United States Department of
Health & Human Services

Office of the Chief Information Officer
Enterprise Architecture

HHS Enterprise Architecture — Framework

Version 16.0
7/25/2010

Table of Contents

List of Exhibits

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"
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"

Version Number	Release Date	Summary of Changes
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
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	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.

Version Number	Release Date	Summary of Changes
13.0	6/23/2008	A new approach to investment modeling based on the experiences from FY09 and the FY10 critical partner review. Some support for segment modeling. Miscellaneous minor changes.
14.0	12/15/2008	Concepts in support of the HHS System Inventory
15.0	6/30/2009	Support for Records Management, FSAM/EASR report, better Data Architecture modeling, and retirement of not used types.
16.0	7/25/2010	Support for HHS-OCIO-2009-0004, "HHS Policy HHS-OCIO Policy for Management of the Enterprise IT System Inventory", July 28, 2009; Simplified investment modeling

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 and aspects of the framework:

Strategy
Business
Investment
Data
Service
Technology
Workforce
Facilities
Performance
Security

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 kind of data can be stored in a 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.

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[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 and a common metamodel. Each cooperating model can be updated independently, including relationships to objects in other models in the federation.

2.2 The HHS Federated EA Model

The HHS Federated EA Model allows for simultaneous updates of EA information distributed across several levels of the organization, e.g., 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 IT 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.
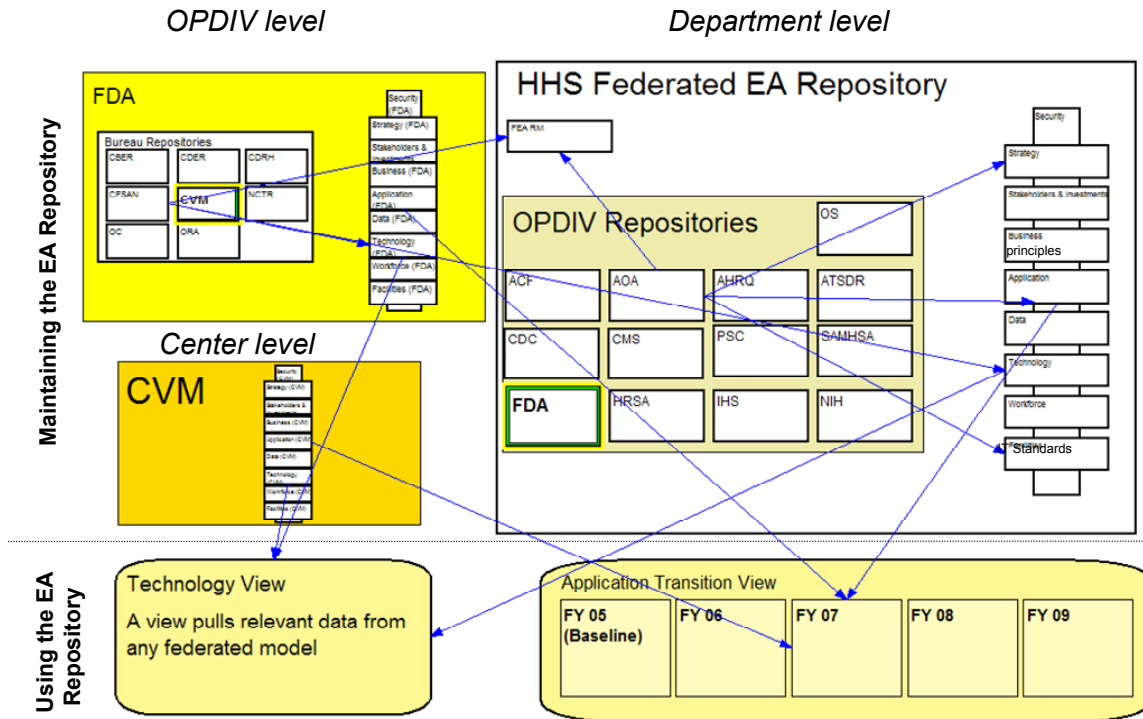
Exhibit 2-1 HHS Federated EA

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 EA framework layers are also similar to the Federal Enterprise Architecture Framework (FEAF). Four layers of the HHS EA 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.

Performance and Security aspects cut across all framework layers and are identified as their own groups within the framework. Performance and security are shown as the vertical pillars in the picture below.

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.

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[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).
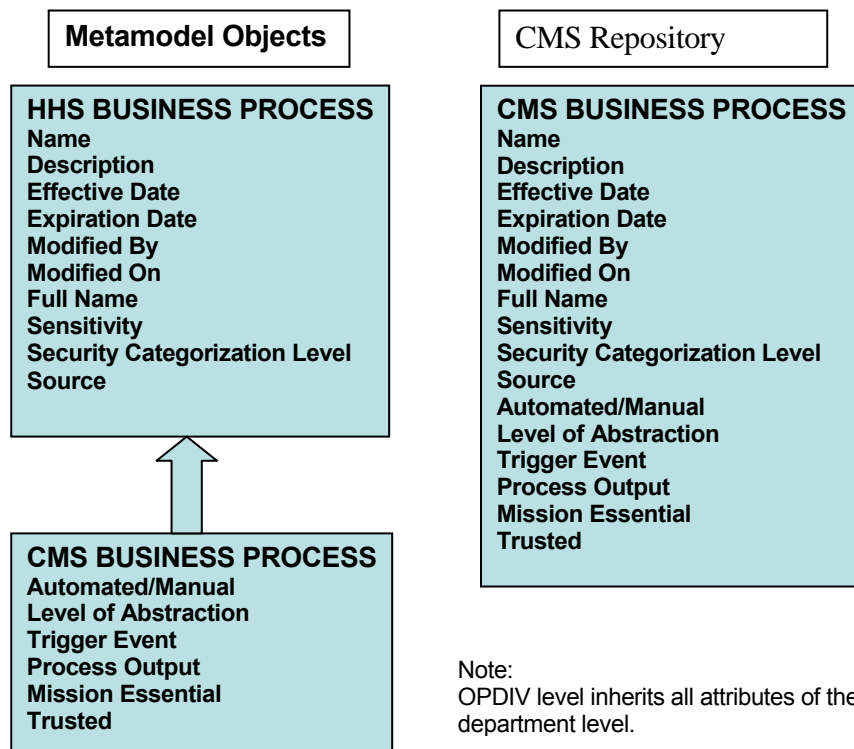
Exhibit 3-1 Metamodel Extension Example

3.1.3 Governance of the Framework

Changes to the HHS EA Repository Framework 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 the repository, including the framework. (See that document for details.) The MWG is a subgroup of the HHS Enterprise Architecture Review Board (EARB).

3.1.4 Evolving the Framework

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

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

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[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.

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.

4 HHS EA Metamodel by Layer

4.1 Changes from the Previous Release

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 - Release Notes for HHS EA Framework, version 16." 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	Exchange Category	Allows classification of Exchange type objects
2.	New	Primary Internet Domain	Identifies the primary domain for an IT System
3.	New	Secondary Internet Domain	Identifies a secondary domain for an IT System
4.	New	Investment Category	Allows classification of IT Investments
5.	New	IT Investment	Represents an investment as such, not its characteristics for a particular fiscal year
6.	New	IT System	Represents an IT System as such not the characteristics of a particular version of the system
7.	New	IT System Alias	Represents an alternative name for an IT System
8.	New	IT Service	A generalization of User and System Services (provided by an IT System)
9.	New	Partaker	A generalization of an IT System or Business Role, partaking in an information exchange
10.	New	Legacy Investment	Represents an investment for FY 2010 or earlier
11.	New	E53 Item	Represents an investment belonging to an Exhibit 53 for FY 2011 or later
12.	Retired	Records Schedule Category	Not needed for records management modeling at HHS
13.	Retired	Component Specification	Not needed after the EA Section was removed from the Exhibit 300
14.	Retired	Technology Specification	Not needed after the EA Section was removed from the Exhibit 300
15.	Retired	Component HHS (abstract type)	Not needed after the EA Section was removed from the Exhibit 300
16.	Changed	Records Schedule	Simplified. See release notes for details

No.	Kind of Change	Type Name	Change Description
17.	Changed	HHS EA Object (abstract type)	New property Comment
18.	Changed	Investment (abstract)	Changed to base type for Legacy Investment and E53 Item. See release notes for details
19.	Changed	IT System Version (formerly IT System)	Renamed to emphasize its purpose of representing a particular version of an IT System.
20.	Changed	IT Project (formerly Project)	Renamed to correspond to HHS terminology
21.	Changed	System Service	Formally redefined as specialization of the new type IT Service. No change to the concept as such
22.	Changed	User Service	Formally redefined as specialization of the new type IT Service. No change to the concept as such
23.	Changed	Exchange Package Category (formerly Exchange Category)	Renamed to allow a new type by name of Exchange Category

4.1.2 Relationship Type Changes

No.	Kind of Change	Type Name	Change Description
1.	New	1. Activity [*] – represents/represented by→ [0,1] IT Service	Replaces: Activity –represents/represented by→ System Service Activity –represents/represented by→ User Service) This is a consequence of introducing the new type IT Service.
2.	New	2. Business Role [*] –uses/used by→ [*] User Service	The relationship identifies that a particular Business Role may use a given User Service. (This is analogous to IT System uses/used by System Service)
3.	New	Document [*] – concerns/has document of concern→ [*] Activity	Identifies a document of interest for an activity in a BPMN diagram
4.	New	Exchange [*] –has context/is context for→ [0,1] IT Service	Defines the context in which an exchange takes place
5.	New	Exchange Category [*] – includes/included by→ [*] Exchange	Provides a classification mechanism for exchanges, separate from the classification that can be derived from associated DRM Exchange Packages
6.	New	Exchange Package Category [*] – includes/included by→ [*] DRM Exchange Package	Replaces: Exchange Category –includes/included by→ DRM Exchange Package

No.	Kind of Change	Type Name	Change Description
7.	New	7. Investment [*] – funds/funded by→ [*] IT Service	This relationship models a service (and indirectly the service-providing IT System), funded by an investment (for a given fiscal year).
8.	New	8. Investment [*] – funds/funded by→ [*] IT System Version	This relationship models investment funds (for a given fiscal year) that cannot be allocated to a specific IT Service provided by a system.
9.	New	9. Investment [*] – funds/funded by→ [*] Program	This relationship allows the modeling of a program as proxy for non-IT System assets funded by an investment (for a given fiscal year).
10.	New	10. IT Investment [*] –aligns to/is context for→ [1] BRM Business Subfunction	Replaces: Investment aligns to/is context for BRM Business Subfunction
11.	New	11. IT Project [*] – works on/worked on by→ [*] IT System Version	This relationship allows OPDIVS to track what projects contribute to a given version of an IT System. Relationships of this type are not required by HHS. Each OPDIV should decide whether to use this type or not.
12.	New	12. IT Service [*] – accesses/accessed by→ [*] DRM Exchange Package	Replaces: System Service –accesses/accessed by→ DRM Exchange Package User Service –accesses/accessed by→ DRM Exchange Package This is a consequence of introducing the new type IT Service.
13.	New	13. IT Service [*] – aligns to/is context for→ [1] SRM Component	Replaces: System Service –aligns to/is context for→ SRM Component User Service –aligns to/is context for→ SRM Component
14.	New	14. IT Service [*] – uses/used by→ [*] Technology	This relationship allows technology of specific importance for a given service to be modeled. Technologies that are identified by an "IT System – uses/used by→ Technology" relationship need and should not be repeated for every service provided by that system.
15.	New	15. IT System [1] – has primary domain/is primary domain for→ [0, 1] Primary Internet Domain	This relationship allows an IT System to be associated with an internet domain (and indirectly with secondary domain as well)
16.	New	16. IT System [1] – provides/provided by→ [*] IT Service	Replaces: IT System –provides/provided by→ System Service IT System –provides/provided by→ User Service This is a consequence of introducing the new type IT Service.

No.	Kind of Change	Type Name	Change Description
17.	New	17. IT System Version [1] –records/is recorded by→ [*] DRM Entity	This relationship type defines the authoritative source for a DRM Entity
18.	New	18. IT System Version [*] – references/is referenced by→ [*] DRM Entity	This relationship type defines a system of reference for a DRM Entity
19.	New	19. IT System Alias [*] – represents/represented by→ [1] IT System	This relationship type defines an alternate name for an IT System
20.	New	20. IT System Version [*] –uses/used by→ [*] Technology	This relationship identifies a technology used in a given version of a system. Technologies identified by sub-systems or by provided IT Services need and should not be repeated.
21.	New	21. IT System Version [1] –provides/is provided by→ [*] IT Service	Replaces: Information System –provides/provided by→ System Service IT System –provides/provided by→ User Service
22.	New	22. Measurement [*] –measures/measured by→ [0,1] Goal	Allow measurements to be captured where a measurement indicator can be defined
23.	New	23. Measurement [*] –measures/measured by→ [0,1] Business Process	Allow measurements to be captured where a measurement indicator can be defined
24.	New	24. Measurement [*] –measures/measured by→ [0,1] Program	Allow measurements to be captured where a measurement indicator can be defined
25.	New	25. Measurement [*] –measures/measured by→ [0,1] IT Project	Allow measurements to be captured where a measurement indicator can be defined
26.	New	26. Measurement [*] –measures/measured by→ [0,1] IT System	Allow measurements to be captured where a measurement indicator can be defined
27.	New	27. Measurement [*] –measures/measured by→ [0,1] IT Service	Allow measurements to be captured where a measurement indicator can be defined
28.	New	28. Organization [*] –co-owns/co-owned by→ [*] IT System	This relationship should be used to show that ownership of a system is formally shared between organizations

No.	Kind of Change	Type Name	Change Description
29.	New	29. Organization [*] –co- maintains /co-maintained by→ [*] IT System	This relationship should be used to show that maintenance of a system is formally shared between organizations
30.	New	30. Organization [1] –maintains/maintained by→ [*] IT System	Replaces: Organization maintains/maintained by IT System (Version)
31.	New	31. Organization [1] –owns/owned by→ [*] IT System	Replaces: Organization owns/owned by IT System (Version)
32.	New	32. Organization [1,*] –uses/used by→ [*] IT System Alias	This relationship shows where a given IT System Alias is used.
33.	New	33. Organization [*] –sponsors/sponsored by→ [*] IT Investment	Replaces: Organization HHS sponsors/sponsored by Investment
34.	New	34. Partaker [1] –receives/received by→ [*] Exchange	Replaces (and generalizes): IT System – receives/received by→ Exchange
35.	New	35. Partaker [1] –sends/sent by→ [*] Exchange	Replaces (and generalizes): IT System –sends/sent by→ Exchange
36.	New	36. Primary Internet Domain –has parts— Secondary Internet Domain	Allows the modeling of domains that are redirected to the primary domain
37.	New	37. PRM Measurement Indicator [*] –sets metric for/metric set by→ [*] IT Service	Replaces: PRM Measurement Indicator –measures/measured by→ System Service PRM Measurement Indicator –measures/measured by→ User Service This is a consequence of introducing the new type IT Service.
38.	New	38. Records Schedule [0,1] –is disposition authority for/has disposition authority→ [1] IT System	Replaces: Records Schedule –is disposition authority for/has disposition authority→ IT System (version)
39.	New	39. Segment [1] –controls/controlled by→ [*] IT Investment	Replaces: Segment controls/controlled by Investment
40.	New	40. Segment [1] –controls/controlled by→ [*] IT System	Replaces: Segment controls/controlled by IT System (Version)

No.	Kind of Change	Type Name	Change Description
41.	New	41. Security Control [*] –secures/secured by→ [*] IT Service	Replaces: Security Control –secures/secured by→ System Service. Security Control –secures/secured by→ User Service. This is a consequence of introducing the new type IT Service.
42.	New	42. Service Category [*] –includes/ included by→ [*] IT Service	This relationship allows categorization of System and User Services. Replaces: Service Category–includes/ included by→ System Service. Service Category–includes/ included by→ User Service. This is a consequence of introducing the new type IT Service.
43.	New	43. IT System – aligns to/is context for→ SRM Component	Replaces the path IT System – Component Specification – SRM Component. (Similar to IT Service aligns to SRM Component)
44.	New	44. IT System [*] – located in/location of→ [*] Facility	Replaces: IT System located in/location of Facility (for system version type)
45.	New	45. IT System [*] – uses/used by→ [*] Device	Replaces: Information System uses_used_by Device (for system version type)
46.	New	46. IT System [*] – requires/required by→ [*] Skill	Replaces: Information System requires_required_by Skill HHS (for system version type)
47.	New	47. Information System Category [*] – includes/included by→ [*] IT System	Replaces: Information System Category includes/included by Information System
48.	New	48. Person [*] – maintains/maintained by→ [*] IT System	Replaces: Person maintains/maintained by IT System (for system version type)
49.	New	49. Person [0,1] – owns/owned by→ [*] IT System	Replaces: Person owns/owned by IT System (for system version type)
50.	New	50. IT Investment supports/supported by Initiative	Replaces: Investment supports/supported by Initiative HHS
51.	New	51. IT Investment leverages/leveraged by Initiative	Replaces: Investment leverages/leveraged by Initiative HHS
52.	New	52. Investment [*] – funds/funded by→ [*] IT Project	Replaces: Investment funds/funded by Project HHS

