



# Transformation through Partnerships

Delivering Enterprise Architecture Lean Methods  
(Maturity and Quality Disciplines)

19 April 2012

- ✓ Introduction **OneArchitecture** concept, goals & alignment
- ✓ Enterprise Architecture Vision for Center of Excellence
- ✓ Road to the **OneArchitecture** Strategy
- ✓ Ensuring Architecture workgroup alignment with *Mission*
- ✓ Enterprise Architecture Maturity and Assessment
- ✓ **NNSA's Repository Proposal**
- ✓ Accomplishments
- ✓ What's Next

NNSA's CIO coined the phrase **OneArchitecture** (One EA) approach to deliver the enterprise architecture. NNSA Enterprise Architecture (EA) team in partnership and collaboration with the Department's Enterprise Architects will provide architecture guidance & support for NNSA's and Department initiatives. As a result the EA team developed a LEAN discipline for architecture.

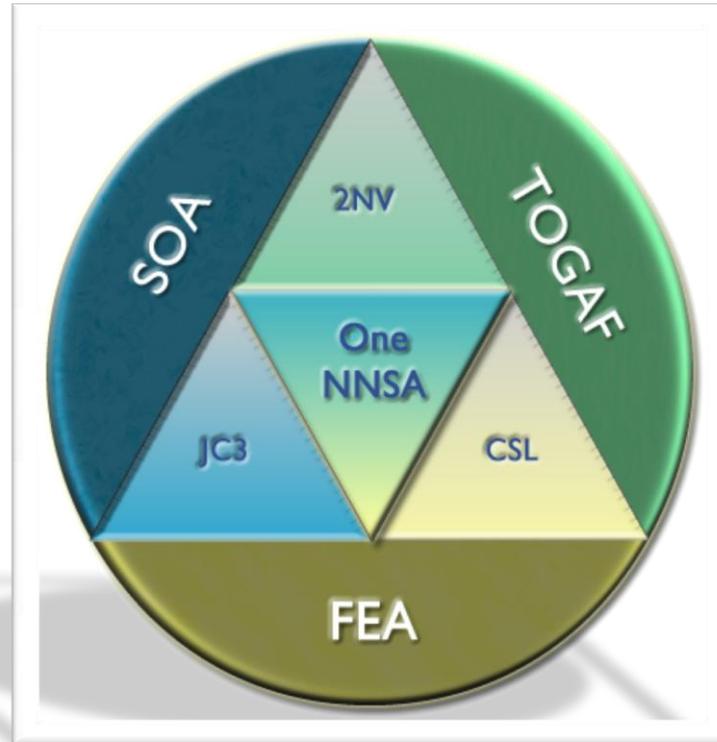
# NNSA's Enterprise Architecture Center of Excellence

**Service Oriented  
Planning and  
Design**

**Engineering  
Quality and  
Standards**

**Context Driven,  
Communications  
and Abstraction**

**Security and  
Interoperability  
Focused**



**Common Business Language**

**Strategic Alignment  
of Business and  
Technology**

**Maturity and  
Process  
Optimization**

**Value Added  
Consumer Services  
for Mission Support**

**Governance for  
Enterprise  
Information  
Architecture**

A *Center of Excellence* approach, **OneArchitecture** (One EA) is a LEAN Architecture development discipline delivering an *As-Emerging* Enterprise Architecture, Blueprints, Standards and Reference Architecture guidance for *business and technology initiatives across the enterprise.*

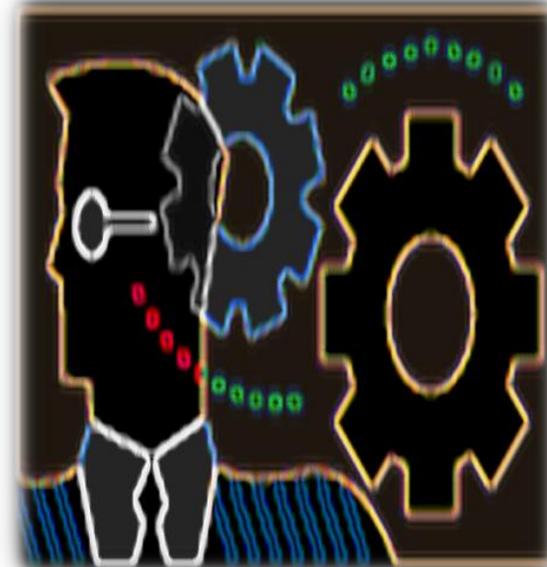


- I. One Enterprise Architecture across all of NNSA
  - Sites/M & O's, Labs, sustained programs, new initiatives
    - **Common set of core artifacts**, common modeling (TOGAF, SOA and FEA), disciplines and common business language
- II. DOE Strategic EA Partner—**Early** support of Key Initiatives
- III. Aligned with Federal Enterprise Architecture (**FEA**) v2
  - Architecture based on Federal Common Approach to Enterprise Architecture (FEA replacement)
  - Federal Shared Services alignment
- IV. Align Strategic Investments in Technology to meet Business Objectives (**CPIC**)

