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State governments are complex organizations with a host of business processes that need to be supported by the capabilities of information technology. Enterprise architecture can be described as an operating discipline comprised of frameworks, methodologies, and delivery processes that can be leveraged to manage the complexities of government. Enterprise architecture can ultimately guide investments in business and technology solutions insuring these solutions are appropriately aligned with business needs. The Chief Information Officer must demonstrate leadership in the area of enterprise architecture as part of their expanding role.

Enterprise architecture is a blueprint for better government providing a holistic, comprehensive view of the governmental enterprise encompassing strategic business intent and the capabilities that enable that intent. Capabilities include business processes, organizational structure and dynamics, and information technology. This “enterprise” view is necessary in order to effectively manage change and complexity.

Government is continually striving to deliver quality services effectively to its citizens. Government must also maintain the ability to meet the continually rising expectations of taxpayers. Citizens hold state government accountable to meet these expectations. State government can successfully respond through well planned, and well executed processes for delivering effective business and technological solutions.

Version 3.0 of the NASCIO Enterprise Architecture Tool-Kit is part of a portfolio of products and services provided by NASCIO to assist the states in the development of their frameworks, methodologies, programs, and projects for delivering quality business and technology solutions. This Tool-Kit presents approaches to various architectures without being prescriptive. The reader should make adaptations to the material presented based on their specific needs.

On behalf of NASCIO, we extend our thanks to the members of the Architecture Working Group (AWG) for their contributions to this version of the Tool-Kit. Products like this are only possible with the involvement of our members.

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## NASCIO EA Development Tool-Kit

### Introduction & Architecture Governance

Version 3.0

October 2004

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# PREFACE



## About NASCIO

The National Association of State Chief Information Officers (NASCIO) represents state chief information officers and information resource executives and managers from the 50 states, six U.S. territories, and the District of Columbia. State members are senior officials from any of the three branches of state government who have executive-level and statewide responsibility for information resource management. Representatives from federal, municipal, and international governments and state officials who are involved in information resource management but do not have chief responsibility for that function participate in the organization as associate members. Private-sector firms and non-profit organizations participate as corporate members.

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*The mission of the association is foster excellence in government.*

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## MISSION

NASCIO's mission is to foster government excellence through quality business practices, information management, and technology policy.

## VISION

NASCIO's vision is government in which the public trust is fully served through the efficient and effective use of technology.

## HISTORY OF THE ASSOCIATION

The association was founded as the National Association of State Information Systems or NASIS. In 1989, the membership voted to undertake a major realignment for the association, including a change in name to the National Association of State Information Resource Executives, and an expansion of membership. The association name changed to the National Association of State Chief Information Officers in 2001 as a reflection of the executive-level roles of the state members. All of the changes were aimed at providing NASCIO members with the information they need to meet their growing responsibilities.

## ABOUT THE ARCHITECTURE PROGRAM

The Adaptive Enterprise Architecture Development Program is a program funded by the Bureau of Justice Assistance, Office of Justice Programs, U.S. Department of Justice, under Grant No. 98-DD-BX-0067, and awarded to NASCIO. In 1998, when the program began, few states considered the importance of enterprise architecture in the provision of services. However, following publication in February 2000 of the NASCIO report, "Toward National Sharing of Governmental Information", a national call for architecture was made. As recommended in 1998 by the Office of Justice Programs and identified as critical in the report findings, NASCIO developed an enterprise architectural framework for government information systems integration.

Adaptive enterprise architecture effectively supports the business of government, enables information sharing across traditional barriers, enhances government’s ability to deliver effective and timely services, and supports agencies in their efforts to improve government functions. Enterprise architecture supports the identification and optimization of the entity’s interrelated business processes and resulting IT systems. The enterprise architecture promotes a constant re-evaluation of enterprise needs and is the best way to build an adaptive enterprise-wide architecture.

The NASCIO Architecture Program and this Enterprise Architecture Development Tool-Kit guide agencies at all levels of government in the definition, development, utilization, maintenance, and institutionalization of an enterprise architecture program supported by stakeholders of all levels, from the executive to the citizen user.

For more information on the NASCIO Adaptive Enterprise Architecture Development Program please visit the NASCIO website at [www.nascio.org](http://www.nascio.org).

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### Audience for Tool-Kit Sections

The **Introduction** section of the Enterprise Architecture Development Tool-Kit provides information that will be of interest to anyone desiring an overview of the importance of enterprise architecture, an introduction to the enterprise architecture concepts and terms or a general perspective of the topics covered within this Tool-Kit. The remainder of the Tool-Kit is dedicated to the development of the architectures.

*The Tool-Kit addresses Architecture Governance, Business, Information, Technology and Solution Architectures.*

The section on **Architecture Governance** will be of particular interest to those who currently guide or manage the organization's enterprise architecture or will do so in the future. Organizations with Architecture Governance in place will benefit by using the information on roles and responsibilities contained in this section as an assessment tool. They will also benefit from the sample organizational charts, provided by state, county and city governments.

The **Business Architecture** section will interest developers of enterprise architecture and those who participate in the description of the state's business from an enterprise-wide perspective or who wish to gain an understanding of the structure and the type of detail captured about the enterprise from a business perspective. For any Enterprise Architecture effort to be successful, it must be founded on the Business Architecture of the enterprise.

**Information Architecture** is defined within this tool kit to include data architecture and process architecture. Information Architecture manages the information of the enterprise by clarifying business

relationships and enhancing the understanding of the business rules adopted by the enterprise. Information Architecture aligns the Business Processes to the Information Systems that support these processes, promotes information sharing and facilitates cross-agency information exchanges. Using the set of business processes that provide a view of the functions of the enterprise, the Information Architecture will provide the organization with a high level model of its critical information. Those with interest in business relationships and use of critical information will find this section of interest.

Those who will be guiding, managing or developing the organization’s technology architecture will benefit from the **Technology Architecture** sections of the Tool-Kit. These sections provide detailed information such as process models, templates for documenting the technology and compliance criteria in use or anticipated within the organization. These sections also include sample tools, data and reports relative to the architectures, compiled from municipal, county and state governments with successful enterprise architecture programs.

**Solution Architecture** facilitates the development of architectural solutions within the enterprise by guiding the solution architect in formulating solution requirements, design specifications, and logical design models. Individuals interesting in streamlining the design process and leveraging the content of their Business, Information, and Technical architectures to create rapid, reusable enterprise solutions will benefit from this section of the Tool-kit.

The Enterprise Architecture Framework graphic in Figure 1 provides a pictorial view of how the various elements within the Enterprise Architecture interact and influence each other.

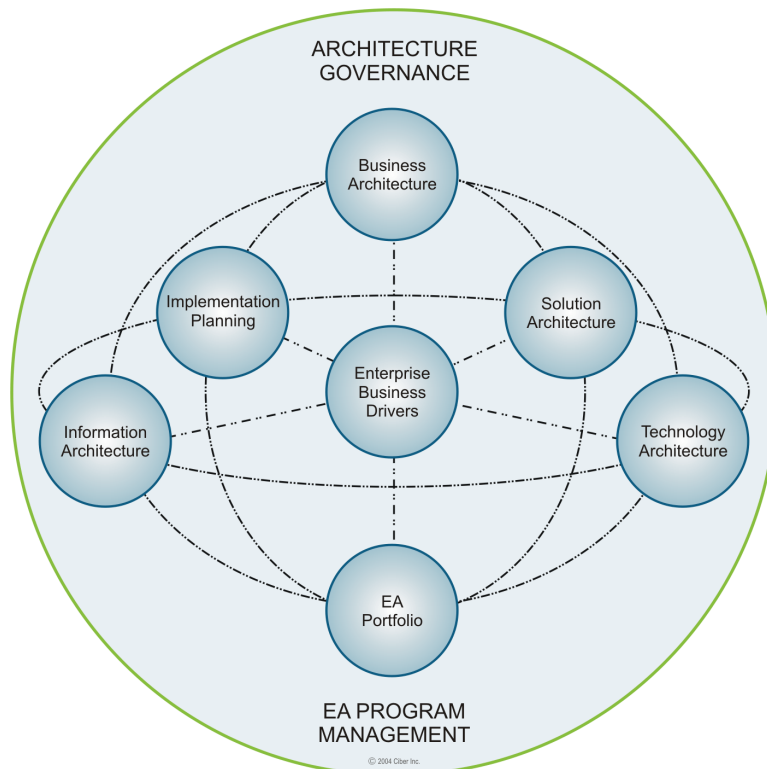


Figure 1. Enterprise Architecture Framework



## Executive Summary

An emerging customer-oriented approach to digital-government provides the incentive for this Enterprise Architecture Development Tool-Kit. It is designed to improve information sharing across government boundaries, as well as to position government enterprises for the digital government age and the advantages and opportunities that technology presents.

NASCIO's goal is a Tool-Kit that a government enterprise might use as a guide to develop their own Enterprise Architecture. It will support designing, implementing and maintaining the infrastructure for their networks and systems.

The Tool-Kit incorporates the design principles and technical standards necessary to be effective at digital government and to share information nationally.

"Adaptive" is key because the Enterprise Architecture must be able to support a wide variety of applications, and it must evolve as and business and technology drivers changes. The rate of change in the business and administrative process of organizations is accelerating. Consequently, cycle times for implementing new service delivery mechanisms are shrinking. While cycle times of the 1970's and 1980's were typically seven to 10 years in length, in the 1990's, cycle times were averaging one to two years in length. The rate of emerging technology is also increasing, making the need to be adaptive even more critical.

The Enterprise Architecture Framework, which combines structure, processes and templates to document the desired architecture in a systematic and disciplined manner, can be described as a technique for developing the necessary repository for the Enterprise Architecture. Templates describe and organize the relationships among the various components of the Enterprise Architecture. However, over time it is expected that governments will quickly see the value in leveraging visual modeling approaches to Enterprise Architecture. Visual modeling enhances communication and the more sophisticated tools for developing visual models provide the capability to ask questions and conduct sensitivity and impact analyses. In this case, the aforementioned templates may constitute underlying screens for capturing and reporting the details behind visual models. The framework must be constructed before the detail regarding the organization's business, information and technology functions can be documented. Ideally, the creation of systems that work together will be simplified, because Enterprise Architecture ensures that crucial interoperability items are addressed.

Enterprise Architecture is critical because it contains the blueprint for the integration of information and services at the design level across agency boundaries. A well-documented enterprise architecture blueprint will allow data to flow from agency to agency, just as water flows through the pipes and electricity flows through the wiring of a well planned home.

## NASCIO'S ENTERPRISE ARCHITECTURE PROGRAM BACKGROUND

NASCIO's goal is to promote national data sharing, the implementation of digital government and the empowerment of municipal, county, and state government to understand, document, control and monitor performance of its IT investments. NASCIO will continue to provide assistance to states in adopting Enterprise Architecture. Specifically, NASCIO continues to develop and expand a Tool-Kit that guides

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*Enterprise Architecture provides the blueprint for the integration of information and services.*

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government enterprises through the development, implementation and evolution of enterprise architecture.

Private industry benefits from the resale of enterprise architecture modeling processes and information technology in general. More and more government enterprises are recognizing the need to share information. Government at every level reaps the highest benefits from sharing common ideas, common approaches and the sharing of information and technology. The Tool-Kit is a product of the government stakeholders it is intended to support. The NASCIO Architecture Work Group, composed of volunteer executive information technology professionals, has worked together to develop the Tool-Kit.

Three government agencies, at varying levels of implementing enterprise architecture (beginning, intermediate and operational), were chosen to participate in a validation program to determine the implications for government enterprises to move toward the national template. The results of this validation effort were incorporated into the final NASCIO Tool-Kit v1.0.

Three regional development workshops were conducted to formalize the presentation of the national template to government representatives and further enhance its applicability. A benchmarking process has been developed and implemented to determine the readiness of municipal, county and state governments to adopt the national enterprise architecture methodology. A number of states participated in a face-to-face benchmarking effort. Additional states and the District of Columbia participated in the benchmarking process through a benchmarking survey instrument.

Additionally, the feasibility of submitting the Enterprise Architecture Development Tool-Kit to nationally recognized standards bodies such as ISO or IEEE for recognition, certification, and publication were explored.

Follow-on efforts to keep the Enterprise Architecture Development Tool-Kit viable are currently being defined. Enterprise architecture viability initiatives include: a continued awareness program, performance measures, technical assistance programs, progress tracking, and an on-going enterprise architecture refresher program to keep the Tool-Kit current, based on emerging government needs.

Integration efforts include mapping the enterprise architecture to the Concept of Operations that has been developed by NASCIO, as well as integration with other national standards initiatives conducted by organizations such as the [National Governors Association](#).

Expanding government participation in this effort includes the development of partnerships with the [Federal CIO Council](#) and municipal and county government entities that have been involved in the development and validation activities as appropriate.



# INTRODUCTION

## □ Concept - Why Architecture?

Adaptive enterprise architecture effectively supports the business of government, enables information sharing across traditional barriers, enhances government's ability to deliver effective and timely services, and supports agencies in their efforts to improve government functions and, thereby, services. NASCIO has developed enterprise architecture processes and templates to guide an organization through enterprise architecture development and adoption, continually providing support that, through standards, narrows the number of products to support and results in reduced complexity. As product numbers and complexity decrease, cost savings emerge. The Tool-Kit is the product of municipal, county and state government input and is applicable to all levels of government with or without existing forms of architecture.

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*...greatly enhance government's ability to deliver effective and timely services.*

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Committing to an ongoing, renewable enterprise architecture process promotes a business-aligned, technology-adaptive enterprise. Enterprise Architecture generates a road map that can provide guidance for future investments and identify and aid in the resolution of gaps in the organization's business and IT functions.

For enterprise architecture to be successful, it must be linked to the business direction of the enterprise. This relationship is confirmed in the Business Architecture, which documents items such as strategies, organization, location, events and information and their existing and future significance.

Information Architecture addresses the informational needs of the enterprise. The information architecture aligns business processes to information systems that support these processes. Using the set of business processes that provides a view of the functions of the enterprise, the Information Architecture will give the organization a high level representation of its critical data. It also promotes information sharing and exchanges across agencies.

Understanding the current application portfolio, future application of technology to new business applications and how future application of technology will be built is presented in the solution architecture of the enterprise architecture. In addition to the applications, it also communicates the supporting technology required to implement the applications,

Technology architecture provides technology commonality that reduces security risks by providing standards for implementing security. It also promotes staff retention by simplifying training and support requirements. It reduces the total cost of ownership by producing technology savings through component commonality, joint purchases and reuse.

Implementing enterprise architecture requires a significant capital investment. It can be compared to moving from an old house to a new one. The old house is a known quantity; we understand what it costs to live there. Moving to a new house, however, potentially requires capital investment for utility deposits, connection fees, appliances, window coverings and landscaping. You would not have been required to make these investments if you had remained in the old house.

Most governments will not have unlimited capital to invest in implementing new enterprise architecture and standards. Implementing enterprise architecture via the big bang theory is not going to work. Migrating to enterprise architecture within available budgets is the only viable method.

Future technology investment and new projects adhere to the adaptive enterprise architecture standards. Over time, the enterprise infrastructure will migrate to the new technology architecture standards. Enterprises with existing in-house architectures and standards can incorporate them into NASCIO's architecture templates. The organization will need only to categorize the existing architecture within the provided templates.

For example, the implementation of technology architecture requires categorizing existing standards and legacy system components into one of the following four technology categories: emerging, current, twilight, or sunset standards.

Many view enterprise architecture standards as constraints that reduce flexibility in system development and deployment, hinder the ability to provide effective service, and increase the cost of service delivery. In fact, enterprise architecture standards create commonality, increasing the enterprise's capability to provide effective information and services and to reduce the cost of delivering those services. Implementation of NASCIO's adaptive Enterprise Architecture model provides this increased capability through familiarity.

Repetitive use of common and adaptive enterprise architecture standards helps to identify and mitigate project risks, increase project success rates, provide the enterprise with interchangeable staff and deliver solutions more quickly. All of these represent opportunities for cost savings. The alternative is to continue to develop and deploy specialized information and business systems with proprietary requirements that may or may not be compatible with other systems.

The debate over whether or not to implement adaptive enterprise architecture standards can be related to a potential homebuyer's decision to buy a tract home or a custom-built home. Both perform effectively in the role for which they were designed. Tract homes typically cost 40% less per square foot than custom homes and rely on proven building plans, defined and readily available building materials, and contractor familiarity with the building process. These advantages are less likely to occur in building a custom home.

Implementing enterprise architecture standards provides a significant benefit in procurement and purchasing. Standards will reduce the variety of items purchased and allow the enterprise to consolidate buying power. The reduced variety also minimizes support and training costs, because it results in a more focused work force.

Additional benefits are realized in providing consistent and common languages in enterprise development of Requests for Proposal (RFPs). Standards may be incorporated as requirements directly into the RFP, leaving no question what the system requirements are from the contractor's perspective. The vendor community must comply with the requirements listed in the RFP and, therefore, can be held accountable for their performance based on requirements that are consistent with the enterprise architecture. In practice, this reduces the procurement cycle significantly. The state of Kansas has reduced its IT project procurement cycle by an average of 41% since its implementation of enterprise architecture. Enterprise architecture compliance also benefits municipal and county government when it is synchronized with state government efforts in the areas of information sharing, integrated services and purchasing through statewide contracts.

A number of potential issues must be effectively addressed when implementing enterprise architecture. These issues include designation of responsible parties for the enterprise architecture effort. Not

everyone will agree with the selection. Data ownership will become a political issue, as enterprise architecture will integrate data from various business units. Identifying the most appropriate and effective owner of the data is key to a successful integration of the data. There will be perceived winners and losers in the process. Traditional system control and responsibility may be handed over to a more appropriate caretaker based on the implementation of enterprise architecture and the integration of data. Simply stated, adopting adaptive enterprise architecture will greatly enhance government's ability to deliver effective and timely services and to support agencies in their efforts to improve the overall functioning of government. Sharing information, maximizing resource investment, increasing technology reuse opportunities, and meeting the public's ever-increasing expectations for electronic access to government information and services are major motivating factors driving the need for implementation of common enterprise architecture and standards.

The necessity to share information electronically in a timely, secure and efficient manner is being driven by the operational requirements of government entities at all levels. A host of state and federal legislative mandates enacted in recent years, such as the Health Insurance Portability and Accountability Act (HIPAA) and other government and private initiatives promoting standards for digital government, communications, e-business and information technology, continue to build on an already strong case for the development of an adaptive enterprise-wide architecture that is widely accepted by government.

Sharing information makes better government. Shared information minimizes clerical errors, information discrepancies and government loopholes. Once information is collected, it is warehoused in a centralized location where it can be upgraded, backed up, archived and easily accessed many times by multiple users.

Public expectation for electronic access to government information and services continues to increase. Citizens expect the same availability of information and efficiencies for government services as they receive from the private sector for information, services and products. Digital government and e-Government initiatives address these expectations. For example, government information and service delivery in many areas have become available electronically on a twenty-four hour, seven day a week basis without expanding office hours or increasing staff.