No.	Kind of Change	Type Name	Change Description
53.	New	53. PRM Measurement Indicator [*] –sets metric for/metric set by→ [*] Business Process	Replaces: PRM Measurement Indicator measures_measured_by Business Process HHS
54.	New	54. PRM Measurement Indicator [*] –sets metric for/metric set by→ [*] Goal	Replaces: PRM Measurement Indicator measures_measured_by Goal HHS
55.	New	55. PRM Measurement Indicator [*] –sets metric for/metric set by→ [*] IT Service	Replaces: PRM Measurement Indicator measures_measured_by System Service PRM Measurement Indicator measures_measured_by User Service
56.	New	56. PRM Measurement Indicator [*] –sets metric for/metric set by→ [*] IT System	Replaces: PRM Measurement Indicator measures_measured_by Information System
57.	New	57. PRM Measurement Indicator [*] –sets metric for/metric set by→ [*] Program	Replaces: PRM Measurement Indicator measures/measured by Program
58.	New	58. PRM Measurement Indicator [*] –sets metric for/metric set by→ [*] IT Project	Replaces: PRM Measurement Indicator measures_measured_by Project HHS
59.	New	59. Investment Category [*] – includes/included by→ [*] IT Investment	Relationships of this type show that an investment is mapped to a given Investment Category. The relationship is made to the "per fiscal year" Investment type in order to preserve historical categorizations. E.g., OMB instructions tend to be modified each year and CPIC categorization for a given investment may change from one year to another.
60.	Changed	4.7.1 Records Schedule is disposition authority for/has disposition authority IT System	Cardinality changed to: Records Schedule [*] –is disposition authority for/has disposition authority→ [1] IT System
61.	Changed	4.7.2 Investment – funds/funded by→ Project	Cardinality changed to: Investment [*] –funds/funded by→ [*] Project The use of this type is not required by HHS and should be decided by each OPDIV.
62.	Changed	4.7.3 Measurement measures/measured by PRM Measurement Indicator	Cardinality changed to: Measurement [*] –measures/measured by→ [1] PRM Measurement Indicator

1.	Retired	1. Activity – represents/represented by→ System Service	Replaced by: Activity –represents/represented by→ IT Service
2.	Retired	2. Activity – represents/represented by→ User Service	Replaced by: Activity –represents/represented by→ IT Service
3.	Retired	4. Component Specification –aligns to/is context for→ SRM Component	Object type Component Specification retired
4.	Retired	5. Component Specification –has parts—Technology Specification	Object type Component Specification retired
5.	Retired	6. Component Specification – specifies/specified by→ Component	Object type Component Specification retired
6.	Retired	7. Exchange Category – includes/included by→ DRM Exchange Package	Replaced by: Exchange Package Category –includes/included by→ DRM Exchange Package
7.	Retired	8. Information System – accesses_accessed_by→ DRM Entitiy"	Replaced by one of: IT System –records/is recorded in→ DRM Entity IT System –references/is referenced in→ DRM Entity
8.	Retired	9. Information System provides/provided by System Service	Replaced by: IT System –provides/provided by→ IT Service
9.	Retired	10. Information System – provides/provided by→ User Service	Replaced by: IT System –provides/provided by→ IT Service
10.	Retired	11. IT System – receives/received by→ Exchange	Replaced by Partaker –receives/received by→ Exchange
11.	Retired	12. IT System – sends/sent by→ Exchange	Replaced by Partaker –sends/sent by→ Exchange
12.	Retired	13. Organization – owns/owned by→ Records Schedule	Not required for the current level of records management at HHS
13.	Retired	16. Project –has parts→ Component Specification	Object type Component Specification retired

14.	Retired	17. Records Schedule – extends/extended by→ Records Schedule	Extension of records schedules is no longer supported
15.	Retired	18. Records Schedule –has parts– Records Schedule	Decomposition of records schedules is no longer supported
16.	Retired	19. Records Schedule –is disposition authority for/ has disposition authority→ IT System (version)	Replaced by: Records Schedule –is disposition authority for/has disposition authority→ IT System (version independent)
17.	Retired	20. Security Control – secures/secured by→ System Service	Replaced by: Security Control –secures/secured by→ IT Service
18.	Retired	21. Security Control – secures/secured by→ User Service	Replaced by: Security Control –secures/secured by→ IT Service
19.	Retired	22. Service Category–includes/ included by→ System Service	Replaced by: Service Category –includes/ included by IT Service
20.	Retired	23. Service Category–includes/ included by→ User Service	Replaced by: Service Category –includes/ included by IT Service
21.	Retired	24. System Service – accesses/accessed by→ DRM Exchange Package	Replaced by: IT Service –accesses/accessed by→ DRM Exchange Package
22.	Retired	25. User Service – accesses/accessed by→ DRM Exchange Package	Replaced by: IT Service –accesses/accessed by→ DRM Exchange Package
23.	Retired	26. Technology Specification –aligns to/is context for→ TRM Service Standard	Object type Technology Specification retired
24.	Retired	27. Technology Specification – specifies/specified by→ Technology	Replaced by either: IT Service –uses/used by→ Technology, or IT System –uses/used by→ Technology
25.	Retired	29. Investment – aligns to/is context for→ BRM Business Subfunction	Replaced by: IT Investment – aligns to/is context for→ BRM Business Subfunction
26.	Retired	30. Organization sponsors Investment	Replaced by: Organization –sponsors/sponsored by→ IT Investment

27.	Retired	31. Organization – maintains/maintained by→ IT System (version)	Replaced by: Organization –maintains/maintained by→ IT System (version independent)
28.	Retired	32. Organization – owns/owned by→ IT System (version)	Replaced by: Organization – owns/owned by→ IT System (version independent)
29.	Retired	33. Records Schedule Category – includes/included by→ Records Schedule	Object type Records Schedule Category has been retired
30.	Retired	34. Segment – controls/controlled by→ Investment	Replaced by: Segment –controls/controlled by→ IT Investment
31.	Retired	35. Segment – controls/controlled by→ IT System (version)	Replaced by: Segment –controls/controlled by→ IT System (version independent)
32.	Retired	36. IT System – located in/location of→ Facility	Replaced by: IT System [*] –located in/location of→ [*] Facility (for system version-independent type)
33.	Retired	37. Information System – uses_used_by→ Device	Replaced by: IT System [*] –uses/used by→ [*] Device (for system version type)
34.	Retired	38. Information System – requires_required_by→ Skill HHS	Replaced by: IT System [*] –requires/required by→ [*] Skill (for system version type)
35.	Retired	39. Information System Category – includes/included by→ Information System	Replaced by: Information System Category [*] – includes/included by→ [*] IT System
36.	Retired	40. Person – maintains/maintained by→ IT System	Replaced by: Person [*] –maintains/maintained by→ [*] IT System (the version independent type)
37.	Retired	41. Person – owns/owned by→ IT System	Replaced by: Person [0,1] –owns/owned by→ [*] IT System (the version independent type)
38.	Retired	42. Investment – supports/supported by→ Initiative HHS	Replaced by: IT Investment supports/supported by Initiative
39.	Retired	43. Investment – leverages/leveraged by→ Initiative HHS	Replaced by: IT Investment leverages/leveraged by Initiative
40.	Retired	44. Service Layer Container has part IT Project	IT Project belongs to Investment Layer only
41.	Retired	45. Investment Layer Container has part Investment	Investment is part of IT Investment

42.	Retired	46. Investment funds/funded by Project HHS	Replaced by: Investment funds/funded by IT Project
43.	Retired	47. PRM Measurement Indicator measures_measured_by Business Process HHS	Replaced by: PRM Measurement Indicator sets metric for/metric set by Business Process
44.	Retired	48. PRM Measurement Indicator measures_measured_by Goal HHS	Replaced by: PRM Measurement Indicator sets metric for/metric set by Goal
45.	Retired	49. PRM Measurement Indicator measures_measured_by System Service	Replaced by: PRM Measurement Indicator sets metric for/metric set by IT Service
46.	Retired	50. PRM Measurement Indicator measures_measured_by User Service	Replaced by: PRM Measurement Indicator sets metric for/metric set by IT Service
47.	Retired	51. PRM Measurement Indicator measures_measured_by Information System	Replaced by: PRM Measurement Indicator sets metric for/metric set by IT System
48.	Retired	52. PRM Measurement Indicator measures/measured by Program	Replaced by: PRM Measurement Indicator sets metric for/metric set by Program
49.	Retired	53. PRM Measurement Indicator measures_measured_by Project HHS	Replaced by: PRM Measurement Indicator sets metric for/metric set by IT Project

4.2 Common Modeling Features

4.2.1 Common Entity and Relationship Attributes

All entity and relationship types in the HHS Enterprise Architecture Framework, have the following attributes:

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.
Model Owner	String	The acronym for the OPDIV responsible for the current entity or relationship(
Comment	Text	Optional text field.

All entity types have two additional attributes:

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 (i.e., classes, or object types) are shown as rectangles. Attributes (i.e., properties) are listed inside the rectangles. Derived attributes (i.e., calculated) are prefixed with a "/" character

Entity Type 5
-Attribute 1 : Date
-Attribute 2 : Boolean
-/Derived Attribute : String
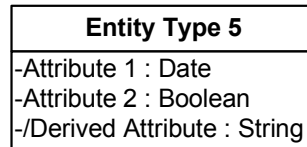
- Relations (i.e., associations) are shown as lines. Relationship multiplicity, i.e., one-to-many, many-to-many, etc. is shown with a cardinality symbol at each end of a relationship. Cardinality can be shown as a range ("0..1"), a number ("1"), or as "*" meaning "0 or many."
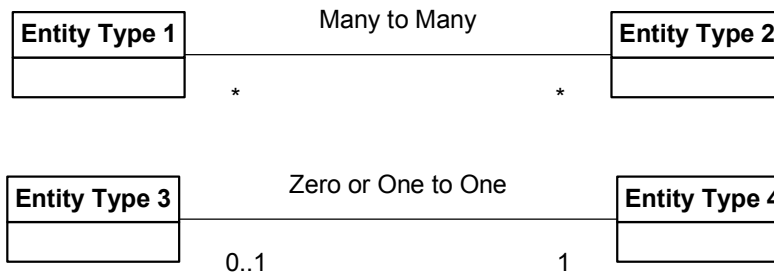
- An aggregation is a one-to-many relationship, symbolized by a line with a diamond in the aggregate end. A black diamond represents containment, which is a strict part-of relation. An open diamond is the general aggregation, which allows aggregates to share elements.
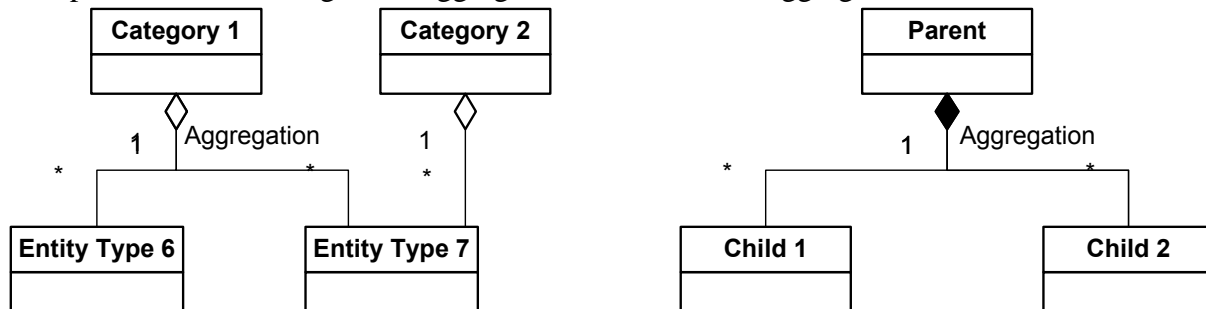
- Each diagram below is focused on one specific layer, but it also includes related entity types from other layers. Entity and relationship types added to the framework during the past quarter are shown outlined in red and with text in italics. A colored background is used to clearly indicate objects 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., /location). 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 relation-

ships are included as a compromise, recognizing that for a young EA program, or early in a given modeling activity, 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 unique attributes		
Relationships:		
part of: any layer container		
parts: Business Process Category, Data Category, Device Category, Exchange Category, Exchange Package Category, Facility Category; Information System Category, Initiative Category, Investment Category; Role Category, Service Category, Technology Category		
Organization [*] —owns/owned by→ Taxonomy [1] Every Taxonomy object must have its owner organization defined.		

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)

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 FEA reference models do not directly address strategy aspects. The layer overview diagram below shows all entity types in the Strategy Layer and all supported relationships for those types.
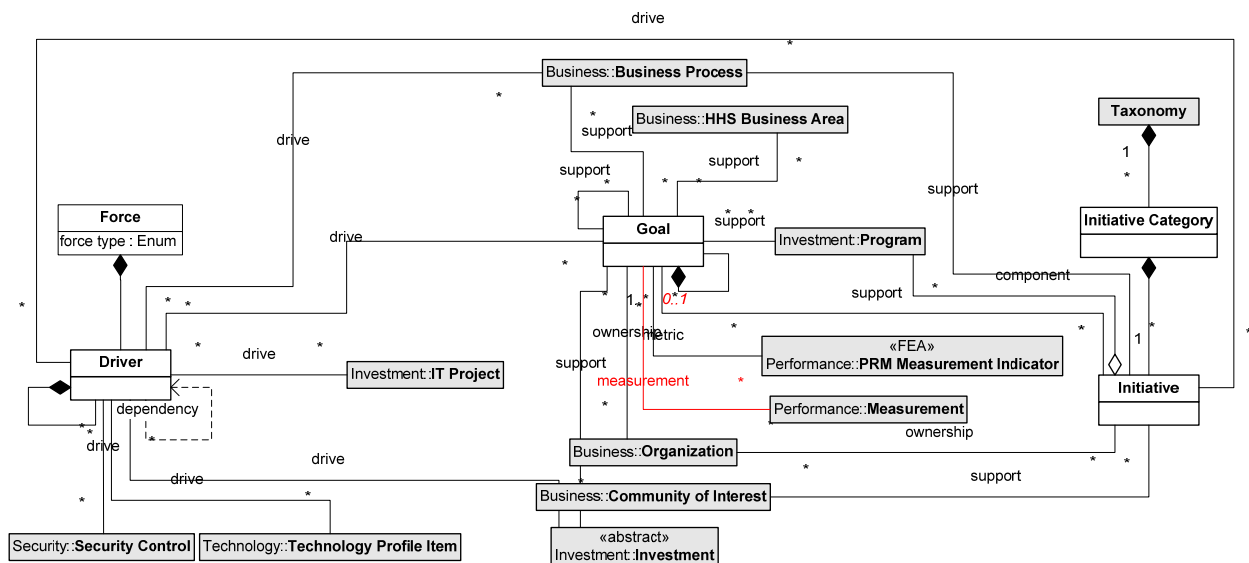
Exhibit 4-1 Strategy Layer Metamodel Overview Diagram

4.3.3 Entity Descriptions

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		
parts: 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 [*] —depends on/has dependent→ Driver [*] It may sometimes be useful to show that there exist dependencies between drivers		
Goal [*] —driven by/drives→ Driver [*] Relevant drivers should be identified when modeling a goal		
Investment [*] —driven by/drives→ Driver [*] Relevant drivers should be identified when modeling an investment		
Business Process [*] —driven by/drives→ Driver [*] Relevant drivers should be identified when modeling a business process		
Initiative [*] —driven by/drives→ Driver [*] Relevant drivers should be identified when modeling an initiative		
Security Control [*] —driven by/drives→ Driver [*] This association is unlikely to be of use in an OPDIV model, but it is modeled in the HHS Common model.		
Technology Profile Item [*] —driven by/drives→ Driver [*] Relevant drivers may be identified when modeling a technology profile		
Driver [*] –drives/driven by→ Project [*] *The type allows the modeling of drivers for a given project.*		

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.

Entity Name	Force	
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	Enumeration	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: Strategy Layer Container, or Goal

parts: 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 [*] —supports/supported by→ Goal [*]
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 [*]
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 [*] —driven by/drives→ Driver [*]
It is possible to use this kind of relationship to show drivers for a goal.

Entity Name	Goal
Program [*] —supports/supported by→ Goal [*] Relevant goals for a given program are modeled with this relationship type.	
Goal [*] —supports/supported by→ Goal [*] 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.	
Measurement [*] –measures/measured by→ Goal [0, 1] This relationship type associates a particular measurement with a measured object of type Goal. All objects of type Measurement must have one (and only one) measurement relationship.	
PRM Measurement Indicator [*] —sets metric for/metric set by→ Goal [*] An association of this kind should only used when it reflects an indicator approved by the owner of the goal/ objective.	
*Investment [*] —supports/supported by→ Goal [1, *]* Create one association for every OPDIV or HHS objective explicitly addressed by the investment documentation.	
HHS Business Area[*] —supports/supported by→ Goal [*] 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 [*] —supports/supported by→ Goal [*] Associations of this type should be created as part of business process modeling, not when the goal itself is created.	
Program –supports/supported by–> Goal	

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
Relationships:		
part of: Initiative Category		
Initiative [*] —supports/supported by→ Business Process [*] Associations of this kind should be used to show the processes that benefit from this initiative		
Initiative [*] —supports/supported by→ Goal [*] Insert associations to relevant objectives (OPDIV or HHS)		

Entity Name	Initiative
Initiative [*] —aggregates/component of→ Program [*] Associations of this kind should be used to show what programs are part of this initiative	
Initiative [*] —driven by/drives→ Driver [*] Associations of this kind should be used to show important drivers for the initiative	
IT Investment [*] – supports/supported by→ [*] Initiative A relationship of this type shows that a given investment supports an eGov, or other cross-agency, initiative.	
IT Investment [*] –leverages/leveraged by→ [*] Initiative A relationship of this type shows that a given investment leverages an eGov, or other cross-agency, initiative.	
Organization [0, 1] —owns/owned by→ Initiative [*] 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.	
Community of Interest [*] —supports/supported by→ Initiative [*] Associations of this kind can be used to show what COI exist in support of this initiative	
PRM Measurement Indicator [*] —measures/measured by→ Initiative [*] Associations of this kind should be used to model measurements that have been defined by the initiative owner	
Segment [*] – should leverage/should be leveraged by → [*] Initiative This relationship allows the HHS EA Program to identify an (FTF) initiative that should be leveraged by investments within the segment.	

