



4.0 ENTERPRISE ARCHITECTURE METHODOLOGY

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In FY2012, the State of Hawai'i embarked on a significant journey to bring about dramatic business and IT transformation to improve efficiency, streamline government processes, and enhance service delivery to constituents. Key initial actions were the hiring of a Chief Information Officer (CIO), the appointment of a Business Transformation Executive, and the establishment of the OIMT. These executives and this organization were given the mandate to lead the overall transformation. In addition, the CIO was tasked with by the Legislature to create the State's Strategic Plan. To support the implementation of the Strategic Plan, the need for an EA and the implementation of EA as a practice was required in order to give structure and direction to the transformation efforts.

4.1 ENTERPRISE ARCHITECTURE (EA) PRACTICE

To understand breadth, depth, and complexity of an EA practice, it is helpful to begin with the definitions of the terms and consider their implications.

ENTERPRISE: An abstract concept of a unit of economic organization or activity; especially a business organization, having a systematic, purposeful activity. *Merriam-Webster*

Within the definition of enterprise, there are some relevant implications:

- The significance of the term unit as it relates to overall organization and activity as a whole; to be able to define boundaries and bring clarity to what is internal to the enterprise and what is external.
- Recognition that end purposes of the “systematic, purposeful activity” do exist and can be assessed and evaluated resulting in indicators and measures of operational performance and mission success.

- The inference that the breadth of consideration contains a significant number of components and subordinate activities, all resulting in a significant level of complexity.
- The abstraction regarding the boundaries of the enterprise—recognizing that one major portion of the Executive Branch (such as a Department) can be considered an enterprise

ARCHITECTURE: The art of designing and building structures involving a complexity of components of various types and how they are organized and integrated into a unifying or coherent form. *Merriam-Webster*

Within the definition of architecture, there are also some relevant implications:

- The significance of the term art indicates that the architecture is not a science and therefore has no single formula in terms of how it is created.

With the definitions and implications of these two words, the goal of the EA practice is design enterprise components to achieve the business goals and objectives to a defined level of effectiveness. Key aspects of the EA practice are to:

- Construct and document the To-Be or future state conceptual architecture of the structure of the enterprise.
- Compare the To-Be state to the As-Is or current state.
- Analyze the gaps.
- Create a *Transition and Sequencing Plan (T&S Plan)* to define a roadmap or transition approach in order to close the gaps between the As-Is and To-Be states and achieve the desired goals, strategies, objectives, and performance measures identified in the Strategic Plan.

Due to the inherent complexity of any enterprise, and by default an EA and everything that is required to achieve the desired transformation, the practice of EA is defined within sub-categories or architectures (i.e., business, information, solutions, infrastructure) in order to create manageable components or layers. This sub-categorization offers different views or perspectives into the enterprise along with its identified challenges; and also enhances the IT stakeholders' analysis of the enterprise one segment at a time. Additional details regarding these sub-categories are described below

Figure 5 illustrates the EA practice as it is defined for the State of Hawai'i.



Figure 5: State of Hawai'i EA Practice

The EA helps organize, prioritize, achieve the future state for the IT environment and then manages it going forward. For the enterprise to achieve desired transformation or operational improvements, the EA must be fully integrated with the other elements, functions, activities, or practice areas. These related elements include:

1. The Management and Oversight function that provides a governance structure/process that oversees all related business transformation activities, IT investments, and projects to ensure they achieve desired results.
2. The Strategic Plan that establishes the overarching goals, strategies, objectives, and performance measures for the transformation and drives the requirements for the EA.
3. Projects, defined within the T&S Plan, are approved, funded, and initiated within the proposed sequence and timeframes. These include BPR projects identified to streamline current business processes and system and technology development/implementation projects which are categorized as Triage projects to address immediate needs; Pilot projects to pilot new enterprise capabilities; or Major Initiative Support projects to establish enterprise systems or technologies.
4. The Portfolio Management (PfM) practice as the comprehensive inventory of all IT investments.

Figure 6 provides an overview of this integration and other functions, practice, or program areas.



Figure 6: EA Practice Context for the State of Hawai'i

Finally, once specific projects are initiated, the EA future state guidance in the information, solutions and technical architectures are used as key touch points within the SDLC for consideration and compliance within the context the EA governance and change management process.

The following sections highlight the primary benefits of an EA for the State.

4.1.1 COMPLETE VIEW OF THE IT ENVIRONMENT

A well-defined EA framework enables the State of Hawai'i to define and model the enterprise as an entire system in all its dimensions and complexity on a continuous basis. EA provides a means for the State to collaborate on creation of the future state vision and define path forward for managing the process of change from the current state to the To-Be vision. The EA focuses on key points of integration that are needed in horizontal business services/processes (e.g., availability of critical enterprise information or Shared Services) and in vertical enterprise (or common) system and technology stacks or platforms. The dimensions (i.e., perspectives or layers) include the business and its mission and services, how the enterprise is organized and how it works, and then it is linked to the information, system, and technology investments and services.

4.1.2 STRATEGIC ALIGNMENT OF IT INVESTMENTS TO BUSINESS NEEDS AND PRIORITIES

A well-defined EA framework supports the traceability of key relationships between the business structures (e.g., services and processes) to the supporting information systems and technologies and their effectiveness in meeting business objectives. The goal of the EA process is to delineate the relationships between these elements and ensure they are aligned to produce the desired results.

4.1.3 INCREASE THE VALUE FROM INVESTMENTS



An EA framework promotes enterprise decisions on standards, which in turn create. Standardizing the IT environment across the enterprise creates economies of scale and provides opportunities to consolidate the environment. These actions simplify the environment and drive increased value from IT investments.

4.1.4 TRANSFORM BUSINESS OPERATIONAL EFFECTIVENESS

While the EA framework facilitates enterprise visioning, collaboration, integration, alignment, and investment decisions, the EA framework also enables greater responsiveness to the ongoing needs for improving and transforming the execution of the business mission, service performance, and operational effectiveness.

4.2 BASIS FOR THE FRAMEWORK, METHODOLOGY, AND DELIVERY PROCESS ASSOCIATED WITH THE STATE'S EA PRACTICE

In creating the EA practice for the State, numerous EA frameworks, methodologies, and delivery processes were reviewed. Careful consideration was given to the approaches that other States and the Federal government have adopted. As part of the selection process, the robustness of the framework, methodology, and delivery process was evaluated and assessed to ensure the complexities of the State's Departmental environments would be accommodated while providing features which facilitate ease of adoption and use; to provide the capability to guide investment in business and technology solutions, and to ensure appropriate alignment with organizational business needs.

The selected framework, methodology, and delivery process approach for the State of Hawai'i and guidance on its implementation are provided below.