Common IT standards and technology architecture will provide guidelines for security, information privacy, communications protocols, infrastructure build out, platform and operating system integration, applications development, and user interfaces that will create efficiencies across a multi-disciplined environment that include significant cost and time savings.

The approach to enterprise architecture development is similar to development in construction: Building codes are designed to provide for standardization, safety and longevity in homes and buildings yet can be adapted to specific requirements. For example, residential building codes typically require carpenters to build with 2x4 boards that must be sixteen inches apart. The requirement provides for structural integrity and safety, as well as a number of additional benefits to building material manufacturers, construction companies and occupants. Building material manufacturers make drywall, roofing materials, insulation and ductwork designed to fit this standard. This reduces product line requirements and the need for customized products.

Because of the use of these standards, the construction industry realizes savings in cost and time during construction. Roofing, drywall, plumbing, electrical and heating/ventilation/air conditioning contractors count on the fact that the studs are on sixteen-inch centers to gain efficiencies in installing those products. Occupants benefit from lower building costs.

The following advice comes from the State of Kansas concerning the development of Enterprise Architecture:

*“Regardless of the architectural development level with which an organization starts, certain criteria should be considered in order for the end-product to be useful and accepted within the organization:*

- *Architectural principles must be derived from agency goals, objectives and written requirements.*
- *An architecture plan should guide individual agency information systems and technology infrastructure decisions.*
- *Senior Managers, legislators, technical project architects, designers, developers, etc. must understand architecture plans.*
- *The architecture should be developed within the enterprise-wide context of IT and technology benefits.*
- *The architecture should enable flexibility and nimbleness in reacting to new changes in IT, systems and data access.*

*In general, architecture should:*

- *Sell its vision to government leaders and IT management.*
- *Help align the use of technology with strategic goals and objectives.*
- *Facilitate the communication of plans within a decentralized IT community.*
- *Help manage the increasing complexity of IT technologies.*
- *Facilitate “bridging” new and emerging IT to legacy architecture.*
- *Provide guidance in adapting the architecture that packaged solutions bring to the architectural vision.*
- *Be complete and consistent and provide guidance to application developers, IT managers, and end-users that need to plan, budget as well as, implement and use information technology.*
- *Provide for easy access (less paper/fewer binders), be web enabled, easy to view, traverse and query.*
- *Provide a means to analyze how processes, tools, technology and people should interact to produce IT solutions that achieve both individual and combined goals.”*

There is a critical need for a common set of IT standards and technology architecture that:

- Ensures a disciplined, independent, adaptive, scalable and portable approach
- Is capable of being implemented in its entirety or in parts
- Will provide government with the guidelines necessary to migrate from their current environment and take advantage of new technologies with appropriate consideration for legacy systems and applications

NASCIO’s adaptive enterprise-wide architecture development effort addresses this critical need.



## Overview of Enterprise Architecture Concepts & Structure

This Tool-Kit outlines some of the considerations to address as an organization develops or moves through the process to achieve adaptive enterprise architecture. The purpose of the Tool-Kit is to serve as a guide in understanding the enterprise architecture evolution process. As such, it provides process models, templates and samples of completed blueprints, etc. to serve as examples of the elements to consider as a government organization undertakes the development of its Enterprise Architecture.

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*The Tool-Kit provides guidance and sample structure, process and blueprint detail.*

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NASCIO working group members, who represent county and state agencies that either have implemented or are in the process of developing enterprise architecture, have compiled the information provided in the samples.

When we plan to build a house, we rely on the knowledge and experience of others who have successfully gone through the building process. We either hire an architect to draw up plans or begin from plans that already exist. In either case, plans are used as a guide to provide detail on the necessary components, considerations and standards.

The original plans are a blueprint and are adapted to include the particular requirements and wishes of the owner. Though there is room to make changes based on needs and wishes, there are still certain standards that must be followed, such as electrical standards, common structure features, etc. Standards such as placing studs and flooring joists on 16” centers; using 3-pronged, grounded electrical outlets; utilizing electric circuits; placing electrical outlets; and using common plumbing fittings make home building less costly. This commonality ensures they are more structurally sound and easier to repair. We also know that, though certain deviations are possible, they may result in more costly construction or difficulty when it comes time to maintain or resell.

In today’s world, information sharing is critical, enterprise architecture is essential, and certain building principles must be followed. Standards are required to accommodate the ever-increasing need for interaction among agencies and organizations.

Most people do not think twice when plugging in their appliances at their new home. They can expect the plug will fit and the appliance will work, no matter which room or which house they are in, whether it is next door or in another state. This would not be possible if common building principles and standards had not been developed.

Construction of a new home or any building is very complex. There are many functional areas of concern and many steps to consider. Though drawing up the plan or blueprint may seem time-consuming and laborious, we would not think of building a home without the detailed plan.

Creation of enterprise architecture can also be complex, but having an architecture blueprint or plan is essential for the enterprise, just as starting with the architectural plan is essential to a sound home.

The purpose of this document is to provide a guide for creating government enterprise architecture or a “guide for creating your blueprint”. The Tool-Kit can be compared to an initial set of blueprints to use as the starting point when working to create the final plan.

Therefore, the Tool-Kit is not meant to dictate the final product, but to provide principles, standards, best practices, etc. as examples for government agencies creating their own architecture. Certain standards

may not be necessary to a particular organization; however, these standards may be essential to sharing information across organizations and to maintaining viability into the future.

While Enterprise Architecture can be compared to creating a well planned home, in an even broader sense, it can be compared to developing a well-planned community. As a guide, enterprise architecture allows each entity the flexibility to build its enterprise architecture to meet its specific requirements, but it also provides common templates to address the essentials, meet the standards and work through the issues that allow interoperability and information exchange.

Defining, creating and maintaining enterprise architecture is an evolving, long-term process. A strong commitment is required to dedicate the resources and time required to define the enterprise architecture. Likewise, it is also the intention of the NASCIO work group that this Tool-Kit/Template Package be a living document, evolving and being updated on a regular basis. The intent is to include items that are beneficial to agencies developing and actively working on their enterprise architecture development process.

Once the city planners have zoned the various parcels of the land, the individual architects and general contractors can begin to plan the communities and business that will service the city. This allows the management of the city's building plans from a modular perspective.

Just as in the analogy, we need to break the Enterprise Architecture Framework elements into workable modules that can be addressed separately, but in concert with each other. It is important to review these pieces so that, when they are brought out in the details, the reader will understand where they fit and how they interact.

## FRAMING THE ENTERPRISE ARCHITECTURE

There are numerous items to consider when undertaking a construction project like a house, a government building or a city plan. So many, in fact, that listing each item to consider would soon become overwhelming. Without some structure for documenting the items to be addressed and a plan for completion, these projects would be impossible.

This section describes concepts for creating and managing the elements of enterprise architecture.

The *Enterprise Architecture Framework* refers to the overarching structure that addresses all of the elements of the Enterprise Architecture. Additionally, it defines the interrelationships between these elements in a consistent and organized fashion.

The building of an adaptive Enterprise Architecture begins with the creation of architecture frameworks. In this Tool-Kit the architecture framework refers to the combination of the templates and the structured processes that facilitate the documentation of architecture in a systematic and disciplined manner.

The Enterprise Architecture Framework graphic in Figure 2 provides a pictorial view of how the various elements within the Enterprise Architecture interact and influence each other.

The goals and objectives of the adaptive enterprise architecture are represented conceptually in this graphic. Government organizations should provide a similar conceptual diagram when developing and implementing their Enterprise Architecture Framework.

As can be seen in the pictorial representation of the Enterprise Architecture Framework, Enterprise Architecture is meant to be living program and will consist of numerous elements, all of which influence

and/or have an impact on each other, and will continue to evolve as the EA Program within an enterprise continues to mature.

Each organization will develop their own Enterprise Architecture, based on the definition and circumstances of their enterprise. The descriptions, definitions and processes within this Tool-Kit are provided as examples that organizations can reference as they develop their own Enterprise Architecture.

This version of the Tool-Kit addresses Architecture Governance and four of the allied architectures:

- Business Architecture
- Information Architecture
- Technology Architecture
- Solution Architecture

The frameworks for each of these allied architectures will be discussed in detail within their respective sections of the Tool-Kit.

## ***ARCHITECTURE GOVERNANCE***

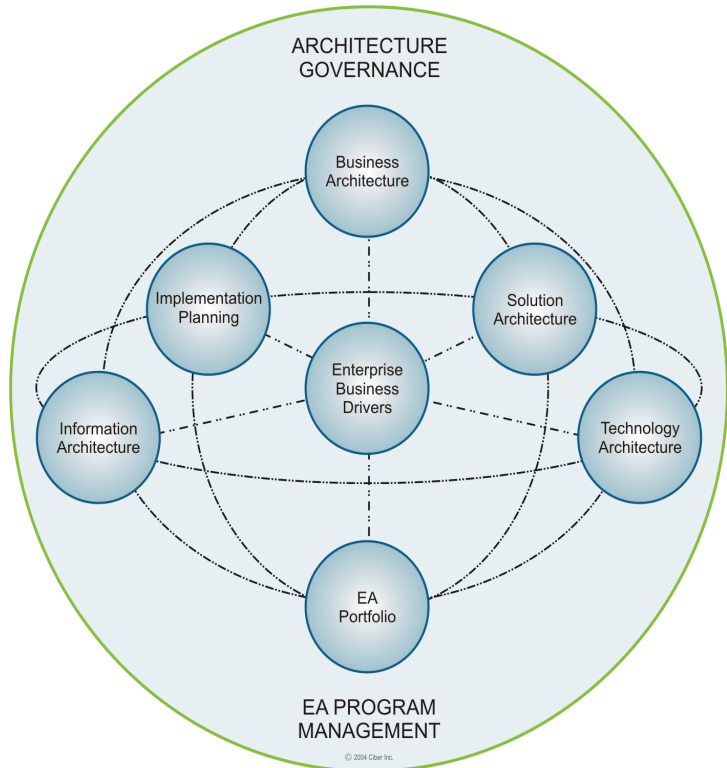
*The Architecture Governance addresses the governance roles and processes required for maintaining Enterprise Architecture.*

The Architecture Governance Framework is used to create a sound governance model to support implementation and management of the architecture as necessary to ensure the enterprise achieves its objectives. The architecture governance framework must be resilient enough to allow for those in primary governance roles to learn and adapt, manage the risks, and appropriately recognize opportunities and act upon them. The Architecture Governance section of the Tool-Kit supports NASCIO's architecture program by providing municipal, county and state governments guidance for establishing effective architecture governance.

## ***BUSINESS ARCHITECTURE***

*Business Architecture provides the high-level representation of the business strategies, intentions, functions, processes, information and assets critical to providing services to citizens, businesses, governments and the like.*

The Business Architecture Framework provides the structure for the collection of detail regarding the motivations, organization, location, events, functions and assets that define the direction of the enterprise from the business perspective. The detail captured within the Business Architecture supports business decision-making by providing documentation of where the enterprise is today and where the enterprise wants to be at a specified time in the future.



*Figure 2. Enterprise Architecture Framework*



## *INFORMATION ARCHITECTURE*

*Information Architecture is the compilation of the business requirements of the enterprise, the information, process entities and integration that drive the business and rules for selecting, building and maintaining that information.*

Information Architecture Framework provides the structure for documenting the detail regarding the information that is critical to the organization, including the baseline and target conceptual (common terms and definitions) and the baseline for the logical and physical. The detail captured within the Information Architecture clarifies business relationships and enhances understanding of the business rules the enterprise has adopted. This understanding forms a baseline for exploring and implementing changes in how business is done, and what business rules the enterprise will adopt.

## *TECHNOLOGY ARCHITECTURE*

*Technology Architecture is a disciplined approach to describing the current and future structure and inter-relationships of the enterprise's technologies in order to maximize value in those technologies.*

The Technology Architecture Framework provides a sound set of structured processes and templates to support implementation and communication of the Technology Architecture. The mapping of the technology products and standards to the Business Drivers is vital to align the overall enterprise direction. Vendors, employees, and business users can benefit from an understanding what technology standards exist and where these standards can be found.

## *SOLUTION ARCHITECTURE*

*Solution Architecture is a process within the Enterprise Architecture that focuses on the development and implementation of a solution or service being created for the enterprise.*

The Solution Architecture framework is a combination of structured processes and templates that utilize existing architecture documents (such as business, information, and technology components as well as models and patterns) to design a desired business solution. The Solution Architecture framework, by allowing the development of a Solution Set, facilitates the rapid development and delivery of a solution in a systematic and well-disciplined manner.

## *ARCHITECTURE BLUEPRINT*

The Architecture Blueprint is the dynamic detail for any of the allied architectures that is captured utilizing the structured processes and templates (framework). The blueprint contains detail regarding the Business, Information and Technology that exist currently, and are proposed for the future.

For example, as new technology is brought into the enterprise and older technology is replaced, the Architecture Blueprint needs to be updated to reflect the change in the Business/IT Portfolio. The Technology Architecture Blueprints provides the means to implement technology into the enterprise in a timely and efficient manner. The vitality of the architecture provides for detail concerning the current technology of the enterprise that is “real-time” and accurate.

The benefits of timely decisions based on improved information include cost savings based on better-informed decisions and cost savings due to the advantage of shared buying power. This more than justifies the effort of developing and maintaining the enterprise architecture.

The Enterprise Architecture consists of three types of information:

- **Static**– Refers to information that changes only when required by business conditions. Architecture Governance and the individual architecture frameworks are a good example of static information
- **Semi-Static**– Refers to information that changes on an annual or bi-annual basis, or when a major shift in the business or technology occurs. Business Drivers are an example of semi-static information, because they change as new and improved ways of providing services to the stakeholders are found.
- **Dynamic**– Refers to information that is reviewed and updated frequently, typically every four to six months for content of the Business, Information and Technology Architectures. New information is typically added on a monthly basis as various groups in the organization have business or technology solutions added to the Business/IT Portfolio. The Business, Information, Technology and Solution Architecture blueprints are considered dynamic. The contents of Solution Architecture are typically considered dynamic because new Solution Sets continue to be developed. However, once a solution is implemented, the appropriate Business, Information and/or Technology Architecture blueprints are updated and the content of the specific Solution Set becomes static and is used for historical purposes.

## SUMMARY

It is through the discussion of architectural structure, structured processes and templates (Architecture Framework) that the NASCIO Tool-Kit provides guidance for the development of adaptive Enterprise Architecture.

Enterprise Architecture begins with the defining of the architecture frameworks.. The enterprise architecture grows as each of the allied architecture frameworks is completed, and the architecture blueprints, which contain the detail relative to the specific allied architecture, are developed.

The architecture blueprint is not a document that is produced once, stored on the shelf and referenced on occasion. It is a plan and a method; it must be both or it has no value. The blueprint is constantly being renewed and updated to meet the demands on the enterprise. There will be good decisions and bad decisions on the way, but having the information surrounding the decisions captured allows for better analysis for future decisions.



## Tool-Kit Map

Figure 3 provides a pictorial overview of the Tool-Kit structure. While the Table of Contents provides directions for the getting to various portions of the Tool-Kit, this graphic provides the map to help the reader determine where they are within the Tool-Kit and to assist with navigation through the Tool-Kit sections.



Figure 3. Tool-Kit Structure

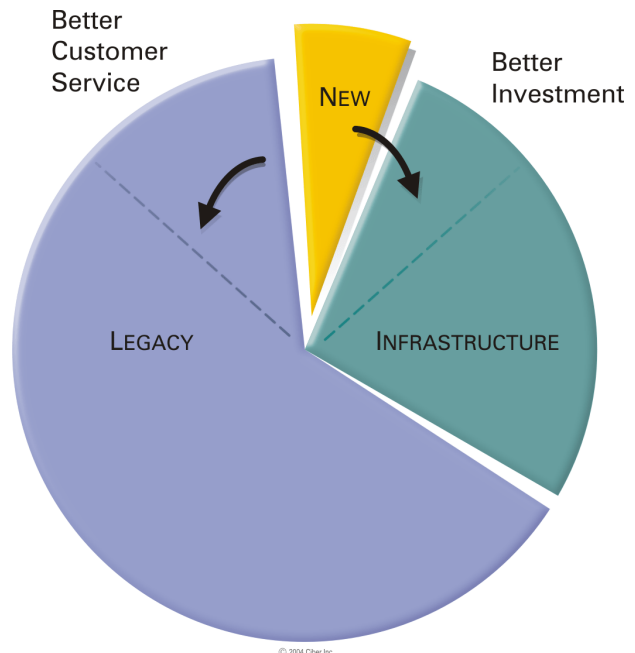


## PROGRAM MANAGEMENT – EA

This section of the Tool-Kit begins to introduce the program management aspects of Enterprise Architecture (EA) governance. Many times people initially think of EA as a project, however, as discussed throughout this Tool-Kit, EA must be treated as a program. Projects have defined start and end dates, and are measured on the effectiveness of a specific implementation (e.g. deliverable effectiveness, on-time delivery, delivery within budget, etc.)

EA is an ongoing effort. Once developed, the architecture is kept vital through on-going reviews and updates, allowing the organization to prepare technology plans based on business and technology drivers. The EA program effectiveness must be measured on its ability to provide accurate data for planning and decision-making and translating the impact of those decisions on the organization's operations. As illustrated in Figure 4, leveraging EA for decisions on enterprise projects can lead to better investments and greater customer service.

An EA program facilitates the alignment between the business strategy and related architecture elements by ensuring the technological responses are well defined and meet the needs of the business. As a program, EA allows for the top-down planning of architectural projects in a balanced and consistent manner. By executing EA program management, these enterprise architectural projects can be accelerated, slowed, delayed, stopped, or restarted to suit the available resources and priorities within the organization's strategic plan.



*Figure 4. EA Contributes To The Decision-Making Process*

Using program management principles to administer EA assures:

- Creation of a viable EA Framework (structural elements such as Architecture Governance, Lifecycle processes, etc.)
- Documentation of architecture blueprints (content) that provides value to decision-making authorities
- Design of enterprise solutions that leverage existing assets, knowledge, configurations and infrastructure
- Evolution of the program through continuous improvement and refinement of the EA program and content.

Generally, an EA program will provide:

- Management of an EA portfolio
- Alignment of an organization's business strategy with the EA
- The identification of interdependencies between enterprise projects.

- The allocation of resources related to the EA project portfolio.
- The ability to measure progress and the effectiveness of the results of adopting EA practices.