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 unique attributes		
part of: Taxonomy		

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 EA framework. (This type is not shown on the diagram above.)	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
No additional unique attributes		
Relationships:		
part of: Strategy Layer Container		
parts: Driver; Force; Goal; Initiative; Initiative Category; Strategy Layer Container; Taxonomy		

4.4 Business Layer

4.4.1 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 4-2.

4.4.2 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.
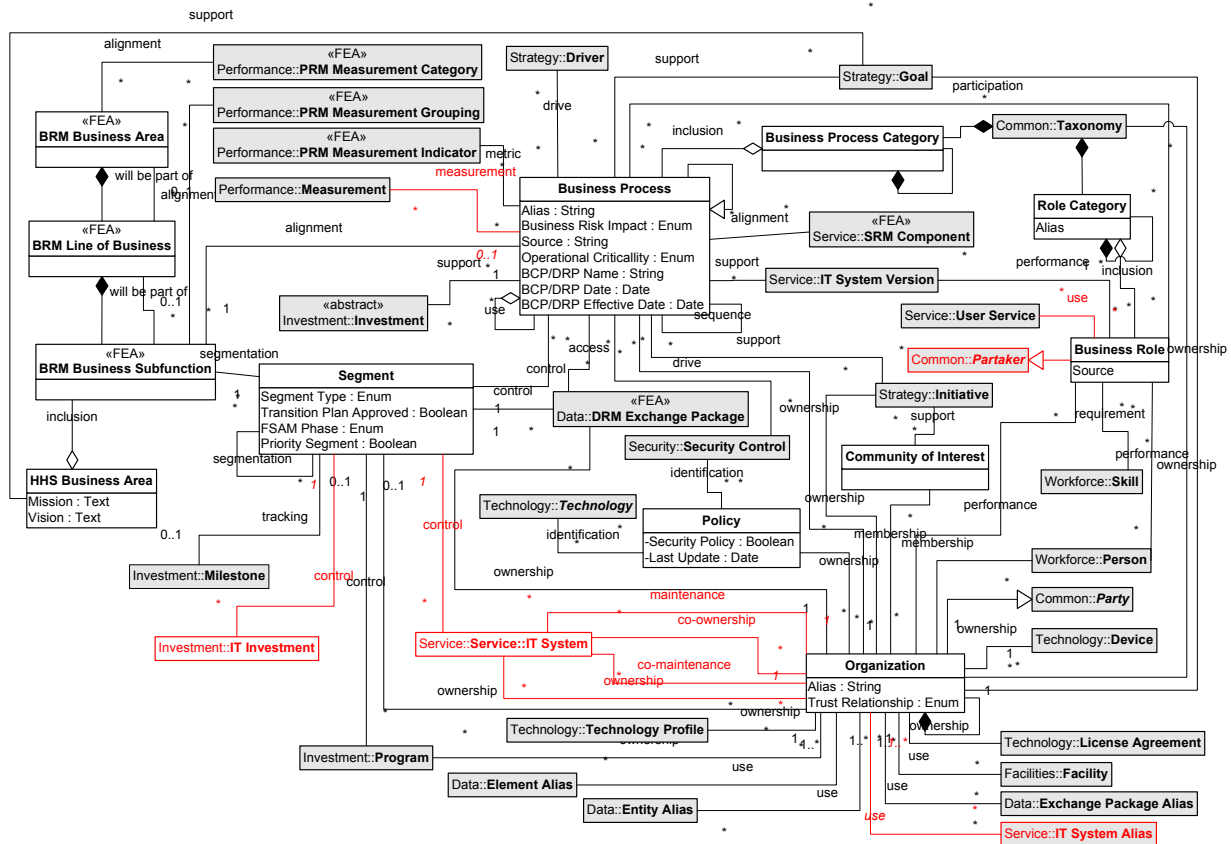
Exhibit 4-2 Business Layer Metamodel Overview Diagram

4.4.3 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
ID	String	Use the ID property to capture the unique identity code assigned by FEA to each business area

Entity Name	BRM Business Area
relation: PRM Measurement Category [*] —aligns to/is context for→ BRM Business Area [*]	

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		
parts: BRM Business Subfunction		
BRM Line of Business [*] —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 [*] —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 [*] —aligns to/is context for→ BRM Business Subfunction [*] 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 [*] —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		
Segment [*] –aligns to/is context for→ [1] BRM Business Subfunction Every segment instance should be aligned to A BRM Business Subfunction, unless it is sub segment of another Segment		
BRM Business Subfunction [*] —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		
HHS Business Area [0, 1] —includes/included by→ BRM Business Subfunction [*] A HHS Business Area should identified at least one included BRM Business Subfunction		
PRM Measurement Grouping [*] —aligns to/is context for→ BRM Business Subfunction [*] 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	The property indicates how critical the loss of the process is for the operation of the OPDIV. LOW means a limited adverse effect. MODERATE means a serious adverse effect. HIGH means a severe or catastrophic adverse effect. Allowed values: Undefined | Low | Moderate | High
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

parts: Workflow Box
A process can include a Workflow Box, which is a container for a Swimlane Diagram

Activity [*] —represents/has→ Business Process [0, 1]
A relationship of this type shows that an activity is a sub process described as a separate business process. The represented business process must be performed by the same business role as the swimlane the activity belongs to. This is logically equivalent the drawing a BPMN flow inside the activity, but allows the process description to be reused by many BPMN diagrams.

Business Role [*] —executes/executed by→ Business Process [*]
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 [*]
There should be one, and only one, ownership association. The process owner is the organization in control of the process definition.

Business Process [*] —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 [*]
Associations of this type can be used to capture variants of a generic process.

Business Process [*] —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 [*] —precedes/preceded by→ Business Process [*]
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 [*] —aligns to/is context for→ BRM Business Subfunction [*]
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 [*] —aligns to/is context for→ SRM Component [*]
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 [*] —includes/included by→ Business Process [*]
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 [*] —supports/supported by→ Business Process [*]
An IT 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.

Initiative [*] —supports/supported by→ Business Process [*]
Initiatives should model the processes they support

IT Investment [*] –aligns to/is context for→ BRM Business Subfunction [1]
This relationship shows the primary BRM alignment for an IT Investment.

Entity Name	Business Process
Business Process [*] —accesses/accessed by→ DRM Exchange Package [*] 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 [*] —driven by/drives→ Driver [*] The drivers of importance to a process can be modeled with this association.	
Security Control [*] —driven by/drives→ Business Process [*] Specific security control requirements for a process can be modeled by inserting an association to a security control object in the HHS Common model.	
Measurement [*] –measures/measured by→ Business Process [0, 1] This relationship type associates a particular measurement with a measured object of type Business Process. All objects of type Measurement must have one (and only one) measurement relationship.	
PRM Measurement Indicator [*] —sets metric for/metric set by→ Business Process [*] Approved indicators for process performance should be modeled with this association.	
Segment [1] –controls/controlled by→ [*] Business Process It is strongly recommended that every Business Process instance is associated with its controlling segment.	
Business Process [*] —supports/supported by→ Goal [*] 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 unique attributes		
Relationships:		
part of: Taxonomy		
parts: Business Process Category		
Business Process Category [*] —includes/included by→ Business Process [*] 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 unique attributes		
Relationships:		
part of: Business Layer Container		

Entity Name	Community of Interest
parts: None	
Community of Interest [*] —has member/is member of→ Organization [*]	
Community of Interest [*] —supports/supported by→ Initiative [*]	

Entity Name	HHS Business Area	
Entity Description	The set of HHS Business Areas provide a high level categorization of HHS' business. The HHS Business Areas are defined by the HHS EA Program. Each area is defined as a set of FEA BRM Subfunctions. Together, the HHS Business Areas define the BRM subset of relevance to HHS.	
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 area.
Vision	Text	Vision statement for a business area.
Relationships:		
part of: Business Layer Container		
parts: None		
HHS Business Area[*] —supports/supported by→ Goal [*] There should be no need to model associations of this kind in OPDIV models. It is possible to derive the applicable segment(s) through the associated HHS objectives and goals		
HHS Business Area [0, 1] —includes/included by→ BRM Business Subfunction [*] A HHS Business Area should identified at least one included BRM Business Subfunction		

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
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

Entity Name	Organization	
Alias	String	Use this field for an alternate short name form (e.g., an acronym or abbreviation).
Trust Relationship	Enumeration	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		
parts: 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		
Community of Interest [*] —has member/is member of→ Organization [*] Membership in a Community of Interest can be modeled with associations of this kind.		
Organization [*] —co-owns/co-owned by→ IT System [*] This relationship may be used to show that ownership of a system is formally shared between organizations.		
Organization [*] –co-maintains/co-maintained by→ [*] IT System This relationship may be used to show that maintenance of a system is formally shared between organizations.		
Organization [*] —located in/location of→ Facility [*] Facilities utilized by an organization can be modeled with associations of this kind.		
Organization [0,1] –maintains/maintained by→ [*] IT System A relationship of this type identifies a particular organization as responsible for the maintenance of a given IT System. There can be at most one relationship of this type for a given IT system.		
Organization [1] —owns/owned by→ Business Process [*] Business Process objects must have their ownership modeled.		
Organization [1] —owns/owned by→ Device [*] Device objects must have their ownership modeled.		
Organization [1] —owns/owned by→ DRM Exchange Package [*] DRM Exchange Package objects must have their ownership modeled.		
Organization [0, 1] —owns/owned by→ Goal [*] Goal objects must have their ownership modeled.		
Organization [0, 1] —owns/owned by→ Initiative [*] Ownership must be modeled for all initiatives, unless it can be derived from the ownership of the taxonomy object containing the initiative		
Organization [1] —owns/owned by→ IT System [*] A relationship of this type identifies a particular organization as the owner of a given IT System. There must be one (and only one) relationship of this type for each IT System object.		
Organization [1] —owns/owned by→ License Agreement [*] License Agreement objects must have their ownership modeled.		
Organization [1] —owns/owned by→ Policy [*] Policy objects must have their ownership modeled.		
Organization [1] —owns/owned by→ Program [*] Program objects must have their ownership modeled.		
Organization [1] —owns/owned by→ Segment [*] Segment objects must have their ownership modeled.		
Organization [1] —owns/owned by→ Taxonomy [*] Taxonomy objects must have their ownership modeled.		
Organization [1] —owns/owned by→ Technology Profile [*] One and only one relationship of this type must be defined for every Technology Profile		
Organization [*] —performs/performed by→ Business Role [*] It is possible to show what business roles an organization is capable of.		

Entity Name	Organization
Organization [1] –sponsors/sponsored by→ [*] IT Investment This relationship type identifies the sponsor organization for a given IT investment. All objects of type IT Investment must have one (and only one) relationship of this type.
Organization [*] –uses/used by→ [*] Element Alias Several organizations may use the same alias.
Organization [*] –uses/used by→ [*] Entity Alias Several organizations may use the same alias.
Organization [*] –uses/used by→ [*] Exchange Package Alias *Several organizations may use the same alias.*
*Organization [1, *] –uses/used by→ IT System Alias [*]* *Relationships of this type show where a given IT System Alias is used. Every object of type IT System Alias should have at least one relationship of this type.*
Party [0, 1] –is contact for/has contact→ DRM Element [*] Party is either a Person or an Organization
Party [0, 1] –is contact for/has contact→ [*] DRM Entity *(Party is an abstraction for either a Person or an Organization)*
Party [0, 1] –is contact for/has contact→ [*] DRM Exchange Package (Party is an abstraction for either a Person or an Organization)
Party [0, 1] –stewards/has steward→ DRM Element [*] Party is either a Person or an Organization
Party [0, 1] –stewards/has steward→ [*] DRM Entity Party is an abstraction for either a Person or an Organization object
Party [0, 1] –stewards/has steward→ [*] DRM Exchange Package *(Party is an abstraction for either a Person or an Organization)*
Person [*] —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 [*] —identifies/identified by→ Security Control [*]		
Organization [1] —owns/owned by→ Policy [*]		

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 EA framework. (This type is not shown on the diagram above.)	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	Type	Description
No additional unique attributes		
Relationships:		
part of: Business Layer Container		
parts: BRM Business Area; BRM Line of Business; BRM Business Subfunction; Business Process; Business Process Category; Community of Interest; HHS Business Area; Organization; Policy; Business Layer Container; Business Role; Role Category; Segment; None		

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	
Unique Attributes	Type	Description
Source	String	Source document or authority for information on process
Relationships:		
part of: Business Layer Container		
parts: None		
Partaker [1] –sends/sent by→ Exchange [*] A relationship of this type shows the sending party for a given information exchange. There must be one (and only one) relationship of this type for each object of type Exchange.		
Partaker [1] –receives/received by→ Exchange [*] A relationship of this type shows the receiving party for a given information exchange. There must be one (and only one) relationship of this type for each object of type Exchange.		
Business Role [*] –uses/used by→ User Service [*] The relationship identifies that a particular Business Role may use a given User Service. (This is analogous to IT System uses/used by System Service)		
relation: Business Role [*] —executes/executed by→ Business Process [*] relation: Role Category [*] —includes/included by→ Business Role [*] relation: Business Role [*] —requires/required by→ Skill [*] relation: Person [*] —performs/performed by→ Business Role [*] relation: Organization [*] —performs/performed by→ Business Role [*] relation: Information System [*] —performs/performed by→ Business Role [*] relation: Swimlane [*] —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 unique attributes		
Relationships:		
Part of: Taxonomy relation: Role Category [*] —includes/included by→ Business Role [*]		
parts: None		

Entity Name	Segment	
Entity Description	The FEA Practice Guidance provides the following definition: "Segments are individual elements of the enterprise describing core mission areas, and common or shared business services and enterprise services. Segments are defined by the enterprise architecture."	
Examples	EA Segment, CPIC Segment	
Entity Source	HHS Segment Modeling activities	
Unique Attributes	**Type**	**Description**
ID	String	The ID property should be used to hold the segment code prescribed by OMB for the FY10 Exhibit 300 submissions (cf. the "95% solution communicated by OMB on May 1, 2008)
Priority Segment	Boolean	The property shows whether a segment is among the HHS priority segments.
FSAM Phase	FSAM phase	This property tracks segment development progress according to FSAM (i.e., SEGMENT ARCHITECTURE TEMPLATE, Federal Enterprise Architecture (FEA) Segment Performance and Investment Tiger Team, September 2, 2008, Document Version 1.0). The values also correspond to segment status values required for budget submissions in OMB Memo "Enterprise Architecture (EA) Segment Architecture Codes", July 2, 2008. Allowed Values: Undefined | Notional | Planned | In-Progress | Completed
Segment Type	Enumeration	The segment type as defined by the FEA Practice Guidance. Allowed Values: [Undefined | Core Mission | Business Service | Enterprise Service]
Transition Plan Approved	Boolean	Leave blank, unless your organization unit has a formal identification scheme for measurement indicators
Relationships:		

Entity Name	Segment
part of: Business Layer Container	
parts: None	
Organization [1] —owns/owned by→ Segment [*] Segment objects must have their ownership modeled.	
Segment [*] –aligns to/is context for→ [1] BRM Business Subfunction Every segment instance should be aligned to A BRM Business Subfunction, unless it is sub segment of another Segment	
Segment [0,1] –subsegment/subsegment of→ [*] Segment Every segment instance should have a subsegment of relationship to another segment, unless it is directly aligned to a BRM Business Subfunction.	
Segment [1] –controls/controlled by→ IT Investment [*] Relationships of this type define the segment for an IT Investment, that is, the segment that best matches all the assets funded by the investment. All IT Investment objects must have one (and only one) relationship of this type.	
Segment [1] –controls/controlled by→ [*] Information System It is strongly recommended that every IT System instance is associated with its controlling segment.	
Segment [1] –controls/controlled by→ [*] Business Process It is strongly recommended that every Business Process instance is associated with its controlling segment.	
Milestone [*] –tracks/tracked by→ [1] Segment This type models milestones pertaining to a segment as such and should not be used as a proxy for milestones that can be derived from other, related, objects, such as Investments and Programs.	
Segment [*] – should leverage/should be leveraged by → [*] Initiative This relationship allows the HHS EA Program to identify an (FTF) initiative that should be leveraged by investments within the segment.	
Segment [0, 1] –controls/controlled by→ [*] Program This relationship allows mapping of programs to a segment.	