4.3 SELECTED EA METHODOLOGY

The State of Hawai'i EA's Methodology uses the federal government's Federal Enterprise Architecture (FEA) and Federal Segment Architecture Methodology (FSAM) as its foundational framework. The rationale for using the FEA as the foundation is that the Federal Government has a depth of experience and maturity in implementing an EA methodology as well as in development of the EA artifacts themselves in a complex government structure. In addition the FEA/FSAM approach divides the LOBs and addresses the levels (i.e., enterprise, segment, solution) of detail. The Federal government models also relate directly to State government and specifically departmental programs that receive Federal funding. (More information on the FSAM is available at <http://www.fsam.gov/>.)

Level of Government	Architecture Scope	Level Of Detail	Area Of Impact
Enterprise	Agency Department	Low	Strategic
Segment	Lines of Business	Medium	Business
Solution	Functional	High	Operational

Once selected, the State's implementation of the FSAM was tailored, making use of key aspects of other proven methodologies (e.g., defined by Gartner, NASCIO), to align with the guidance provided by the CIO for the State of Hawai'i and to address inherent risks experienced in EA implementations. The goals of the tailoring included:

- Simplification—adjustments were made to simplify the terminology, the architecture layers and deliverables, and the steps involved in the methodology.
- Streamlining—adjustments were made to incorporate a more incremental and iterative approach to EA development to balance the speed of accomplishment and realization of the downstream benefits in investment decision making with the depth and detail in the EA models and artifacts.

The following guiding principles address the implementation and tailoring activities.

4.3.1 GUIDING PRINCIPLES FOR THE EA METHODOLOGY IMPLEMENTATION AND TAILORING

Consistent with the CIO's guidance on a pragmatic, agile program implementation a few guiding principles to the development of the methodology have been established:

1. Employ various methods to support responsiveness in achieving results and building momentum for the program as a whole.
2. Structure EA development projects consistent with small increments to facilitate making rapid progress.
3. Time-box the EA development work within an increment. Limit the time allotted to any one project to support the time demands that participants have on them, and to ensure results are achieved in a rapid fashion.
4. Use disciplined scope management in each EA project consistent with the segment technique to ensure that the scope of study can be addressed in the planned time allotment.
5. Balance the breadth of scope and level of depth that a specific project addresses consistent with the time allotment. For example, some EA develop tasks will be established as outlined tasks to focus on rapid identification and brainstorming without full details.
6. Plan for iterations to circle back and enhance detail as time allows. Begin with high-level outlines for broader scopes (enterprise or LOB), and follow with iterations to detail subordinate areas.
7. Evolve over time from principles-based guidance towards model based guidance with, as stated by Gartner, "just enough modeling, just in time."
8. Use techniques from Gartner such as the Common Requirements Vision and the Conceptual Architecture Principles to capture statements that outline needed requirements for EA changes and principles guiding decisions and standardizations within the EA. Then as time allows reflect these results in updates to the EA models. Learn to document the essence of the change or the future state vision in statements first, and then models to facilitate moving fast. Consistent with guidance from Gartner, the goal is not to model the world but to concentrate on those aspects of the business process/information system/technical infrastructure that will need to be changed to deliver the new operational performance objectives.

4.3.2 HAWAII'S TAILORED EA METHODOLOGY IMPLEMENTATION

Using these guiding principles, the FSAM methodology was adjusted for use in Hawai'i as depicted in Figure 7 below.

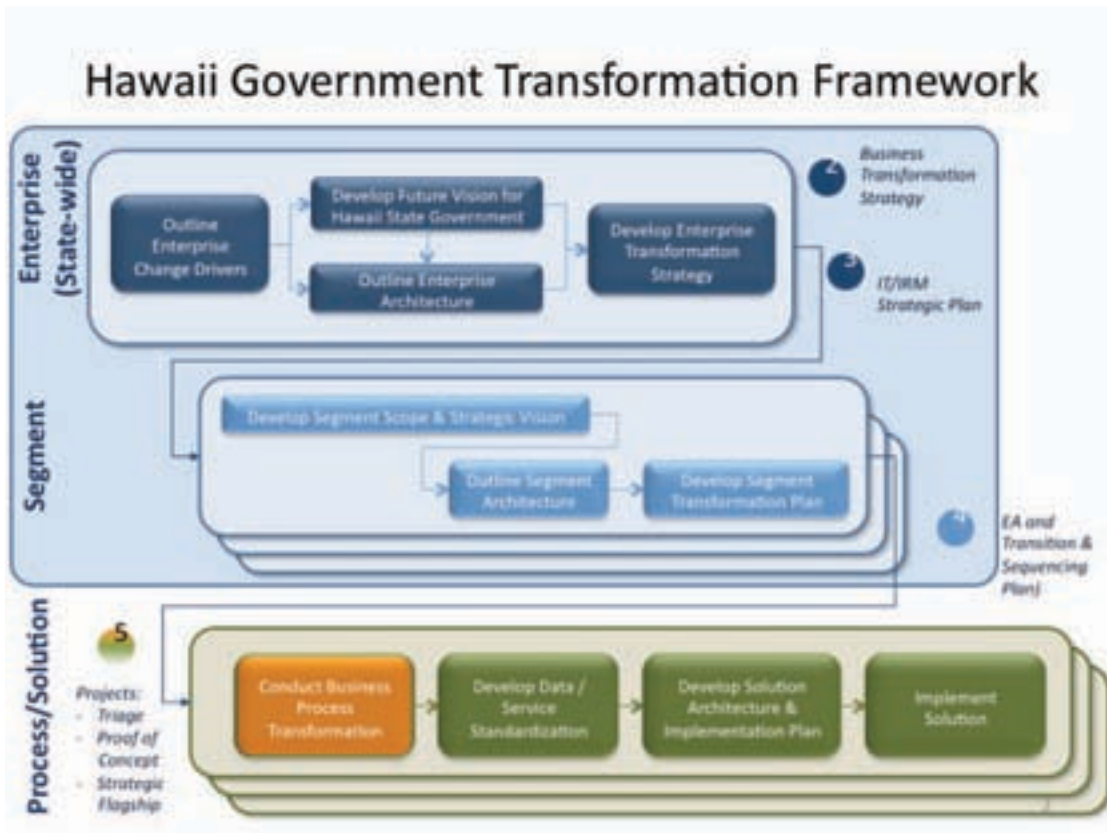


Figure 7: State of Hawai'i Two Level EA Methodology

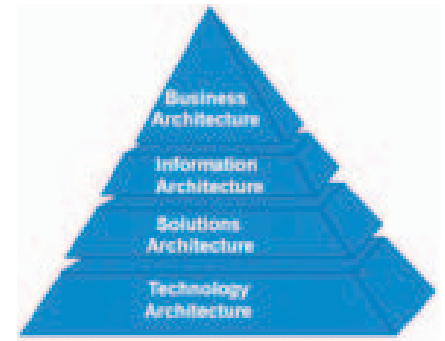
The Hawai'i methodology for EA is a framework based on two levels: 1) an enterprise level that is holistic and state-wide in its view, and 2) a segment level that is based upon the FSAM concept and enables detailed EA development in achievable components along the segment boundaries. Each level has a simplified and streamlined approach as compared to the FSAM. At each level there are two tracks: one focused on the business perspective supported by the senior executives, and the second focused on the information management and technology supported by the CIO and IT managers within each Department. The basic workflow within each level is similar and includes:

