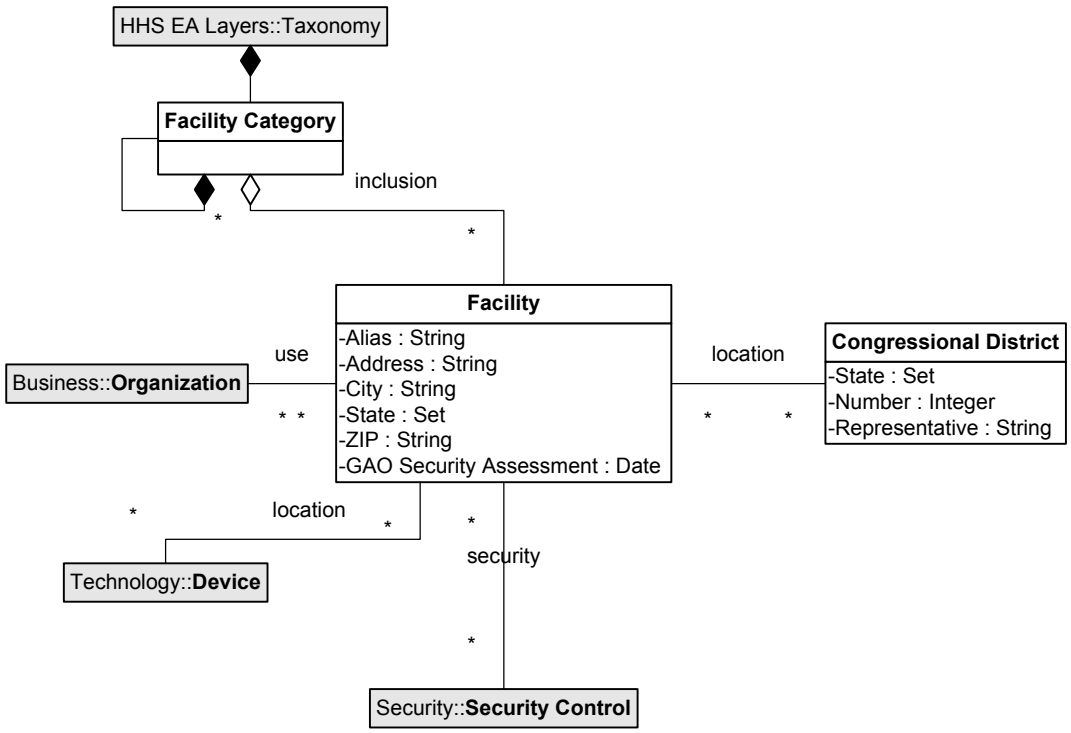


Exhibit 4-9 Facilities Layer Metamodel Overview Diagram

4.10.3 Entity Descriptions

Entity Name	Facility	
Entity Description	Physical building or site hosting one or more HHS or external functions	
Examples	Will be provided when artifacts of this type are added to the model	
Entity Source	TBD	
Unique Attributes	**Type**	**Description**
Alias	String	Use this field for an alternate short name form (e.g., an acronym or abbreviation)
Address	String	Address
City	String	City name
State	Set	State code (including territories with a non-voting congressional delegate)
ZIP	String	The postal code
GAO Security Assessment Date	Date	Provides the date the GAO Security Assessment was performed
relation: Facility Category [0, *] — includes/included by → Facility [0, *] **relation: Facility [0, *] — located in/location of → Congressional District [0, *]** relation: Organization [0, *] — located in/location of → Facility [0, *] relation: Device [0, *] — located in/location of → Facility [0, *] relation: Security Control [0, *] — secures/secured by → Facility [0, *]		

Entity Name	Facility Category	
Entity Description	This type allows a modeling organization unit such as an OPDIV to categorize Facilities according to their own needs.	
Examples	Training Facility, Primary Care Facility, University Hospital	
Entity Source	TBD	
Unique Attributes	**Type**	**Description**
No additional attributes		
part of: Taxonomy relation: Facility Category [0, *] — includes/included by → Facility [0, *]		