- I. Develop Mature EA Framework and Repeatable Governance Model/Process
- II. Develop and Approve list of Artifacts and Blueprints for future projects
- III. Align all Architecture work to EA disciplines and principals
- IV. Build EBRM, ETRM, ESRM, ESerRM
  - Technical Standards,
  - Functional Decomposition to Business Processes,
  - Security Profiles and Risk Approach,
  - Application design and engineering standards and Principles

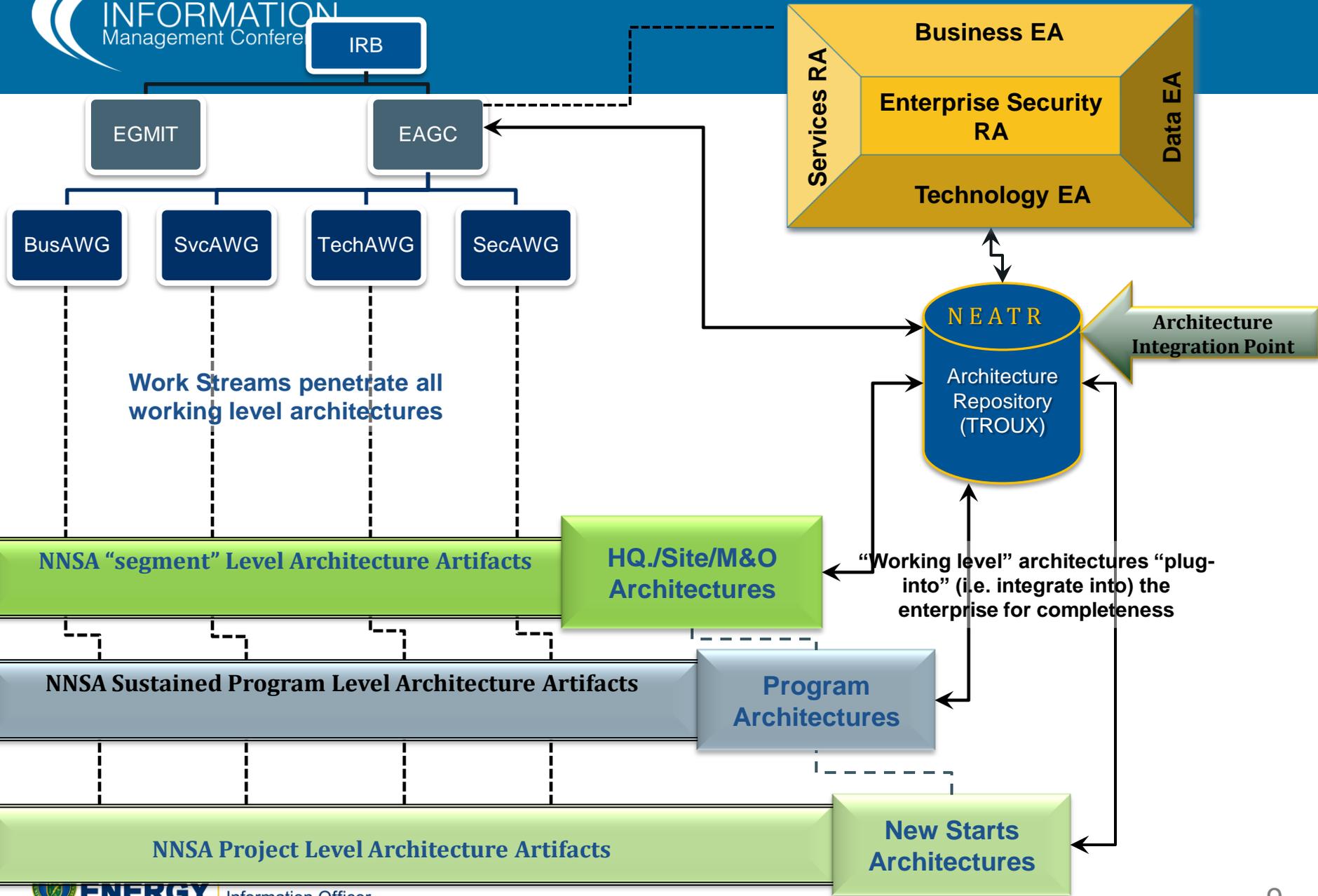
# Delivering OneArchitecture Strategy and Execution

Conceptual Architecture COE	As-Is Analysis	Prescriptive Architecture	As-Emerging Architecture
EA Principals, Goals and Guidance to meet <i>OneNNSA</i> strategic objectives	Grant Thornton, Records Management Data	Descriptions and Definitions of Services High-level Details	Specific Objectives, Technology and Business Transformation
SOA, TOGAF, FEA	Just Enough	2NV/JC3/CSL	Blueprints
Completed 2011	2011	2012	2012 - 2013