4.4.4 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.
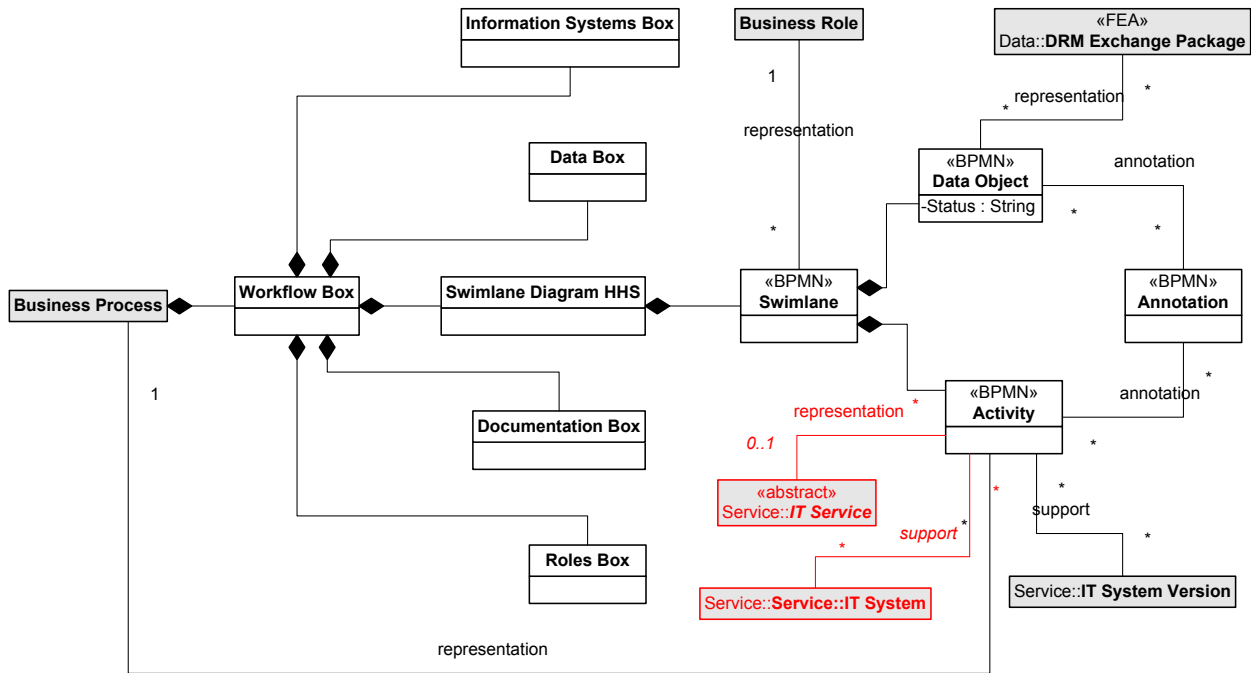
Exhibit 4-3 Business Layer Workflow Related Types

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 unique 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 IT 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

Entity Name	Information Systems Box
No additional unique attributes	
part of: Workflow Box	
parts: IT System, System Service, User Service	

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 Entity 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 unique 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 Entities 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 [*] —represents/has→ DRM Exchange Package [1, *]* All data objects should be associated with exchange packages		
*Data Object [1, *] —flow association→ Message Flow [*]* All message flows should have a Data Object associated with it.		
Data Object [*] —flow association→ Sequence Flow [*] 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

Entity Name	Documentation Box	
Unique Attributes	Type	Description
No additional unique 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 IT System with the "supports/supported by" relationship type.	
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.
Relationships:		
part of: Swimlane		
Activity [*] —represents/has→ Business Process [0, 1] A relationship of this type shows that an activity is a sub process described as a separate business process. The represented business process must be performed by the same business role as the swimlane the activity belongs to. This is logically equivalent the drawing a BPMN flow inside the activity, but allows the process description to be reused by many BPMN diagrams.		
Activity [*] —represents/has→ IT Service [0, 1] A relationship of this type shows that an activity implements an IT service (I.e., a user service or a system service). The swimlane the activity belongs to must represent an IT System, for the relationship to be meaningful.		
Information System [*] --supports/supported by→ [*] Activity Use this relationship in BPMN modeling to show what IT System supports an activity of a human process participant		

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	

Entity Name	Roles Box	
Unique Attributes	**Type**	**Description**
No additional unique 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 [*] —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 unique 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 IT Systems, Business Roles and DRM Exchange Packages.	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
No additional unique attributes		

4.5 Investment Layer

4.5.1 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 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 4-4.

4.5.2 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.
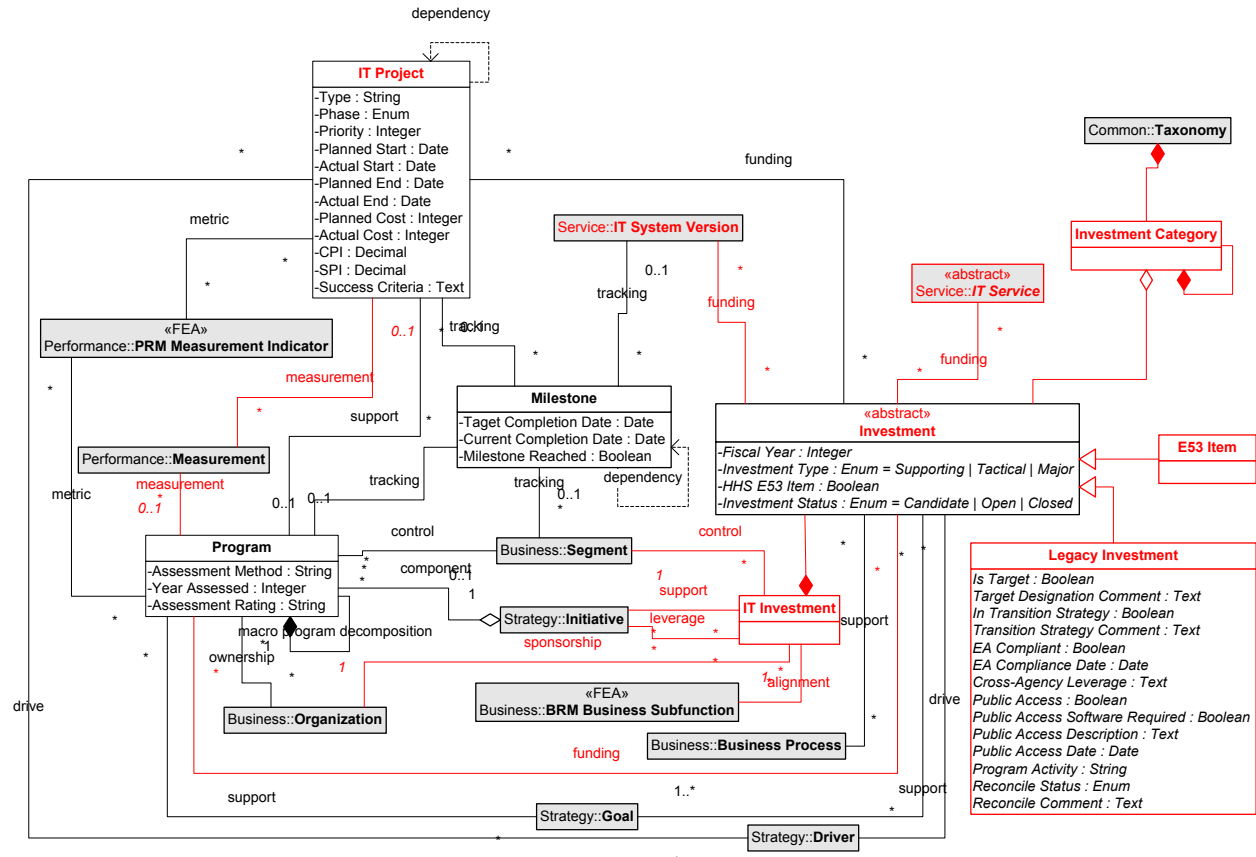
Exhibit 4-4 Investment Layer Metamodel Overview Diagram

4.5.3 Entity Descriptions

Entity Name	E53 Item	
Entity Description	The "E53 Item" type is used to capture investment information for FY11 and later. The name was chosen to distinguish it from the old type "Investment" and to emphasize that the EA Repository objects actually represent the "version" of an investment, associated with an Exhibit 53 for a given fiscal year.	
Examples	HHS Enterprise Architecture Program, HHS Unified Financial Management System	
Entity Source	PMT	
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, preferably 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.

Entity Name	E53 Item	
Expiration Date	Date	The date funding is no longer (expected to be) available.
Fiscal Year	Enumeration	The fiscal year for the investment decision. [FY07 ... FY15]
Investment Type	Enumeration	Must be assigned one of the values [Supporting, Tactical, Major]
Reconcile Status	Enumeration	This property is intended for use during the System Inventory reconciliation activity in early 2009. It allows a reviewer to record the reconcile decision as one of: Not Reconciled = 0 = No decision has been made yet, regarding this object New PMT = 10 = This object is a new, valid, object imported from PMT New SPORT = 20 = This object is a new, valid, object imported from SPORT Reconciled – Matched = 30 = This object will remain in HEAR after the reconciliation period. It represents the same "real world item" as another object. Reconciled – To Be Deleted = 40 = This object will be purged from HEAR after the reconciliation period. Reconciled – Not Matched = 50 = This object will remain in HEAR after the reconciliation period. It contains information about a unique "real world item"
Reconcile Comment	Text	This property is intended for use during the System Inventory reconciliation activity in early 2009. It allows a reviewer to enter an optional comment regarding a reconcile decision, e.g., the name of an object replacing the current object.
Relationships:		
part of: IT Investment		
parts: None		
Investment [*] —driven by/drives→ Driver [*] Use this to show important drivers for the investment		
Investment [*] —funds/funded by→ Program [*] Relationships of this type are optional. They can, for instance, be used for IT investments that do not directly fund IT systems. The relationship to a funded program serves as a proxy for the actual assets funded.		
Investment [*] —funds/funded by→ Project [*] Relationship of this type shows that funds are flowing from an investment to a project. Funding amount or ratio is not tracked.		
Investment [*] –funds/funded by→ IT Service [*] This relationship models a service (and indirectly the service-providing IT System), funded by an investment (for a given fiscal year). Relationships of this type should be used whenever relevant for the associated investment.		
Investment [*] –funds/funded by→ IT System [*] This relationship models investment funds (for a given fiscal year) that cannot be allocated to a specific IT Service provided by a system (a particular version of a system, that is).		

Entity Name	E53 Item
Investment Category [*] –includes/included by→ Investment [*] This type is used to classify investments according to an existing investment category.	
*Investment [*] —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 [*] —supports/supported by→ Business Process [*] 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.	

Entity Name	Investment Category	
Entity Description	This type is used to classify investments	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
No additional unique attributes		
Relationships:		
part of: Taxonomy; Investment Category Investment Category		
parts: Investment Category		
Investment Category [*] –includes/included by→ Investment [*] This type is used to classify investments according to an existing investment category.		

Entity Name	IT Investment	
Entity Description	The acquisition of an IT asset and the management of that asset through its life cycle after the initial acquisition. An IT Investment may consist of one or more IT projects.	
Examples	HHS Enterprise Architecture Program, HHS Unified Financial Management System	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
Name	String	This must be the same as in PMT
Description	Text	This must be 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, often the beginning of a fiscal year.
Expiration Date	Date	The date funding is no longer (expected to be) available, often the end of a fiscal year.
Investment Type	Enumeration	This must be the same as in PMT
Relationships:		
part of: Investment Layer Container		
parts: E53 Item; Legacy Investment		

Entity Name	IT Investment

IT Investment [*] – supports/supported by→ [*] Initiative A relationship of this type shows that a given investment supports an eGov, or other cross-agency, initiative.
IT Investment [*] –leverages/leveraged by→ [*] Initiative A relationship of this type shows that a given investment leverages an eGov, or other cross-agency, initiative.
Segment [1] –controls/controlled by→ IT Investment [*] Relationships of this type define the segment for an IT Investment, that is, the segment that best matches all the assets funded by the investment. All IT Investment objects must have one (and only one) relationship of this type.
Organization [1] –sponsors/sponsored by→ IT Investment [*] This relationship type identifies the sponsor organization for a given IT investment. All objects of type IT Investment must have one (and only one) relationship of this type.
IT Investment [*] –aligns to/is context for→ BRM Business Subfunction [1] This relationship shows the primary BRM alignment for an IT Investment.

Entity Name	IT Project	
Entity Description	A temporary, planned endeavor funded by an approved IT Investment; thus achieving a specific goal and creating a unique product, service, or result.	
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	This property allows the modeler to specify whether the project is mainly aimed at new development, enhancement to existing components, or maintenance.
Phase	Enumeration	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 phase values are: Undefined | Initiation | Concept | Planning | Requirements Analysis | Design | Development | Testing | Implementation | Operations & Maintenance | Disposition]
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

Entity Name	IT Project	
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
Planned Cost	Decimal	Planned cost as per project charter or baseline
Actual Cost	Decimal	Best estimate updated as of modification date
CPI [- 5.0, + 5.0]	Decimal	Cost Performance Index (use value in the interval [-5.0, +5.0])
SPI [- 5.0, + 5.0]	Decimal	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:		
part of: Investment Layer Container		
parts: None		
Driver [*] –drives/driven by→ Project [*] The type allows the modeling of drivers for a given project.		
Investment [*] —funds/funded by→ IT Project [*] Relationship of this type shows that funds are flowing from an investment to a project. Funding amount or ratio is not tracked.		
Measurement [*] –measures/measured by→ IT Project [0, 1] This relationship type associates a particular measurement with a measured object of type IT Project. All objects of type Measurement must have one (and only one) measurement relationship.		
Milestone [*] –tracks/tracked by→ Project [0, 1] Relationships of this type show milestones for IT projects. (Supports the EA Segment Report definition of May 2009.)		
PRM Measurement Indicator [*] —sets metric for/metric set by→ IT Project [*] A relationship of this type shows that a given measurement indicator defines metrics for an IT Project .		
Project [*] —depends on/has dependent→ Project [*] Use this to model other dependencies than funding. The nature of the dependency can be captured in the relationship description.		
Project [*] —supports/supported by→ Program [*] Relationships of this type show that a projects support a program (in some way).		

Entity Name	Legacy Investment	
Entity Description	The "Legacy Investment" type captures data collected for FY10 budget submissions and earlier. It is not to be used for investment data related to FY11 or later. All instances of this type are read-only in the EA Repository.	
Examples	HHS Enterprise Architecture Program, HHS Unified Financial Management System	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
Name	String	This must be the same name as in PMT

Entity Name	Legacy Investment	
Description	Text	Update as appropriate. There should be a brief explanatory description, preferably 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	Enumeration	The fiscal year for the investment decision. [FY07 ... FY15]
Investment Type	Enumeration	Must be assigned one 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.
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.)

Entity Name	Legacy Investment	
Public Access	Boolean	Check this property if the investment is funding one or more IT 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.
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.
Reconcile Status	Enumeration	This property is intended for use during the System Inventory reconciliation activity in early 2009. It allows a reviewer to record the reconcile decision as one of: Not Reconciled = 0 = No decision has been made yet, regarding this object New PMT = 10 = This object is a new, valid, object imported from PMT New SPORT = 20 = This object is a new, valid, object imported from SPORT Reconciled – Matched = 30 = This object will remain in HEAR after the reconciliation period. It represents the same "real world item" as another object. Reconciled – To Be Deleted = 40 = This object will be purged from HEAR after the reconciliation period. Reconciled – Not Matched = 50 = This object will remain in HEAR after the reconciliation period. It contains information about a unique "real world item"
Reconcile Comment	Text	This property is intended for use during the System Inventory reconciliation activity in early 2009. It allows a reviewer to enter an optional comment regarding a reconcile decision, e.g., the name of an object replacing the current object.
Relationships:		
part of: IT Investment		
parts: None		

Entity Name	Legacy Investment
Investment [*] —driven by/drives→ Driver [*] Use this to show important drivers for the investment	
Investment [*] —funds/funded by→ IT Project [*] Relationship of this type shows that funds are flowing from an investment to a project. Funding amount or ratio is not tracked.	
Investment [*] –funds/funded by→ IT Service [*] This relationship models a service (and indirectly the service-providing IT System), funded by an investment (for a given fiscal year). Relationships of this type should be used whenever relevant for the associated investment.	
Investment [*] –funds/funded by→ IT System [*] This relationship models investment funds (for a given fiscal year) that cannot be allocated to a specific IT Service provided by a system (a particular version of a system, that is).	
Investment [*] —funds/funded by→ Program [*] Relationships of this type are optional. They can, for instance, be used for IT investments that do not directly fund IT systems. The relationship to a funded program serves as a proxy for the actual assets funded.	
Investment Category [*] –includes/included by→ Investment [*] This type is used to classify investments according to an existing investment category.	
Investment [*] —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 [*] —supports/supported by→ Business Process [*] 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.	

Entity Name	Milestone	
Entity Description	Instances of this type allows milestones to be modeled for associated Programs, Projects, Segments, or IT Systems	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
Target Completion Date	Date	The planned target date when the milestone was originally decided.
Current Completion Date [date]	Date	The currently estimated target date.
Milestone Reached	Boolean	Indicator if the current target date is a planned or actual date.
Relationships:		
part of: Investment Layer Container		
parts: None		
Milestone [*] –tracks/tracked by→ IT System [0, 1] Relationships of this type show milestones for IT System Versions. (Supports the EA Segment Report definition of May 2009.)		
Milestone [*] –tracks/tracked by→ Project [0, 1] Relationships of this type show milestones for IT projects. (Supports the EA Segment Report definition of May 2009.)		