Entity Name	Congressional District	
Entity Description	US Congressional District	
Examples	Will be provided when artifacts of this type are added to the model	
Entity Source	TBD	
Unique Attributes	**Type**	**Description**
State	Set	State code (including territories with a non-voting congressional delegate)
Number	Integer	District number
Representative	String	Currently serving U.S. Representative for district
relation: Facility [0, *] — located in/location of → Congressional District [0, *]		

Entity Name	Facilities Layer Container	
Entity Description	This type allows grouping of other facilities layer types. Together with other "layer container" types, it allows (and, to some extent restricts) a modeler to structure the model according to the HHS framework. (This type is not shown on the diagram above.)	
Examples		
Entity Source		
Unique Attributes	**Type**	**Description**
No additional attributes		

4.11 Security Aspects

4.11.1 Security Aspects Description

The Security Aspect includes entities and relationships that pertain to HHS security. Also note that many entity types in various layers include security related attributes.

4.11.2 Relationship to the FEA Reference Models

The FEA reference models do not directly address security aspects. The layer overview diagram below shows all entity types and all supported relationships for those types.

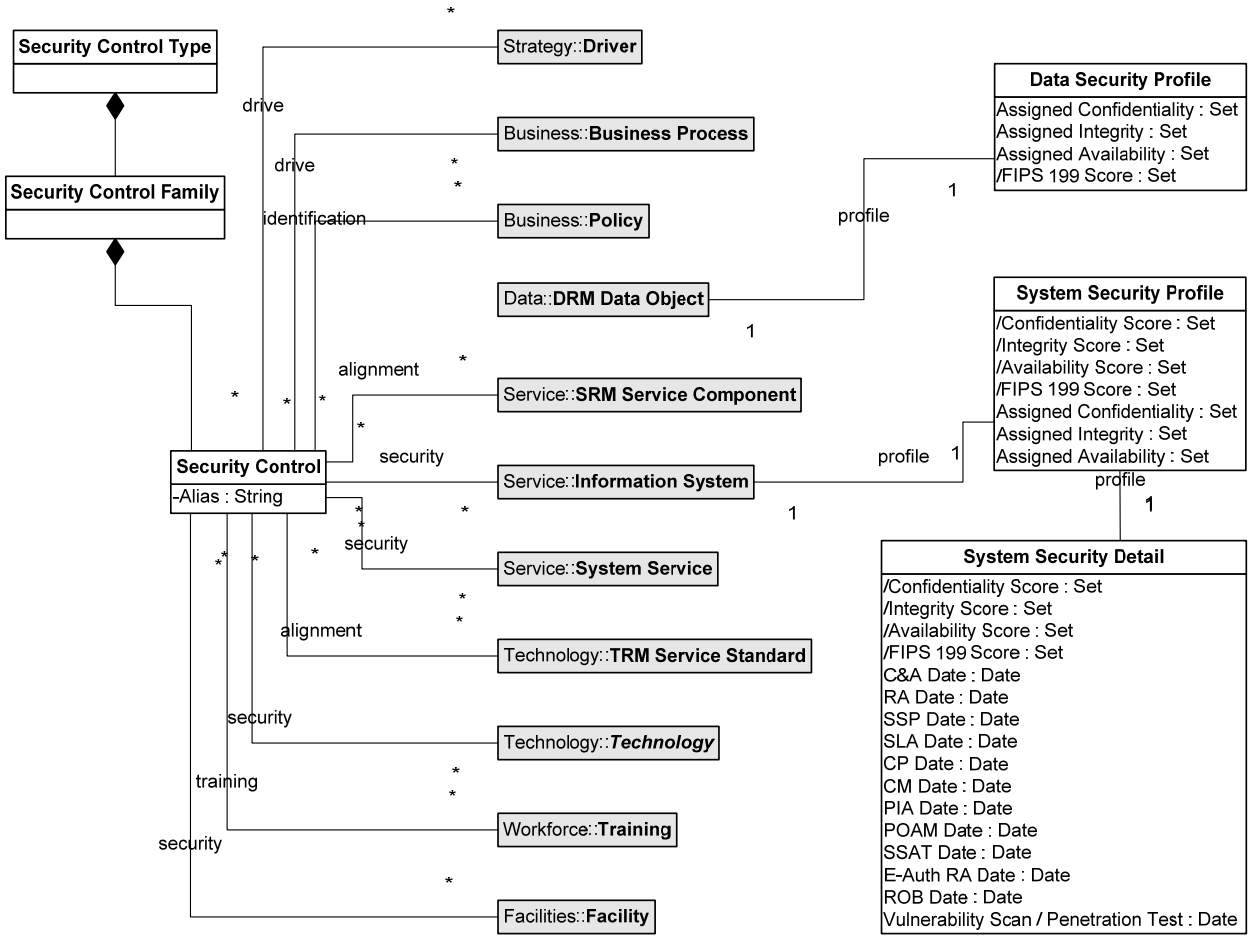


Exhibit 4-10 Security Aspect Metamodel Overview Diagram

4.11.3 Entity Descriptions

Entity Name	Data Security Profile	
Entity Description	Defines non-sensitive security related properties for an associated DRM Data Object instance. Keeping security related information in a separate object allows the data to be updated by security specialists, while DRM Data Object specialists maintain non-security information regarding data. View access to Data Security Profile properties is not restricted within the HHS EA modeling community.	
Examples		
Entity Source	Secure One, OPDIV security specialists	
Unique Attributes	**Type**	**Description**
/Confidentiality Score	low moderate high N/A	The highest confidentiality value defined for any DRM Data Property belonging to the associated DRM Data Object, or the Assigned Confidentiality for the Data Security Profile itself, if it is higher.
/Integrity Score	low moderate high	The highest integrity value defined for any DRM Data Property belonging to the associated DRM Data Object, or defined in the Data Security Profile itself.
/Availability Score	low moderate high	The highest availability value defined for any DRM Data Property belonging to the associated DRM Data Object, or assigned in the Data Security Profile itself.