1. Identifying the strategic external and internal drivers for change and the associated transformation objectives
2. Developing the future state vision for business performance
3. Identifying the implications for change on the supporting IT systems and infrastructure and outlining the needed restructuring, i.e., re-architecting
4. Developing the implementation strategy/plan for achieving the objectives

The EA development establishes the overall objectives for integration, sharing, and standardization—identifying the integration touch points horizontally and vertically across the enterprise. The overall structure of the EA is established with a focus on assigning stewardship of key components and identifying stakeholder involvement influenced by the identified integration points. The EA development at the segment level drills down into further detail resulting in greater clarity on defining a full suite of integrated solutions and systems to meet the performance objectives of the segment.

4.4 ARCHITECTURAL LAYERS WITHIN THE EA FRAMEWORK

An integral aspect of the EA is the definition of the architectural layers. The layers facilitate an important objective by decomposing the enterprise into sub-categories. An important characteristic of this layered structure is the flow down of requirements from layer to layer. Within the State of Hawai'i's methodology, the subordinate architectural layers were tailored to be consistent with the traditional the four-layer model described in the Gartner approach. The four layers used within the State of Hawai'i's EA framework are defined below.



4.4.1 ENTERPRISE BUSINESS ARCHITECTURE (EBA)



The EBA layer describes a comprehensive business model within the EA. The business model includes:

- The business mission, services, and performance objectives within the Departments and State
- The associated Service Delivery value chains including support for the citizens who use the services and other government entities that work with the State to deliver services
- The detailed business processes that define how work is done including policies, business rules, and organizational alignment

The top-level component for organizing the EBA is a LOB. The LOBs are subdivided into Core Mission Areas that are citizen-facing services and Support Service Areas that are internally-focused services. The LOB is a critical entity for organizing business operations of the State from a functional perspective independent of the Departments, attached agencies, or programs that perform them in order to promote collaboration across the Departments to bring cross-cutting transformation. The LOBs are used in organizing all stewardship responsibilities for business service/process performance, information quality and availability, and information system functionality, usability, and integration. Stewards for each LOB, generally Department-based, will be identified.

4.4.2 ENTERPRISE INFORMATION ARCHITECTURE (EIA)



The EIA represents the second or information layer within the EA. The EIA begins with the:

- Conceptual information model to promote the identification of common or shared information at the enterprise level and within the LOBs
- Development of standard definitions of the structures and values of common information

The key integration point between the EBA and EIA is the identification of critical information needs within the business process definitions to facilitate information reuse, analysis, and decision-making; and the resulting information definition, structuring, classification, and storage, delivery, and exchange solutions to enable its confidentiality, integrity, and availability.

4.4.3 ENTERPRISE SOLUTION ARCHITECTURE (ESA)

The ESA represents the solution layer of the EA. The ESA focuses on solutions that involve the application of IT systems and products to automate and streamline business processes and information delivery and use. In this context, the term solution may seem analogous to an IT information system or



an application. The solution concept used here is somewhat broader in that it may include IT service provision such as a service desk or data center. The key integration touch points for the ESA in relation to the EBA and EIA are associated with the most challenging enterprise issue: delivering solutions that help achieve strategic goals and meet key business process and information needs.

4.4.4 ENTERPRISE TECHNOLOGY ARCHITECTURE (ETA)



The ETA is the fourth and final layer of the EA. The ETA supports and enables delivery of the enterprise solutions through technology. The ETA identifies and organizes the breadth of technologies needed within taxonomy of technology domains, categories, product types, specifies standard protocols, and products for use in the State's technical infrastructure. The key integration point related to the ESA deals with standard solution patterns that specify a technology stack and IT platforms for hosting, managing, and supporting enterprise solutions.

Table 1 identifies each of the architectures, provides a crosswalk to the associated reference models within the FEA, and outlines key features of that layer.

Table 1: Relationship of Architectures to Federal Reference Models

Group	FEA/FSAM Reference Model	Features
Enterprise Business Architecture (EBA)	<ul style="list-style-type: none"> • Business Reference Model (BRM) • [Business perspective of] Services Reference Model (CRM) • Performance Reference Model (PRM) 	<ul style="list-style-type: none"> • LOB Stewardship • Value Chain • Core Mission Areas • Internal Support Areas • Horizontal Enterprise Services Layer
Enterprise Information Architecture (EIA)	<ul style="list-style-type: none"> • Data Reference Model (DRM) 	<ul style="list-style-type: none"> • Management of Shared Data <ul style="list-style-type: none"> - Enterprise - LOB • Data Stewardship • Data Standardization
Enterprise Solutions Architecture (ESA)	<ul style="list-style-type: none"> • [IT perspective of] SRM 	<ul style="list-style-type: none"> • IT Services Integration Layers <ul style="list-style-type: none"> - Enterprise - LOB
Enterprise Technology Architecture (ETA)	<ul style="list-style-type: none"> • Technical Reference Model (TRM) 	<ul style="list-style-type: none"> • Solution Patterns (Reference Architectures) • Technology Architecture Taxonomy • Guiding Principles • Technology Standards and Guidelines

4.5 TECHNICAL APPROACH FOR EA DEVELOPMENT AND CONTINUAL UPDATE

This section describes the technical approach followed in executing both the enterprise-level and segment-level iterations for EA development. Types of segments that are defined for development in the FY2012 timeframe and associated variations in the detailed segment architecture development approach are also described.

Due to the nature of the biennial budget cycle for the State of Hawai'i and the scope of the enterprise, the target To Be or future state vision has been established for the next ten years. The objective of the future state vision is to portray “a day in the life” experience of key customers (citizens) and stakeholders (Federal and local government officials, contracting/supplier businesses, etc.) in terms of interacting, receiving services from, or doing business with the State.

Note that a fundamental principle regarding the approach for developing the future state vision was unrestricted by any barriers or inhibitors that might exist in the current state. Once the future state vision was established, only then was consideration given to analyzing the gaps that exist between the current state and the future state in order to develop the roadmap of initiatives to close the gap.