Some of the benefits of managing the EA activities from a program perspective include:

- *Effective Delivery of Change* - Within an EA program, changes are planned and implemented in an integrated manner that ensures current business operations are not adversely affected.
- *Alignment of Enterprise Projects to Business Strategies* - EA provides response to business and technology strategic initiatives by utilizing effective analysis of gaps identified in the architecture.
- *Reduction of Risk* - EA includes the identification of standards, processes and governance that, when followed, will reduce certain risk issues.
- *Coordination and Control* - Having a formal EA program with defined management and governance exercises control over a complex range of business and technical activities.
- *Consistency* - Utilizing policies and standards to guide the EA program will ensure consistency



## Program Management for Enterprise Architecture

A critical success factor of any program is the administration of the program. The same is true for EA. The best approach of administering an EA program is by creating an office to manage the program. Some organizations may already have robust program management principles and/or offices in place for other programs. If so, the organization is encouraged to apply those successful models to their EA program. The EA program management office is a resource to help cultivate EA throughout the organization. While EA program management offices may vary by name and/or organizational structure, their charter is promoting and supporting the organization through the application of EA

The EA program management office is an organizational function responsible for support and internal consulting to ensure that enterprise projects (business or technology) are carried out consistently and successfully in alliance with organizational strategy. The creation of an EA program management office enables the following:

- A focal point that provides a repository for architecture standards
- The institutionalizing of a body to enforce the architecture governance
- A means of mapping business strategies into technology solutions
- A forum to help cultivate EA throughout the organization

For example, the EA program management office would:

- Provide primary support to business top and line managers on current and proposed business process opportunities for improvement.
- Provide primary support to Business and line managers due to turn over to help them understand the business and processes and core functional areas they control or are involved in.
- Serve in an advisory capacity on the subject of Business, Information and Technology architectures
- Consult with staff on the design and development of EA components related to specific projects
- Make recommendations and provide advice with respect to policy, procedures, standards, and benefits as they relate to the development, maintenance and evolution of the EA

- Serve as a “working group” for architectural tasks specifically assigned by the Governance committees or other architecture stakeholders
- Promote architectural practices throughout the organization
- Communicate best practices, ideas, and evolutionary architectural elements among stakeholders

An EA program management office may have the following scope of operation:

- Determine the components that define an EA framework and blueprint.
- Create and maintain a set of standards, which can guide future projects while ensuring compliance to the EA and business strategies.
- Create and maintain governance policies that enforce compliance with the current standard EA blueprint.
- Create and maintain an appeals and change process that results in keeping the EA in an up-to-date status.
- Create a communications dialogue that fosters the discussion of, compliance with, and understanding of, current and future EA standards.

The EA program management office responsibilities include:

- Designing, developing, and administering EA
- Application and enforcement of the EA governance
- Developing the overall EA plan and implementation road-map
- Developing, updating, and facilitating the EA review committees
- Assessing technology trends and the impact of these trends on business requirements
- Recommending technology directions to the architecture committees
- Communicating and promoting EA throughout the organization
- Developing educational materials and facilitating the education of EA within the organization
- Developing the transitional training efforts necessary to evolve traditional development into development using EA as basis and driver.
- Identifying “gaps” in business, information and/or technology, based on business requirements and strategic directions established by the organization
- Overseeing the EA management process
- Ensuring the transfer of the Architecture Help Request between phases
- Assisting with budget and capital planning issues relative to technology improvements
- Participating as architecture consultants on projects
- Assisting in initial reviews of the format, contents, and completeness of submitted architectural documents
- Assuring architecture repositories contain the most current documentation
- Locating appropriate Subject Matter Experts
- Performing reviews on architecture issues
- Distributing the architecture documents, with accompanying unresolved technical and business issues noted for review

An EA program management office, functioning within an organization will have the direct responsibility for the management of the EA program. It is common to find either a Chief Technology Officer or Chief Architect directing the day-to-day operations of an EA program management office. This is a current trend in the management structure of several organizations.

The initial goal of the EA program management office typically includes developing the architecture framework. This includes the development of the architecture processes and structures, establishing the governance processes, and the execution of these framework elements to develop the EA Blueprint.

The Tool-Kit section entitled *Architecture Governance Roles & Responsibilities* covers the roles and responsibilities associated with EA in detail. Figure 5 provides an illustration of the primary roles, and the groups and individuals that serve in supporting roles, as well as their relationship within the architecture. While some of the individuals that serve in these roles may reside in the EA program management office, others may simply interact with the office.



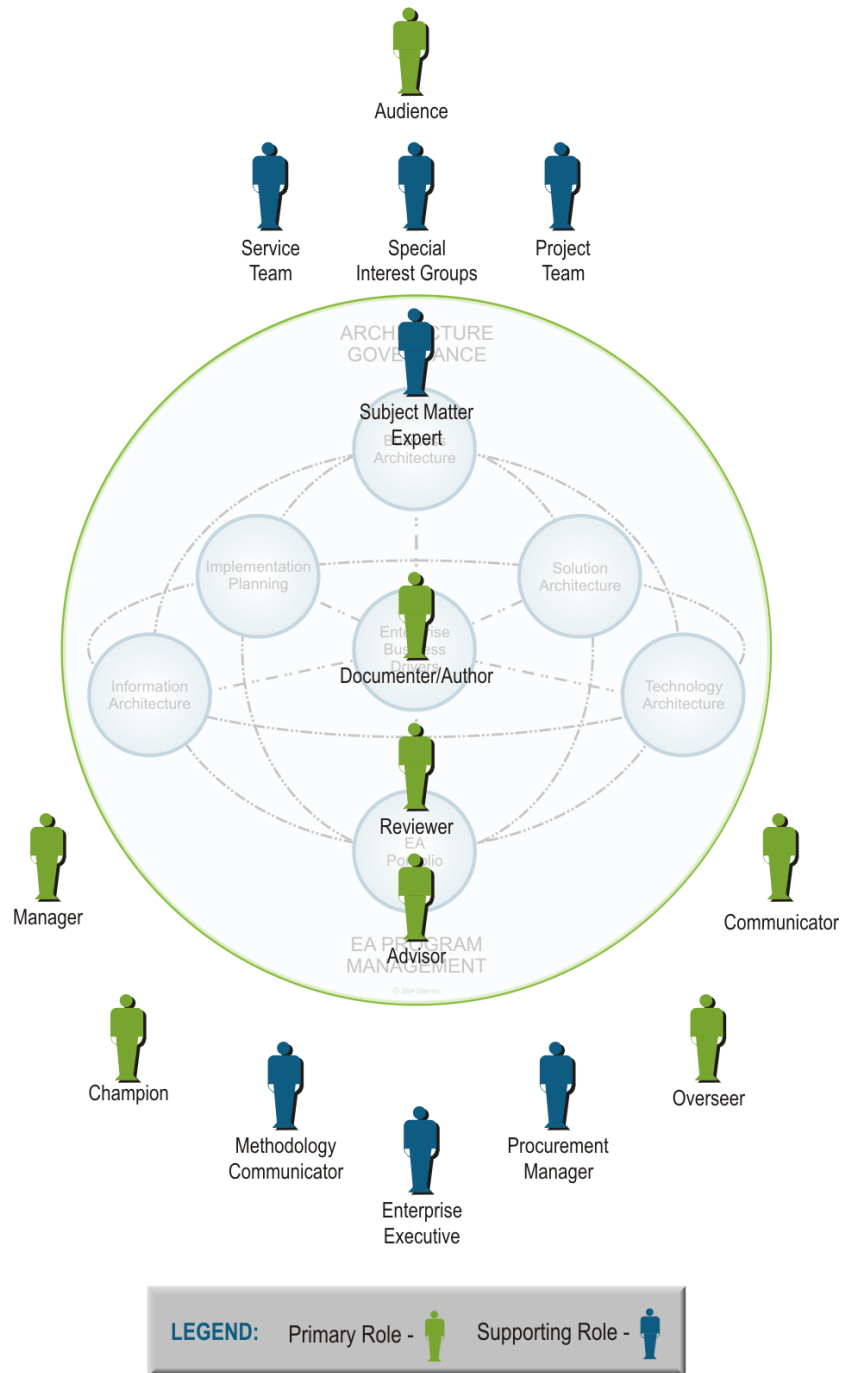


Figure 5. Primary and Supporting Contributors to the Architecture

For example, an architect serves in several roles, such as Documenter/Author, Reviewer, Advisor at various times, and is typically a full time position within the EA program management office. Architects document and update the Architecture Blueprints and Solution Sets as an on-going role, while continuously reviewing the EA Portfolio and emerging technologies to bring about the best, integrated solutions for the enterprise. The architect is also responsible for providing information regarding updates to the various EA Framework elements to the Reviewers and the Communicators.

The role of Business Analyst is a good example of a typically “non-office” role. Though this analyst is not part of the EA program management office, this supporting role of Subject Matter Expert is just as important to the success of the EA program as those reporting directly to the EA program management office. The Business Analyst is responsible for communicating the business processes of their assigned organization and providing an understanding of the links to the technologies that are used to meet those business requirements. Without this knowledge and insight, the EA program management office would be missing valuable information, which would directly impact their ability to deliver the best-architected solutions.

Another key role commonly associated with the EA program management office, but rarely contained within that organization is the Architecture Review Board (ARB). This team is typically a mid- to senior-management-level group responsible for reviewing and recommending approval on the blueprints of the various architectures (Business, Information, and Technology) as well as Solution Sets developed as part of the Solution Architecture.

This group consists of representatives with a basic working knowledge of the organization’s key technologies and business processes. The actual membership of this board may vary with each of the allied architectures. The ARB reviews architecture compliance requests and submits recommendations and may act as the approving body for the EA artifacts. Again, while it’s not important what title these individuals have or what organization they report to, the role they are filling must be acknowledged and utilized by the architecture program.



## Touch-points - EA and Other Management Activities

EA, as described previously, provides many benefits to the organization, especially as it applies to influencing the procurement and retirement of IT related solutions. However, it is also common for the EA governance and management functions to affect, and be influenced by, other common organizational elements including: Project or Program Management programs; processes involved with the identification and reporting of Performance Measures and Metrics; and activities supporting the development of Business Case information.

### PROJECT MANAGEMENT

The typical Project Management Office provides the organizational mechanisms to manage and monitor project- or program-related activities for specific projects within the organization, including general project management functions, oversight, risk management, and performance metrics. As EA matures in the organization, it is only natural for the EA program to contribute to, and to utilize the various elements provided by the organizations Project Management Office.

EA should be leveraged to ensure that projects are aligned with architecture goals and objectives, the project deliverables provide an integrated solution and the implementation of these deliverables does not adversely impact standard business operations.

The EA program management office should include in its processes a “checkpoint” with Project Management to assure that the new project conforms to the Enterprise Architecture. By assessing the projects stated goals, objectives, and task deliverables from an architectural perspective, it can be determined if the elements of the project conform to the Enterprise standards. This assessment activity, or architecture compliance review, should be a collaborative effort between the EA program management office and Project Management, and should take place at various points within the project. Activities that typically trigger collaboration between the EA program management office and Project Management include:

- Introduction of new technology
- Changes to computing equipment or infrastructure
- Changes to a purchased package base
- Additions or changes to key interfaces between technologies/solutions
- Changes to the physical data models.
- Additions or changes to external customer or supplier access to the technology/solution
- Migration to a new release of, or alternate vendor for, a key component
- Development of any new solution
- Significant changes in business processes

During these reviews, it is not unusual for the team to uncover issues that may impact the project or the destination environment. The earlier in a project these items are discovered, the more likely the item will be addressed and the management team will have the time to react to and resolve the issue.

As Project Management and EA program management interact, the identification of organizational “best practices” can also occur. The sharing of this information during these “check-point” meetings can therefore, provide benefit to the EA program management office as well as to Project Management. However, the main purpose of the interaction between the EA program management office and Project Management is to ensure compliance with the EA and Project Management standards.

## PROJECT RISK MANAGEMENT

Actively managing project risk is an integral part of Project Management. Identification of project risks, along with potential risk intervention and mitigation strategies, is typically done during project definition. Throughout the lifecycle of the project, risk management activities occur to ensure that new risks are identified, risks that come to fruition are managed, and the results of mitigations strategies are monitored for success. EA program management activities assist in managing project risk by defining Business, Information and Technology Architectures in such a way as to allow for the early identification of potential issues before they endanger the success of a project.

In addition to Business, Information, and Technology Architectures, many EA programs include Solution Architecture. Solution Architecture, which addresses the scope, requirements and design specifications for enterprise projects, contributes to project risk identification and mitigation efforts by facilitating the following:

- The leveraging of proven Business Reference Models
- Identification of Capacity Planning needs and impacts
- Reuse of previously identified Solution Set patterns
- Linkage between stated business goals and the solution proposal

- Development of Solution Sets that link to preferred Business, Information, and Technology Architecture components

## PROJECT OVERSIGHT

Project Oversight is a typical function of a Program Management Office that provides an independent analysis, review, and report of a project. This information is typically used to provide agency management information on the progress of a project by measuring how well it is doing relative to schedule, cost, and scope. The desired result of an oversight review is to determine if the project is on track to be completed within the time identified, if it will be completed within budget guidelines, and if the project will provide the required functionality when deliverables are implemented.

The EA program management office can contribute to the Project Oversight reviews by ensuring that:

- Projects are prioritized and selected based on linkage to previously identified architecture gaps and migration strategies
- The execution of project reviews occur at the designated times and include architectural reviews as a common practice
- Projects procuring new technologies are referencing existing architecture standards and directions prior to the actual purchase of new solutions
- Any new architectural changes that were introduced when the project deliverables are implemented have been documented appropriately as architecture blueprints and that the architecture repository has been updated to reflect the new environment

Project Oversight also has an impact on the EA program. The development of the framework for each of the program elements (e.g. Architecture Governance and, Business, Information, Technology and Solution Architectures) is typically approached as a project. That is, there are considerations for funding the development, there is a specific timeline identified, and a specific purpose with a defined deliverable. These EA Program development activities can also be analyzed, reviewed, and reported on as a part of the Project Oversight function. This provides information to the management team as to the progress of EA implementation efforts. This progress can then be used as one measure when determining the overall metrics for Enterprise Architecture.

## PERFORMANCE MEASURES AND METRICS

As with any major organizational activity, Enterprise Architecture, must demonstrate value to the organization for it to continue, otherwise the organization will realign the supporting resources (e.g., funds, people) to other important tasks. As such, it becomes necessary to define how the effectiveness of EA will be measured. This function typically involves a collaborative effort by the EA program management office and the organization's Project Management Office or entity that is responsible for performance metrics.

Defining a set of business goals and objectives for EA and aligning these with the organization's strategic objectives are critical to the development of strategies for the execution of an adaptive EA program that enables the implementation of the organizational directives. For example, if one of the organizational strategies was to "buy vs. build all Information Technology system applications", the EA Blueprint would reflect the tool/vendor choices and/or standards necessary to implement this strategy. In addition, the EA Governance process would review Solution Set Designs for adherence to this directive.

Achieving strategic objectives is an indicator of effective performance of business functions. Here EA can be linked to the organization's performance measurement system. It is important to keep in mind that EA

is a comprehensive, holistic view of the enterprise, and as such it includes detailed information about an organization's strategic business intent, business operations, organizational units, information, solutions, and the technology used to perform the business operations. If this information is captured in an EA repository, appropriate traceability can be established including traceability to environmental drivers, market/needs analysis, strategic business intent, and business operations.. This relationship to business objectives and the EA elements can be used to determine a measurement for the objective.

The Office of Management and Budget (OMB) defined their Performance Reference Model that incorporates the best parts of several conceptual management measurement models. This model shows the cause-and-effect relationships between enabling technologies, the direct effects of organizational activities, and the results measured from a customer perspective. The focus of this model is on the value-chain that results by analyzing government agency customer relationships or the value that project participants contribute to the organization.

For more information on the Performance Management Model developed by the Federal Enterprise Architecture Program Management (FEAPMO), Office of Management and Budget (OMB) please reference the OMB web site at <http://www.feapmo.gov/fea.asp>.

## BUSINESS CASE DEVELOPMENT

“The creation of a strong Enterprise Business Case is the best hope to get a project approved.”<sup>1</sup> This is a common understanding of any project manager or organizational leader as they compete for funds within the organization. All projects proposals must document the business case associated with the project solution being presented. The quality of information within the business case will be used to decide whether the project obtains funding and proceeds to implementation. Therefore, a sound business case is based upon principals that include goals, strategies, initiatives and outcomes, and also addresses short and long-term organization priorities.

EA is integral to the ability to develop accurate business cases. EA, with its documentation of the current and future business models and links to enterprise business drivers, assist in the definition of the project and contributes to its understanding of the touch points within business and technical areas.

In addition, the contents of the architecture (EA Blueprint) will help to identify technology compatibilities, integration opportunities, and the potential for component reuse – all of which contribute to the value of the solution and can be documented as such in the business case.

For more information on business case development see NASCIO's "Business Case Basics and Beyond" available for ordering on NASCIO's website, [www.nascio.org](http://www.nascio.org).



## EA and Technology Planning Processes

As the importance, and cost, of information technology has grown, organizations find that the past traditional methods of making business and technology planning and budget decisions are no longer viable. Today more than ever, organizations depend on successful uses and deployments of technology. One of the challenges is to develop a technology plan and budget that accurately reflects not only the

<sup>1</sup> NASCIO [Business Case Basics and Beyond: A Primer on State Government IT Business Cases](#), By Andris Ozols, Senior Analyst, Department of Information Technology, State of Michigan

initial cost of a solution, but also all the related expenses as the solution matures, i.e. the *total* cost of ownership.

By leveraging the EA blueprints and migration strategies, technology planning processes can enable an organization to take advantage of new opportunities, and substantially re-use existing proven technologies, while minimizing the negative impact of unexpected challenges. In this time of rapid technological change, technology planning and budgeting processes that utilize the EA Implementation Planning processes, EA Governance, and the documented architectural standards, can provide greater opportunities in the use, and re-use, of information technology. Building a technology plan and budget based on the information contained within the EA Blueprint should:

- Clearly identify technology gaps and needs
- Link technology components to proposed business solutions
- Be a formal continuous improvement process
- Be supported by executive management
- Leverage current planning methods
- Result in documented output publicized to the organization
- Be diverse, choosing the best features from a diverse set of resources
- Be broad but bounded in scope, by incorporating economically and technically feasible solutions based on the Implementation Plan and the EA roadmap
- Involve senior administrators, representatives of line-of-businesses, procurement, and information technology staff members
- Present a clear prioritization of possible projects that have articulated a strong business case, defined the solution at the conceptual level, and established a realistic project cost and schedule
- Engage the EA program management office to identify potentially important technological developments and recognize when those developments make the transition from emerging to current, based upon the organizations ability to assimilate technology change as defined by the EA program
- Be driven by organizational issues, opportunities and business needs, rather than technological developments

A technology planning and budgeting process enables management focus and attention on activities and resources necessary to successfully meet technology related needs. EA enables value decisions on the usage and selection of technology prior to the actual start of the dependent project requiring the technology capabilities.



## EA Program Management at Work

EA programs can be implemented at various levels within an enterprise. For example, there may be EA efforts and even an EA program management office at the state level, while individual agencies and/or municipalities may also have their own active EA program management offices and initiatives. Each of these efforts provides value. The greatest value for a state is achieved when these offices and initiatives are coordinated and cooperative. Federal and state level architectures should be utilized when determining strategic alignment and strategic direction from the agency and municipality perspective.