Entity Name	Milestone
Milestone [*] –tracks/tracked by→ [1] Program	
Milestone [*] –tracks/tracked by→ [1] Segment This type models milestones pertaining to a segment as such and should not be used as a proxy for milestones that can be derived from other, related, objects, such as Projects and Programs. Milestone [*] –depends on/has dependant→ [*] Milestone	

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**
Assessment Method	String	The assessment method (e.g., PART) used for this program
Year Assessed	1nteger	The year the program was last assessed
Assessment Rating	String	The overall score given at the last assessment
Relationships:		
part of: Investment Layer Container, Program		
parts: Program		
Organization [*] —owns/owned by→ Program [0, 1]		
Project [*] —supports/supported by→ Program [*] Relationships of this type show that a projects support a program (in some way).		
Program [*] —supports/supported by→ Goal [*] Relevant goals for a given program are modeled with this relationship type.		
Milestone [*] –tracks/tracked by→ [1] Program		
Initiative [*] —aggregates/component of→ Program [*]		
Program –supports/supported by–> Goal		
PRM Measurement Indicator [*] –measures/measured by–> [*] Program *This relationship allows for measurement indicators to be defined for a program.*		
Investment [*] —funds/funded by→ Program [*] Relationships of this type are optional. They can, for instance, be used for IT investments that do not directly fund IT systems. The relationship to a funded program serves as a proxy for the actual assets funded.		
Measurement [*] –measures/measured by→ Program [0, 1] This relationship type associates a particular measurement with a measured object of type Program. All objects of type Measurement must have one (and only one) measurement relationship.		
Segment [0, 1] –controls/controlled by→ [*] Program This relationship allows mapping of programs to a segment.		

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 EA framework. (This type is not shown on the diagram above.)	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	Type	Description
No additional unique attributes		
Relationships:		
part of: Investment Layer Container		
parts: E53 Item, Investment Category, Investment Layer Container; IT Investment; IT Project; Legacy Investment; Milestone; Program; Taxonomy		

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.
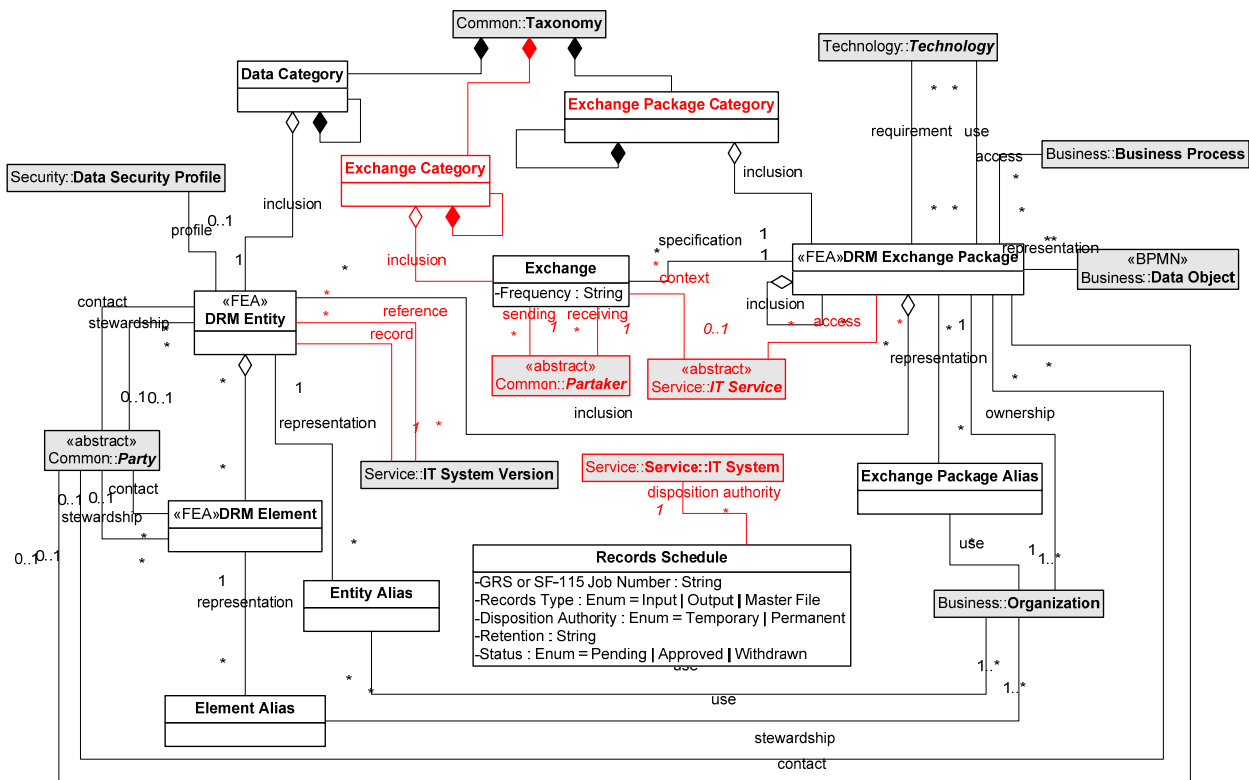
Exhibit 4-5 Data Layer Metamodel Overview Diagram

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 Entities 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 unique attributes		
Relationships:		
part of: **Taxonomy**		
parts: Data Category		
Data Category [*] —includes/included by→ DRM Entity [*]		

Entity Name	DRM Element	
Entity Description	Each instance of this type represents an atomic unit of data that has a precise meaning. Associations between DRM Elements and DRM Entities model an entity's attributes.	
Examples	Will be provided when artifacts of this type are added to the model	
Entity Source	FEA DRM	
Unique Attributes	**Type**	**Description**
No unique attributes		
Relationships:		
part of: Data Layer Container		
parts: None		
DRM Entity [*] –includes/included by→ DRM Element [*] An association between a DRM Element and a DRM Entity shows that the Entity has an attribute with the meaning specified by the element.		
Element Alias [*] –represents/represented by→ [1] DRM Element Several aliases may be created for the same element.		
Party [0, 1] –stewards/has steward→ DRM Element [*] Party is either a Person or an Organization		
Party [0, 1] –is contact for/has contact→ DRM Element [*] Party is either a Person or an Organization		

Entity Name	DRM Entity
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 Entities represent information which can be accessed by IT 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 Name	DRM Entity	
Entity Source	FEA DRM	
Unique Attributes	Type	Description
No unique attributes		
Relationships:		
part of: Data Layer Container		
parts: None		
DRM Exchange Package [*] —includes/included by→ DRM Entity [*]		
IT System [1] –records/recorded by→ DRM Entity [*] *This relationship type defines the authoritative source for a DRM Entity. It is mandatory for all instances of type DRM Entity.*		
IT System [*] references/referenced by DRM Entity [*] *This relationship type defines a system of reference for a DRM Entity. That is a system with access to a copy for reference (read only) of an entity recorded in another system.*		
Data Security Profile [0, 1] —profiles/profiled by→ DRM Entity [1]		
Data Category [*] —includes/included by→ DRM Entity [*]		
DRM Entity [*] –includes/included by→ DRM Element [*] An association between a DRM Element and a DRM Entity shows that the Entity has an attribute with the meaning specified by the element.		
Entity Alias [*] –represents/represented by→ DRM Entity [1] *Several aliases may be created for the same entity.*		
Party [0, 1] –stewards/has steward→ DRM Entity [*] Party is an abstraction for either a Person or an Organization object		
Party [0, 1] –is contact for/has contact→ DRM Entity [*] *(Party is an abstraction for either a Person or an Organization)*		

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 Entities.	
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

Entity Name	DRM Exchange Package	
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
Relationships:		
part of: Data Layer Container		
parts: None		
Business Process [*] —accesses/accessed by→ DRM Exchange Package [*] Describe all exchange packages of importance to a process. This is typically done as part of business process modeling.		
Data Object [*] —represents/has→ DRM Exchange Package [*] All Data Objects identified in a completed BPMN swimlane diagram should have associated exchange packages.		
DRM Exchange Package [*] —includes/included by→ DRM Entity [*] When known, describe the payload of an exchange package as a set of (logical) DRM Entities		
DRM Exchange Package [*] —includes/included by→ DRM Exchange Package [*] When known, describe the payload of an exchange package as a set of smaller exchange packages		
DRM Exchange Package [*] —requires/required by→ Technology [*] Describe the technologies required for this kind of exchange, e.g., a messaging protocol		
DRM Exchange Package [1] –specifies/specified by→ [*] Exchange A DRM Exchange Package specifies an information exchange that can be used in many different exchanges.		
DRM Exchange Package [*] —uses/used by→ Technology [*] Describe the technologies used for this kind of exchange, e.g., a messaging protocol		
Exchange Category [*] —includes/included by→ DRM Exchange Package [*] This relationship allows DRM Exchange Packages to be categorized, similar to categorization of DRM Entities (and many other types).		
IT Service [*] —accesses/accessed by→ DRM Exchange Package [*] The relationship identifies a given DRM Exchange Package as in scope for a given IT service.		
Exchange Package Alias [*] –represents/represented by→ DRM Exchange Package [1] *Several aliases may be created for the same Exchange Package.*		
Organization [*] —owns/owned by→ DRM Exchange Package [1] The organization in control of the exchange package definition should be modeled		
Party [0, 1] –stewards/has steward→ DRM Exchange Package [*] (Party is an abstraction for either a Person or an Organization)		
Party [0, 1] –is contact for/has contact→ DRM Exchange Package [*] (Party is an abstraction for either a Person or an Organization)		

Entity Name	Element Alias
Entity Description	Each instance of this type identifies an alternative name for a DRM Element. An alias can be shared between organizations.
Examples	N/A
Entity Source	N/A

Entity Name	Element Alias	
Unique Attributes	**Type**	**Description**
No unique attributes		
Relationships:		
part of: Data Layer Container		
parts: None		
Organization [*] –uses/used by→ Element Alias [*] Several organizations may use the same alias.		
Element Alias [*] –represents/represented by→ DRM Element [1] Several aliases may be created for the same element.		

Entity Name	Entity Alias	
Entity Description	Each instance of this type identifies an alternative name for a DRM Entity. An alias can be shared between organizations.	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
No unique attributes		
Relationships:		
part of: Data Layer Container		
parts: None		
Entity Alias [*] –represents/represented by→ DRM Entity [1] *Several aliases may be created for the same entity.*		
Organization [*] –uses/used by→ Entity Alias [*] Several organizations may use the same alias.		

Entity Name	Exchange	
Entity Description	Each instance of this type represents an information exchange between two associated systems and it identifies the transmitted information as specified by an associated DRM Exchange Package.	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
Frequency	String	Allows the modeler to enter an informal description of the frequency of the exchange.
Relationships:		
part of: Data Layer Container		
parts: None		
DRM Exchange Package [1] –specifies/specified by→ Exchange [*] A DRM Exchange Package specifies an information exchange that can be used in many different exchanges.		

Entity Name	Exchange
Exchange [*] –has context/is context for→ IT Service [0,1] This relationship shows that a given Exchange takes place in the context of a particular IT Service (i.e., either a User Service or a System Service).	
Exchange Category [*] —includes/included by→ Exchange [*] This relationship allows Exchanges to be categorized, similar to categorization of DRM Exchange Packages, DRM Entities (and many other types.)	
Partaker [1] –sends/sent by→ Exchange [*] A relationship of this type shows the sending party for a given information exchange. There must be one (and only one) relationship of this type for each object of type Exchange.	
Partaker [1] –receives/received by→ Exchange [*] A relationship of this type shows the receiving party for a given information exchange. There must be one (and only one) relationship of this type for each object of type Exchange.	

Entity Name	Exchange Package Alias	
Entity Description	Each instance of this type identifies an alternative name for a DRM Exchange Package. An alias can be shared between organizations.	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
No unique attributes		
Relationships:		
part of: Data Layer Container		
parts: None		
Organization [*] –uses/used by→ Exchange Package Alias [*] *Several organizations may use the same alias.*		
Exchange Package Alias [*] –represents/represented by→ DRM Exchange Package [1] *Several aliases may be created for the same Exchange Package.*		

Entity Name	Records Schedule	
Entity Description	A "records schedule" identifies records as either temporary or permanent. All Federal records must be scheduled (44 U.S.C. 3303) either by an agency schedule or a General Records Schedule (GRS). All records schedules must be approved by the National Archives and Records Administration (NARA).	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
ID	String	The GRS or SF-115 Job Number
Records Type	Enumeration	Indicate whether a record is input to, output from, or stored in the system? Input | Output | Master File

Entity Name	Records Schedule	
Disposition Authority	Enumeration	Indicate if records will be destroyed (temporary) or transferred to NARA (permanent).
		Temporary | Permanent
Retention	String	Indicate how long the records are retained prior to destruction (for temporary records) or transfer to NARA (for permanent records).
Status	Enumeration	Indicate if the schedule has been accepted by NARA or not.
		Pending | Approved | Withdrawn
Relationships:		
part of: Data Layer Container		
parts: None		
Records Schedule [*] –disposition authority for/ has disposition authority→ IT System [*] This relationship type can be used to identify one or more records schedules for an IT System. Each object of type Records Schedule must have one (and only one) relationship of this type.		

Entity Name	Exchange Category	
Entity Description	This type is used to define taxonomies to categorize objects of type Exchange.	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
No additional unique attributes		
Relationships:		
part of: Taxonomy; Exchange Category		
parts: Exchange Category		
Exchange Category [*] —includes/included by→ Exchange [*] This relationship allows Exchanges to be categorized, similar to categorization of DRM Exchange Packages, DRM Entities (and many other types.)		

Entity Name	Exchange Package Category	
Entity Description	Instances of this type provide a means to categorize DRM Exchange Packages.	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
No additional unique attributes		
Relationships:		
part of: Taxonomy; Exchange Package Category		
parts: Exchange Package Category		
Exchange Category [*] —includes/included by→ DRM Exchange Package [*] This relationship allows DRM Exchange Packages to be categorized, similar to categorization of DRM Entities (and many other types).		

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 EA framework. (This type is not shown on the diagram above.)	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
No additional unique attributes		
Relationships:		
part of: Data Layer Container		
parts: Data Category, Data Layer Container, DRM Element, DRM Entity, DRM Exchange Package, Element Alias, Entity Alias, Exchange, Exchange Category, Exchange Package Alias, Exchange Package Category, Records Schedule, Taxonomy		

4.7 Service Layer

4.7.1 Service Layer Description

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

- Deployed (as-is) and future (to-be) HHS IT 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 IT System services, as well as individual service components (e.g., Customer Relationship Management) that may be fulfilled by one or more IT Systems. The layer overview diagram below shows all entity types and all supported relationships for those types.
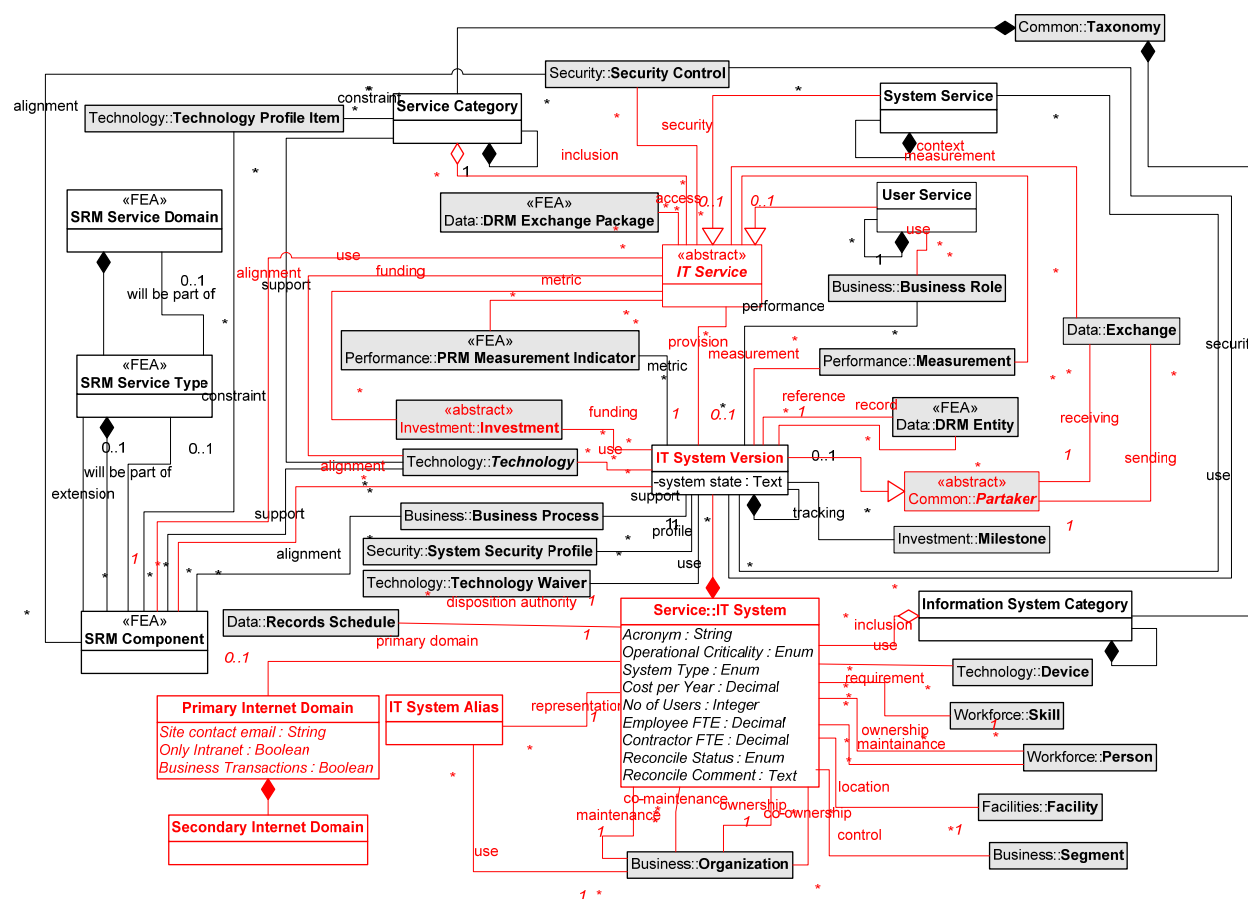