A related principle involves recognizing the need to continually maintain or update the current state baseline over the ten-year timeframe in order to readjust the roadmap as required to close the gaps to achieve the future-state vision.

Fundamental Principles for Developing the Future State EA Vision

- Unrestricted by any barriers or inhibitors present in the current state
- Continually maintain and update the current state baseline in order to readjust the T&S
- Business drives the direction

Finally, the most important principle applied to the EA development at both the enterprise- and segment-levels is the dual-track structure that distinguishes and interlaces business (executive) involvement and IT senior management involvement. For any EA to be successful, the business must drive the results. The methodology must be structured to represent the business.

4.6 HIGH-LEVEL EA DEVELOPMENT APPROACH

The top level of the EA methodology for the State is intended to establish the overall structure of all four of the architectural layers and to surface the enterprise-level integration points involving the horizontal or cross-cutting LOB services or value chains, and common or shared information, systems, services, and infrastructure.

Figure 8 illustrates the Business and IT tracks, noted in three principles above, and the activities and associated work products.

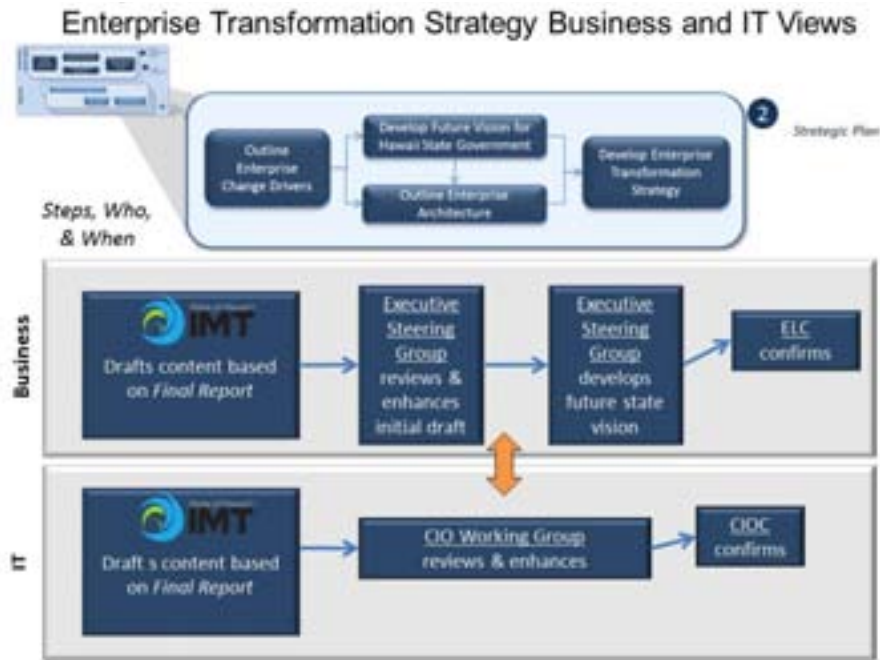


Figure 8: Enterprise Transformation Strategy

The details of the four steps in the enterprise-level work process are described below.

4.6.1 STEP ONE — OUTLINE ENTERPRISE CHANGE DRIVERS

As part of the development and annual update of the *Strategic Plan*, the external and internal business environment for the State is being characterized with a focus on the forces that are considered drivers for transformation. Techniques typically used in such an evaluation consist of an analysis of internal strengths, weaknesses, external opportunities, and threats (SWOT) analysis resulting in a set of statements that communicate the opportunities for strategic improvement that provide direction for constructing and restructuring the future-state vision for government operations, organizations, and performance. This analysis is performed at the business level by the executive leadership and led by the Business Transformation Executive and then at the IT level by the IT senior leadership (or CIOC led by the CIO).

4.6.2 STEP TWO — DEVELOP TO-BE OR FUTURE-STATE VISION

The development of the future-state vision for Hawai'i is another key activity in the development of the *Strategic Plan*. The executive leadership within the State describes and characterizes the future state of government operations and performance from a business perspective (i.e., not from an IT/IRM perspective). The opportunities for strategic improvement result in constructing or restructuring the how State government should function. The logical thought progression moves from strategic goals that must be achieved within the future state, business strategies for achieving them, lower-tier strategic objectives, and associated performance indicators or measures (measures that evolve and objectives are reached) that establish the transformation direction.

4.6.3 STEP THREE – OUTLINE ENTERPRISE ARCHITECTURE (EA)

In response to and in parallel with the development of the future state vision for government operations is the initial structuring of the high-level EA. There are two major activities within this step:

1. Capturing the requirements for change within the enterprise information, solutions, and technology infrastructure to achieve the transformation objectives
2. Outlining the key components within each of the architectural layers, their horizontal and vertical integration points, and characterizing those areas impacted by the change requirements

Matrices are typically used to document and maintain the traceability (or line of sight) from strategic transformation objective to EA change requirements, to EA components within the layers affected by the change.

In the initial iteration for the State of Hawai'i, the content for the future state of each architectural layer is developed at an outline level (i.e., all the components are being identified two or three levels deep in decomposition for each architecture layer but without fully characterizing the components). The As-Is or current state baseline was captured as effectively as feasible during the *Final Report*.

There are specific approaches used to outline the EA as a whole and the individual subordinate architectures. These approaches are discussed below.

4.6.3.1 CONSTRUCTING THE CONCEPTUAL ARCHITECTURE

The Gartner EA methodology popularized a technique known as conceptual architecture which is used as a foundational framework in starting the development of the EA. The conceptual architecture technique facilitates a starting point by keeping considerations for change and restructuring of the enterprise at a higher conceptual level in an initial iteration of architectural development. This technique focuses on developing statements of principle that communicate the essence of how the overall IT environment must be structured (or restructured) and provide guidance on the ongoing decision making process to achieve that structure. The conceptual architecture helps outline what the essential components need to be, identify new or changed components that must exist, and how the components must interact and integrate in order to achieve the needed requirements for transformation.

Some key concepts and features of a conceptual architecture as articulated in *The Commonwealth of Virginia's Conceptual Architecture* documentation include:

- Providing high-level guidance for aligning business drivers and architectural requirements with the underlying technological components to meet the vision of the Enterprise Architecture.
- Defining a logically consistent set of principles that will guide engineering across domain architectures. (Note: Domain architectures refer to the first-level decomposition or ETA layer.)
- Identifying applicable EA best practices as conceptual architecture principles. These principles are high-level fundamental truths, ideas, or concepts that frame and contribute to the understanding of the EA.
- Deriving conceptual architecture principles from best practices that have been assessed for appropriateness to the State's EA. The justifications and implications of each principle is identified and documented within the context of the State environment, and there is a direct linkage between each principle to one or more of the transformational change requirements.
- Enabling the enterprise to identify strengths and weaknesses in the current IT delivery methods, policies, skills, and organization based on these principles. It further provides a baseline to assess the applicability and appropriateness of the current technology products deployed by the enterprise. Finally, it provides a framework to derive, prioritize, and drill-down into necessary domain architectures.