The level of the government represented by the organization and the charter given to the architecture development team will determine the amount of detail contained in the architecture blueprints. Where a federal or statewide EA initiative may be at a high level, with focus on the conceptual views and directed toward specific strategic initiatives, individual agencies may choose to develop architectures that detail a specific roadmap for their current organization, as well as including a more tactical approach to accommodate their initiatives.

Every enterprise should evaluate the level of detail and direction to be included in their EA Blueprint, ensuring the level of detail is fitting for the charter of that organization and provides the enterprise the tools necessary to use architecture principles for accomplishing the business initiatives.

There are many public sector EA initiatives across the county. The examples below site the approach to EA program management by several organizations. The inclusion or exclusion of any individual effort is not a reflection on the efforts within that enterprise – the examples provided are simply samples to illustrate the direction and charter these organizations have taken in institutionalizing EA within their organizations.

### FEDERAL EA PROGRAM MANAGEMENT OFFICE

In February of 2002, the Associate Director for Information and E-Government, Office of Management and Budget issued a directive establishing the Federal Enterprise Architecture Program Management Office (FEAPMO). This office was established to foster the growth of EA within government agencies. Additionally, the FEAPMO was charged in the development of models to facilitate technology solutions and to develop a complete architecture for each of the 24 Presidential initiatives and to improve government effectiveness and efficiency through new business processes and consolidations.<sup>2</sup>

The Chief Technology Officer for the Office of Management and Budget manages the FEAPMO. The Chief Technology Officer is responsible for the overall success of the program, overseeing completion of program tasks and obtaining approval of program deliverables. There is a Program Manager that is responsible for the day-to-day activities of the FESPMO.<sup>3</sup>

The FEAPMO provides no direct management of the implementation of EA within government agencies. However, it does have the responsibility to develop architectural models and to set standards for the Federal EA Framework.

### NORTH CAROLINA – OFFICE OF ENTERPRISE TECHNOLOGY STRATEGIES

The State of North Carolina has an Office of Enterprise Technology Strategies (ETS) that manages the North Carolina Statewide Technical Enterprise Architecture. The mission for the Office of Enterprise Technology Strategies is to provide “leadership in information technology and telecommunications services to accomplish the directives formulated by the State CIO regarding state-level information technology strategies, plans, policies, and procedures. Working with state agencies, federal and local governments, citizens and private sector businesses, ETS helps the implementation of new technologies consistent with the state's enterprise approach.”<sup>4</sup>

ETS reviews agency IT projects and offers recommendations on the disposition of the project to governing bodies, provides leadership, guidance, and mentoring to agencies on approaches to IT, IT

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<sup>2</sup> <http://www.feapmo.gov/about.asp>

<sup>3</sup> [http://www.feapmo.gov/feapmo\\_org\\_structure.asp](http://www.feapmo.gov/feapmo_org_structure.asp)

<sup>4</sup> <http://ets.state.nc.us/about.html>

procurement and IT project management, independent verification & validation on key projects, services, and systems and provides enterprise IT planning and strategies for the State CIO and governing bodies.

## NORTH DAKOTA – INFORMATION TECHNOLOGY DEPARTMENT

“Through legislative authority, the Information Technology Department (ITD) of the state of North Dakota is mandated to develop policies, standards, and guidelines for technology based on information from state agencies, institutions, and departments with the goal of creating a common statewide architecture. Since 1998, the Standards and Policy Review Group consisting of lead IT coordinators representing every agency have performed this cooperative function. Enterprise Architecture will replace this current process.

Through the Enterprise Architecture (EA) process, state agencies will more effectively partner with ITD in setting future direction of information technology in the state of North Dakota. The success of this highly collaborative process will depend on the strength of its governance structure and the commitment of the participants to its goals and guiding principles.”<sup>5</sup>

## MISSOURI – OFFICE OF INFORMATION TECHNOLOGY

“Enterprise Architecture is one of the key areas of responsibility for the Office of Information Technology. This is the core business and strategic plan for all technology in Missouri state government. For the purpose of security, service, and efficiency, Missouri must function as one seamless technology enterprise. Architecture will allow Missouri state government to act as a single entity, an enterprise, with respect to information technology.

By implementing a blueprint for standards and methods that are agreed upon by all agencies, the state positions itself to save money, increase service, and gain a competitive advantage for the long term. This is an ongoing process that can swiftly adapt to changes in business and citizen needs. The goal is always to provide the citizens of the State of Missouri with the most efficient and effective service possible.”<sup>6</sup>

## NEW MEXICO – INFORMATION TECHNOLOGY COMMISSION (ITC)

New Mexico’s Information Technology Commission (ITC) and the Office of the Chief Information Officer (OCIO) are responsible for the statewide information architecture program and plan. “The goal of New Mexico’s Enterprise Architecture is to enhance coordination, simplify integration, build a consistent infrastructure, and generally allow greater efficiencies in the development of technology solutions to support our Agencies in the fulfillment of their missions to serve our constituents. Our intent is to provide continuous alignment between the business of state government and technology.”<sup>7</sup>

Sample governance models for Kansas and North Carolina, as well as tables to describe the mapping between organizational titles and the primary and supporting roles for relative to EA are included within the Architecture Governance section of this document (See *Architecture Governance – Sample Governance Models*).

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<sup>5</sup> <http://www.state.nd.us/ea/about/>

<sup>6</sup> <http://oit.mo.gov/architecture/enterprise%20architecture.html>

<sup>7</sup> <http://www.cio.state.nm.us/content/architecture/FrameworkForEntArchProg.pdf>





## Summary

Many of the activities and tools common to program management in general can be applied to EA program management. Numerous resources are available to cover these topics and this Tool-Kit is not intended to recreate what is readily available.

Several topics, related specifically to EA, are covered in detail within this version of the Tool-Kit:

- Architecture Governance
  - Scope
  - Roles & Responsibilities
  - Samples Governance Models
  - Architecture Governance Development
- EA Lifecycle Processes



# ARCHITECTURE GOVERNANCE

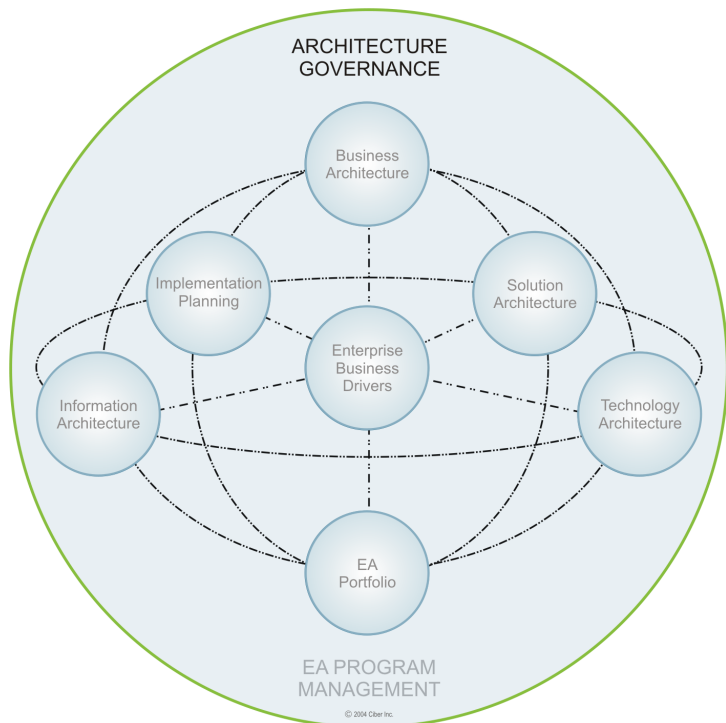
NASCIO has established an Adaptive Enterprise Architecture Program to assist all levels of government with the adoption of adaptive enterprise architecture. As part of the NASCIO's overall Enterprise Architecture Program, this Tool-Kit was created to provide guidance for developing an adaptive enterprise architecture that effectively aligns information technology with the enterprise business direction.

Sound architecture governance, which supports implementation and management of the enterprise architecture, is necessary to ensure the enterprise achieves its objectives. The Architecture Governance must be resilient enough to allow for those in primary governance roles to learn and adapt, manage the risks, and appropriately recognize opportunities to take advantage of technology and act upon them.

This section of the Tool-Kit on governance supports NASCIO's architecture program by providing municipal, county and state governments an understanding of and a method for establishing effective enterprise architecture governance. It effectively supports the analysis of existing governance structures, identifying methods to improve governance performance, as well as the development of a governance structure in its entirety.

The information presented in this section defines the purpose of governance, the concepts of Enterprise Elements and Enterprise Architecture Framework Elements and governance roles and examples of the structured processes for establishing architecture governance. Additionally, samples of effective governance organizational charts from municipal, county and state government are provided for reference.

Architecture Governance is the responsibility of executives, as well as stakeholders, such as citizens, businesses, employees and other organizations, throughout the enterprise. Governance consists of the leadership, organizational structures, direction, and processes that ensure Information Technology (IT) sustains and extends the enterprise's mission, strategies and objectives in a planned manner.



The purpose of Architecture Governance is to direct or guide initiatives, to ensure that performance aligns the enterprise business by taking advantage of the associated benefits, to enable the enterprise business by exploiting opportunities, to ensure IT resources are used responsibly and Technology Architecture-related risks are managed appropriately.

Architecture Governance is typically applied in layers. Strategy and goals are rolled down into the organization. Team leaders report to and receive direction from their managers; managers report to the executive and the executive reports to the mayor, county executive, or governor. Deviations from goals and standards are reported, and recommendations for action requiring endorsement by the governing layer are included.

## Scope

The approach to Architecture Governance presented here relies on the development, collection, and utilization of “*Enterprise Elements*”. Enterprise Elements consist of information developed and documented by both the business and IT communities within the enterprise.

Information contained in these Enterprise Elements becomes the foundation for building the Enterprise Architecture Framework Elements. Enterprise Architecture Framework Elements discussed within this version of the Tool-Kit consist of Architecture Governance, the Business, Information, Technology and Solution Architecture Frameworks and the respective Architecture Blueprint for each of these allied architectures. These Enterprise Architecture Framework Elements are the foundation for a comprehensive Enterprise Architecture Framework. These established Enterprise Architecture Framework Elements provide the capability to categorize and identify the details of the enterprise architecture, including the business and information needs, the technological direction, the architecture lifecycle processes and overall enterprise architecture program specifics.

## ENTERPRISE ELEMENTS

Enterprise Elements are identified in this section along with a high-level explanation of their relationships to the Architecture Governance Elements. A detailed understanding of these relationships can be gained from the Governance processes identified later in this section. Enterprise Elements aid in communicating information throughout the enterprise and can be classified in three categories: *strategic*, *procedural* and *tactical*.

“*Strategic*” Enterprise Elements aid in top down communication within the enterprise and ensure enterprise-level strategies are addressed appropriately within the Enterprise Architecture Framework. Some examples of Strategic Enterprise Elements are:

- Enterprise Direction
- Mission Statements
- Organizational Charts
- Operating Budgets
- Goals, Objectives, and Strategies
- Strategic Management Initiatives

“*Procedural*” Enterprise Elements aid in providing the translation of the top down communication into the bottom up communication and identify the implementation relationships to the Strategic Enterprise Elements. Some examples of Procedural Enterprise Elements are:

- Project Methodologies
- Service Policies and Procedures

- Procurement Policies and Procedures
- Adaptive Enterprise Architecture

“Tactical” Enterprise Elements aid in providing information from the bottom of an enterprise up and provide the actual delivery of the various services, products and initiatives. Tactical elements provide opportunity for measuring the effectiveness of the enterprise architecture efforts. Some examples of Tactical Enterprise Elements are:

- Tactical Initiatives
- Services
- Projects
- Specific Budgets (Project or Unit)

Figure 6 illustrates the flow that the Enterprise Elements follow from the enterprise perspective, along with their relationships.

### ENTERPRISE ELEMENT RELATIONSHIPS

Strategic elements translate into both the procedural and tactical elements to accomplish the identified goals and objectives of the enterprise. It makes little difference whether an organization utilizes Strategic Planning, Enterprise Direction Statements, or Mission Statements to communicate the various strategic elements. All organizations have, in some form, strategic elements that are then translated into procedural and tactical elements to aid in implementation.

Strategic Elements can be communicated in various ways including, but not limited to:

- Enterprise Direction
- Organizational Charts
- Mission Statements
- Strategic Plans
- Strategic Initiatives
- Enterprise Budget

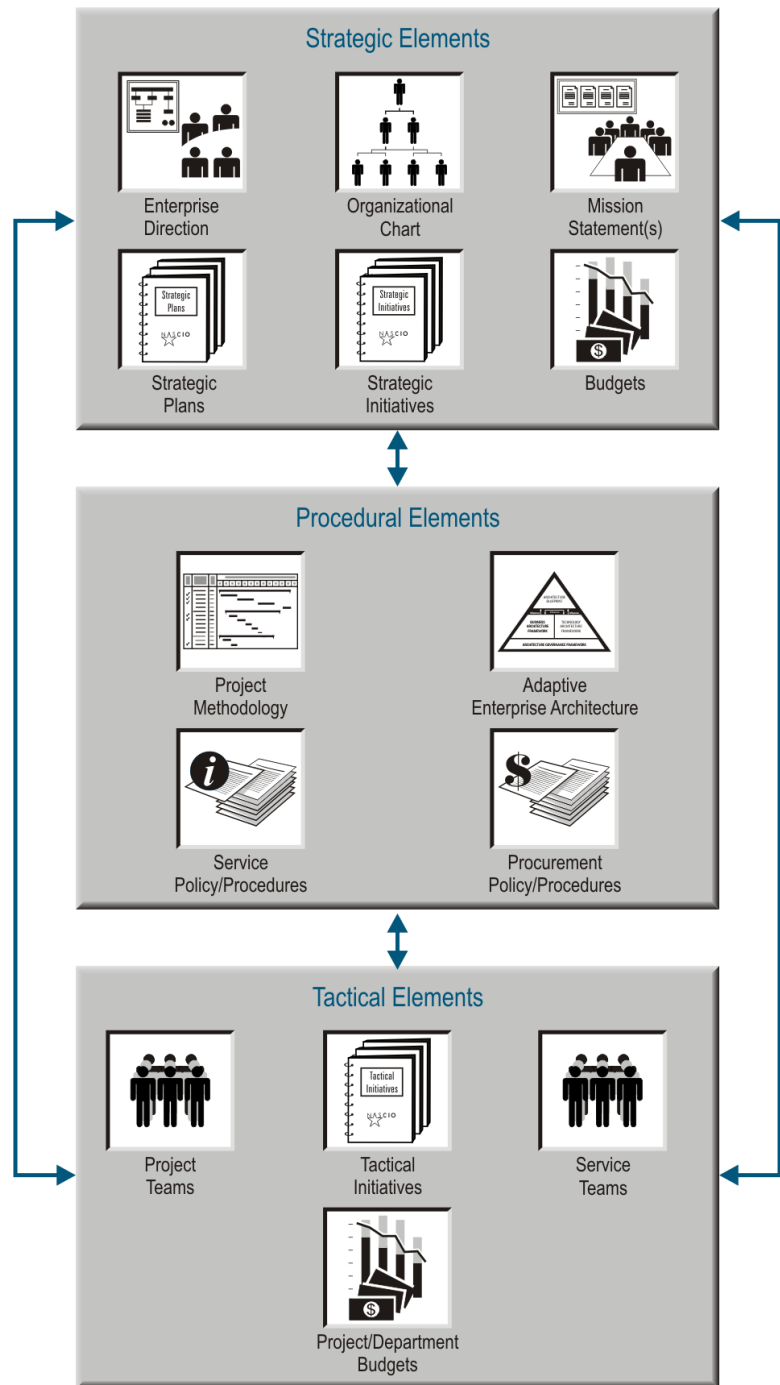


Figure 6. Enterprise Element Relationships

Procedural elements address questions such as what is the best delivery method, which payment options give the best value, and which enterprise architecture best matches the strategic element. Through utilization of the procedural elements, Strategic Initiatives will provide better opportunities to leverage services across the enterprise. This information is provided as feedback into the strategic elements to aid in refining existing strategies and developing new strategies.

There are processes and information available to the service and project teams that are designed to help the business and IT communities consistently and methodically execute projects, purchases, and implement technology solutions. Among these are:

- Procurement Policies and Procedures
- Project Methodologies
- Service Policies and Procedures
- Adaptive Enterprise Architecture

Implementation work begins with the tactical elements, once the delivery method/procedure is determined, the enterprise architecture solution is identified, and the procurement vehicle is established. It is through the tactical elements that the strategic elements are brought to fruition. Tactical elements can include:

- Project Teams
- Service Teams
- Tactical Initiatives
- Project/Departmental Budgets

As the project and service teams work with the various procedural elements, they may see ways to improve the methods, policies, and procedures. These improvement suggestions need to be fed back into the procedural elements to aid in future implementation efforts. All three levels of enterprise elements are required to have an effective and adaptive enterprise:

- Strategic elements provide direction.
- Procedural elements provide consistent, timely, and budget-conscious deliveries.
- Tactical elements provide day-to-day implementation of the services and products.

## ENTERPRISE ARCHITECTURE FRAMEWORK ELEMENTS

Now that the overall, top-down flow of Enterprise Elements from Strategic Elements to specific Tactical Elements has been established, their relationship with Enterprise Architecture Framework Elements can be explained (see Figure 7). Enterprise Architecture Framework Elements pertain specifically to the adaptive enterprise architecture, and therefore, fall within the scope of enterprise architecture governance.

The Enterprise Architecture Framework Elements include:

- Architecture Governance Framework (including Lifecycle Processes)
- Business Architecture Framework
- Information Architecture Framework
- Technology Architecture Framework

- Solution Architecture Framework
- Architecture Blueprint

In Figure 7, the Enterprise Architecture Framework Elements are placed between the Strategic Elements and the Tactical Elements. Similar to Project Methodologies/Service Policies/Procedures and Procurement Policies/Procedures, the Enterprise Architecture Framework Elements define the adaptive enterprise architecture structure that supports the project and service teams, which methodically and consistently bring solutions to the enterprise.

Strategic Elements, focused on Business Strategies, provide the information for defining the Business Architecture Framework at the business executive level. The Strategic Elements, focused on Technology Strategies, along with the Technology Architecture Framework, aid in establishing and confirming the Technology Architecture Framework.

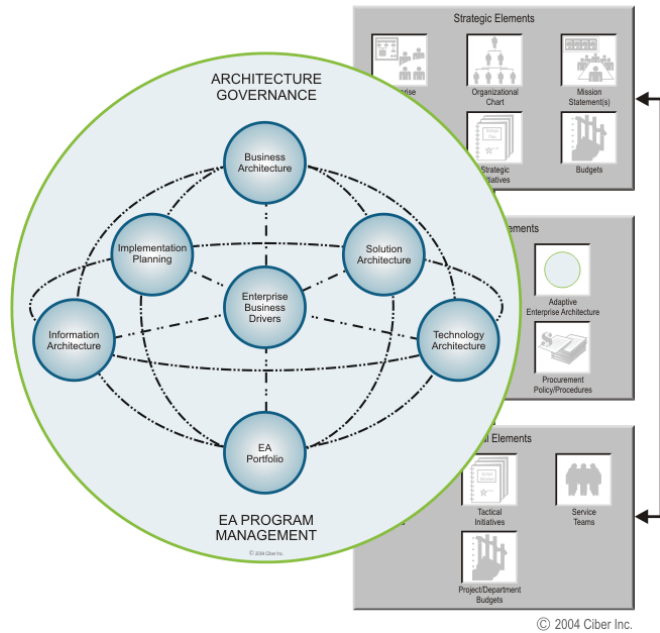


Figure 7. EA Supports Enterprise Elements

The development of, or change to the Technology Architecture Framework or Blueprint can also influence the development of the allied Architectures Frameworks and blueprints. Updates or changes to any of the architecture framework or blueprint should trigger a review of the allied architectures to ensure the enterprise perspective remains intact.