Exhibit 4-6 Service Layer Metamodel Overview Diagram

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 CRM 2.3	
Unique Attributes	Type	Description
No additional unique 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 CRM 2.3	
Unique Attributes	Type	Description
No additional unique attributes		
Relationships:		
part of: SRM Service Domain		
parts: SRM Component		
SRM Component [*] —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 [*] —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 Component [*] —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 Component	
Entity Description	Logical "building blocks" of a business or IT System service component	
Examples	Billing and Accounting, Modeling	
Entity Source	FEA CRM 2.3	
Unique Attributes	Type	Description
No additional unique attributes		
Relationships:		
part of: SRM Service Type, or Service Layer Container		
parts: None		
IT System [*] – aligns to/is context for→ SRM Component [*] Relationships of this type classifies IT Systems (versions of systems, actually) according to the OMB SRM.		
IT System aligns to/is context for SRM Component Relationships of this type classifies IT Systems (versions of systems, actually) according to the OMB SRM.		
Business Process [*] —aligns to/is context for→ SRM Component [*] This is typically modeled as part of process modeling		

Entity Name	SRM Component
Security Control [*] —aligns to/is context for→ SRM Component [*] This is typically modeled as part of security control modeling	
Technology [*] —supports/supported by→ SRM Component [*] This is typically modeled as part of technology modeling	
SRM Component [*] —extends/extended by→ [0, 1] SRM Service Type This relationship models optional SRM extensions as described in the CPIC instructions from OMB	
SRM Component [*] —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 Component [*] —constrains/constrained to→ Technology Profile Item [*] The applicability of a recommendation can be constrained in terms of SRM Components	

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.; IT System External Usage Type (Direct External Usage, No External Users, External Submissions)	
Entity Source	TBD	
Unique Attributes	**Type**	**Description**
No additional unique attributes		
Relationships:		
part of: Taxonomy; Information System Category		
parts: Information System Category		
Information System Category [*] —includes/included by→ IT System [*] Relationships of this type allow classification of IT Systems according to categories defined by HHS or OPDIV.		

Entity Name	IT System
Entity Description	Information Technology (IT) System – A discrete set of information resources organized for the collection, processing, maintenance, transmission, and dissemination of information, in accordance with defined procedures, whether automated or manual to support HHS' or OPDIV's mission. An interconnected set of information resources under the same direct management control, which shares common functionality. A system normally includes hardware, software, information, data, applications, communications, and people. Refers to a set of information resources under the same management control that share common functionality and require the same level of security controls. Note 1: An object of type IT System represents a system "as such" (version-independent). An object of type IT System can contain one or more objects of type IT System Version, each representing a version of the system. Note 2: An IT System may be decomposed into a set of subsystems, where each subsystem is a system in its own right (and not just an internal module within the parent system. A typical use of the subsystem feature would be to model a General Support System (GSS) and the systems included in it.
Examples	N/A
Entity Source	N/A

Entity Name	IT System	
Unique Attributes	**Type**	**Description**
Name	String	System names must be unique within HHS. They must also be different from investment names (due to limitations in the Portfolio Management Tool (PMT)). It is recommended that the following name pattern is used to ensure uniqueness and work around limitations in certain tools:
		Prefix consisting of {OPDIV acronym} and {Highest level OPDIV component acronym}
		Infix consisting of {Core system name, consisting of one or more words}
		Optional suffix to avoid naming collision with an investment name {the word 'System")
Acronym	String	The 'acronym' property is intended for the official (or commonly accepted) system acronym, or short name. Other alternative system names may be documented as associated objects of type IT System Alias.
ID	String	Leave blank, unless your organization unit has a formal identification scheme for IT Systems
Operational Criticality	Enumeration	The property indicates how critical the loss of the system is for the operation of the OPDIV. LOW means a limited adverse effect. MODERATE means a serious adverse effect. HIGH means a severe or catastrophic adverse effect.
		Allowed values: Undefined | Low | Moderate | High
System Type	Enumeration	Records the security classification for a system. Allowed values: Undefined | Minor Application | Major Application | General Support System | National Security System (per OMB Circular A-130)
Cost per Year	Integer	The estimated average cost per year (in thousands of dollars)
No of Users	Integer	The estimated number of users
Employee FTE	Decimal	The number of government employees supporting the IT System
Contractor FTE	Decimal	The number of contractors supporting the IT System

Entity Name	IT System	
Reconcile Status	Enumeration	This property is intended for use during the System Inventory reconciliation activity in early 2009. It allows a reviewer to record the reconcile decision as one of:
		Not Reconciled = 0 = No decision has been made yet, regarding this object
		New PMT = 10 = This object is a new, valid, object imported from PMT
		New SPORT = 20 = This object is a new, valid, object imported from SPORT
		Reconciled – Matched = 30 = This object will remain in HEAR after the reconciliation period. It represents the same "real world item" as another object.
		Reconciled – To Be Deleted = 40 = This object will be purged from HEAR after the reconciliation period.
		Reconciled – Not Matched = 50 = This object will remain in HEAR after the reconciliation period. It contains information about a unique "real world item"
Reconcile Comment	Text	This property is intended for use during the System Inventory reconciliation activity in early 2009. It allows a reviewer to enter an optional comment regarding a reconcile decision, e.g., the name of an object replacing the current object.

Relationships:
part of: Service Layer Container
parts: IT System; IT System Version
Information System Category [*] —includes/included by→ IT System [*] Relationships of this type allow classification of IT Systems according to categories defined by HHS or OPDIV.
IT System Alias [*] –alias for/has alias→ IT System [1] This relationship type defines an alternate name for an IT System. All instances of type IT System Alias must have one (and only one) relationship of this type.
IT System [1] –has primary domain/is primary domain for→ Primary Internet Domain [*] This relationship allows an IT System to be associated with an internet domain (and indirectly with secondary domain as well).
IT System [*] –located in/location of→ [*] Facility This relationship type should be used only when system association to Devices is of no interest to the model. If Devices are relevant, then use IT System -uses/used by→ Device --located in/location of→ Facility.
IT System [*] —requires/required by→ Skill [*] This type shows skill needed for development or operation of an IT System.
IT System [*] —uses/used by→ Device [*] Relationships of this type shows mapping between IT Systems and Devices, such as servers.

Entity Name	IT System
Organization [*] —co-owns/co-owned by→ IT System [*] This relationship may be used to show that ownership of a system is formally shared between organizations.	
Organization [*] –co-maintains/co-maintained by→ [*] IT System This relationship may be used to show that maintenance of a system is formally shared between organizations.	
Organization [0,1] –maintains/maintained by→ [*] IT System A relationship of this type identifies a particular organization as responsible for the maintenance of a given IT System. There can be at most one relationship of this type for a given IT system.	
Organization [1] —owns/owned by→ IT System [*] A relationship of this type identifies a particular organization as the owner of a given IT System. There must be one (and only one) relationship of this type for each IT system object.	
Person [0,1] –maintains/maintained by→ [*] IT System Relationships of this type identify persons involved in the maintenance of an IT System.	
Person [0, 1] –owns/owned by→ [*] IT System This relationship identifies the person who is the (business) owner of a given IT System.	
Records Schedule [*] –disposition authority for/ has disposition authority→ IT System [*] This relationship type can be used to identify one or more records schedules for an IT System. Each object of type Records Schedule must have one (and only one) relationship of this type.	
Segment [1] –controls/controlled by→ [*] Information System Relationships of this type define the segment for an IT System. All IT Systems objects must have one (and only one) relationship of this type.	

Entity Name	IT System Alias	
Entity Description	This type identifies an alternate name for an IT System and can be associated with organizations using that name.	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
No additional unique attributes		
Relationships:		
part of: Service Layer Container		
parts: None		
IT System Alias [*] –alias for/has alias→ IT System [1] This relationship type defines an alternate name for an IT System. All instances of type IT System Alias must have one (and only one) relationship of this type.		
*Organization [1, *] –uses/used by→ IT System Alias [*]* *Relationships of this type show where a given IT System Alias is used. Every object of type IT System Alias should have at least one relationship of this type.*		

Entity Name	IT System Version
Entity Description	Objects of this type identify specific versions of an IT System.
Examples	
Entity Source	

Entity Name	IT System Version	
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 IT Systems
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
System State	Enumeration	The System State property reflects the maturity of a given IT System object. State changes are closely linked to and governed by the EPLC process. The system state values are [Initiation | Concept | Planning | Requirements Analysis | Design | Development | Test | Implementation | Operations and Maintenance | Disposition]

Relationships:
part of: IT System, or IT System Version IT System Version can be decomposed into sub IT System Versions
parts: IT System Version IT System Version can be decomposed into sub-systems
Information System [*] —performs/performed by→ Business Role [*] Relationships of this kind can be used in detailed business process modeling, to show that a process participant role has been automated.
Information System [*] --supports/supported by→ [*] Activity Use this relationship in BPMN modeling to show what IT System supports an activity of a human process participant
Information System [*] —supports/supported by→ Business Process [*] An IT 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 [*] —uses/used by→ Device [*] The actual server instances (and other hardware depending on the system) can be identified by this kind of relationship.
Information System [*] —uses/used by→ System Service [*] Make sure that all use-associations point to a System Service provided by another IT System object There should be one relationship for every service used by a system. (That is, every service provided by another system.)
Information System [1] —uses/used by→ Technology Waiver [*] All technology waivers that exist for a system should be modeled, but a direct association for an IT System object is only required if a waiver cannot be derived through replacement associations to other IT System objects.
Investment [*] –funds/funded by→ IT System [*] This relationship models investment funds (for a given fiscal year) that cannot be allocated to a specific IT Service provided by a system (a particular version of a system, that is).

Entity Name	IT System Version

IT System [1] —provides/provided by→ IT Service [*]
This relationship type shows what services are provided by a given version of an IT System. All instances of type IT Service must have one (and only one) relationship of this type.

IT System [*] – aligns to/is context for→ SRM Component [*]
Relationships of this type classifies IT Systems (versions of systems, actually) according to the OMB SRM.

IT System [1] –records/recorded by→ DRM Entity [*]
This relationship type defines the authoritative source for a DRM Entity. It is mandatory for all instances of type DRM Entity.

IT System [*] references/referenced by DRM Entity [*]
This relationship type defines a system of reference for a DRM Entity. That is a system with access to a copy for reference (read only) of an entity recorded in another system.

IT System [*] –uses/used by→ Technology [*]
This relationship identifies a technology used in a given version of a system. Technologies identified by sub-systems or by provided IT Services need and should not be repeated if already defined at a higher level in a system hierarchy.

Measurement [*] –measures/measured by→ IT System [0, 1]
This relationship type associates a particular measurement with a measured object of type IT System Version. All objects of type Measurement must have one (and only one) measurement relationship.

Milestone [*] –tracks/tracked by→ IT System [0, 1]
Relationships of this type show milestones for IT System Versions. (Supports the EA Segment Report definition of May 2009.)

Partaker [1] –sends/sent by→ Exchange [*]
A relationship of this type shows the sending party for a given information exchange. There must be one (and only one) relationship of this type for each object of type Exchange.

Partaker [1] –receives/received by→ Exchange [*]
A relationship of this type shows the receiving party for a given information exchange. There must be one (and only one) relationship of this type for each object of type Exchange.

PRM Measurement Indicator [*] —sets metric for/metric set by→ Information System [*]
A relationship of this type shows that a given measurement indicator defines metrics for an IT System Version .

Security Control [*] —secures/secured by→ Information System [*]
Applicable security controls can be identified with this kind of relationship.

Segment [1] –controls/controlled by→ [*] Information System
It is strongly recommended that every IT System instance is associated with its controlling segment.

System Security Profile [0, 1] —profiles/profiled by→ Information System [1]
Relationships of this type can be used to identify a system security profile for an IT System Version.

Entity Name	Primary Internet Domain	
Entity Description	The type Primary Internet Domain identifies a primary domain for an IT System (per OMB/GSA data call). It must be associated with an IT System. It can have 0 or more Secondary Internet Domain objects as parts (children).	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	Type	Description

Entity Name	Primary Internet Domain	
Site contact email	String	The email address to get in touch with the domain administrator
Only Intranet	Boolean	Indicates that a domain is only available in the HHS intranet. E.g., ocioportal.hhs.gov
Business Transactions	Boolean	Indicates if this site permits online business transactions (other than text comments or feedback)
Relationships:		
part of: Service Layer Container		
parts: Secondary Internet Domain		
IT System [1] –has primary domain/is primary domain for→ Primary Internet Domain [*] This relationship allows an IT System to be associated with an internet domain (and indirectly with secondary domain as well).		

Entity Name	Secondary Internet Domain	
Entity Description	Objects of type Secondary Internet Domain must be part of an object of type Primary Internet Domain. This identifies the domain as secondary to its parent. This type would be used when a domain is registered to prevent it from being misused, or when one domain redirects traffic to another, primary, domain.	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
No additional unique attributes		
Relationships:		
part of: Primary Internet Domain		
parts: None		

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 unique attributes		
Relationships:		
part of: Taxonomy		
parts: Service Category		
Technology [*] —supports/supported by→ Service Category [*] This reflects a technology's capability to support a certain kind of service.		

Service Category [*] —includes/included by→ IT Service [*]
This relationship allows categorization of System and User Services.
Service Category [*] —constrains/constrained to→ Technology Profile Item [*]
The applicability of a technology recommendation can be constrained in terms of Service Categories

Entity Name	**System Service**	
Entity Description	A service provided by or used by an IT System; must be aligned to a SRM 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
Relationships:		
part of: Service Layer Container, or System Service A service may be decomposed into sub-services.		
parts: System Service		
Activity [*] —represents/has→ IT Service [0, 1] A relationship of this type shows that an activity implements an IT service (I.e., a user service or a system service). The swimlane the activity belongs to must represent an IT System, for the relationship to be meaningful.		
Exchange [*] –has context/is context for→ IT Service [0,1] This relationship shows that a given Exchange takes place in the context of a particular IT Service (i.e., either a User Service or a System Service).		
Information System [*] —uses/used by→ System Service [*] Associations of this type are typically created when the using IT System is modeled. Only include systems that are truly using the service, not the system providing it.		
Investment [*] –funds/funded by→ IT Service [*] This relationship models a service (and indirectly the service-providing IT System), funded by an investment (for a given fiscal year). Relationships of this type should be used whenever relevant for the associated investment.		
IT Service [*] —accesses/accessed by→ DRM Exchange Package [*] The relationship identifies a given DRM Exchange Package as in scope for a given IT service.		
IT Service [*] –aligns to/is context for→ SRM Component [1] This relationship type categorizes IT Services in terms of the SRM (the Service Component Reference Model). All IT Services must align to one (and only one) SRM Component.		
IT Service [*] –uses/used by→ Technology [*] This relationship allows technology of specific importance for a given service to be modeled. Technologies that are identified by an "IT System –uses/used by→ Technology" relationship need and should not be repeated for every service provided by that system.		

Entity Name	System Service

IT System [1] —provides/provided by→ IT Service [*]
This relationship type shows what services are provided by a given version of an IT System. All instances of type IT Service must have one (and only one) relationship of this type.

Measurement [*] –measures/measured by→ IT Service [0, 1]
This relationship type associates a particular measurement with a measured object of type System Service or User Service. All objects of type Measurement must have one (and only one) measurement relationship.

PRM Measurement Indicator [*] —sets metric for/metric set by→ IT Service [*]
Relationships of this type identify metrics that apply to IT Services.

Security Control [*] —secures/secured by→ IT Service [*]
Relationships of this type show what security controls apply to a given IT Service.

Service Category [*] —includes/included by→ IT Service [*]
This relationship allows categorization of System and User Services.

Entity Name	User Service	
Entity Description	Instances of type User Service model services offered to end users, similar to how instances of type System Service model the services a system provides for other systems to use.	
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 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 User 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

Relationships:

part of: Service Layer Container, or User Service
A service may be decomposed into sub-services.

parts: User Service

Activity [*] —represents/has→ IT Service [0, 1]
A relationship of this type shows that an activity implements an IT service (I.e., a user service or a system service). The swimlane the activity belongs to must represent an IT System, for the relationship to be meaningful.

Business Role [*] –uses/used by→ User Service [*]
The relationship identifies that a particular Business Role may use a given User Service. (This is analogous to IT System uses/used by System Service)

Exchange [*] –has context/is context for→ IT Service [0,1]
This relationship shows that a given Exchange takes place in the context of a particular IT Service (i.e., either a User Service or a System Service).