/FIPS 199 Score	low moderate high	This value is derived as the highest of the confidentiality, integrity and availability scores for the current System Security Profile.
Assigned Confidentiality	low moderate high N/A	This value is used to raise the Confidentiality Score above the rolled up value (but not to lower it).
Assigned Integrity	low moderate high	This value is used to raise the Integrity Score above the rolled up value (but not to lower it).
Assigned Availability	low moderate high	This value is used to raise the Availability Score above the rolled up value (but not to lower it).
relation: Data Security Profile [0, 1] — profiles/profiled by → DRM Data Object [0, 1]		

Entity Name	Security Control	
Entity Description	Provides the minimum HHS security control needed to mitigate potential vulnerabilities.	
Examples	Data Sanitization: Low = shredding, Moderate = Degauss, High = Physical destruction	
Entity Source	NIST SP 800-53	
Unique Attributes	**Type**	**Description**
Alias	string	The control number as defined in NIST SP 800-53, e.g., AC-1, CM-7, etc. (The full security control name is captured in the Name property.)

Entity Name	Security Control
part of: Security Control Family relation: Policy [0, *] — identifies/identified by → Security Control [0, *] **relation: Security Control [0, *] — aligns to/is context for → TRM Service Standard [0, *]** **relation: Security Control [0, *] — aligns to/is context for → SRM Service Component [0, *]** relation: Security Control [0, *] — uses/used by → Technology [0, *] relation: Security Control [0, *] — secures/secured by → Information System [0, *] relation: Security Control [0, *] — secures/secured by → System Service [0, *] relation: Security Control [0, *] — secures/secured by → Facility [0, *] relation: Security Control [0, *] — driven by/drives → Business Process [0, *] relation: Security Control [0, *] — driven by/drives → Driver [0, *] relation: Training [0, *] — teaches/taught by → Security Control [0, *]	

Entity Name	Security Control Family	
Entity Description	This type provides lower level grouping of security controls	
Examples	Security Planning, Risk Assessment	
Entity Source	NIST SP 800-53	
Unique Attributes	**Type**	**Description**
No additional attributes		
part of: Security Control Type		

Entity Name	Security Control Type	
Entity Description	The Security Control Type is the highest level of grouping of Security Controls	
Examples	Operational, Management, Technical	
Entity Source	NIST SP 800-53	
Unique Attributes	**Type**	**Description**
No additional attributes		