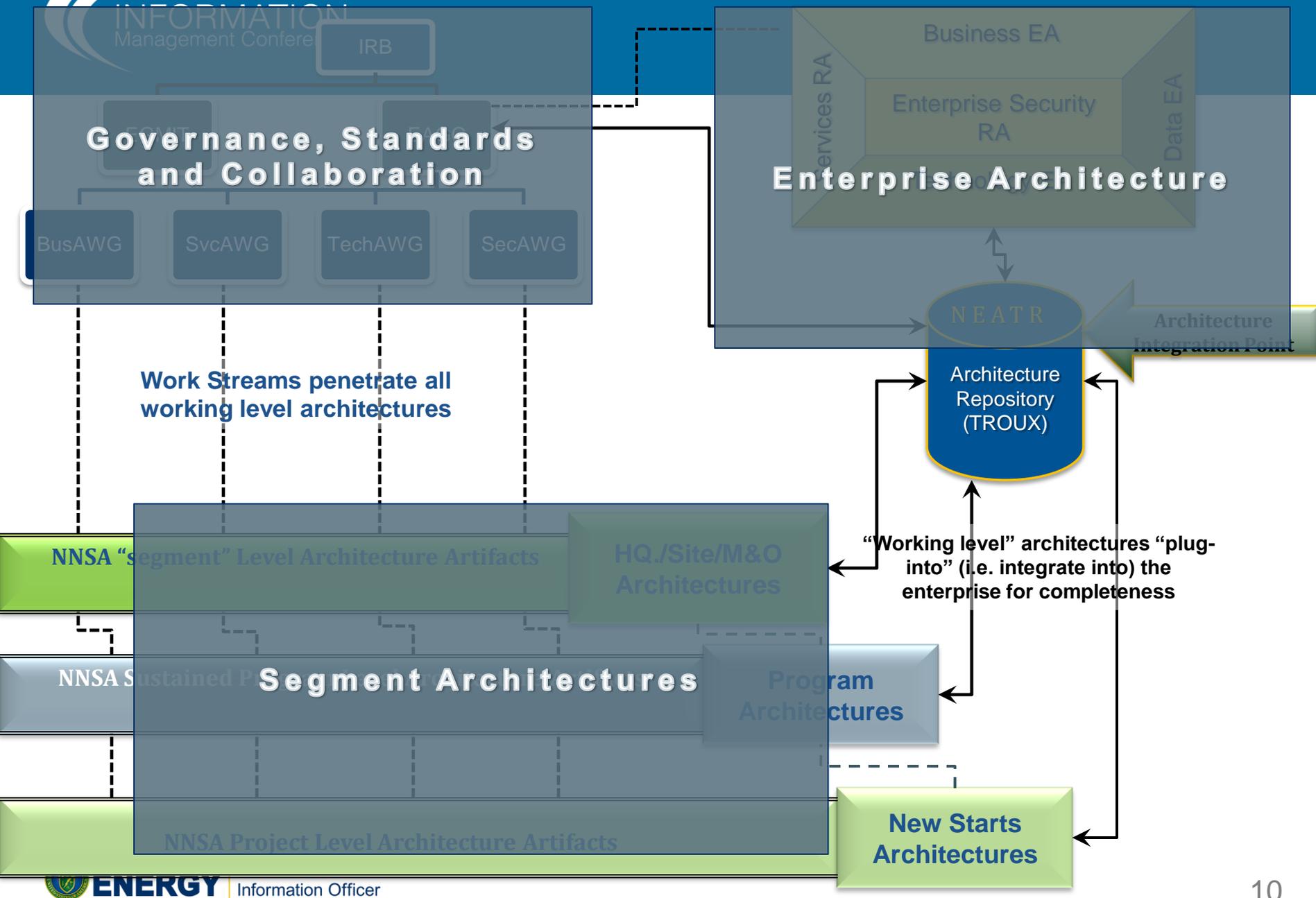


# Architecture Domain and Workgroup Alignment

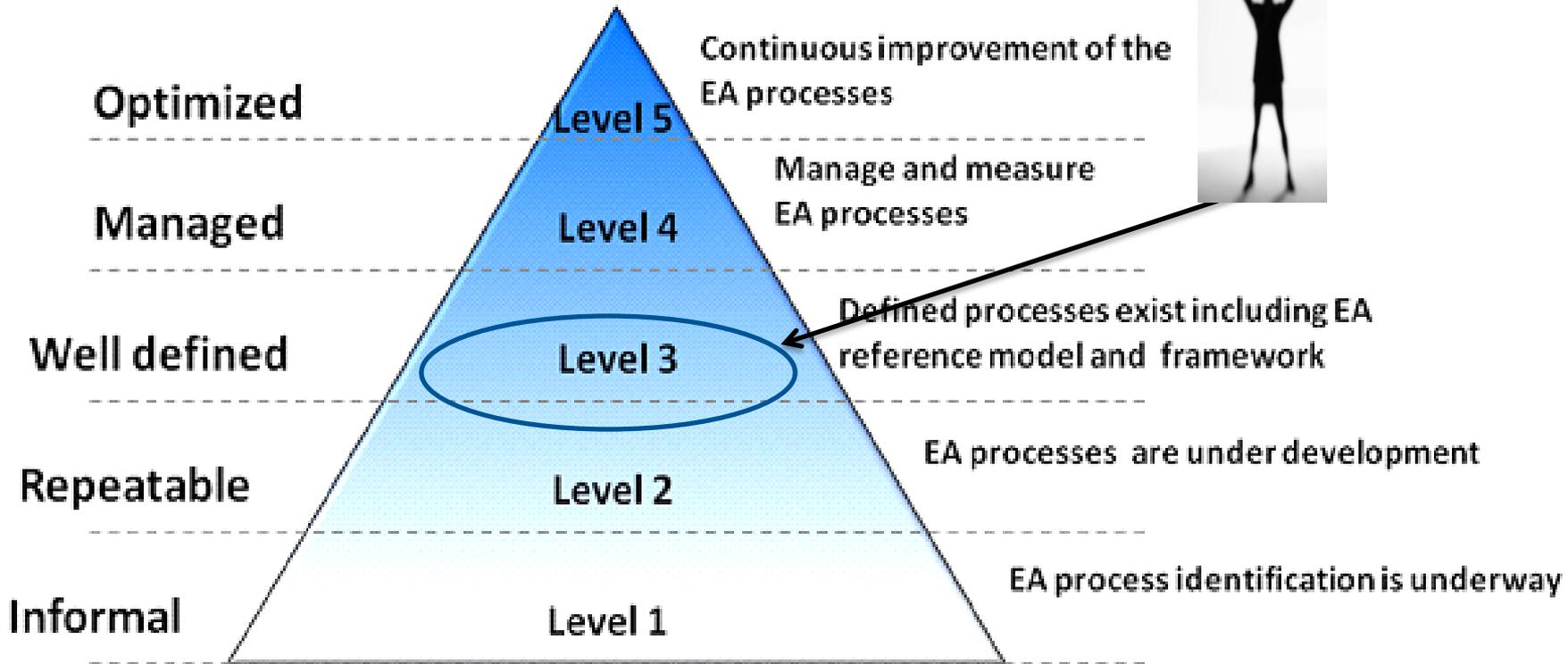
<b>Business Architecture</b>	<b>Security Architecture</b>	<b>Technical Architecture</b>	<b>Service/APP Architecture</b>
Strategic Alignment (Business Case)	DAA-related topics	Administration of technology	Application/Service development
Business Process Engineering	SSM-related topics	Solution Architecture	Rest and WSDL Contracts (Interfaces)
Information Assets	Audit/control issues	Change Control	Service Catalogues
Investment Alignment	Enterprise Role and Continuous Monitoring	Infrastructure Components (Networks, Platforms, Facilities, Access)	Service Oriented Architecture
Performance Metrics	Policy Enforcement	IT Portfolio	Service Inventory
<b>Identity Management</b>			
<b>ENTERPRISE LINES OF SITE</b>			
Master Data and Workflow (BRM, DRM, PRM)	Information Assurance (SRM)	Virtualization (IRM)	Shared Services and Information Exchange (ARM)