Entity Name	User Service

Investment [*] –funds/funded by→ IT Service [*]
This relationship models a service (and indirectly the service-providing IT System), funded by an investment (for a given fiscal year). Relationships of this type should be used whenever relevant for the associated investment.

IT Service [*] —accesses/accessed by→ DRM Exchange Package [*]
The relationship identifies a given DRM Exchange Package as in scope for a given IT service.

IT Service [*] –aligns to/is context for→ SRM Component [1]
This relationship type categorizes IT Services in terms of the SRM (the Service Component Reference Model). All IT Services must align to one (and only one) SRM Component.

IT Service [*] –uses/used by→ Technology [*]
This relationship allows technology of specific importance for a given service to be modeled. Technologies that are identified by an "IT System –uses/used by→ Technology" relationship need and should not be repeated for every service provided by that system.

IT System [1] —provides/provided by→ IT Service [*]
This relationship type shows what services are provided by a given version of an IT System. All instances of type IT Service must have one (and only one) relationship of this type.

Measurement [*] –measures/measured by→ IT Service [0, 1]
This relationship type associates a particular measurement with a measured object of type System Service or User Service. All objects of type Measurement must have one (and only one) measurement relationship.

PRM Measurement Indicator [*] —sets metric for/metric set by→ IT Service [*]
Relationships of this type identify metrics that apply to IT Services.

Security Control [*] —secures/secured by→ IT Service [*]
Relationships of this type show what security controls apply to a given IT Service.

Service Category [*] —includes/included by→ IT Service [*]
This relationship allows categorization of System and User Services.

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 EA framework. (This type is not shown on the diagram above.)	
Examples	N/A	
Entity Source	N/A	
Unique Attributes	**Type**	**Description**
No additional unique attributes		
Relationships:		
part of: Service Layer Container, or Container		
parts: Information System Category, IT System, IT System Alias, IT System Version, Primary Internet Domain, Secondary Internet Domain, Service Category, Service Layer Container, SRM Component, SRM Service Domain, SRM Service Type, System Service , Taxonomy, User Service		

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.
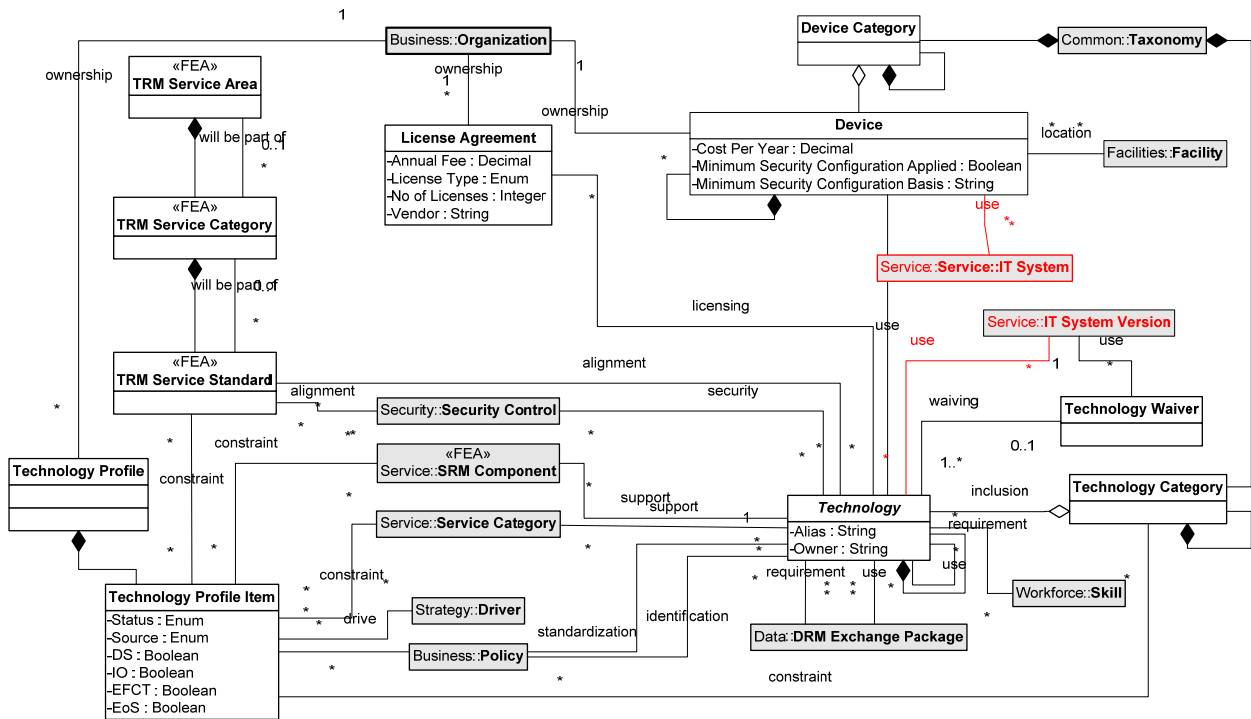
Exhibit 4-7 Technology Layer Metamodel Overview Diagram

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 CRM 2.3	
Unique Attributes	Type	Description
No additional unique 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 CRM 2.3	
Unique Attributes	Type	Description
No additional unique attributes		
Relationships:		
part of: TRM Service Area		
TRM Service Category [*] —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 [*] —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 CRM 2.3	
Unique Attributes	Type	Description
No additional unique attributes		
Relationships:		
part of: TRM Service Category		
Technology [*] —aligns to/is context for→ TRM Service Standard [*] All technology objects should be aligned to TRM Service Standards		
TRM Service Standard [*] —constrains/constrained to→ Technology Profile Item [*] The scope of a technology recommendation can be limited by relationships of this type		
TRM Service Standard [*] —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 [*] —aligns to/is context for→ TRM Service Standard [*]		

Entity Name	Device	
Entity Description	Physical technical devices that can be organized in hierarchies	
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.
Relationships:		
part of: Technology Layer Container; Device		
parts:		
IT System [*] —uses/used by→ Device [*] Relationships of this type shows mapping between IT Systems and Devices, such as servers.		
Organization [*] —owns/owned by→ Device [0, 1]		
Device Category [*] —includes/included by→ Device [*]		
Device [*] —uses/used by→ Technology [*]		
Device [*] —located in/location of→ Facility [*]		

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 unique attributes		
part of: Taxonomy relation: Device Category [*] –includes/included by→ Device [*]		

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	Enumeration	Describes the type of license, i.e., [Node locked, Node transferable, Floating, Enterprise, Unlimited]
No of Licenses	integer	The number of licenses held

Entity Name	License Agreement	
Vendor	string	Name of the license vendor
Relationships:		
Organization [*] —owns/owned by→ License Agreement [0, 1] Shows the license holder		
License Agreement [*] —licenses/licensed by→ Technology [*] Shows the technologies covered by the license		

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.
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		
parts: Technology Technology families can be modeled as hierarchies of technology objects		
DRM Exchange Package [*] —uses/used by→ Technology [*] Shows technologies known to be used for exchanges described by the exchange package. This should be modeled when the IT System is described.		
DRM Exchange Package [*] —requires/required by→ Technology [*] Shows technologies that are required to be used for exchanges described by the exchange package. This should be modeled when the IT System is described.		
Device [*] —uses/used by→ Technology [*] Shows technologies known to be used by a device (i.e., installed on the device). This should be modeled when the device is described.		
IT Service [*] –uses/used by→ Technology [*] This relationship allows technology of specific importance for a given service to be modeled. Technologies that are identified by an "IT System –uses/used by→ Technology" relationship need and should not be repeated for every service provided by that system.		

Entity Name	Technology
IT System [*] –uses/used by→ Technology [*] This relationship identifies a technology used in a given version of a system. Technologies identified by sub-systems or by provided IT Services need and should not be repeated if already defined at a higher level in a system hierarchy.	
License Agreement [*] —licenses/licensed by→ Technology [*] Shows technologies covered by a license agreement. This should be modeled when the agreement is described.	
Security Control [*] —uses/used by→ Technology [*] Shows that a technology can be used to implement a particular security control.	
Technology [*] —aligns to/is context for→ TRM Service Standard [1, *] Provide at least one association of this kind	
Technology [*] —supports/supported by→ SRM Component [1, *] Provide at least one association of this kind. This reflects a technology's capability to support a certain kind of service.	
Technology [*] —supports/supported by→ Service Category [*] This reflects a technology's capability to support a certain kind of service.	
Technology Category [*] —includes/included by→ Technology [*] Provides a mechanism to define technology taxonomies other than the TRA and SRM.	
Technology [*] —requires/required by→ Skill [*] Provides a mechanism do define that a certain skill is required for a particular technology.	
*Technology Profile Item [1, *] —standardizes/standardized in→ Technology [1]* Provides a mechanism to define sets of technology recommendations for an organization	
Technology Waiver [*] —waives/waived by→ Technology [*] Provides a mechanism to that a non-standard technology was formally approved for a specific use. This should be modeled when an IT System is described.	
Technology [*] —uses/used by→ Technology [*] Provides a mechanism to show technology dependencies (e.g., Metis Team Server 6 uses Oracle 9i	

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 unique attributes		
part of: Taxonomy relation: Technology Category [*] —includes/included by→ Technology [*] relation: Technology Category [*] —constrains/constrained to→ Technology Profile Item [*]		

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 EA framework. (This type is not shown on the diagram above.)

Examples	N/A	
Entity Source	N/A	
Unique Attributes	Type	Description
No additional unique attributes		
Relationships:		
part of: Technology Layer Container, or Container		
parts: Device; Device Category; License Agreement; Technology; Technology Category; Technology Layer Container; Technology Profile; Technology Profile Item; Technology Waiver; TRM Service Area; TRM Service Category; TRM Service Standard;, Taxonomy		

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 unique attributes		
Relationships:		
Parts: Technology Profile Item A technology profile can contain any number of technology profile items		
Organization [1] —owns/owned by→ Technology Profile [*] One and only one relationship of this type must be defined for every Technology Profile		

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**
Status	Enumeration	Determines the strength of the recommendation. Valid values are: [Undefined	Emerging	Strategic	Tactical	Containment	Retirement	Not Recommended	Not Allowed]
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	Enumeration	Indicates if the recommendation was made due to an external requirement or if it was an internal decision. Valid values [External, Internal]
Relationships:		
Part of: Technology Profile A technology profile item must be part of a technology profile		
Technology Profile Item [*] —standardizes/standardized in→ Technology [1] Every profile item must define one, and only one, recommended technology for an organization		
TRM Service Standard [*] —constrains/constrained to→ Technology Profile Item [*] The applicability of a recommendation can be constrained in terms of TRM Service Standards.		
Technology Category [*] —constrains/constrained to→ Technology Profile Item [*] The applicability of a recommendation can be constrained in terms of Technology Categories		
SRM Component [*] —constrains/constrained to→ Technology Profile Item [*] The applicability of a recommendation can be constrained in terms of SRM Components		
Service Category [*] —constrains/constrained to→ Technology Profile Item [*] The applicability of a recommendation can be constrained in terms of Service Categories		
Technology Profile Item [*] —driven by/drives→ Driver [*]		

Entity Name	Technology Waiver	
Entity Description	Documents the approval to use a non-standard Technology for a particular IT System	
Examples	Will be provided when artifacts of this type are added to the model	
Entity Source	TBD	
Unique Attributes	Type	Description
No additional unique attributes		
Information System [1] —uses/used by→ Technology Waiver [*] All technology waivers that exist for a system should be modeled, but a direct association for an IT System object is only required if a waiver cannot be derived through replacement associations to other IT System objects.		
*Technology Waiver [1, *] —waives/waived by→ Technology [*]* This relationship identifies a non-standard technology that has been approved by a specific waiver.		

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.
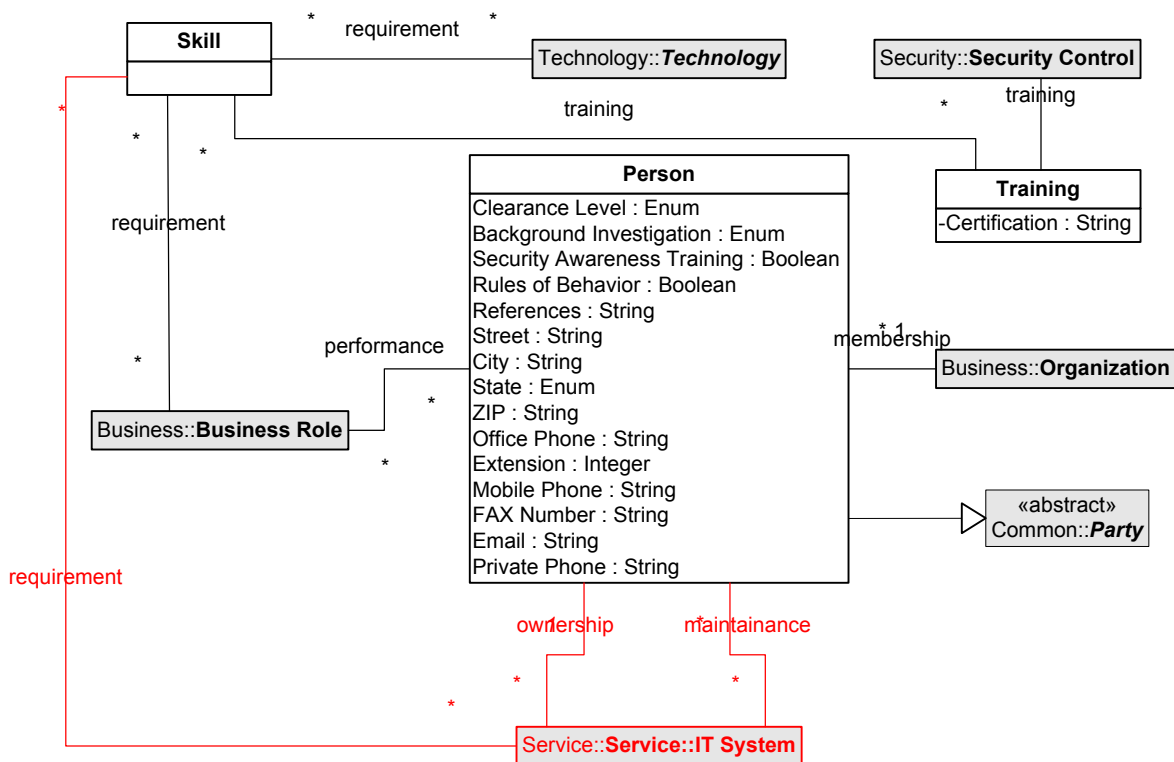
Exhibit 4-8 Workforce Layer Metamodel Overview Diagram

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)	Provides the clearance level assigned to the person
	Moderate Risk Public Trust (Level 5)	
	Top Secret Access (Level 3 or 4)	
	Secret/Confidential Access (Level 2)	
	Low Risk/Non-Sensitive (Level 1)	
Background Investigation	BI	Provides the type of background investigation performed
	NACIC (LBI)	
	SSBI	
	LBI	
	NACI	
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	Enumeration	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
Relationships:		
part of: Taxonomy		
parts: Exchange Category		
Exchange Category [*] —includes/included by→ DRM Exchange Package [*]		
Person [0, 1] –owns/owned by→ [*] IT System This relationship identifies the person who is the (business) owner of a given IT System.		
Person [0,1] –maintains/maintained by→ [*] IT System Relationships of this type identify persons involved in the maintenance of an IT System.		
Person [*] —performs/performed by→ Business Role [*]		
Person [0, 1] —belongs to/includes→ Organization [*]		

Entity Name	Person
Party [0, 1] –is contact for/has contact→ [*] DRM Entity *(Party is an abstraction for either a Person or an Organization)*	
Party [0, 1] –stewards/has steward→ DRM Element [*] Party is either a Person or an Organization	
Party [0, 1] –is contact for/has contact→ DRM Element [*] Party is either a Person or an Organization	
Party [0, 1] –stewards/has steward→ [*] DRM Entity Party is an abstraction for either a Person or an Organization object	
Party [0, 1] –stewards/has steward→ [*] DRM Exchange Package (Party is an abstraction for either a Person or an Organization)	
Party [0, 1] –is contact for/has contact→ [*] DRM Exchange Package (Party is an abstraction for either a Person or an Organization)	

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
No additional unique attributes		
Relationships:		
part of: Workforce Layer Container		
parts: None		
Business Role [*] —requires/required by→ Skill [*]		
IT System [*] —requires/required by→ Skill [*] This type shows skill needed for development or operation of an IT System.		
Technology [*] —requires/required by→ Skill [*]		
Training [*] —teaches/taught by→ Skill [*]		

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
Relationships:		
part of: Workforce Layer Container		
parts: Exchange Category		
Training [*] —teaches/taught by→ Skill [*] Relationships of this type identifies a given training as relevant for a certain skill.		
relation: Training [*] —teaches/taught by→ Security Control [*] Relationships of this type identifies a given training as relevant for a certain Security Control..		