It is through development of structured processes and templates that each of the architecture frameworks is finalized and maintained. Once these foundation pieces of the enterprise architecture are in place, the Architecture Blueprint can be produced. The processes and templates are discussed in detail later in the respective sections of this Tool-Kit.

The EA Portfolio is an additional element to the overall Enterprise Architecture Framework. In the early stages of the development of EA, the Business, Information, and Technology blueprints are primarily focused on the detailed content and uniqueness of the specific architecture components and are often viewed as separate architecture entities. As the organization and architecture practices mature, it becomes more valuable to the organization to view the integration of the specific architecture artifacts holistically – that is, the “the whole is more than the sum of the parts”. To provide this value, the architecture artifacts need to be bundled or packaged for documentation and understanding, rapid reuse, adoption, and interoperability.

The EA Portfolio is primarily concerned with developing these views and packages that are the sum of the various components across the Business, Information, and Technical architectures. Often, the packages are referred to as application and infrastructure patterns. In addition, application profiles and technology services are also grouped and presented as a cross view of the specific, individual architecture components.



## Roles & Responsibilities

Well-established roles and responsibilities for Architecture Governance are essential to implementing a successful enterprise architecture program. Architecture Governance covers responsibility for such items as:

- Ensuring the Enterprise Elements and Enterprise Architecture Framework Elements effectively represent the needs and wishes of the enterprise
- Defining the Enterprise Architecture Framework and Blueprint
- Maintaining the vitality of the Enterprise Architecture Blueprint
- Maintaining the viability of the Enterprise Architecture Framework

In Architecture Governance, the roles and responsibilities are specific to the function performed. When an organization develops its Architecture Governance structure, these responsibilities will be distributed among individuals, groups, or committees as best meets the needs of the organization.

Governance roles and functions are performed by various groups or individuals. People who consistently work with the architecture processes, framework, and artifacts are considered to be contributing in a primary capacity.

<i>Primary Architecture Roles</i>	
Overseer	Champion
Manager	Documenter/Author
Communicator	Advisor
Reviewer	Approver
Audience	

Other individuals or groups that are identified to support architectural blueprints or elements on an as-needed basis are contributing to the Enterprise Architecture in a secondary or supportive capacity.

<i>Contributors that Play a Supporting Role</i>	
Subject Matter Experts (SME)	Enterprise Executive
Project Teams	Services Teams
Procurement Manager	Special Interest Groups
Project/ Services Methodology Communicator	

Figure 8 shows the primary and supportive roles, groups, and individuals and their close relationships within the Enterprise Architecture Framework.

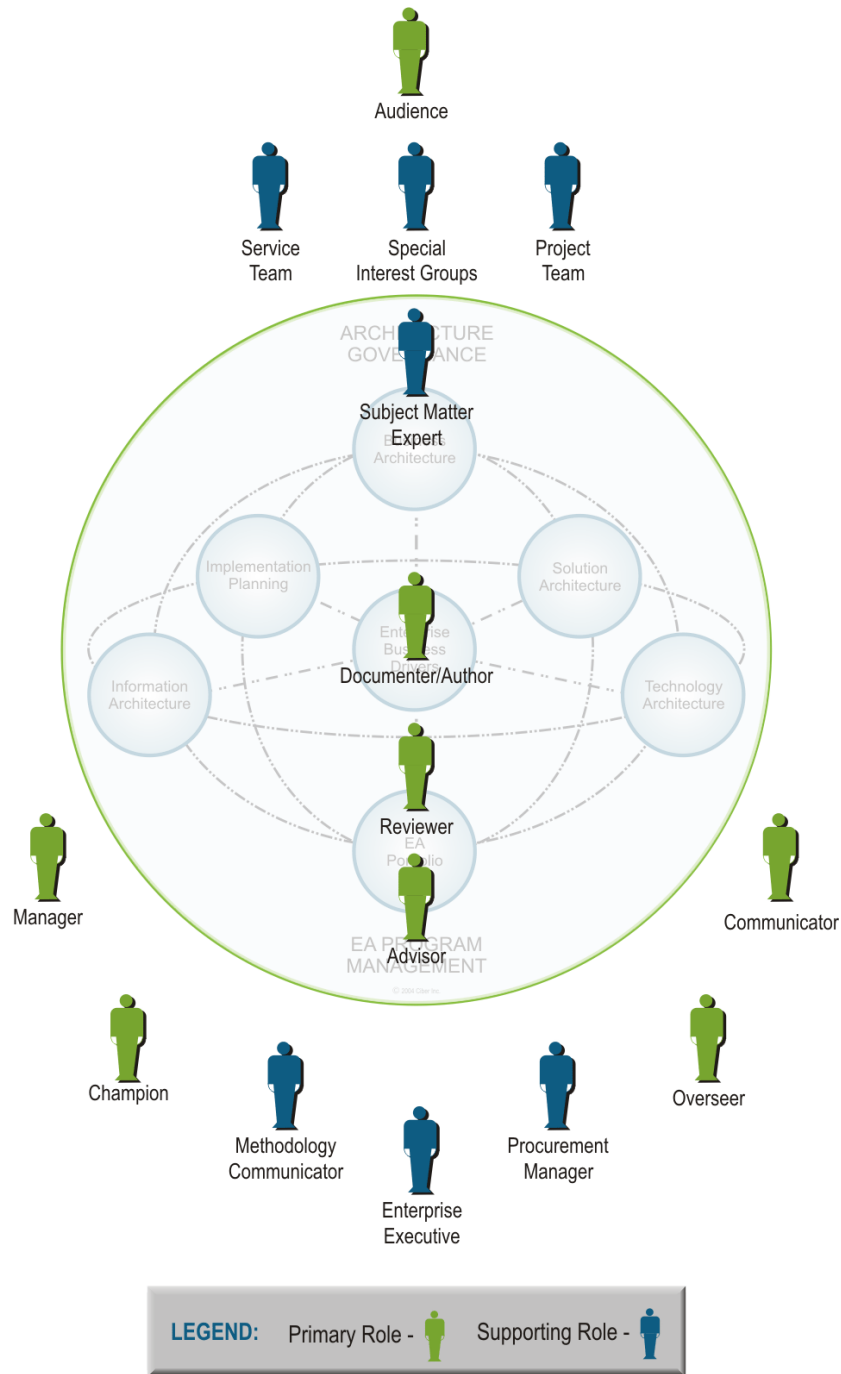


Figure 8. Primary and Supporting Contributors to EA



The contributions provided by the roles, groups, and individuals involved in Architecture Governance are described in detail in this section. For each contributor the following information is provided:

- *Description* – The specific EA role, group, or individual and its relationship to other roles or groups.
- *Implementation recommendations* – Is the function better implemented as a committee or as a single position?
- *Checks and Balances* – Whether this function should be implemented in combination with other roles and what combinations to avoid.
- *Full-time / Part-Time* – Is the contributor typically considered full-time or part-time?
- *Contribution Significance* – Is the function critical, necessary, or helpful? If the function is critical or necessary, a comment addressing the risk of non-implementation is provided under “Missing Contribution Responsibility”.
- *Missing Contribution Risk* – An explanation of the risk incurred if no one assumes responsibility for this function from the governance model. This item is included only for critical or necessary contributions.

Appendix C contains a Role & Responsibility Matrix, which provides an “at-a-glance” reference of the responsibilities of each Architecture Governance contributor, the EA Life Cycle aligned with the tasks, and the architecture artifact impacted by the task being performed.

## PRIMARY CONTRIBUTORS

### Overseer

- *Description:* The Overseer is a role that is established by legislative mandate or similar directive from the Enterprise Executive. Membership on the committee is usually by appointment from the establishing organization or designated representative. A committee, team or group typically fills the role of Overseer. The Overseer is responsible for ensuring that Business and IT plans follow the proper direction for the enterprise and that the associated budgets are well spent.
- *Implementation Recommendation:* The role of Overseer can be implemented as an individual or committee. An informed, consensus opinion must be obtained for effective oversight.
- *Checks and Balance:* The role of Overseer can be combined with the roles of Manager, Advisor, and Communicator. Combining the role of Overseer with the role of Reviewer is not recommended.
- *Full-time / Part-Time:* The role of Overseer is considered part-time.
- *Contribution Significance:* Helpful
- *Missing Contribution Risk:* Without the overseer role the architecture participants will need to monitor their program activities without the benefit of a third-party viewpoint.

### Champion

- *Description:* While every individual associated with the enterprise architecture effort should be its “champion” by continuously promoting, advertising, marketing, and participating, the role of Champion is typically an executive role. Potentially the role of Champion is held by an executive at the CIO or equivalent level, and is responsible for ensuring the enterprise goals and objectives set out by the enterprise architecture efforts are met. Though the role of Champion is not directly involved in the specific enterprise architecture processes, the Champion provides the cheerleading and public relations that the adaptive enterprise architecture effort requires to be successful. The

Champion is also responsible for promoting the benefits that will be accomplished by creating adaptive enterprise architecture. As with any effort that is conducted at the enterprise level of an organization, a Champion is essential for success throughout the enterprise.

- *Implementation Recommendation:* The role of Champion is best implemented as an individual; however, everyone connected with the enterprise architecture effort should be a champion of the effort. Having an executive-level management Champion for the adaptive enterprise architecture effort is vital to its success, especially in getting started and when seeking compliance.
- *Checks and Balance:* The role of Champion can be combined with the Advisor and/or Manager.
- *Full-time/ Part-Time:* The role of Champion is recommended as part-time.
- *Contribution Significance:* CRITICAL
- *Missing Contribution Risk:* Absence of this role could result in the lack of executive support and enterprise visibility. In addition, the enterprise architecture effort may not be empowered.

### Manager

- *Description:* The Manager is responsible for the coordination of the overall enterprise architecture effort. The manager seeks guidance and support from the Champion on enterprise architecture related matters such as selecting contributors to fulfill enterprise architecture functions or enterprise architecture review items that require executive approval. The Manager also receives clarity and support from the Advisor on Strategic Elements from both the business and IT communities within the enterprise.

The Manager chairs and directs the role of Reviewer. The Manager also receives evaluations and recommendations from the Reviewer. Both the Manager and the Reviewer share in the responsibility of screening enterprise architecture requests and recommendations. The Manager appoints and directs the Documenters. The Manager spells out the responsibilities of the Documenters both in processes and in scope of work.

The Manager provides information to the Communicator to:

- Promote the overall enterprise architecture effort.
- Specify the audience for the information.
- Identify what information is available during the various enterprise architecture process steps.
- *Implementation Recommendation:* This Manager role is best implemented as an individual, not a committee. The individual should have a solid technical background and, ideally, the Chief Architect or equivalent should fill the role at the enterprise level. Precise decisions and direction are needed.

The Manager role can be extended into multiple roles at varying levels or in various organizations within the enterprise. Extended Managers act as an extension of the enterprise level Manager and essentially fulfill the same responsibilities, except that they are taking their guidance and direction from the enterprise level Manager.

- *Checks and Balance:* The Manager role can be combined with the Champion and/or Communicator Roles. The Manager can be a Reviewer but should not be the only Reviewer. The combination of role of Manager with the role of Approver is not recommended.
- *Full-time/ Part-Time:* The Manager role is recommended as full-time.
- *Contribution Significance:* CRITICAL
- *Missing Contribution Risk:* Lack of guidance and a single consistent vision.

### Documenter/Author

- *Description:* The Documenter/Author can be either senior or junior level IT staff, or business staff depending on what is most appropriate. A Documenter's primary responsibility is to maintain the various Architecture Governance elements. Based on the Documenter's scope, which is directed by the Manager, each Documenter/Author maintains one or more of the following:
  - Architecture Governance Framework
  - Business Architecture Framework
  - Information Architecture Framework
  - Technology Architecture Framework
  - Solution Architecture Framework
  - Business, Information and/or Technology Architecture Blueprint

The first five Architecture Governance elements are fairly static and change only due to updates to the Strategic Elements or approved enterprise architecture process improvement suggestions. The Architecture Blueprint Documenter is an on-going role that is constantly reviewing the Business/IT Portfolio and emerging technologies to bring about the best, integrated solutions for the enterprise. The Documenter/Author is responsible for providing information regarding updates to the various Enterprise Architecture Framework Elements to the Reviewer and the Communicator. After the Documenter/Author receives the results of the evaluation from the Reviewer, the Documenter/Author is responsible for updating the Enterprise Architecture Framework Elements to include a summary of the results for historical purposes.

- *Implementation Recommendation:* The role of Documenter/Author is best implemented as a committee. A consensus opinion must be put into the documentation. Architecture Documenters often make up Domain Committees responsible for documenting the discipline set that makes up their assigned domain.
- *Checks and Balance:* The role of Documenter/Author can be filled by contributors from the organization's Subject Matter Expert, Support Teams, and/or Project Teams. The combination of the role of Documenter/Author with the role of Reviewer and/or Communicator is not recommended.
- *Full-time/ Part-time:* The role of Documenter/Author is recommended as part-time. At the start of the Architecture documentation period, this may be a full-time role.
- *Contribution Significance:* CRITICAL
- *Missing Contribution Risk:* No documented business, information, technical architecture blueprints, or solution sets available for communication, review or compliance.

### Communicator

- *Description:* The Communicator is the conduit for Enterprise Architecture information into the enterprise. An individual with experience in technical writing and/or end user reporting, best fills the Communicator role. This individual can be a junior level IT staff member. Based on parameters established by the Manager, the Communicator both pulls information on behalf of a request and pushes information to the Audience. Information is provided to the Communicator from the following three roles:
  - The Documenter
  - The Reviewer
  - The Manager

Though information can be requested from any of the Architecture roles, the requests will come primarily from the following roles or groups including:

- Audience
  - Service Teams
  - Project Teams
  - Subject Matter Experts
  - Special Interest Group
- *Implementation Recommendation:* Every individual involved in the enterprise architecture effort has certain inherent communications responsibilities as defined by their designated role. However, the role of Communicator is best implemented as an individual rather than a committee. Precise, formal communication is needed. Differing communication styles can cause for confusion to the Audience.
  - *Checks and Balance:* The Communicator role may be combined with the Reviewer and/or Manager. Combining Communicator role with the role of Documenter/Author is not recommended.
  - *Full-time/ Part-time:* The Communicator role is recommended as part-time.
  - *Contribution Significance:* CRITICAL
  - *Missing Contribution Risk:* Lack of visibility, understanding, and accountability in the Architecture Blueprint. Compliance is difficult to ascertain absent an understanding of the previous Audience communication that identified the version of the Architecture Blueprint used for future compliance reviews.

#### Advisor

- *Description:* An Advisor should be an executive that provides clarity and support to the Manager of the enterprise architecture. This Advisor serves as a representative of the Strategic Elements from both the business and IT communities within the enterprise. This executive will also provide guidance on enterprise architecture variance requests from a business and economic perspective.
- *Implementation Recommendation:* This role can be implemented as an individual, multiple individuals, or a committee. Guidance, decisions, and direction are needed that encompasses all organizations within the enterprise. Advisors should be identified in a manner that effectively represents the enterprise.
- *Checks and Balance:* This role can be combined with the roles of Champion. The Advisor can be a Reviewer but should not be the only Reviewer. The combination of role of Advisor with the role of Manager is not recommended.
- *Full-time/ Part-time:* The Advisor role is recommended as part-time.
- *Contribution Significance:* Necessary
- *Missing Contribution Risk:* A well-rounded perspective of the enterprise needs and requirements will be absent.

#### Reviewer

- *Description:* The Reviewer should be an executive or senior-level IT person. The Reviewer is responsible for evaluating the suggested Architecture Governance Elements changes for the Manager. The Reviewer may seek advice from the various Subject Matter Experts prior to making a recommendation. The Reviewer may need clarity from the Documenter.

For Architecture Review Items that require executive approval, the Reviewer will ask the Manager for assistance. Reviewer provides recommendation and reviewed information to the Communicator and the Manager.

- *Implementation Recommendation:* The role of Reviewer is best implemented as a committee. More than one opinion must be put into the review.
- *Checks and Balance:* The role of Reviewer can be combined with the roles of Communicator and can be staffed from individuals from the organization's Subject Matter Expert, Support Teams, and/or Project Teams. The combination of role of Reviewer with the role of Documenter/Author is not recommended.
- *Full-time/ Part-time:* The Reviewer role is recommended as part-time.
- *Contribution Significance:* CRITICAL
- *Missing Contribution Risk:* Lacking more than one set of eyes for quality assurance and variety of perspectives.

### Approver

- *Description:* An Approver should be a mid-to-executive level member of the management team that provides leadership and direction to the Manager of the enterprise architecture. This approver serves as a business representative with the understanding of the overall organizational strategies, plan, and directions from both the business and IT communities within the enterprise. The Approver also provides leadership and direction to all parties engaged in architecture activities, regardless of their line of business or technical affinities. This individual will also provide final resolution on the approval or rejection of enterprise architecture variance requests from a business and economic perspective.
- *Implementation Recommendation:* The role of the approver is best implemented as a committee. Guidance, decisions, and direction are needed that encompasses all organizations within the enterprise so the committee should be staffed accordingly. Approvers should be identified in a manner that effectively represents the enterprise.
- *Checks and Balance:* This role can be combined with the roles of Champion. The Approver can be a Reviewer but should not be the only Reviewer. The combination of role of Approver with the role of Manager and Advisor is not recommended.
- *Full-time/ Part-time:* The Approver role is recommended as part-time.
- *Contribution Significance:* Necessary
- *Missing Contribution Risk:* Enterprise Architecture accountability, decision authority, and a well-rounded perspective of the enterprise needs and requirements will be absent.

### Audience

- *Description:* The Audience role is made up of various groups of identified stakeholders in the Architecture Governance Elements, including:
  - Enterprise executives, departmental managers, and enterprise business leaders
  - Internal and external IT Staff that are creating and maintaining IT services for the enterprise.
  - Vendors that provide or wish to provide technology solutions to the enterprise
  - Various enterprise architecture team members
  - Executive IT staff members.

- *Implementation Recommendation:* See the above description for the various implementations of this role.
- *Checks and Balance:* None
- *Full-time/ Part-time:* The role of Audience is considered part-time.
- *Contribution Significance:* Necessary
- *Missing Contribution Risk:* Lack of architecture stakeholders. Must identify those held accountable for compliance and ensure communications are delivered in a timely manner.