# NNSA Enterprise Architecture Framework



## EA Maturity Model



## **Goal: Ensure Business Architecture alignment with the enterprise**

### **Strategic Alignment of Business and Technology**

- Identify existing business processes across the enterprise
- Identify future business processes that will align to mission
  
- Identify existing business use cases across the enterprise
- Identify future business use cases that will align with mission

## **Goal: Ensure architecture services are aligned with enterprise initiatives**

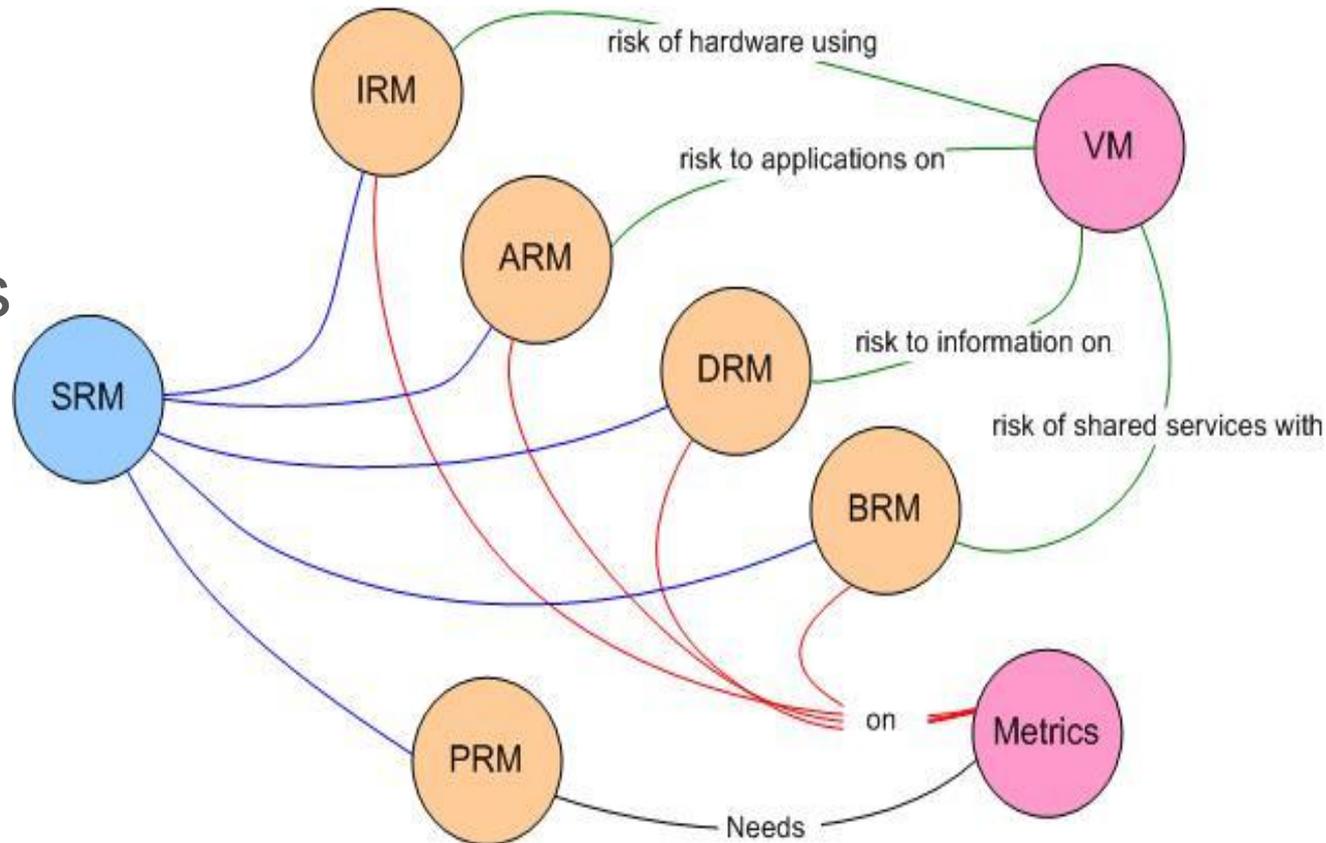
- Applications will be defined in terms of services offered
- Identify application candidates at each site that can be consolidated or retired
- Map selected applications to future cloud-aware requirements for
- Ensure future Cloud aware applications satisfy criteria for
  - Interoperability
  - Performance and scalability
  - Reliability and availability
  - Application and technology insertion lifecycles
  - Technological risks