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 EA framework. (This type is not shown on the diagram above.)	
Examples		
Entity Source		
Unique Attributes	Type	Description
No additional unique attributes		
Relationships:		
part of: Workforce Layer Container		
parts: Person; Skill; Training; Workforce Layer Container		

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.
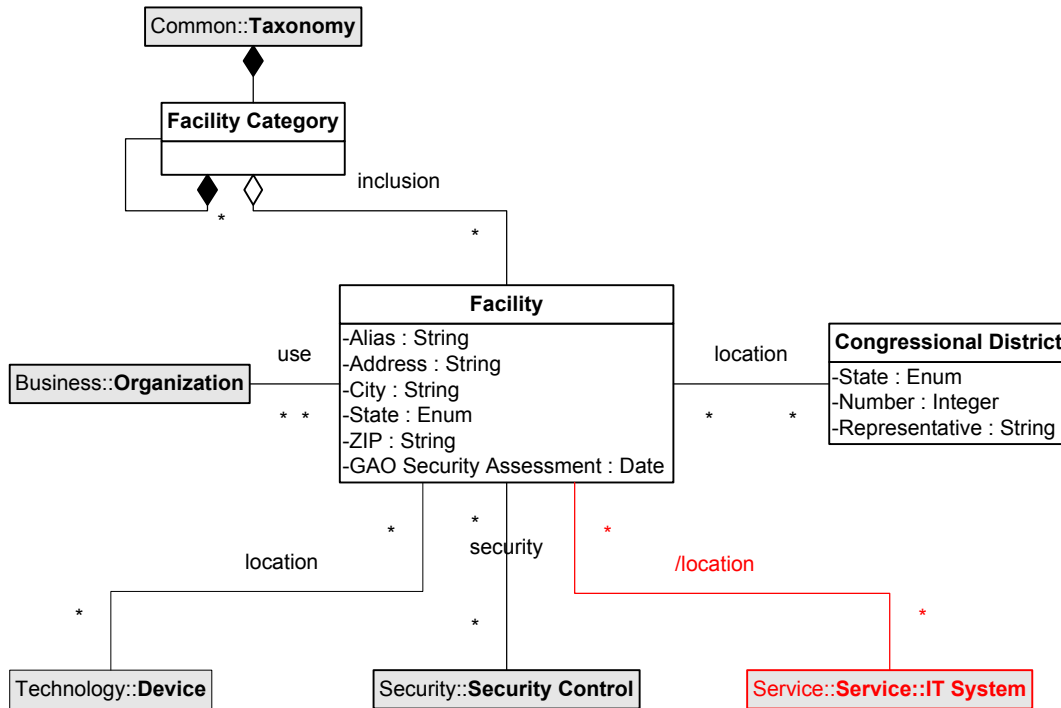
Exhibit 4-9 Facilities Layer Metamodel Overview Diagram

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	Enumeration	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
Relationships:		
part of: Facilities Layer Container		
Facility Category [*] —includes/included by→ Facility [*]		
Facility [*] —located in/location of→ Congressional District [*]		
Organization [*] —located in/location of→ Facility [*]		
Device [*] —located in/location of→ Facility [*]		
Security Control [*] —secures/secured by→ Facility [*]		
IT System [*] –located in/location of→ [*] Facility This relationship type should be used only when system association to Devices is of no interest to the model. If Devices are relevant, then use IT System -uses/used by→ Device --located in/location of→ Facility.		

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 unique attributes		
part of: Taxonomy relation: Facility Category [*] —includes/included by→ Facility [*]		

Entity Name	Congressional District
Entity Description	US Congressional District
Examples	Will be provided when artifacts of this type are added to the model

Entity Name	Congressional District	
Entity Source	TBD	
Unique Attributes	Type	Description
State	Enumeration	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 [*] —located in/location of→ Congressional District [*]		

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 EA framework. (This type is not shown on the diagram above.)	
Examples		
Entity Source		
Unique Attributes	Type	Description
No additional unique attributes		

4.11 Performance Aspect

4.11.1 Performance Aspect Description

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

4.11.2 Relationship to the FEA Reference Models

The Performance Aspect 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 4-10
shows all entity types and all supported relationships for those types.
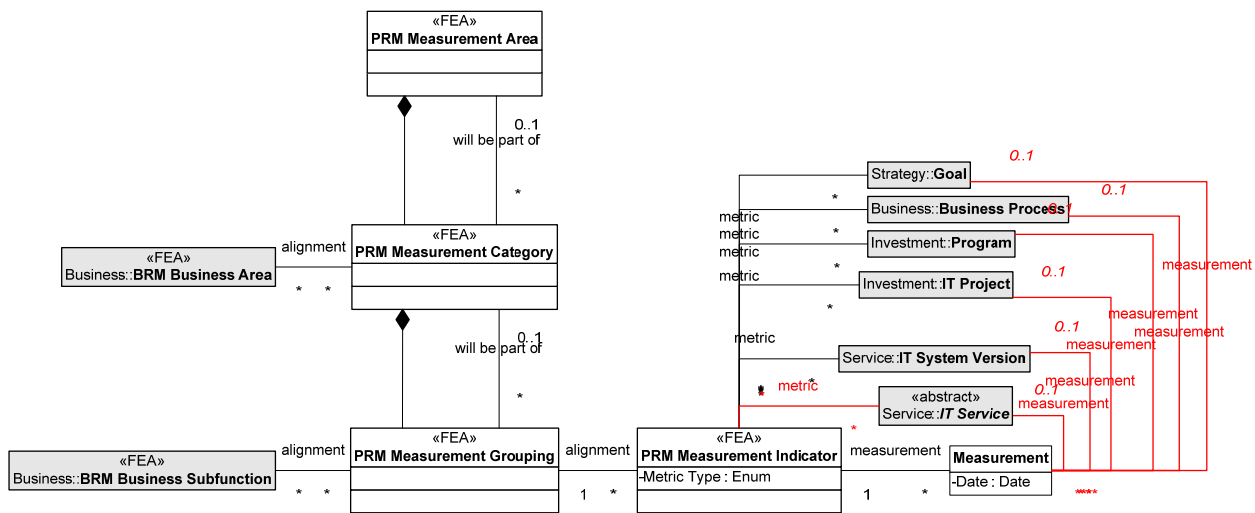
Exhibit 4-10 Performance Aspect Metamodel Overview Diagram

4.11.3 Entity Description

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 unique attributes		

Entity Name	PRM Measurement Category	
Entity Description	Provides general classifications of measurement indicators within the Performance Reference Model	

Entity Name	PRM Measurement Category	
Examples	Health, Information and Technology Management	
Entity Source	Federal Enterprise Architecture Performance Reference Model	
Unique Attributes	**Type**	**Description**
No additional unique attributes		
Relationships:		
part of: PRM Measurement Area		
parts: PRM Measurement Grouping		
PRM Measurement Category [*] —aligns to/is context for→ BRM Business Area [*] 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 [*] —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 unique attributes		
Relationships:		
part of: PRM Measurement Category		
PRM Measurement Indicator [*] aligns to/is context for→ PRM Measurement Grouping [1] All measurement indicators must be aligned to a measurement grouping		
PRM Measurement Grouping [*] —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 [*] —aligns to/is context for→ BRM Business Subfunction [*] 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 named PRM 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

Entity Name	PRM Measurement Indicator	
Metric type	Metric type	Categorization of measurements according t to OMB's EASR guide. Possible values are: [Undefined, Output, Efficiency, Outcome].
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: Performance Aspect Container		
PRM Measurement Indicator [1] —aligns to/is context for→ PRM Measurement Grouping [*] There must be one and only one association to the appropriate grouping as defined in the PRM.		
PRM Measurement Indicator [*] —sets metric for/metric set by→ Goal [*] An association of this kind should only used when it reflects an indicator approved by the owner of the goal		
PRM Measurement Indicator [*] —sets metric for/metric set by→ IT Project [*] A relationship of this type shows that a given measurement indicator defines metrics for an IT Project .		
PRM Measurement Indicator [*] —sets metric for/metric set by→ Business Process [*] An association of this kind should only used when it reflects an indicator approved by the process owner		
PRM Measurement Indicator [*] —sets metric for/metric set by→ Information System [*] A relationship of this type shows that a given measurement indicator defines metrics for an IT System Version .		
PRM Measurement Indicator [*] —sets metric for/metric set by→ IT Service [*] Relationships of this type identifies metrics that apply to IT Services.		
Measurement [0, 1] measurers/is measured by→ PRM Measurement Indicator [*] All measurements should be associated with one (and only one) measurement indicator		
PRM Measurement Indicator [*] —sets metric for/metric set by→ User Service [*] An association of this kind should be used when it reflects an indicator approved for the service by the owner of the system providing the service.		
Measurement [*] –measures/measured by–> PRM Measurement Indicator [1] This relationship links a measurement value to the PRM Measurement Indicator that defines the metric for the measurement. The term Measurement is derived from the EASR guidance.		
PRM Measurement Indicator [*] –sets metric for/metric set by–> Program [*] This relationship allows for measurement indicators to be defined for a program.		

Entity Name	Measurement	
Entity Description	Instances of this type capture metrics collected for a given PRM Measurement Indicator. The term Measurement is derived from the EASR guidance.	
Examples		
Entity Source		
Unique Attributes	**Type**	**Description**
Description	Text	Use the description for the actual measurement value
Date	Date	The date the measurement was made
Relationships:		
part of: Performance Aspect Container		

| Entity Name	Measurement
Measurement [*] –measures/measured by→ Program [0, 1] This relationship type associates a particular measurement with a measured object of type Program. All objects of type Measurement must have one (and only one) measurement relationship.	
Measurement [*] –measures/measured by→ IT System [0, 1] This relationship type associates a particular measurement with a measured object of type IT System Version. All objects of type Measurement must have one (and only one) measurement relationship.	
Measurement [*] –measures/measured by→ IT Service [0, 1] This relationship type associates a particular measurement with a measured object of type System Service or User Service. All objects of type Measurement must have one (and only one) measurement relationship.	
Measurement [*] –measures/measured by→ IT Project [0, 1] This relationship type associates a particular measurement with a measured object of type IT Project. All objects of type Measurement must have one (and only one) measurement relationship.	
Measurement [*] –measures/measured by→ Goal [0, 1] This relationship type associates a particular measurement with a measured object of type Goal. All objects of type Measurement must have one (and only one) measurement relationship.	
Measurement [*] –measures/measured by→ Business Process [0, 1] This relationship type associates a particular measurement with a measured object of type Business Process. All objects of type Measurement must have one (and only one) measurement relationship.	
Measurement [*] –measures/measured by–> PRM Measurement Indicator [1] This relationship links a measurement value to the PRM Measurement Indicator that defines the metric for the measurement. The term Measurement is derived from the EASR guidance.	

4.12 Security Aspect

4.12.1 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.

4.12.2 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.
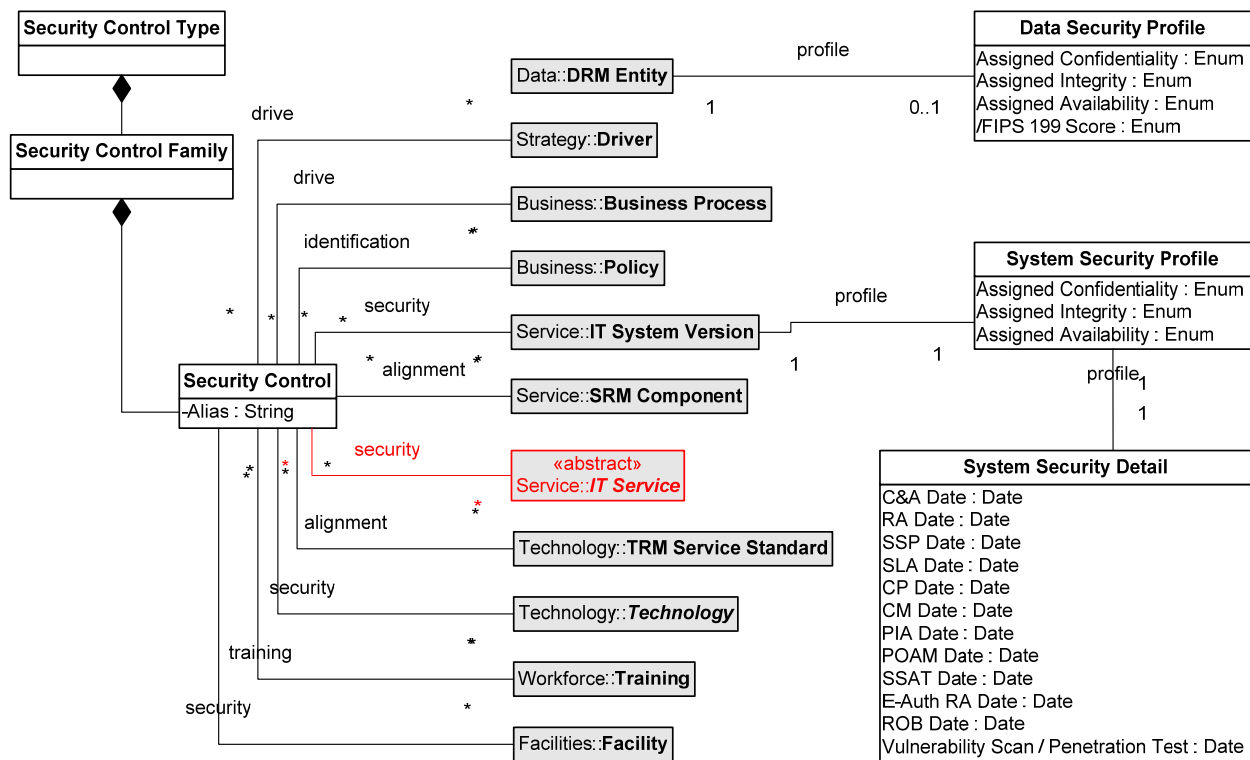
Exhibit 4-11 Security Aspect Metamodel Overview Diagram

4.12.3 Entity Descriptions

Entity Name	Data Security Profile
Entity Description	Defines non-sensitive security related properties for an associated DRM Entity instance. Keeping security related information in a separate object allows the data to be updated by security specialists, while DRM Entity specialists maintain non-security information regarding data. View access to Data Security Profile properties is not restricted within the HHS EA modeling community.

Entity Name	Data Security Profile	
Examples		
Entity Source	Secure One, OPDIV security specialists	
Unique Attributes	**Type**	**Description**
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).
Relationships:		
part of: Security Aspect Container		
Data Security Profile [0, 1] —profiles/profiled by→ DRM Entity [1] Relationships of this type identify a security profile for a DRM Entity. Each Data Security Profile must be associated with one, and only one, DRM Entity.		

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.)
Relationships:		
part of: Security Control Family		
parts: None		
Policy [*] —identifies/identified by→ Security Control [*]		
Security Control [*] —aligns to/is context for→ TRM Service Standard [*]		
Security Control [*] —aligns to/is context for→ SRM Component [*]		
Security Control [*] —uses/used by→ Technology [*]		
Security Control [*] —secures/secured by→ Information System [*] Applicable security controls can be identified with this kind of relationship.		
Security Control [*] —secures/secured by→ IT Service [*] Relationships of this type show what security controls apply to a given IT Service.		
Security Control [*] —secures/secured by→ Facility [*]		
Security Control [*] —driven by/drives→ Business Process [*]		
Security Control [*] —driven by/drives→ Driver [*]		
Training [*] —teaches/taught by→ Security Control [*]		

Entity Name	Security Control Family
Entity Description	This type provides lower level grouping of security controls

Entity Name	Security Control Family	
Examples	Security Planning, Risk Assessment	
Entity Source	NIST SP 800-53	
Unique Attributes	Type	Description
No additional unique attributes		
Relationships:		
part of: Security Control Type		
parts: Security Control		

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 unique attributes		
Relationships:		
part of: Security Aspect Container		
parts: Security Control Family		

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 EA framework. (This type is not shown on the diagram above.)	
Examples		
Entity Source		
Unique Attributes	Type	Description
No additional unique attributes		
Relationships:		
part of: None		
parts: Data Security Profile; Security Aspect Container ; Security Control Type; System Security Details; System Security Profile		

Entity Name	System Security Details	
Entity Description	Defines sensitive security related properties for an associated IT System object. Keeping security related information in a separate object allows the data to be updated by security specialists, while IT 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**
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
Relationships:		
part of: Security Aspect Container		
parts: None		
System Security Details [0, 1] —profiles/profiled by→ System Security Profile [1]		

Entity Name	System Security Profile	
Entity Description	Defines security related, non-sensitive properties for an associated IT System object. Keeping security related information in a separate object allows the data to be updated by security specialists, while IT 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**
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).
Relationships:		
part of: Security Aspect Container		
parts: None		
System Security Profile [0, 1] —profiles/profiled by→ Information System [1] Relationships of this type can be used to identify a system security profile for an IT System Version. Each System Security Profile must be associated with one, and only one, IT System Version.		
System Security Details [0, 1] —profiles/profiled by→ System Security Profile [1] Relationships of this type can be used to identify a system security information of higher sensitivity that that in a System Security Profile. Each System Security Details object must be associated with one, and only one, System Security Profile.		

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
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"

Term	Source	Definition
		architecture)
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

Term	Source	Definition
		technology) that coordinate functions and share information in support of a common mission (or set of 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

Term	Source	Definition
		manner.
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.

Term	Source	Definition
Systems Development Life Cycle (SDLC)	TEAF	Guidance, policies, and procedures for developing 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
System Inventory Policy	HHS-OCIO-2009-0004: "HHS-OCIO Policy for Management of the Enterprise IT System Inventory", July 28, 2009 [HHS OCIO]
System Inventory Guidelines	"HHS Guidelines for Management of the Enterprise IT System Inventory", Version 1.1, July 1, 2010 [HHS OCIO]
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 16," version 1.0, Jun 30, 2009 [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.)