Entity Name	Security Aspect Container	
Entity Description	This type allows grouping of other security aspect types. Together with other "layer container" types, it allows (and, to some extent restricts) a modeler to structure the model according to the HHS framework. (This type is not shown on the diagram above.)	
Examples		
Entity Source		
Unique Attributes	**Type**	**Description**
No additional attributes		

Entity Name	System Security Details	
Entity Description	Defines sensitive security related properties for an associated Information System object. Keeping security related information in a separate object allows the data to be updated by security specialists, while Information System specialists maintain non-security information. The System Security Details type is a complement to the System Security Profile type (which contains non-sensitive security related properties). This separation makes it possible to restrict access to sensitive security information while allowing non-sensitive security information to be shared.	
Examples		
Entity Source	Secure One, OPDIV security specialists	
Unique Attributes	**Type**	**Description**
/Confidentiality Score	low moderate high N/A	The Confidentiality Score as defined by an associated Data Security Profile
/Integrity Score	low moderate high	The Integrity Score as defined by an associated Data Security Profile
/Availability Score	low moderate high	The Availability Score as defined by an associated Data Security Profile
/FIPS 199 Score	low moderate high	The FIPS 199 Score as defined by an associated Data Security Profile
C&A Date	Date	The date of the C&A Package was authorized and signed
RA Date	Date	The date the Risk Analysis was approved and signed
SSP Date	Date	The date the System Security Plan was approved and signed
SLA Date	Date	The date the Service Level Agreement was approved and signed
CP Date	Date	The date the Contingency Plan was approved and signed
CM Date	Date	The date the Configuration Management Plan was approved and signed
PIA Date	Date	The date the Privacy Impact Assessment was approved and signed
POAM Date	Date	The date the Plan of Action and Milestones was approved and signed
SSAT Date	Date	The date the Self-Assessment was approved and signed
E-Auth RA Date	Date	The date the E-Auth Risk Assessment was approved and signed
ROB Date	Date	The date the Rules of Behavior was approved and signed
Vulnerability Scan / Penetration Test	Date	The date the vulnerability scan or penetration test was performed

Entity Name	System Security Details
relation: System Security Details [0, 1] — profiles/profiled by → System Security Profile [0, 1]	

Entity Name	System Security Profile	
Entity Description	Defines security related, non-sensitive properties for an associated Information System object. Keeping security related information in a separate object allows the data to be updated by security specialists, while Information System specialists maintain non-security information. View access to System Security Profile properties is not restricted within the HHS EA modeling community.	
Examples		
Entity Source	Secure One, OPDIV security specialists	
Unique Attributes	**Type**	**Description**
/Confidentiality Score	low moderate high N/A	The highest confidentiality value defined for any DRM Data Object accessed by the Information System profiled by the current System Security Profile, or the Assigned Confidentiality for the profile itself, if it is higher.
/Integrity Score	low moderate high	The highest integrity value defined for any DRM Data Object accessed by the Information System profiled by the current System Security Profile, or the Assigned Integrity for the profile itself, if it is higher.
/Availability Score	low moderate high	The highest availability value defined for any DRM Data Object accessed by the Information System profiled by the current System Security Profile, or the Assigned Availability for the profile itself, if it is higher.
/FIPS 199 Score	low moderate high	This value is derived as the highest of the confidentiality, integrity and availability scores for the current System Security Profile.
Assigned Confidentiality	low moderate high N/A	This value is used to raise the Confidentiality Score above the rolled up value (but not to lower it).
Assigned Integrity	low moderate high	This value is used to raise the Integrity Score above the rolled up value (but not to lower it).
Assigned Availability	low moderate high	This value is used to raise the Availability Score above the rolled up value (but not to lower it).
relation: System Security Details [0, 1] — profiles/profiled by → System Security Profile [0, 1] **relation: System Security Profile [0, 1] — profiles/profiled by → Information System [0, 1]**		