## **Goal: Ensure Technical Architecture alignment with enterprise initiatives**

- **Primary focus areas include:**
  - Cloud Computing
  - Mobility
  - Social Computing
  - Networking
- **Identify existing network diagrams and topologies at each site**
  - Identify Cloud Computing topologies that will align with future business processes

## Goal: Ensure Security Architecture alignment with RightPath initiatives for all architectural domains

- ↪ Business
- ↪ Information
- ↪ Applications
- ↪ Data
- ↪ Technology



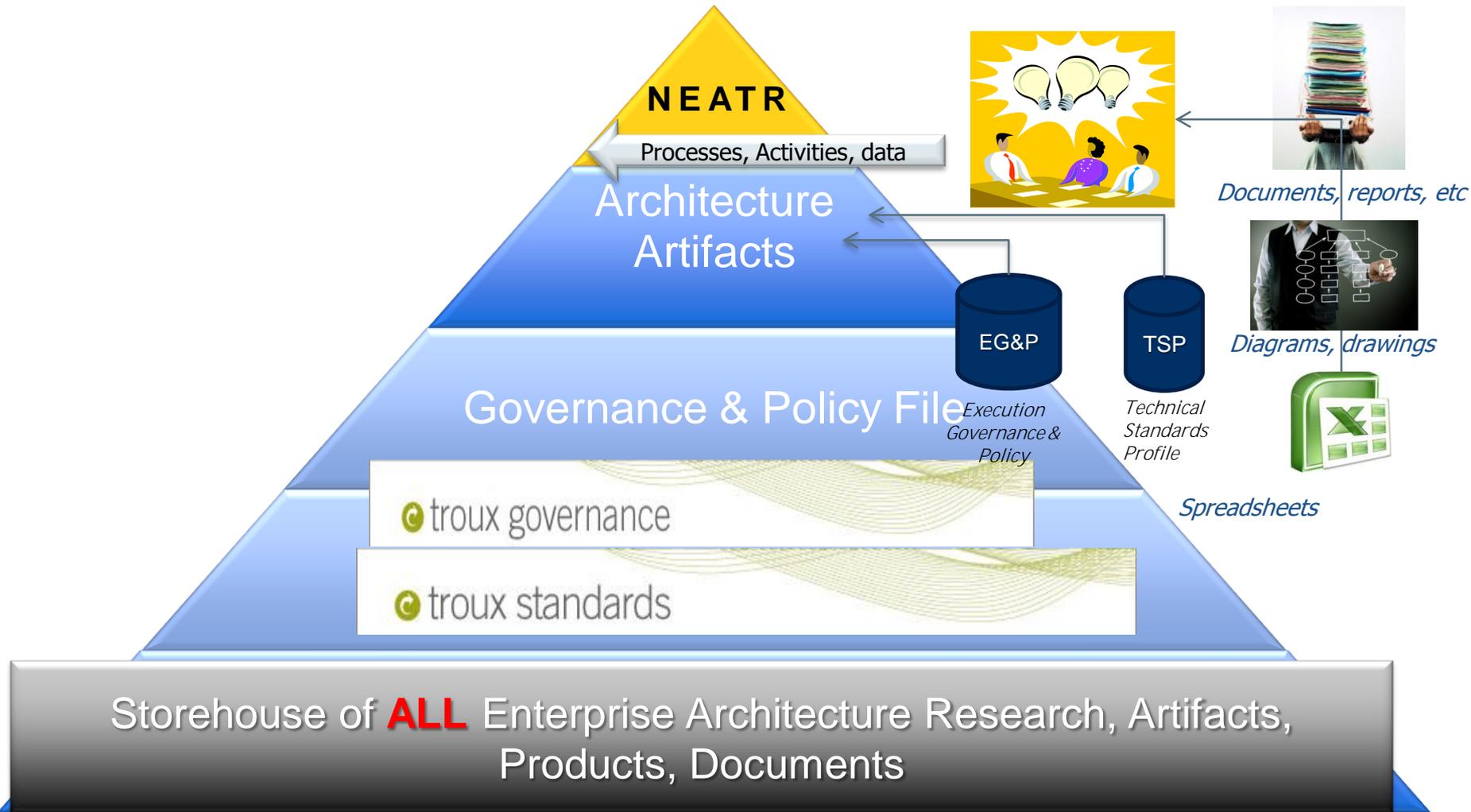
## Ensuring OneArchitecture alignment complies with FedRAMP