4.6.3.2 OUTLINING THE ENTERPRISE BUSINESS ARCHITECTURE (EBA)

The following tasks are accomplished in outlining the future-state EBA:

- Establishing the LOB
- Identifying the Core Mission Areas and the Support Service Areas
- Identifying the subordinate business functions and enterprise services within each LOB
- Establishing stewardship policies and principles
- Identifying and obtaining agreement on departmental stewardship and stakeholder assignments
- Establishing a governance framework for making changes to the EBA going forward

4.6.3.3 OUTLINING THE ENTERPRISE INFORMATION ARCHITECTURE (EIA)

The following tasks are accomplished in outlining the future-state EIA:

- Constructing a Conceptual Information Architecture which identifies a decomposition of information subject areas that are consistent with the lines of business and subordinate business services.
- Identifying key subject area relationships that indicate information dependencies across lines of business.
- Augmenting stewardship policies and principles to encompass the information subject areas as associated responsibilities for information quality/integrity, availability, and security.
- Establishing requirements and principles to drive standard enterprise information integration, delivery, analysis, and collaboration solutions.

4.6.3.4 OUTLINING THE ENTERPRISE SOLUTIONS ARCHITECTURE (ESA)

The following tasks are accomplished in outlining the future-state ESA:

- Constructing a notional future state ESA which identifies an optimum set of IT solutions to automate the business and information components of the EBA and EIA.
- Identifying key crosscutting enterprise IT services (e.g., web services) that need to exist within a common services layer.
- Establishing requirements and principles to drive standard enterprise solution patterns, technical integration capabilities, and platforms.

4.6.3.5 OUTLINING THE ENTERPRISE TECHNOLOGY ARCHITECTURE (ETA)

The following tasks are accomplished in outlining the future-state ETA:

- Identifying and outlining requirements for enterprise solution patterns (or reference architectures for standard types of solutions):
 - Developing initial high-priority enterprise-wide solution patterns
 - Standardizing on strategic application platforms and technologies for future applications development, acquisition, and integration
 - Outlining standard development methods, skills development (training) and skills acquisition (contracting), and standard tools/technologies
 - Outlining a communication plan to socialize the standards and guidance within each Department
 - Potential solution patterns include:
 - Web applications
 - Mobile applications
 - Social media systems
 - Workflow services
 - Document management services
 - GIS software platform/technology
 - IT infrastructure management / enterprise system management tools
 - Web services integration
 - Shared databases and master data sets
 - Data analytics systems
- Outlining enterprise technology guiding principles and standards:
 - Agreeing on technology domains and taxonomy
 - Developing guiding principles on technology domain direction and decisions
 - Developing an immediate baseline of current assumptions regarding sunset, legacy, preferred, and standard application platforms, architectural stacks, and technologies
 - Using an involvement approach of a CIO Working Group with separation into Technology Domain Architecture Working Groups and review and confirmation by CIOC

4.6.4 STEP FOUR – DEVELOP ENTERPRISE TRANSFORMATION STRATEGY

The final work product from the Strategic Plan consists of analysis and structuring of actionable focus areas for future initiatives and high level considerations for the timing and sequencing of these initiatives. This should be viewed as the first iteration of the definition of a set of initiatives or projects needed in order to create the future state vision of the State and the EA. These initiatives are further expanded upon during the detailed segment architecture work to populate portions of the T&S Plan that in turn becomes part of the investment portfolio. Thus, the EA outlines the context of determining what projects need to be done, how to scope these projects, profile these projects, and sequence these projects within the T&S Plan for subsequent evaluation, approval, and funding as part of the PFM activities.

Figure 9 below identifies the general work plan for execution of the initial iteration of these tasks in FY2012.