Appendix A ACRONYMS

ASW	Administrative Systems Work Group
BPEL4WS	Business Process Execution Language for Web Services
BPMI	Business Process Management Initiative
BPMN	Business Process Modeling Notation
BRM	The Business Reference Model (one part of FEA)
CCB	Configuration Control Board
CDC	Centers for Decease Control and Prevention
CEA	Chief Enterprise Architect
C/I/A	Informal acronym for the combined security attributes Confidentiality, Integrity and Availability
C/I/O	Center/Institute/Office is used as a common term for the organization level immediately below OPDIV (or STAFFDIV)
CIO	Chief Information Officer
CMS	Centers for Medicare and Medicaid Services
COTR	Contracting Officer's Technical Representative
COTS	Commercial Off The Shelf system
CPIC	Capital Planning and Investment Control
CSV	Comma Separated Value
DRM	The Data Reference Model (one part of FEA)
EA	Enterprise Architecture
EAMS	Enterprise Architecture Management System
EA PMO	Enterprise Architecture Program Management Office
EAPT	Enterprise Architecture Program Team, was renamed to EARB
EARB	HHS Enterprise Architecture Review Board
FDA	Food and Drug Administration
FEA	Federal Enterprise Architecture (a standard maintained by OMB)
FEAF	Federal Enterprise Architecture Framework
FHA	Federal Health Architecture
FIPS 199	Federal Information Processing Standards Publication 199 – Standards for Security Categorization of Federal Information and Information Systems
FISMA	Federal Information Security Management Act
FTF	Federal Transition Framework
FY	Fiscal Year
GPEA	Government Paperwork Elimination Act of 1998
HEAR-F	HHS EA Repository Framework
HHS	United States Department of Health & Human Services
HIPAA	Health Insurance Portability and Accountability Act of 1996
HW	Hardware

ID	Identity, as in “ID Code,” “Identity Code”
IEEE	The Institute of Electrical and Electronics Engineers, Inc
ISO	International Organization for Standardization
IT	Information Technology
ITA	U.S. Department of Health and Human Services, Information Technology Architecture, Version 1.1 April 21, 2000 (Revised September 2002)
ITIRB	HHS ITIRB — Information Technology Investment Review Board
ITU	International Telecommunication Union
MAPI	Messaging Application Protocol Interface
MWG	HHS EA Model Working Group
NARA	US National Archives & Records Administration
NIH	National Institutes of Health
NIST SP 800-53	National Institute of Standards and Technology, Draft Special Publication 800-53 “Recommended Security Controls for Federal Information Systems”
ODBC	Open Data Base Connectivity
OEA	Office of Enterprise Architecture (at the Department of Health & Human Services, Office of the Chief Information Officer)
OMB	The President’s Office of Management and Budget
OMG	Object Management Group
OPDIV	Operating Division (of HHS). The term OPDIV should be interpreted to also include STAFFDIVs throughout this document, except where a distinction is explicitly made
OS	Operating System
PBX	Private Branch Exchange
PDD	Presidential Decision Directive
PMT	Portfolio Management Tool
POP3	Post Office Protocol version 3
PRM	The Performance Reference Model (one part of FEA)
QA	Quality Assurance
SME	Subject Matter Expert
SRM	The FEA Service Component Reference Model (one part of FEA)
STAFFDIV	Staff Division (of HHS), within the Office of the Secretary
TBD	To Be Decided
TRM	The Technical Reference Model (one part of FEA)
TSP	Technical Standards Profile
UFMS	Unified Financial Management System
UML	Unified Modeling Language (A standard maintained by Object Management Group, Inc. (OMG). OMG is an open membership, not-for-profit consortium that produces and maintains computer industry specifications for interoperable enterprise applications. Its membership includes government, industry and academia.

US	United States
X.500	Information technology — Open Systems Interconnection — The Directory: Overview of concepts, models and services
XML	Extensible Markup Language