*What is FEDRAMP?*

**FedRAMP** is a government-wide program that provides a standardized approach to security assessment, authorization, and continuous monitoring for cloud products and services.

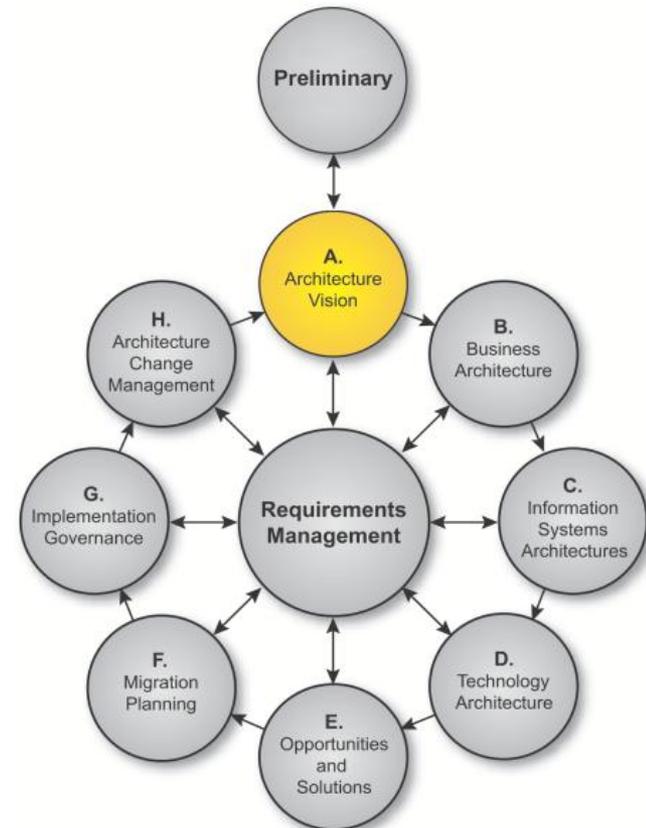
- This approach uses a “**do once, use many times**” framework that will save cost, time, and staff required to conduct redundant agency security assessments.

# NNSA Enterprise Architecture Transformation Repository (NEATR)



## ▶ Artifacts are divided into architecture domains to build the Enterprise Architecture

- ▶ Business
- ▶ Technology/Infrastructure
- ▶ Application/Service
- ▶ Security
- ▶ Data/Information



- Developed NNSA **OneArchitecture** framework and (As-Emerging) Blueprinting Approach
- Developed list of Artifacts for (Business, Technical, Security, Applications and Data) and Intake process
- Developed Technical Reference Model- **In Review**
- Delivered Business Architecture Project Plan - **Complete**
- Delivered Business Architecture Strategy – **In Review**
- Developed PPBE **IDEF0** Modeling - **Collaboration**
- Delivered Enterprise Business Functional Decomposition - **Complete**
- SOA Assessment Strategy & Reference Model -

- Perform BA Assessment and discovery for all HQ Programs  
**(SixSigma Assessments)**
- Deliver Enterprise Reference Models and Technology Bricks and Patterns (**ETRM, EBRM, SecRM**)
- Deliver Enterprise Trough Strategy
  - Meta-Models, DataMarts, Artifacts, Intake
- Continue to align with mission and business requirements
- Plan for Enterprise Architecture Day