## SUPPORTING CONTRIBUTORS

### Subject Matter Experts

- *Description:* These individuals or groups refer to an internal or external entity that provides expert knowledge on a given subject. Subject Matter Experts contribute information to the following:
  - Documenter
  - Reviewer
  - Service Teams
  - Project Teams
- *Implementation Recommendation:* Subject Matter Experts are most effective when implemented as a committee or a group. More than one opinion must be put into the expert advice.
- *Checks and Balance:* Subject Matter Experts can fill the roles of Documenters, or can participate as members of Support Teams, Project Teams, or architects. Subject Matter Expert should not fill the role of Reviewer as this may lead to the proliferation of self-interest.
- *Full-time/ Part-time:* This Subject Matter Expert is recommended as a part-time function.
- *Contribution Significance:* Necessary
- *Missing Contribution Risk:* Possible inclusion of incorrect product or compliance criteria into the architecture blueprints.

### Services Teams

- *Description:* Services Teams support the existing business/IT portfolio for the enterprise. They review Strategic and Tactical Initiatives to determine whether existing service and/or technology can be utilized to solve the initiative. When extending the existing service/technology, the Service Teams communicate new compliances and/or the need for version updates to the Documenter. This allows for continuous improvement to the Architecture Blueprint.
- *Implementation Recommendation:* None
- *Checks and Balance:* None
- *Full-time/ Part-time:* Services Team are utilized in a part-time capacity.
- *Contribution Significance:* Necessary
- *Missing Contribution Risk:* Could not supply day-to-day services to the enterprise. Necessary to enterprise architecture to verify the Architecture Blueprint is providing the plan for achieving services.

### Project Teams

- *Description:* Project Teams align Strategic/Tactical initiatives with possible service and/or technology solutions. In determining the best solution the Project Team may:
  - Review the Architecture Blueprint.
  - Seek further technology scans in emerging solutions.
  - Provide information on existing solutions.

When requesting new service/technology or extending existing service/technology, the Project Team is responsible for reviewing and adhering to Architecture Compliance.

- *Implementation Recommendation:* None
- *Checks and Balance:* None
- *Full-time/ Part-time* Project Teams are a part-time user of the enterprise architecture.
- *Contribution Significance:* Necessary
- *Missing Contribution Risk:* Could not enhance/extend the existing services for the enterprise in large-scale efforts in a consistent and organized fashion without the daily interruptions for existing services. This function is necessary for the vitality of the enterprise architecture in seeking out new services/technology to extend the Architecture Blueprint.

### Procurement Manager

- *Description:* The Procurement Manager is responsible for the procurement policies and procedures. These policies and procedures are external to the enterprise architecture; however, the interface with the enterprise architecture processes is essential to assure that purchases have been correctly evaluated and documented in the Architecture Blueprint.
- *Implementation Recommendation:* None.
- *Checks and Balance:* None
- *Full-time/ Part-time:* The Procurement Manager is a part-time advisor to the enterprise architecture groups.
- *Contribution Significance:* CRITICAL
- *Missing Contribution Risk:* This function is critical to the purchasing of new services and technologies for the enterprise. This function is critical to enterprise architecture and ensures that purchase requests adhere to the Architecture Compliance process prior to purchase.

### Project/ Services Methodology Communicator

- *Description:* The Project and Services Communicator is responsible for communicating the methodologies and procedural steps to be followed when providing services and project support to the enterprise. The methodology should be adapted to include steps for Architecture Review and Compliance.
- *Implementation Recommendation:* None
- *Checks and Balance:* None
- *Full-time/ Part-time:* The Project/ Services Methodology Communicator is a part-time advisor to the enterprise architecture groups.
- *Contribution Significance:* Necessary

- *Missing Contribution Risk:* Critical to consistent and timely delivery of extensions and services to the enterprise. Necessary to enterprise architecture to verify that Architecture Compliances are done in a timely manner according to the Project and Service methods, policies, and procedures.

### Special Interest Groups

- *Description:* Special Interest Groups can vary greatly in make-up as well as interests. They can be both internal and external to the enterprise. An example of internal special interest groups would be a Geographical Information Systems Advisory Group. Examples of external special interest groups would include citizen groups associated with libraries or the state's educational system. Special interest groups provide advisory input into the enterprise architecture by identifying special needs, interests, or considerations, as well as enterprise architecture compliance requirements specific to the group.
- *Implementation Recommendation:* Special Interest Groups are implemented as a committee or group. Generally, the input is the consensus of the groups and is provided to the Manager or Documenter.
- *Checks and Balance:* Special Interest Groups should not be combined with any other role.
- *Full-time/ Part-time:* Part-time as needed.
- *Contribution Significance:* HELPFUL
- *Missing Contribution Risk:* Lacking multiple perspectives on what would benefit the enterprise.

### Enterprise Executive

- *Description:* Enterprise Executive provides the Strategic Elements that give direction, goals and objectives to the enterprise. Enterprise Executive is typically an executive role, potentially at the level of governor/mayor or equivalent and is responsible for ensuring the enterprise goals and objectives are set by the state/county/municipality.
- *Implementation Recommendation:* Enterprise Executives are implemented as an individual or group of individuals tasked with strategically aligning the enterprise.
- *Checks and Balance:* The role of Enterprise Executive can be combined with role of Advisor.
- *Full-time/ Part-time:* This Enterprise Executive role is recommended as part-time.
- *Contribution Significance:* CRITICAL
- *Missing Contribution Risk:* Absent the Strategic Elements, implemented technology would not relate to the business of the enterprise.

Each organization will create its Architecture Governance structure based on the previously described roles. The following section provides several examples of how various government organizations implement these roles.





## Governance Samples

Successful architecture governance models that have been implemented by municipal, county and state governments are provided as examples of working architecture governance models. The sample governance models in general are not purely representative of governance; they intermingle IT/business organizations and positions not specifically related to architecture governance with the governance roles.

Samples of governance models representing State government include:

- State of Missouri
- Commonwealth of Kentucky
- State of Arkansas
- State of Kansas
- State of Washington
- State of North Carolina

Samples of governance models representing municipal and county government include examples from:

- Philadelphia, Pennsylvania
- San Diego, California
- Virginia Beach, Virginia
- Fairfax County, Virginia

The samples are represented with an organizational chart graphic followed by a description of significant organizational function for each of the governance models. The majority of the samples were developed utilizing a typical organizational chart structure with typical position titles, while the architecture roles previously identified in this Tool-Kit are functional in nature. A cross-reference column is included in the significant organizational function lists that map the governance model components to the architecture roles. Roles identified within the samples are defined by the providing enterprise and interpreted for the purpose of this discussion. In some cases, the rationale for the mapping may not be apparent.

### APPLICABILITY IN THE JUDICIAL ENVIRONMENT

The illustrated governance models contained within this document are primarily based on the executive branch of government. The components are equally applicable in the judiciary or legislative branch of government by simply inserting the appropriate Enterprise Executive for the enterprise and applying the other roles and functional relationships as they apply. Established Judicial Branch Governance models, if illustrated, are similar to those identified for the executive branch.

Ideally, an enterprise governance structure in a municipal, county or state government would encompass all applicable entities of the Executive, Legislative and Judicial branches of government.

A good example of this is the illustrated Kansas Governance model, which effectively incorporates all three branches in the governance process. All enterprise decisions at the executive level are by joint decree. All three branches have equal say in the process. It is possible to implement a variation of this model using a structure that allows for independent decision making on issues that are only germane to a specific branch of government.

The requirement to keep the three branches of government separate is more strictly enforced in some enterprise environments. This strict enforcement often prevents in-depth involvement by all members of the government branches. The illustration of Kentucky's governance model is a good example of this situation. Originally, the judicial branch participated as a voting member in Kentucky's governance structure. The Kentucky Supreme Court ruled the participation was unconstitutional, preventing their continued participation. The Judicial Branch, however, is still participating in the process by presenting their business case and having it influence the direction of the enterprise.

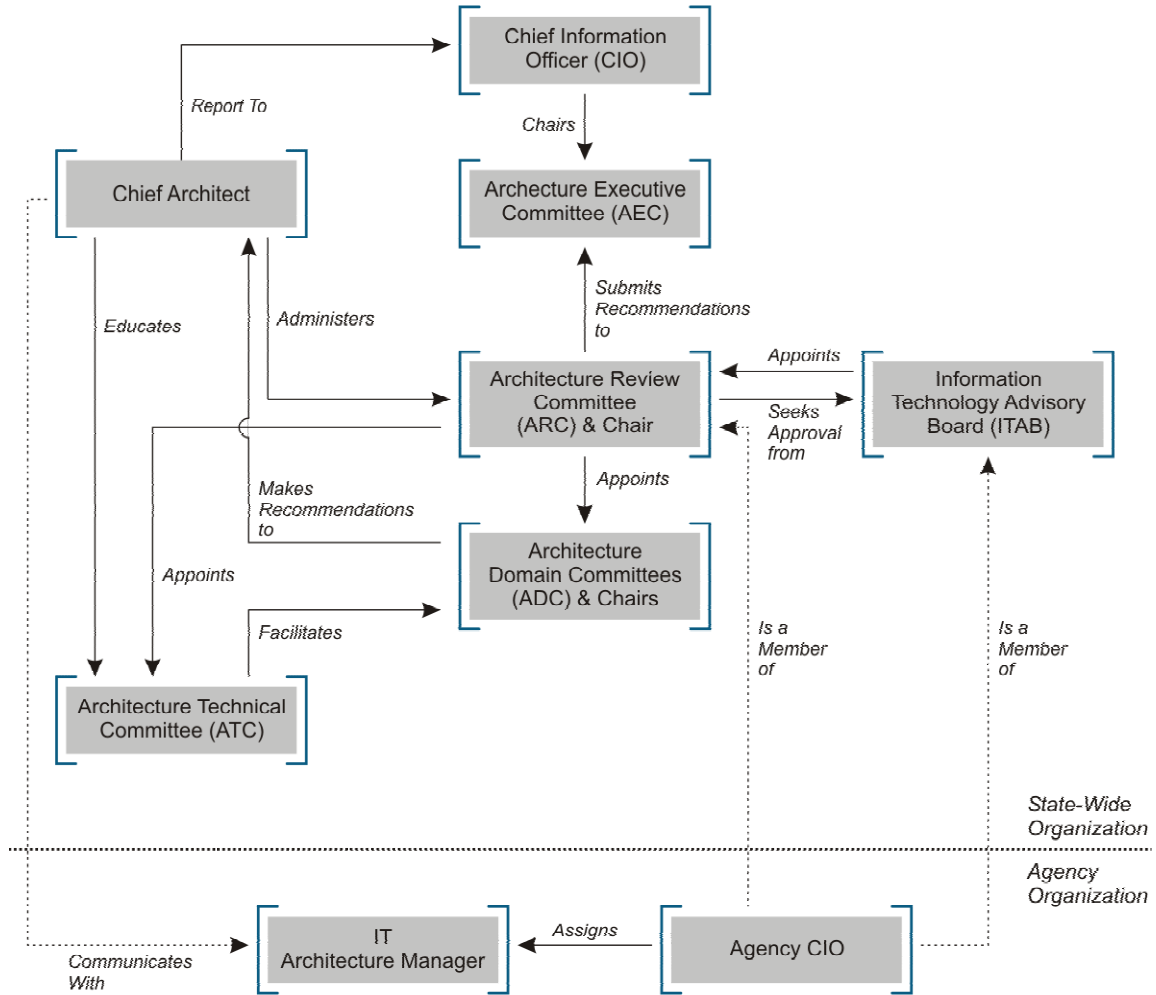
The key is to set up the governance model so that all branches of government can participate. Strong executive leadership is critical in promoting the partnership between the three branches of government and implementing a strong governance model for the enterprise.

## GOVERNANCE MODELS

The following examples represent successful Architecture Governance Models implemented in the State of Missouri, the Commonwealth of Kentucky, the State of Arkansas, the State of Kansas, the State of Washington and the State of North Carolina, as well as in the municipal and county government entities for Philadelphia, PA; San Diego, CA; Virginia Beach, VA; and Fairfax County, VA. A description of significant organizational functions of the governance model is provided for each example.

## STATE GOVERNMENT – MISSOURI

The following diagram illustrates the Architecture Governance Model for the State of Missouri.



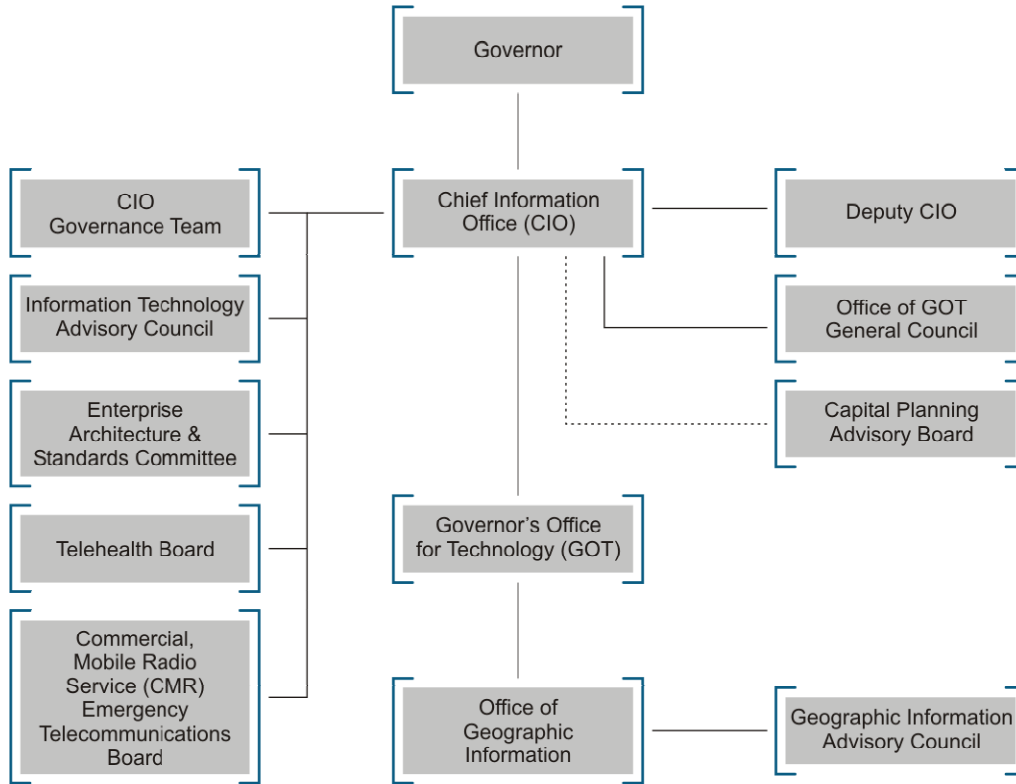
Significant Organizational Functions

The following list identifies the significant organizational functions of the Architecture Governance Model for the State of Missouri.

<i>Functions</i>	<i>Description</i>	<i>Governance Role Mapping</i>
Chief Information Officer (CIO)	Champions the architecture effort, promotes architecture value, ensures architecture success, assigns appropriate resources, and manages architecture principles. Has IT project approval for large budget projects and supports the budget and appropriation process on behalf of other agencies.	Champion
Architecture Executive Committee (AEC)	Approves architecture variations, reviews project plans, risk strategy for consistency with architecture.	Advisor
Chief Architect	Implements management processes; educates facilitators and users; manages targets and performance measures, manages implementation plan; manages architecture contents; administers compliance reviews; develops domain templates; and administers ARC.	Manager, Communicator
Architecture Review Committee (ARC)	Submits architecture recommendations to AEC, reviews architectural changes, reviews requests for variance, establishes architecture management processes; appoints Facilitators and Architecture domain committees & chairs.	Reviewer
Architecture Domain Committees (ADC)	Recommend architecture standards, provides domain guidance to agencies, and provide technical assistance on architecture domain issues.	Documenters
Architecture Technical Committee (ATC)	Educate domain committees, facilitate domain sessions, assure adherence to methodology, ensure consistent enterprise view, gain consensus of ADC members, serve as methodology experts, and handle special projects.	Subject Matter Experts
Information Technology Advisory Board (ITAB)	This board consists of the department level CIOs and/or IT directors. Implements strategic plan and develops IT strategies. Critical to endorsing CIO initiatives. Functions as the key contact with project stakeholders. Staff many of the committees for policy and standards.	N/A
IT Architecture Manager	Establishes & manages departmental compliance process; communicates to and educates developers, users, & mgrs; establishes architecture targets and measurements; manages departmental architecture database; manages architecture implementation plan; assures adherence to methodology; and acts as a potential members of ATC.	Subject Matter Experts
Agency CIO	Owens department-level architecture.	Audience

## STATE GOVERNMENT – KENTUCKY

The following diagram illustrates the Architecture Governance Model for the Commonwealth of Kentucky.



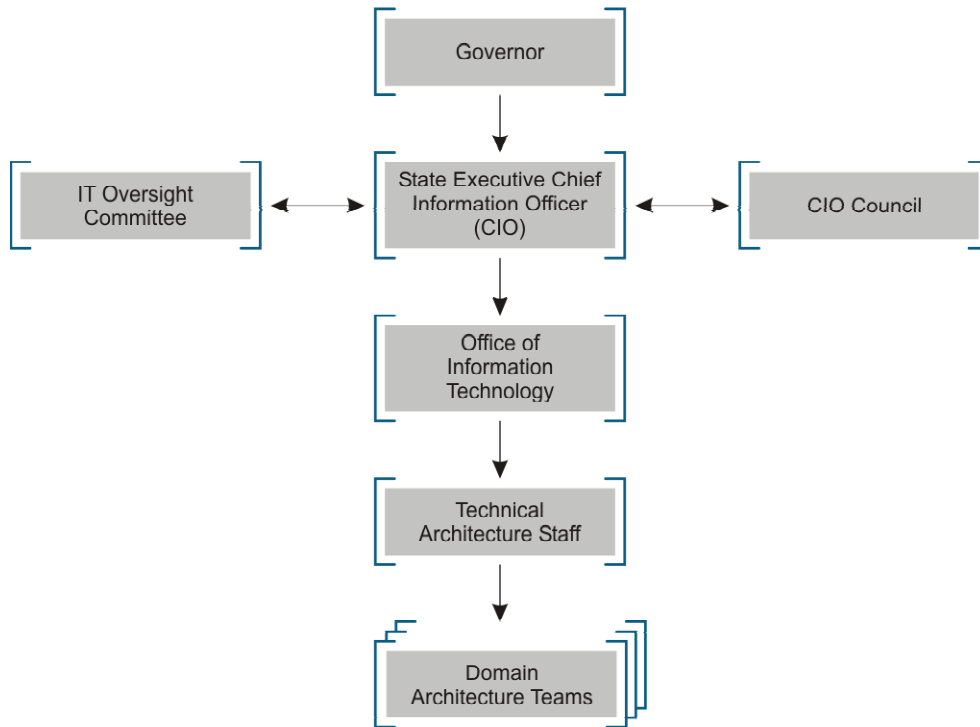
Significant Organizational Functions

The following list identifies the significant organizational functions of the Architecture Governance Model for the Commonwealth of Kentucky.