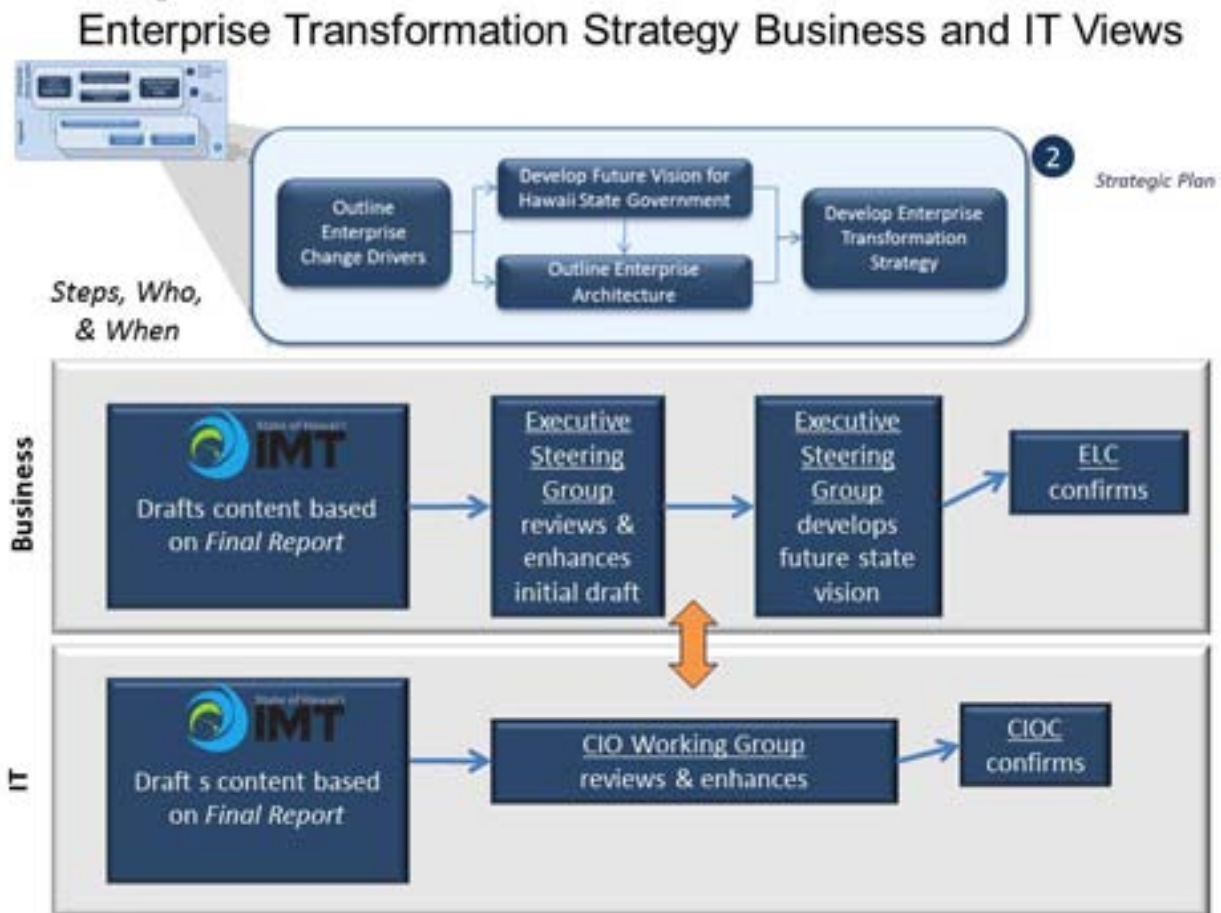


Figure 9: Enterprise Transformation Strategy

4.7 DETAILED BUSINESS SEGMENT ARCHITECTURE DEVELOPMENT APPROACH

The segment level of the EA methodology for the State is intended to fill in the additional architecture detail for the four architectural layers in a step by step or incremental fashion for the scope of a defined segment at a time. The concept of a segment is used to allow the flexibility of scoping the detailed architecture development in most any direction (e.g., focused on an LOB architecture expansion or a technology domain architecture expansion).

Segments are being defined early on while the iteration at the enterprise level is being worked as the more detailed analysis and architecture development work is planned. Initially, filling in the details of the functioning of the new IT/IRM programs, services, and operations under the leadership of the CIO and OIMT will be accomplished consistent with a segment architecture approach.

Additionally, high-priority areas of the ETA will be developed in this manner. Then focus will shift to executing the detailed architecture development on business segments that are scoped consistent with one or more of the LOBs. These types of segment definitions are shown below in Figure 10.

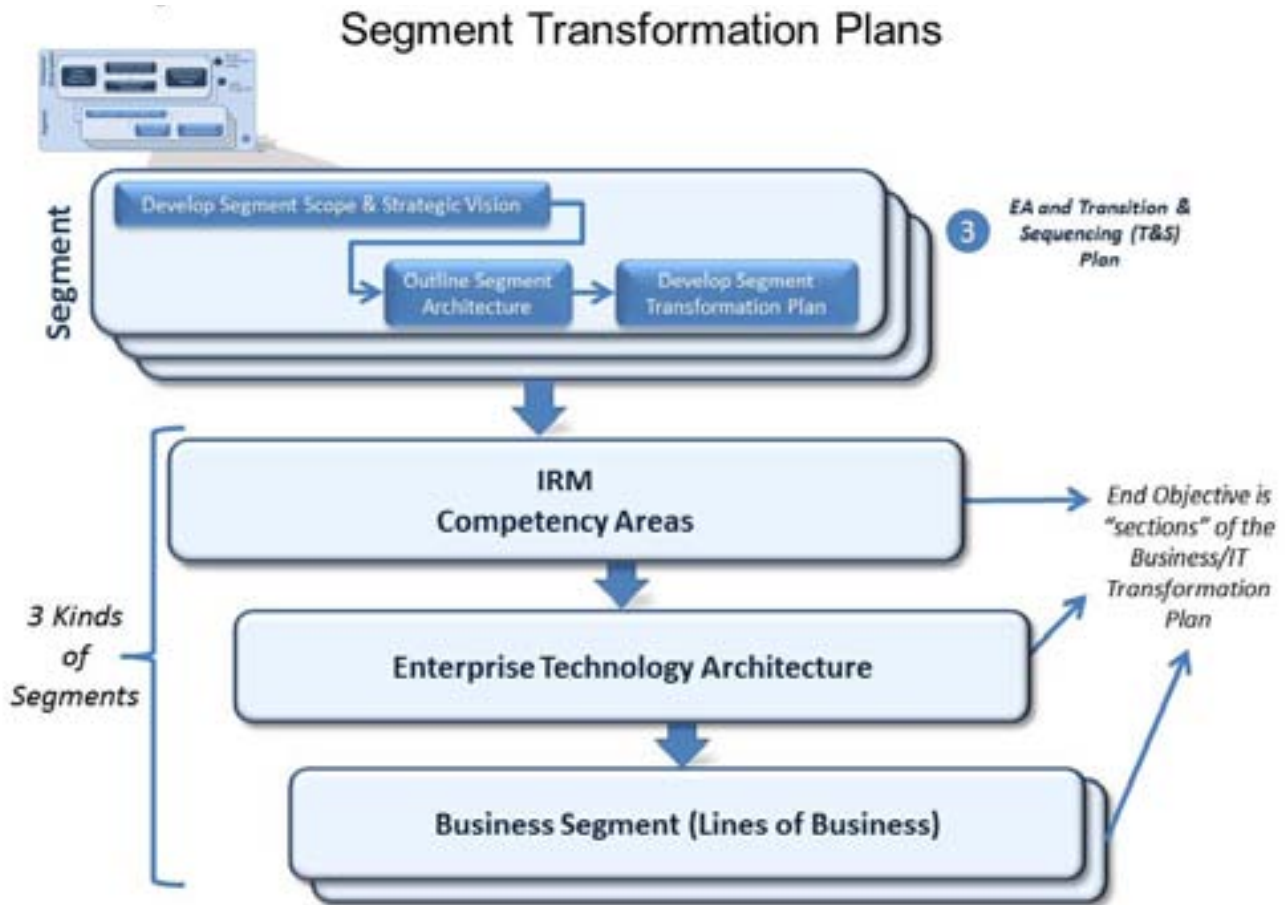


Figure 10: Segment Transformation Plans

Business segment architecture efforts are intended to fill in the additional architecture details for primarily the top three architectural layers for the scope of the defined business segment and to expand upon the segment-level integration points involving the horizontal or cross-cutting LOB services or value chains, as well as the use of common or shared enterprise services and infrastructure. Figure 11 below outlines the Business and IT tracks and the activities and associated work products.