Appendix B GLOSSARY

Term	Source	Definition
"As-Is" Architecture	Treasury Enterprise Architecture Framework (TEAF)	The current state of an enterprise's architecture (see baseline architecture)
Administrative Systems Work Group (ASW)	HHS	A working group consisting of business owners and stakeholders of HHS administrative systems collaboratively providing for interoperability and data sharing among and between administrative systems
"To-Be" Architecture	TEAF	The target state of an enterprise's architecture (see target architecture)
Architectural Artifacts	Federal Enterprise Architecture Framework (FEAF)	The relevant documentation, models, diagrams, depictions, and analyses, including a baseline repository and standards and security profiles
Architecture Product	IEEE STD 610.12	The structure of components, their interrelationships, and the principles and guidelines governing their design and evolution over time
Architecture	DoD Joint Pub 1-02	A framework or structure that portrays relationships among all the elements of the subject force, system, or activity
Architecture	John Zachman	A set of design artifacts, or descriptive representations, relevant for describing an object such that it can be produced to requirements (quality) as well as maintained over the period of its useful life (change)
Architecture Repository	TEAF	An information system used to store and access architectural information, relationships among the information elements, and work products
Artifact	TEAF	An abstract representation of some aspect of an existing or to-be-built system, component, or view. Examples of individual artifacts are a graphical model, structured model, tabular data, and structured or unstructured narrative. Individual artifacts may be aggregated.
Availability	FISMA, section 3542(b)(1)(A-C))	Ensuring timely and reliable access to and use of information
Baseline Architecture		The set of products that portray the existing enterprise, the current business practices, and technical infrastructure (commonly referred to as the "As-Is" architecture)

Term	Source	Definition
Baseline Architecture	FEAF	Representation of the cumulative “as-built” or baseline of the existing architecture. The current architecture has two parts: (1) The current business architecture, which defines the current business needs being met by the current technology and (2) the current design architecture, which defines the implemented data, applications, and technology used to support the current business needs.
Business Architecture	FEAF	A component of the current and target architectures and relates to the Federal mission and goals. It contains the content of the business models and focuses on the Federal business areas and processes responding to business drivers. The business architecture defines Federal business processes, Federal information flows, and information needed to perform business functions.
Business Process Modeling Notation (BPMN)	OMG	The Business Process Modeling Notation (BPMN) specification provides a graphical notation for expressing business processes in a Business Process Diagram (BPD). The objective of BPMN is to support business process management by both technical users and business users by providing a notation that is intuitive to business users yet able to represent complex process semantics. The BPMN specification also provides a mapping between the graphics of the notation to the underlying constructs of execution languages, particularly BPEL4WS.
Capital Planning and Investment Control (CPIC) Process	OMB	A process to structure budget formulation and execution and to ensure that investments consistently support the strategic goals of the Agency.
Confidentiality	FISMA, section 3542(b)(1)(A-C))	The preservation of authorized restrictions on access and disclosure, including means for protecting personal privacy and proprietary information.
EA Team	HHS EA Framework	A term for the combination of the EA PMO Program and TS-Team which together supports the HHS Chief Enterprise Architect.
EA TS–Team	HHS EA Framework	The Enterprise Architecture Technical Support Services Team, within the HHS EA PMO; also known as the Technical Services Team (TS-Team)
Enterprise	TEAF	An organization supporting a defined business scope and mission. An enterprise is comprised of interdependent resources (people, organizations, and technology) that coordinate functions and share information in support of a common mission (or set of

Term	Source	Definition
		related missions).
Enterprise Architecture (EA)	FEAF/TEAF	A strategic information asset base that defines the business, the information necessary to operate the business, the technologies necessary to support the business operations, and the transitional processes necessary for implementing new technologies in response to the changing business needs. It is a representation or blueprint.
Enterprise Architecture	John Zachman	The set of primitive, descriptive artifacts that constitute the knowledge infrastructure of the enterprise
Enterprise Architecture Policy		A statement governing the development, implementation, and maintenance of the enterprise architecture
Enterprise Architecture Products		The graphics, models, and/or narrative that depict the enterprise environment and design
Enterprise Engineering		A multidisciplinary approach to defining and developing a system design and architecture for the organization
Enterprise Life Cycle	TEAF	The integration of management, business, and engineering life cycle processes that span the enterprise to align IT with the business
Framework	FEAF	A logical structure for classifying and organizing complex information.
Integrity	FISMA, section 3542(b)(1)(A-C))	Guarding against improper information modification or destruction, and includes ensuring information non-repudiation and authenticity
Legacy Systems	TEAF	Those systems in existence and either deployed or under development at the start of a modernization program. All legacy systems will be affected by modernization to a greater or lesser extent. Some systems will become transition systems before they are retired. Other systems will simply be retired as their functions are assumed by modernization systems. Still others will be abandoned when they become obsolete.
Metamodel	OMG	A model of models.
Methodology	TEAF	A documented approach for performing activities in a coherent, consistent, accountable, and repeatable manner.