<i>Functions</i>	<i>Description</i>	<i>Governance Role Mapping</i>
CIO	Oversees developing, implementing and managing strategic information technology directions, standards and enterprise architecture, including implementing necessary processes to ensure full compliance with those directions, standards and architecture.	Champion, Manager, Advisor
Deputy CIO	Provides support to the CIO for developing, implementing and managing strategic information technology directions, standards and enterprise architecture, including implementing necessary processes to ensure full compliance with those directions, standards and architecture.	Subject Matter Expert
Enterprise Architecture and Standards Committee	Chaired by the CIO. Composed of multiple agency representatives and is administered and supported by the Division of Planning and Architecture, Governor's Office for Technology. Responsible for governing the architecture and standards process.	Documenter
Governor's Office For Technology	This office was established by the legislature to help ensure that the information technology direction of the state adequately supports the needs of the citizens of the commonwealth. Extensive responsibilities including providing support to the CIO for enterprise level initiatives. Manages enterprise level systems and services.	Reviewer, Communicator, Project / Services Methodology Communicator, Overseer
CIO Governance Team	Formed by the CIO (not required by statute). Represents all agency CIOs. Operates as the IT policy and investment board.	Services Team, Project Team,
Information Technology Advisory Council	Advises the CIO on IT issues.	Subject Matter Experts
Telehealth Board	Advises the CIO and IT community on IT issues relating to health.	Special Interest Group
Commercial Mobile Radio Service (CMRS) Emergency Telecommunications Board	Advises CIO and IT community on IT issues relating to mobile radio services and emergency telecommunications issues.	Special Interest Group
Geographic Information Advisory Council	Advises the CIO and IT community on IT issues relating to geographic information.	Special Interest Group

## STATE GOVERNMENT - ARKANSAS

The following diagram illustrates the Architecture Governance Model for the State of Arkansas.



Significant Organizational Functions

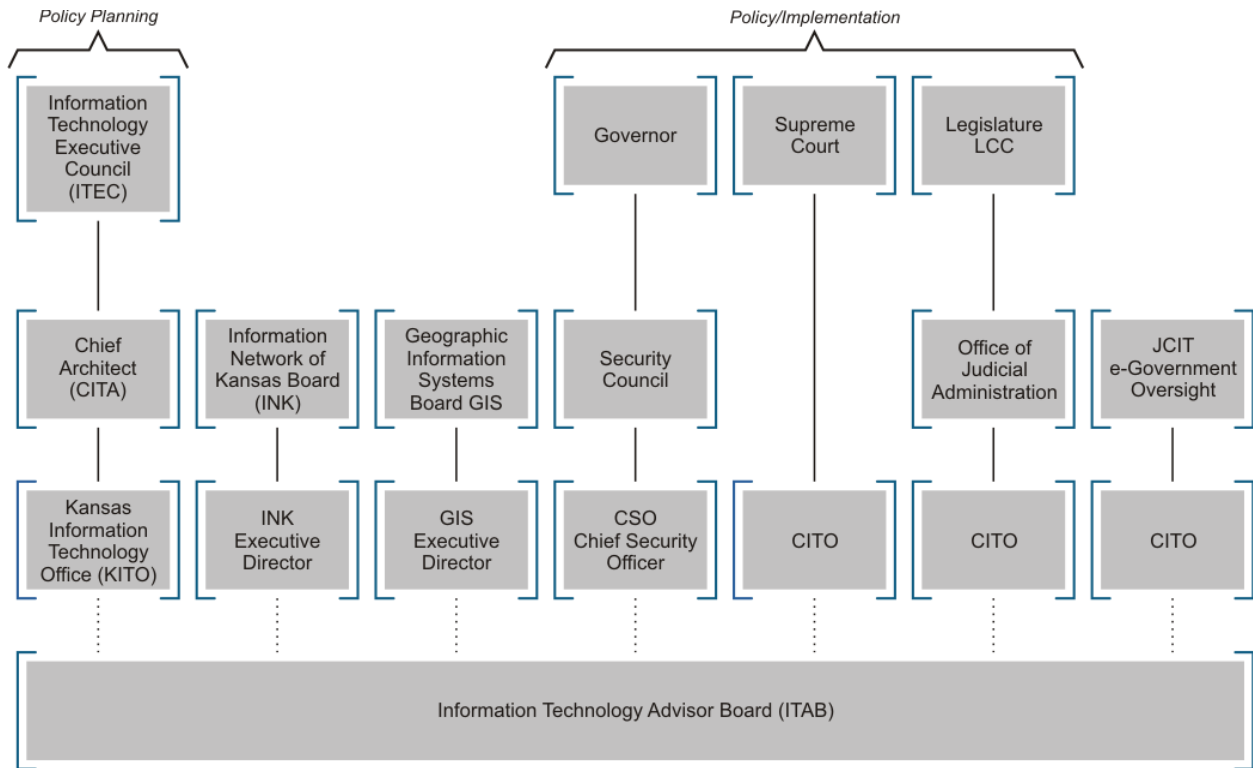
The following list identifies the significant organizational functions of the Architecture Governance Model for the State of Arkansas.

<i>Functions</i>	<i>Description</i>	<i>Governance Role Mapping</i>
State Executive CIO	Directs the formulation of policies, standards and guidelines for IT in the state; reports to the Governor.	Champion, Manager, Advisor
CIO Council	Provides leadership in coordinating information technology in the state; made up of agency CIOs.	Subject Matter Experts
IT Oversight Committee	Committee of private and public entities to advise executive CIO on allocation of information technology resources used by the state.	Overseer, Special Interest Group
Office of Information Technology	Acts as CIO's staff; oversee agency IT planning and review; administer enterprise projects; ensure IT project alignment with state technical architecture; houses technology investigation center; houses state GIS office.	Communicator, Reviewer, Service Teams, Project Teams
Technical Architecture Staff	Work under the direction of the state executive CIO within the Office of Information Technology; facilitate domain architecture teams.	Documenter
Architecture Domain Teams	Business and technical staff from state agencies that research and come to consensus on standards, best practices and policies.	Documenter



## STATE GOVERNMENT – KANSAS

The following diagram illustrates the Architecture Governance Model for the State of Kansas.



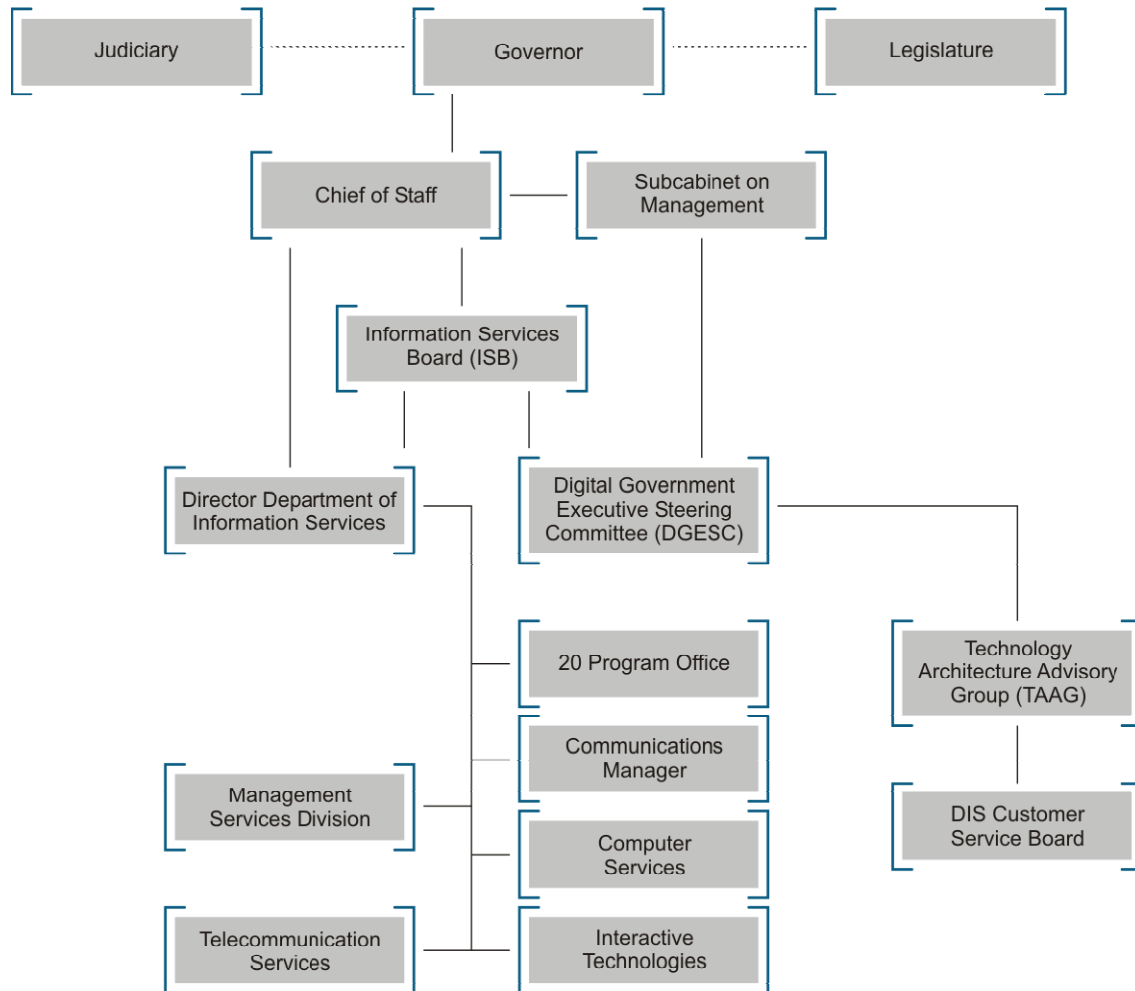
Significant Organizational Functions

The following list identifies the significant organizational functions of the Architecture Governance Model for the State of Kansas.

<i>Functions</i>	<i>Description</i>	<i>Governance Role Mapping</i>
Information Technology Executive Council (ITEC)	Responsible for adopting information technology resource policies and procedures and project management methodologies for all state agencies/offices; an enterprise information technology architecture, including telecommunications systems, networks and equipment, that covers all state agencies/offices; standards for data management for all state agencies/offices; and a strategic information technology management plan for the state.	Overseer, Champion, Advisor, Reviewer
Chief IT Architect (CITA)	Non-voting member of the ITEC. Develops and recommends information technology resource policies and procedures and project management methodologies for all state agencies/offices; an information technology architecture, including telecommunications systems, networks and equipment, that covers all state agencies/offices; standards for data management for all state agencies/offices; and a strategic information technology management plan for the state.	Manager, Documenter
CHIEF INFORMATION TECHNOLOGY OFFICER (CITO)	Responsible for implementing information technology resource policies and procedures and project management methodologies; an information technology architecture, including telecommunications systems, networks and equipment; standards for data management; and the strategic information technology management plan for the requisite branch of government. CITO also approves all projects and bid specifications over \$250,000. Every quarter the CITO reports the status of projects.	Communicator
Information Technology Advisory Board	Functions as a technical resource to the CITO for the executive branch.	Subject Matter Experts

## STATE GOVERNMENT – WASHINGTON

The following diagram illustrates the Architecture Governance Model for the State of Washington.



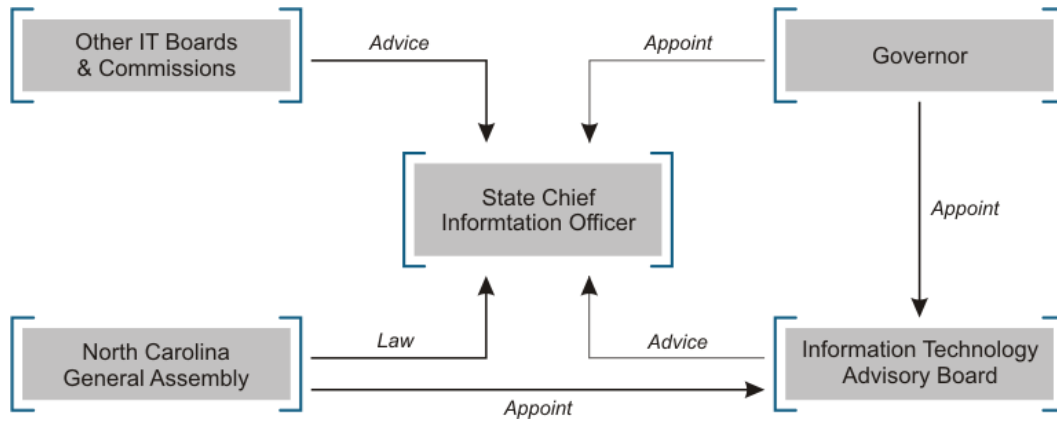
Significant Organizational Functions

The following list identifies the significant organizational functions of the Architecture Governance Model for the State of Washington.

<i>Functions</i>	<i>Description</i>	<i>Governance Role Mapping</i>
Information Services Board (ISB)	Establishes IT policy, direction, IT plans and technology standards.	Overseer, Champion, Manager
Digital Government Executive Steering Committee (DGESC)	Membership includes the Office of the State Treasurer, Office of the Secretary of State, Office of the State Auditor and Office of Financial Management. Provides enterprise-wide business policy guidance, recommendations, issue resolution and coordination to achieve the goals of the digital government program.	Advisor
Technology Architecture Advisory Group (TAAG)	Makes recommendations to the DGESC regarding technical requirements, tool selection and objectives for e-commerce infrastructure and services, including design of electronic authorization technologies, access control and directory services. The TAAG also participates in the development of digital government policy, standards and guidelines. This group is composed of senior level agency IT managers drawn from the DIS Customer Service Board.	Reviewer, Subject Matter Expert
Department of Information Services (DIS) Customer Advisory Board	Provides technical expertise and guidelines for digital government; coordinates and supports interagency communications; develops and implements new technology infrastructure and services; advises on funding to support agency digital government services; and provides staff support to the ISB.	Communicator, Documenter, Subject Matter Expert, Project / Services Methodology Communicator

## STATE GOVERNMENT – NORTH CAROLINA

The following diagram illustrates the Architecture Governance Model for the State of North Carolina.



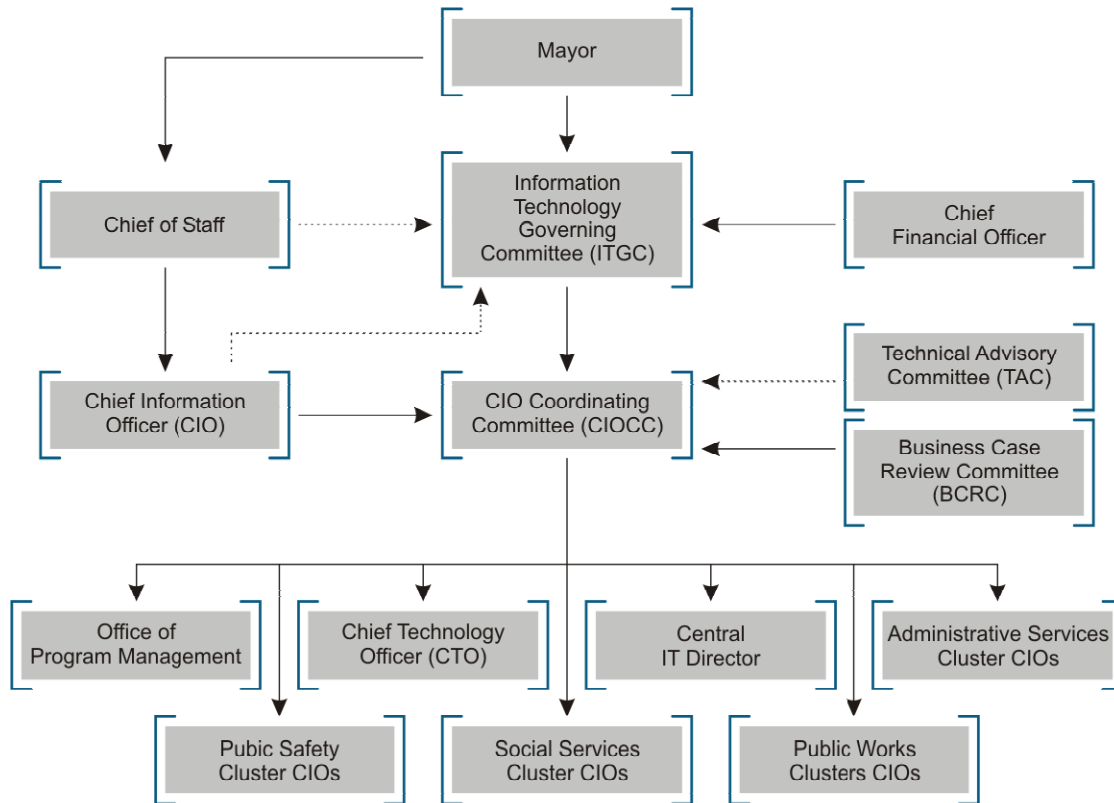
Significant Organizational Functions

The following list identifies the significant organizational functions of the Architecture Governance Model for the State of North Carolina.

<i>Functions</i>	<i>Description</i>	<i>Governance Role Mapping</i>
CIO	<p>The head of Information Technology Services. State CIO reports directly to the Governor. Identifies IT polices. Develops state IT Plan.</p> <p>Provides statewide common IT services – computing, telecommunications, etc. Responsible for statewide IT strategies and develops state-wide IT initiatives..</p> <p>Through the ETS office, the state CIO provides Technical Architecture, QA and Project Approval, Information Privacy and Protection, and E-Government.</p>	<p>Champion, Manager, Overseer</p> <p>Documenter, Communicator</p>
Information Technology Advisory Board (ITAB)	<p>Board consisting of 12 members: 4 appointed by Governor, 4 appointed by Senate, 4 appointed by House of Representatives.</p> <p>Reviews and comments on State IT Plan, developed by the state CIO.</p> <p>Reviews and comments on IT plans, developed by executive branch agencies.</p> <p>Reviews and comments on state-wide Technology initiatives, developed by the state CIO.</p>	<p>Advisor, Reviewer</p>
CIO Council	<p>A council consisting of representation of the agency CIOs. Provides advice to the state CIO.</p>	<p>Subject Matter Expert</p>

## LOCAL GOVERNMENT – PHILADELPHIA, PENNSYLVANIA

The following diagram illustrates the Architecture Governance Model for Philadelphia, Pennsylvania.