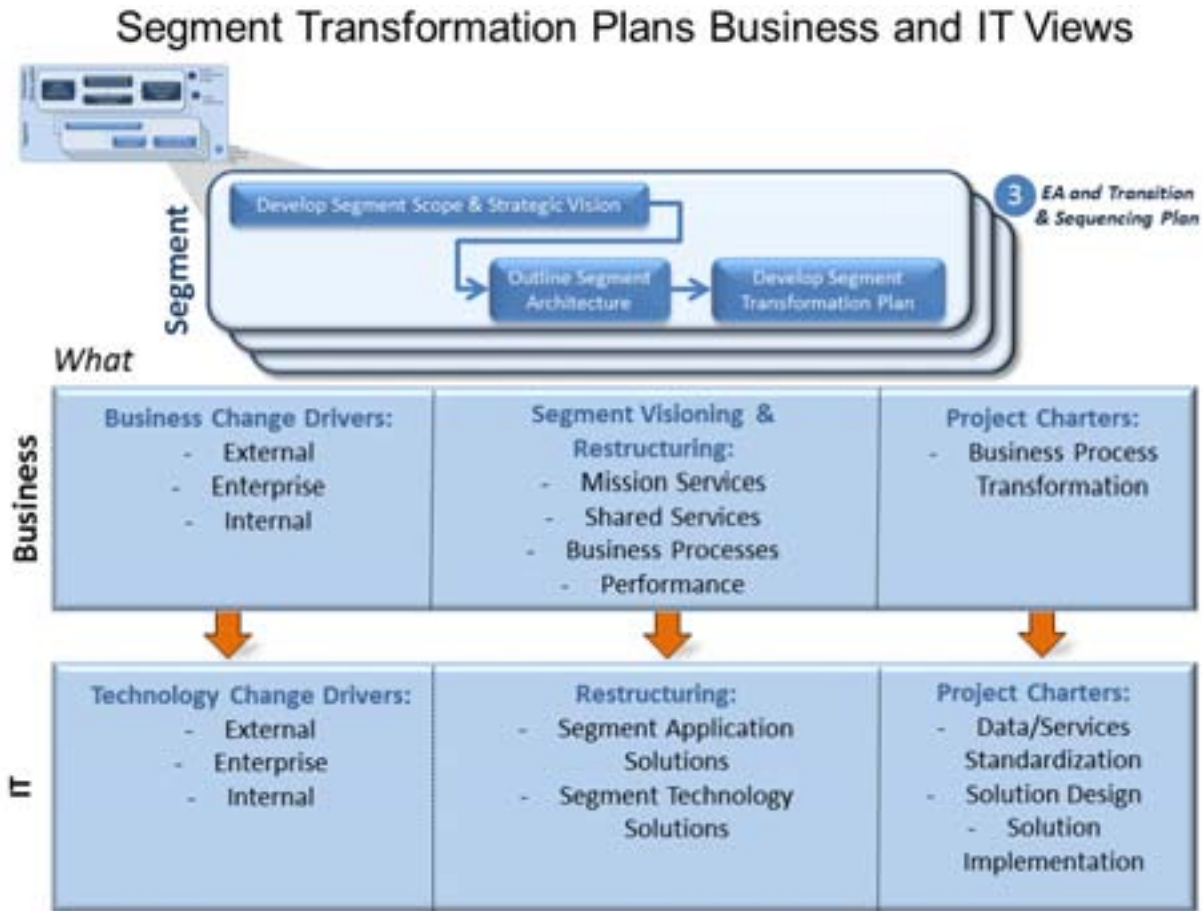


Figure 11: Business Segment Architecture Development – Business and IT Tracks

The following details regarding the three steps in the segment-level work process for business segments are described below. (Note: This work process mirrors the FSAM. Additional details on how to perform the specifics of each step, the questions to answer, and the techniques and tools to document can be found at <http://www.fsam.gov/>).

4.7.1 STEP ONE – DEVELOP SEGMENT SCOPE AND STRATEGIC VISION

Using identified strategic drivers at the enterprise level to determine what business segments to build first, Step One of the methodology addresses the launching of the effort with appropriate stewardship and stakeholder participation with an initial activity to determine the scope and strategic intent for the business segment. The segment strategic intent consists of the target state vision, performance goals, and common/mission services and their target maturity levels. This step is designed to allow to team to understand:

- What are the major common/mission services associated with the strategic improvement opportunities?
- Who are the segment stakeholders and what are their needs?
- What are the current segment investments, systems, and resources?
- What are the deficiencies within the segment or the inhibitors to success?
- What is the target state vision for the segment?



4.7.2 STEP TWO – OUTLINE SEGMENT ARCHITECTURE



Step Two accomplishes two key activities: the definition of business and information requirements for the segment and the definition of the conceptual solution for the segment that meets the business, information, and performance requirements. This step expands the business and information architectures within the segment scope, and addresses the following questions:

- How well does the current (As-Is) business and information environment perform?
- How should the target business and information environment be designed?
- Have the segment's goals and performance objectives been translated into an actionable and realistic target business and information architecture expressed within business functions, business processes, and information requirements?
- Have the business and information requirements been analyzed and documented to the lowest level of detail necessary to form actionable recommendations?
- Did the business and information analysis provide a synchronized and cohesive set of recommendations?
- Do both the business and IT leadership teams understand the adjustments that are required for the current business and information environments to fulfill the target performance architecture?

Next, the conceptual solution for the segment is restructured to meet the strategic business, information, and performance requirements that align with the future state vision for the involved LOBs. For IT personnel, this is where the development of solution architecture occurs following defined development processes and where system and service transition dependencies are recognized. This step also focuses on alignment with enterprise-level goals for common platforms and centralized computing. This step is integrated with the governance process for the State and provides input and also receives direction from the governance structure established for the State.

Guiding questions for this step include:

- What existing systems and services are deployed?
- How well do the existing systems and services currently support the mission? Which systems and services should be considered for retirement or consolidation or reengineering?

- What does the To-Be conceptual solution architecture need to include to fulfill the desired target performance?
- Are the selected target business functions, systems, and service components reusable?
- Does the conceptual solution architecture support the target performance, business, and data architectures developed in prior steps, along with recommendations for transitioning from the As-Is state to the To-Be state?
- Have the dependencies, constraints, risks, and issues associated with the transition to the future state EA been analyzed to identify alternatives to be considered?

4.7.3 STEP THREE – DEVELOP SEGMENT TRANSFORMATION (TRANSITION AND SEQUENCING) PLAN



Step Three in the creation of the segment is the creation of the *T&S Plan* for the segment. This step outlines the investments in the form of projects (i.e., DME, migration, retirement, consolidation) and prioritization of activities required to close the gaps or transition to the To-Be segment architecture. This step requires the buy-in and participation by business and IT leadership to ensure success for the State.

These improvement investments will be defined by a formal business case submission and will include specific projects or activities to conduct BPR, systems integration or improvements, policy or capability development, or other transformational approaches and requirements³. The projects are organized and staged within the overall *T&S Plan* to ensure the transformation to the future state is achieved. The *T&S Plan* also provides visibility into all activities from the following perspectives or views:

- Overall transformation views (Business Architecture: LOB and Business Service, Organization: Department and Program, Portfolio Life Cycle; Solution Architecture, and Technology Architecture)
- Departmental transformation views
- Governance (IT/IRM competency areas) views

³ The OIMT Portfolio Management (PFM) Methodology further defines the investment process and relationship to EA.