Term	Source	Definition
Portfolio Management Tool	HHS	The information system used by HHS to manage its portfolio of IT investments. Often referred to by the name of the COTS product it uses, i.e., Prosight.
Principle	TEAF	A statement of preferred direction or practice. Principles constitute the rules, constraints, and behaviors that a bureau will abide by in its daily activities over a long period of time.
Principles	FEAF	A component of the strategic direction. In terms of the Federal Enterprise Architecture, the principles are statements that provide strategic direction to support the Federal vision, guide design decisions, serve as a tie breaker in settling disputes, and provide a basis for dispersed, but integrated, decision making.
Repository	TEAF	An information system used to store and access architectural information, relationships among the information elements, and work products.
Sequencing Plan		A document that defines the strategy for changing the enterprise from the current baseline to the target architecture. It schedules multiple, concurrent, and interdependent activities and incremental builds that will evolve the enterprise.
Spewak EA Planning Methodology	Enterprise Architecture Planning, S.H. Spewak	Formal methodology for defining architectures for the use of information in support of the business and the plan for implementing those architectures developed and published by Steven H. Spewak.
Standards	FEAF	A component of the FEAF. Standards are a set of criteria (some of which may be mandatory), voluntary guidelines, and best practices. Examples include: • Application development • Project management • Vendor management • Production operation • User support • Asset management • Technology evaluation • Architecture governance • Configuration management • Problem resolution
System	IEEE STD 610.12	A collection of components organized to accomplish a specific function or set of functions.
Systems	TEAF	Guidance, policies, and procedures for developing

Term	Source	Definition
Development Life Cycle (SDLC)		systems throughout their life cycle, including requirements, design, implementation, testing, deployment, operations, and maintenance
Target Architecture	FEAF	Representation of a desired future state or "to be built" for the enterprise within the context of the strategic direction. The target architecture is in two parts: • Target Business Architecture—defines the enterprise future business needs addressed through new or emerging technologies • Target Design Architecture—defines the future designs used to support future business needs.
Transitional EA Components		Representation of a desired state for all or part of the enterprise for an interim milestone between the baseline architecture and the target architecture. A time-sliced set of models that represent the increments in the sequence plan.
Zachman Framework	John Zachman, 1987 *IBM Journal* Article	Classic work on the concepts of information systems architecture that defined the concept of a framework and provided a 6×6 matrix of architecture views and perspectives with products.

Appendix C REFERENCES

Alias	Title
BPMN 1.0	"Business Process Modeling Notation (BPMN) Specification Final Adopted Specification dtc/06-02-01" [OMG]
FEAF	"Federal Enterprise Architecture Framework," Version 1.1, September 1999 [CIO Council]
FEAF Guide	"A Practical Guide to Federal Enterprise Architecture," Version 1.1, February 2001 (CIO Council) [CIO Council]
GAO Guide	"A Practical Guide to Federal Enterprise Architecture," Version 1.0, February 2001 [General Accounting Office]
HHS EA Configuration Management Plan	"HHS Enterprise Architecture - Configuration Management Plan for HHS EA Repository," Version 1.0, June 2005 [HHS EA Program]
Spewak	"Enterprise Architecture Planning: Developing a Blueprint for Data, Applications, and Technology," ISBN 0-471-599859 [Steven H. Spewak]
Zachman Framework	"A framework for information systems architecture," IBM Systems Journal Volume 26, No 3, 1987 [J. A. Zachman]
Framework Release Notes	"HHS Enterprise Architecture - Framework, Release Notes for version 12," version 1.0, April 20, 2007 [HHS EA Program]
Metis View Design	"HHS Enterprise Architecture – Metis View Design Guide" version 1.0, June 30, 2006 [HHS EA Program]
FTF Metamodel	"Document -- gov/06-09-03 (FTF MetaModel, UML)", September 3, 2006 [Object Management Group] (used in lieu of official release from OMB.)