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# BACKUP Slides



## Transformation through Partnerships

Sample of Common FEA v2, TOGAF 9 Artifacts and  
EA Definitions

Artifact	Standard	Domain	Condition	Owner ***	Comment
<b>Business Architecture</b>					
Business Reference Model version 2	FEA v2 - Deliverable	Business	Required	EA Team	Federal Enterprise Architecture Reference Model version 2
Functional Decomposition Diagram	Visio	Business	Required	EA Team	Describes the functions with the organization
TOGAF 9 Template - Request for Architecture Work	TOGAF 9 - Document	Business	Required	Functional	All IT investments requiring architecture review
Business Process Diagram	BPMN 2.0	Business	Required	Functional/ EA Team	Business Process Model Notation version 2.0, Open Management Group (OMG)
TOGAF 9 Template - Organizational Model for Enterprise Architecture	TOGAF 9 - Document	Business	Required	Functional/ EA Team	Document to describe the organizational roles and responsibilities from the enterprise perspective
Actor Role Matrix	TOGAF 9 - Document	Business	Required	Functional/ EA Team	The matrix to describe the organizational roles and responsibilities
Use Case Narrative and Diagram	UML - Visio	Business	Required	EA Team	use case depicts the actors, scenario tied to process models
TOGAF 9 Template - Business Principles - Goals - Drivers	TOGAF 9 - Document	Business	Optional -Threshold	Functional	Business principles, business goals, and business drivers provide context for architecture work, by describing the needs and ways of working employed by the enterprise.
TOGAF 9 Template - Architecture Requirements Specification	TOGAF 9 - Document	Business	Required	Functional	Requirements Specification document to capture required for the business need
Business Interaction Matrix	TOGAF 9 - Document	Business	Required	Functional	describes the business locations (nodes), the "needlines" between them, and the characteristics of the information exchanged
Information Exchange Matrix	Excel	Business	Required	Functional/ EA Team	Information exchange requirements express the relationships across three basic entities (activities, business nodes and their elements, and information flow), and focus on characteristics of the information exchange, such as performance and security. They identify who exchanges what information with whom, why the information is necessary, and in what manner.
As-emerging Business Architecture	OneEA - Deliverable	Business	Required	Functional/ EA Team	
As-emerging Business Architecture Definition Document	OneEA - Deliverable	Business	Required	Functional/ EA Team	
Business Inputs to the EA Roadmap/Transition Plan/Sequencing Plans	OneEA - Deliverable	Business	Required	Functional/ EA Team	

# Technology/Infrastructure Architecture Artifacts

Artifact	Standard	Domain	Condition	Owner	Comment
<b>Technology &amp; Infrastructure</b>					
Infrastructure Reference Model	FEA v2 - Deliverable	Infrastructure	Required	EA Team	EA team develops and collaborates with stakeholders. Enterprise Technical Reference Model(ETRM) in development
TOGAF 9 Template - Requirements Catalog	TOGAF 9 - excel	Infrastructure	Required	Functional	Analysis and work-study document
Network Diagram (voice, data, video, mobile)	Visio	Infrastructure	Required	Functional	TBA
Network Computing - Hardware Matrices	TOGAF 9 - excel	Infrastructure	Required - Appendix	Functional	Network physical computing
TOGAF 9 Template - Environments and Location Diagram	OneEA -Deliverable	Infrastructure	Optional - Appendix	EA Team	Depicts the application host, location, and equipments of all services ( cloud, other)
TOGAF 9 Template - Technology Standards Catalog	OneEA - Deliverable TOGAF 9 - excel	Infrastructure	Required	EA Team	Identify the current and emerging standards as mapped through the portfolio catalogue
TOGAF 9 Template - Technology Portfolio Catalog	TOGAF 9 - excel	Infrastructure	Required	Functional	Deployed technology, logical and physical and platform layers as related to appropriated technology
System - Technology to App Matrix	TOGAF 9 - excel	Infrastructure	Optional		maps applications to technologies, sunset dates, versions, etc
Technology Stack Diagrams	OneEA -Pattern Deliverable	Infrastructure	* Required - need sample diagram	EA Team	stack diagram showing how hardware, operating system, software infrastructure, and packaged applications combine.
As-Emerging Technology Architecture	OneEA - Deliverable	Infrastructure	Required	EA Team	Develop a Baseline Description of the EMERGING Technology Architecture, to support the Target Technology Architecture. The scope and level of detail to be defined will depend on the extent to which emerging technology components are likely to be carried over into the Target Technology Architecture, and on what architectural descriptions exist
as-Emerging Technology Architecture Definition Document	OneEA - Deliverable	Infrastructure	Required	EA Team	<ol style="list-style-type: none"> <li>1. Fundamental functionality and attributes - semantic, unambiguous including security capability and manageability</li> <li>2. Named interfaces: chosen set, supplied (APIs, data formats, protocols, hardware interfaces, standards)</li> <li>3. Map to business/organizational entities and policies</li> </ol>
Technology Plan/Sequencing Plans	OneEA - Deliverable	Infrastructure	Required	EA Team	