Input for the plan is aggregated from multiple streams: the current known projects from the *Final Report* results, the high-level EA development work, and the segment architecture development work. Figure 12 below identifies the general work plan for execution of the initial iteration of the segment architecture projects in FY2012

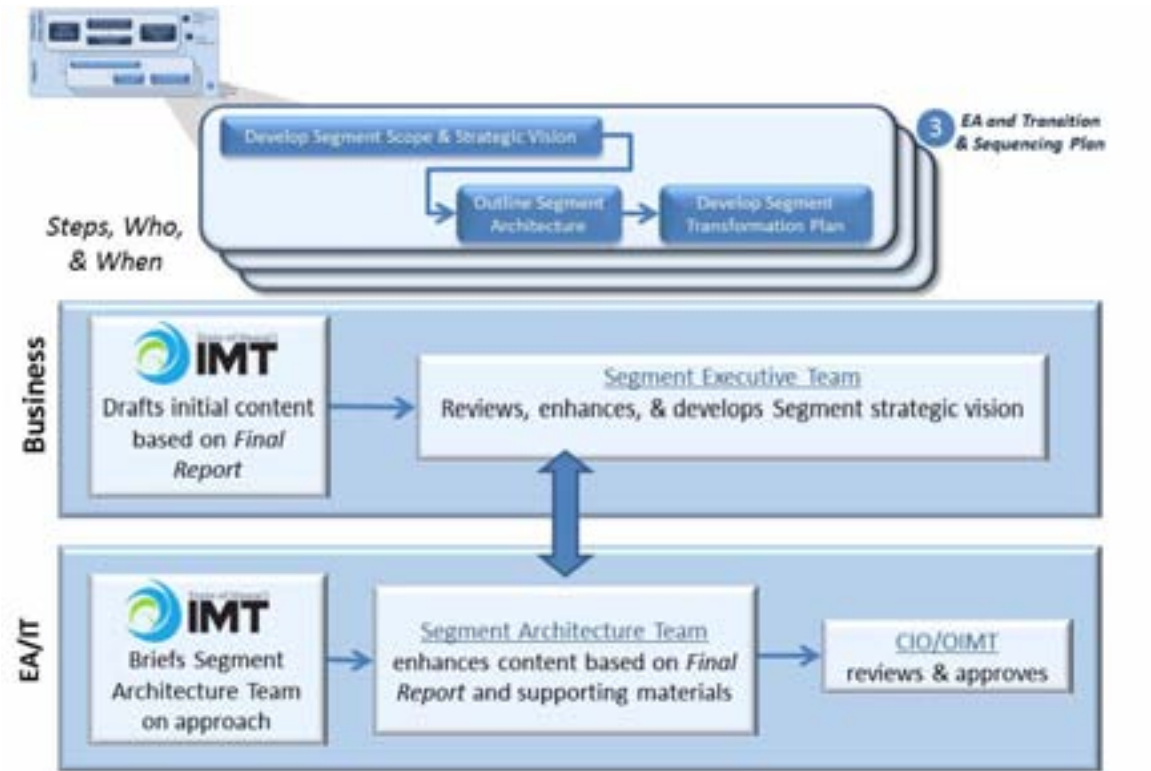


Figure 12: Business Segment Architecture Development Work Plan

Figure 13 below indicates the involvement of the two teams representing the dual business and IT tracks: the Segment Architecture Business Executive Team and the Segment Architecture IT Team.

Business Segment Architecture Teams

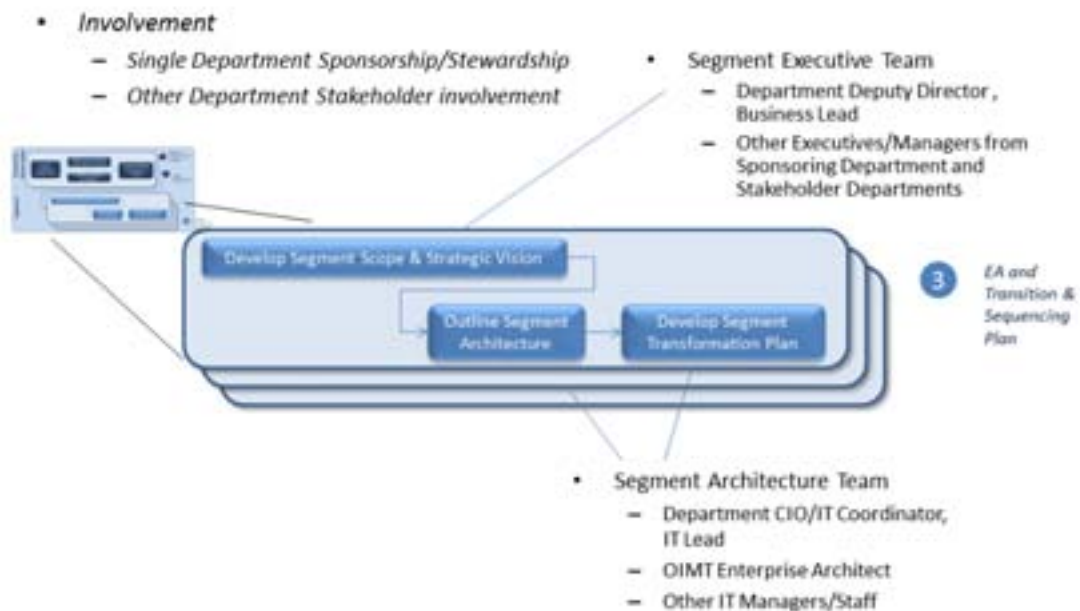


Figure 13: Business Segment Architecture Development (Involvement Model)

4.8 INSTITUTIONALIZING AND MAINTAINING THE EA PROGRAM

To benefit the State of Hawai'i for the long-term, the State must continually refine the EA in keeping with the needs of the State's *Strategic Plan*. The iterative, incremental, and time-boxed approach is intentional to:

- Balance the tendency to over-analyze or fall into analysis paralysis.
- Ensure that the EA is responsive and delivers direction that can be acted upon and achieved in a timely fashion.

A successful EA is not a one-time deliverable or effort but an ongoing management discipline featuring the continual evolution of alignment with the evolving business and transformation needs and the priorities in order to achieve the future state EA.

Note: This document communicates the approach for the initial major annual iteration to develop the State's EA for FY2012. OIMT will reestablish the new priorities for subsequent EA refinement for FY2013 and beyond.