Artifact	Standard	Domain	Condition	Owner	Comment
<b>Applications Architecture</b>					
Applications Reference Model	FEA v2 - Deliverable	Applications	Required	EA Team	EA team develops and collaborates with stakeholders. Enterprise Application Reference Model(EARM) in development
TOGAF 9 Template - Requirements Catalog	TOGAF 9 - excel	Applications	Required	Functional	Analysis and work-study document
Physical Application Components Map to Organization's Units	TOGAF 9 - excel	Applications	Required	Functional	Depicts the applications aligned to the business units
TOGAF 9 Template - Application Communication Diagram	TOGAF 9- excel	Applications	Required	Functional	Depicts the data that is exchanged between applications
Application Interaction Matrix	TOGAF 9 - excel	Applications	Required	Functional	Two views (Logical and Physical Data Flow Map)
System - App to App to Service to system Matrix	TOGAF 9 - excel	Applications	Required	Functional	Application to application or application to service, or application to system (multiple applications)
System - Data Matrix	TOGAF 9 - excel	Applications	Required	Functional	Two views (Logical and Physical Data Flow to App Mapping)
TOGAF 9 Template - Interface - Performance Matrix	TOGAF 9 - excel	Applications	Required	Functional	Depicts the applications and the local Performance of the Information
Enterprise Service Bus Diagram	Visio 10	Applications	Required	Functional	Depicts the sample design of the service bus
Application Inventory (Application Portfolio Catalog)	TOGAF 9 - excel	Applications	Required	Functional	Applications Portfolio Catalog
Software License Inventory	ACCESS	Applications	Required	Functional	
System Interface Catalog	Access/SQL	Applications	Required	Functional	
As-Emerging Applications Architecture Description Document	OneEA - Deliverable	Applications	Required	EA Team	
Applications Architecture input to Transition Plan	OneEA - Deliverable	Applications	Required	EA Team	

Artifact	Standard	Domain	Condition	Owner	Comment
<b>Security Architecture</b>					
Security Reference Model	FEA v2 - Deliverable	Security	Required	EA Team	EA team develops and collaborates with stakeholders. Enterprise Security Reference Model (ESRM) in development
TOGAF9 Template - Principles Catalog	TOGAF 9 - excel	Security	Required	Functional	Describes the security principles on the security tab
System Security Plan	TBA	Security	Required	Functional	Describes the security requirements and plan for operation
Security Controls Catalog	NIST SP-800-53A - excel	Security	Required	Functional	List of security controls
TOGAF 9 Template - Requirements Catalog	TOGAF 9 - excel	Security	Required	Functional	Depicts the Security Requirements
TOGAF 9 Template - Requirements Impact Assessment	TOGAF 9 - DOC	Security	Required	Functional	Depicts the security impact assessments requirements
Risk Management Plan	OneEA - Deliverable	Security	Required	EA Team	Depicts the risk mediation strategies
Security and Privacy Plan	OneEA-Deliverable	Security	Required	EA Team	Plan to describe the privacy standards
System Authorization (Certification & Accreditation)	FIPS199, 200, 800-37Rev1, 800-39, 800-60,800-61,800-53Rev3, 800-53Arev1	Security	Required	Functional	Authorization to Operate, to apply for ATO
Disaster Recovery Plan	OneEA-Deliverable	Security	Required	EA Team	TBD
Continuity of Operations Plan	OneEA - Deliverable	Security	Required	EA Team	TBD
As-emerging Security Architecture Description Document	OneEA - Deliverable	Security	Required	EA Team	
Security Architecture input to Transition/Sequencing Plan	OneEA - Deliverable	Security	Required	EA Team	

Artifact	Standard	Domain	Condition	Owner	Comment
<b>Data Architecture</b>					
Data Reference Model	FEA v2 - Deliverable	Data	Required	EA Team	EA team develops and collaborates with stakeholders. Enterprise Data Reference Model(EDRM) in development
TOGAF 9 Template - Data Entity - Data Component Catalog	TOGAF 9 - excel	Data	Required	TBD	Depicts and defines the data from a Logical and physical
Logical Data Model (Entity or Object)	UML	Data	Required	TBD	UML Class Model - static information, attributes
Physical (Service) Data Model	DODAF 2.02	Data	Required	TBD	UML Class Model - depicting service and attributes
Knowledge Management Plan	TBD	Data	Required	TBD	
Entity/Object State-Transition Diagram	UML	Data	Required	TBD	
Entity/Object Event Sequence Diagram	UML	Data	Optional	TBD	
Data Quality Plan	TBD	Data	Optional	TBD	
Object Library	Access/SQL	Data	Required	TBD	
Data Entity/business Function Matrix	Excel	Data	Optional	TBD	showing which data supports which functions and which business function owns which data Entity
Data Security Diagram	Visio ?	Data	Optional	TBD	Developed jointly with SecWG

- **Conceptual Architecture (Complete)**

The conceptual architecture represents the highest level of architectural perspective and defines the overall Enterprise vision. It identifies the architectural reference models and frameworks that support the Enterprise architecture (EA). In addition, the conceptual architecture is an overview of the architectural lifecycles and their relationships and dependencies are provided.

- **Prescriptive Architecture (In Revision)**

The prescriptive architecture defines a standard approach to categorizing and classifying business processes, information exchanges, and technologies as service capabilities. Guided by the conceptual architecture, the prescriptive architecture delivers a model that identifies service models that align to the business principles of OneNNSA.

- As-Emerging Architecture

The As-Emerging Architecture will provide the detailed objectives and technology specifications in deployment. This takes the high-level objectives and standards of the Prescriptive Architecture and informs consumers and developers with a emerging-transformative enterprise and program level capabilities.

- As-Is (Just Enough)

The As-Is analysis is enterprise architecture is a well-known baseline method to identify “present” information of the people, processes, and technologies of an organization. The “just enough” approach is a way of scoping the effort into specific segments for business transformation.