Significant Organizational Functions

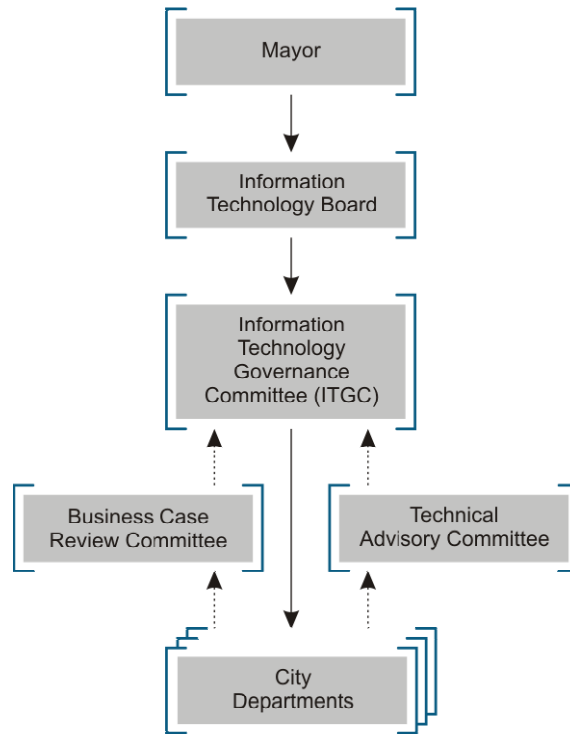
The following list identifies the significant organizational functions of the Architecture Governance Model for Philadelphia, Pennsylvania.

<i>Functions</i>	<i>Description</i>	<i>Governance Role Mapping</i>
Information Technology Governing Committee (ITGC)	Chaired by the Chief of Staff with the CIO, CFO, & MDO making up the remainder of the committee. Responsible for management prioritization approval and resources allocation .	N/A
CIO	The CIO chairs the coordinating committee; is a member of the ITGC; manages the IT infrastructure of the city; and uses the input from the Cluster CIOs and to understand IT needs and priorities across the City.	Champion
Business Case Review Committee (BCRC)	Made up of Department Heads. The BCRC will review all business cases from their specific cluster and recommend sending the proposal to the CIO Coordinating Committee, send the proposal back to the department for additional work, or disapprove the project.	Advisor
Technical Advisory Committee (TAC)	Made up of Department IT Directors. The TAC will assist the CTO and CIO CC on design and architecture for IT systems and implementation of enterprise.	Subject Matter Expert
CIO CC	Responsible for strategic planning for IT: championing the impact of e-government, resource planning and control, systems and technology control, and budgetary control.	Reviewer, Communicator
CTO	In coordination with the CIO CC, responsible for design and architecture for IT systems and implementation of enterprise standards.	Documenter
CLUSTER CIOs	Cluster CIOs work with Department Heads to understand department-specific, cluster-specific and enterprise needs; represents cluster and department in CIO CC and advocates for projects accordingly; supervises department IT directors/managers and project managers.	Project Teams, Service Teams, Project / Services Methodology Communicator



*LOCAL GOVERNMENT – SAN DIEGO, CALIFORNIA*

The following diagram illustrates the Architecture Governance Model for San Diego, California.



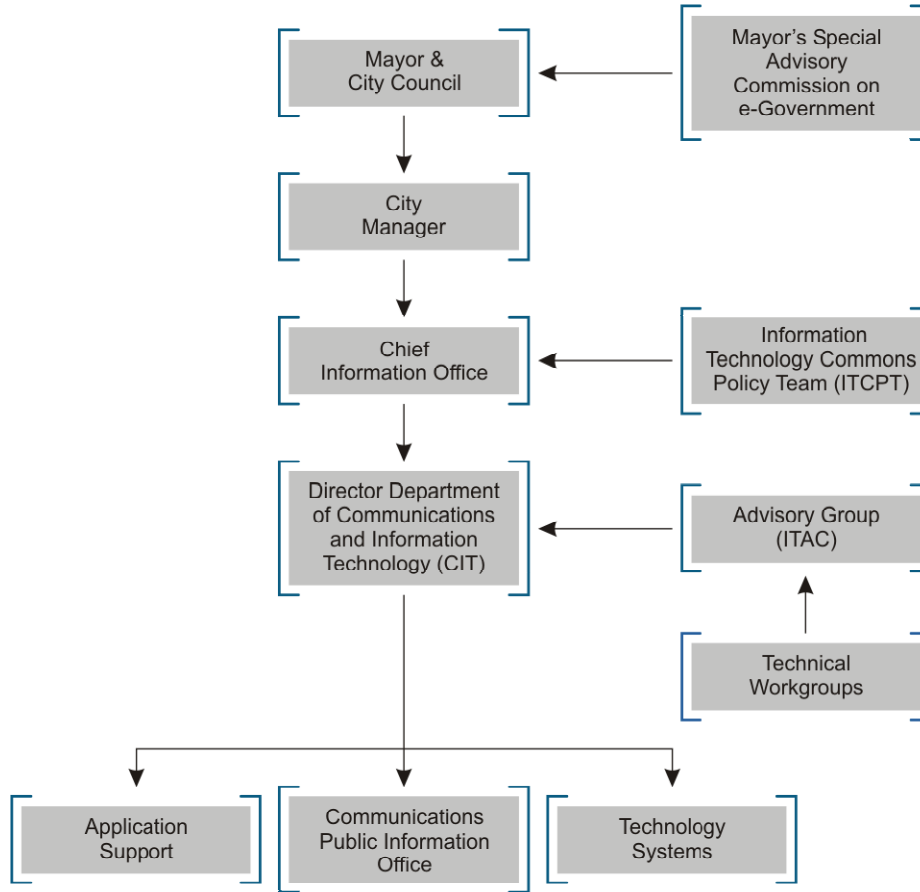
Significant Organizational Functions

The following list identifies the significant organizational functions of the Architecture Governance Model for San Diego, California.

<i>Functions</i>	<i>Description</i>	<i>Governance Role Mapping</i>
Information Technology Board	Responsible for establishing IT policy; approving IT strategic plans and IT annual budgets; defining and communicating business goals and objectives; and establishing support for high level IT initiatives.	Champion
Information Technology Governance Committee	Responsible for reviewing and prioritizing IT project proposals and annual IT budgets; approving business cases; delineate citywide, multi-dept. and single-dept. initiatives; review major projects; and approving IT standards.	Manager, Reviewer
Technical Advisory Committee	Advises the ITGC on architecture and standards; provides technical review and advice on projects; and ensures departmental IT initiatives are consistent with approved City architecture and standards.	Documenter
Business Case Review Committee	Reviews business cases; provides business case feedback to the (ITGC), provides guidance and assistance to Departments in evaluating significant issues associated with IT projects.	Advisor
City Departments	Advocate and sponsor IT projects; own and manage Department specific IT projects; define and monitor project accountability and success measures.	Project Teams, Service Teams, Project/Services Methodology Communicator

*LOCAL GOVERNMENT – VIRGINIA BEACH, VIRGINIA*

The following diagram illustrates the Architecture Governance Model for Virginia Beach, Virginia.



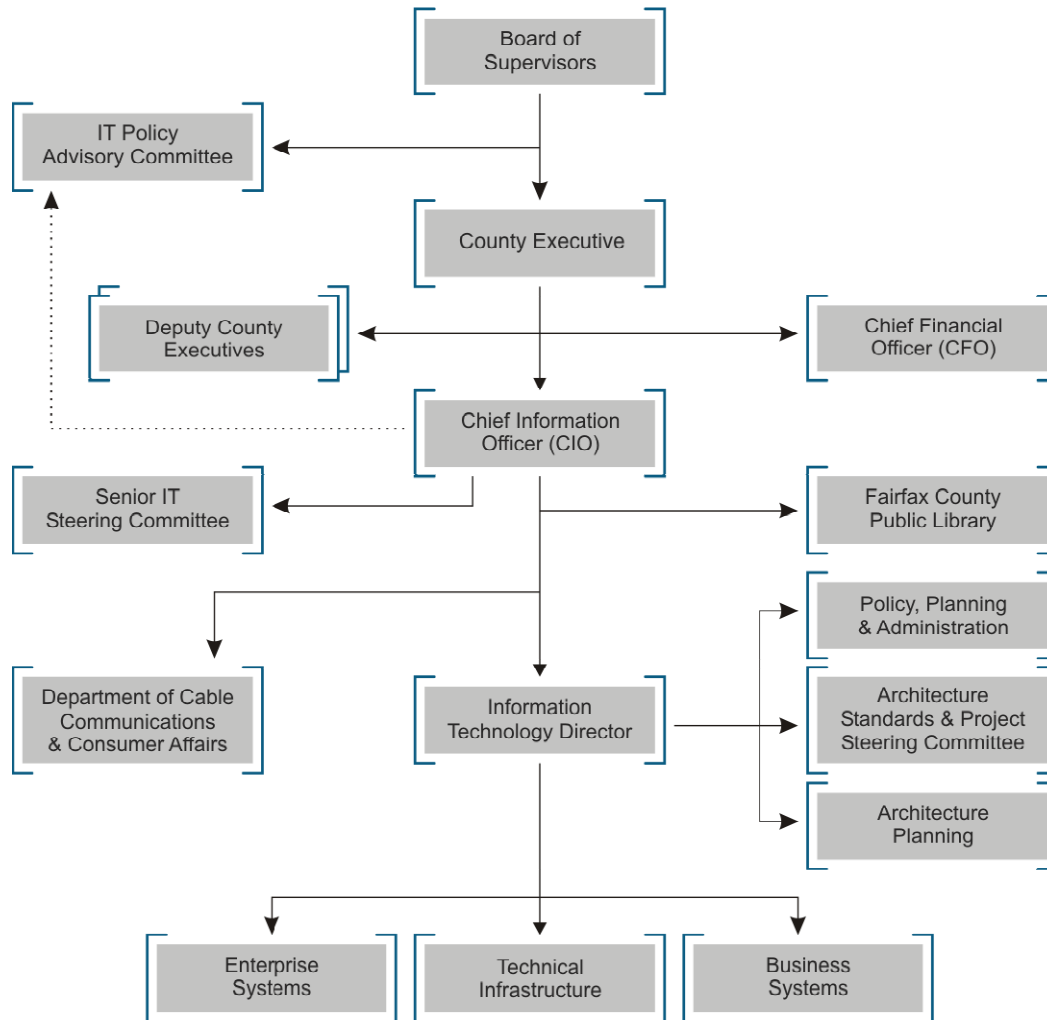
Significant Organizational Functions

The following list identifies the significant organizational functions of the Architecture Governance Model for Virginia Beach, Virginia.

<i>Functions</i>	<i>Description</i>	<i>Governance Role Mapping</i>
Mayor's Special Advisory Council on E-Government	Made up of citizen appointees. Provide citizen input to the Mayor on IT issues.	Special Interest Group
City Manager	Responsible for coordinating IT vision and city direction with department heads including the CIO.	Champion, Enterprise Executive
Chief Information Officer	The CIO is responsible for establishing Citywide architecture and standards, manages the IT infrastructure of the City and implements City IT policies.	Manager, Documenter
Information Technology Commons Policy Team (ITCPT)	Information Technology Governance Team – Made up of agency directors. Responsible for providing input to the CIO on agency business and IT needs.	Advisor, Reviewer
Director, Department of Communications and Information Technology	Member of the ITCPT. Responsible for operational aspects of implementing IT policies, standards and procedures.	Communicator
Information Technology Advisory Group (ITAC)	Advises the Director of CIT on Information Technology issues.	Subject Matter Expert
Technical Workgroups	Provides technical support to ITAC on IT efforts.	Subject Matter Expert
Applications Support	Responsible for application life-cycle support.	Services Team
Communications Public Information Office	Responsible for maintaining the City's website, providing telecommunications, video and E-911 services and support.	Services Team
Technology Systems	Responsible for supporting technology systems, GIS and printing for the City.	Services Team

## LOCAL GOVERNMENT – FAIRFAX COUNTY, VIRGINIA

The following diagram illustrates the Architecture Governance Model for Fairfax County, Virginia.



### Significant Organizational Functions

The following list identifies the significant organizational functions of the Architecture Governance Model for Fairfax County, Virginia.

<i>Functions</i>	<i>Description</i>	<i>Governance Role Mapping</i>
IT Policy Advisory Committee (ITPAC)	Private sector citizen representatives appointed by the Board of Supervisors - Critical to ensuring the Chairman and the Board of Supervisors that IT plans are following the right direction for the County and that IT funding is well spent. This group endorses the IT budget to the Board during budget hearings and are a critical part of the funding process.	Overseer, Special Interest Group
Senior It Steering Committee	Internal advisory group chaired by the CIO. Members include the County Executive, Chief Financial Officer, Deputy County Executives, Director of the Department of Information Technology and major department directors/stake holders. This group sets the overall strategic objectives for the County's IT program and is critical to ensuring that departments are a part of the IT planning process and that proposed IT projects are aligned with the County's overall direction.	Advisor
Chief Information Officer (CIO)	Works with the County Executive, Deputy County Executives, Chief Financial Officer, County departments and IT committees to ensure that the IT program is meeting its objectives as approved by the Board of Supervisors. The CIO is responsible for the overall management of information and technology countywide and works to establish overall IT architecture, standards, policies and direction.	Champion, Manager
Director Of The Department Of Information Technology	Responsible for the day-to-day operation of the IT Department, infrastructure and projects countywide. The Director is critical to successful collaboration with departments and key IT project stakeholders in the County.	Project / Services Methodology Communicator
Policy, Planning And Administration	This group assists the Director of the Department of Information Technology and the CIO to manage IT enterprise project budgets and funding, produce the annual IT plan, manage the administration for the Department of Information Technology and enterprise IT projects, write IT policy and provide information security.	Advisor
Architecture Planning	Two IT architects, which report to the Director of the Department of Information Technology and focus on architecture from an infrastructure and software development standpoint.	Documenter
Architecture Committees, Standards Committees And Project Steering Committees	Critical to establishing cooperation/collaboration at the working level of the County organization. They are very important in producing the building blocks, architecture, standards, project proposals, statuses etc. for the other groups to review, consider approve etc.	Reviewer
Enterprise Systems	Department of Information Technology Division responsible for Geographic Information Systems, Land Development Systems, Public Safety Systems and E-government.	Services Team
Technical Infrastructure	Department of Information Technology Division responsible for Telecommunications (voice, video and data), Data Center operations, Technical Support Center and user support services.	Services Team

<i>Functions</i>	<i>Description</i>	<i>Governance Role Mapping</i>
Business Systems	Department of Information Technology Division responsible for Tax Systems, Finance/Procurement/Human Resources Systems, Training, Human Services Systems, Customer Relationship Management Systems and other miscellaneous systems.	Services Team



## Architecture Governance Development

This section identifies the process that can be used as a guide by municipal, county or state government to identify a partial or complete architecture governance structure. The presented process is effective for all government levels independent of their maturity in the process of establishing governance. Use the process to identify gaps in existing governance structures and roles that can be added to existing organizations to enhance performance. The Governance Process consists of four sub-processes that will facilitate the documentation of the Governance Elements, Governance Roles, Architecture Lifecycle Processes, and Architecture Governance Organizational Charts. The four sub-processes are:

- Determine Architecture Governance
- Create Architecture Governance Structure
- Document/Update Architecture Lifecycle Processes
- Confirm Architecture Governance Structure

Each of these four sub-processes is presented in detail in this section. A Process Model is presented followed by a narrative of the detail for each of the sub-processes.

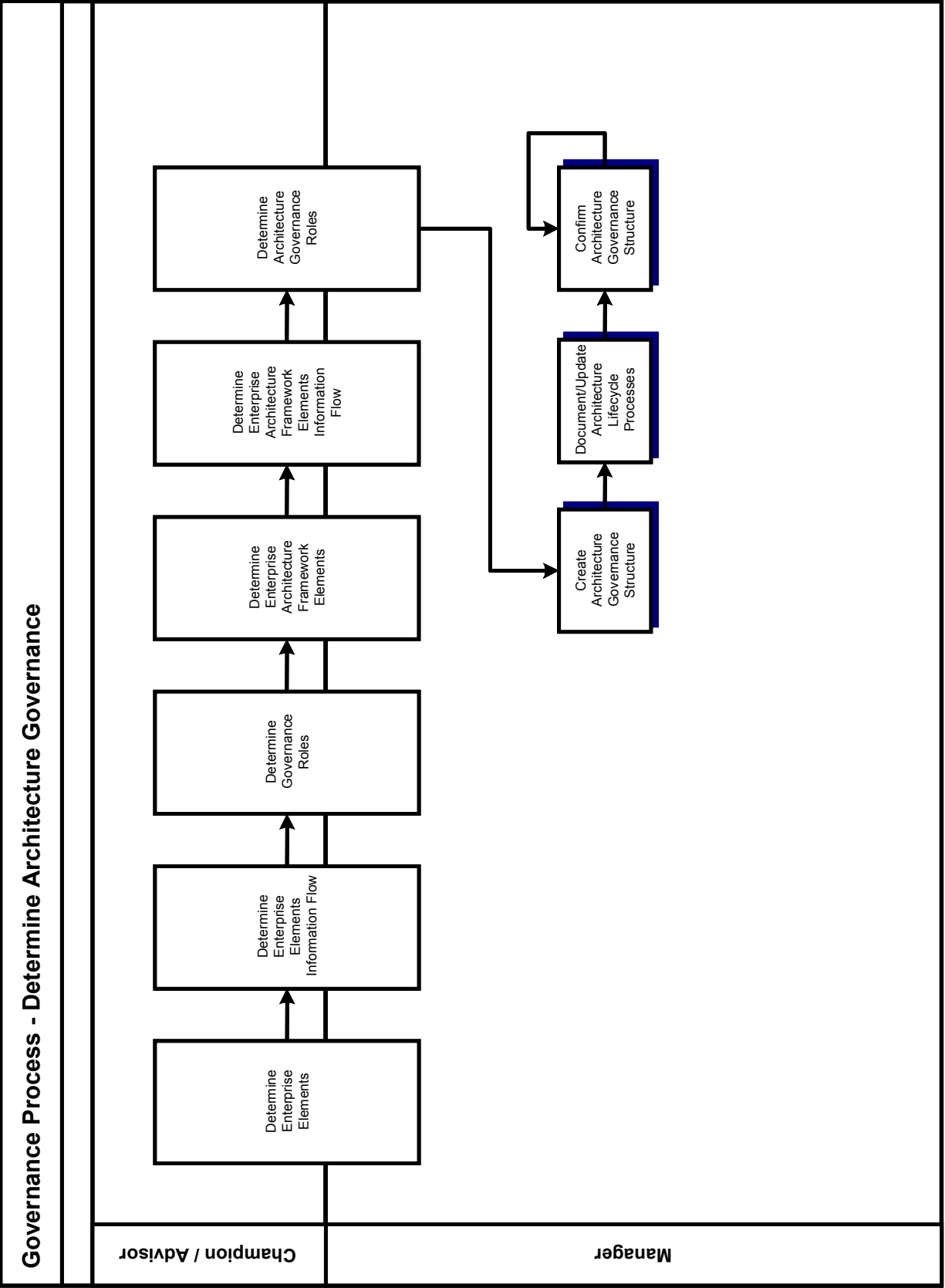
The process model for the first of the four sub-processes, “Determine Architecture Governance”, is presented on the following page.

### DETERMINE ARCHITECTURE GOVERNANCE

#### *PROCESS OVERVIEW*

This process entails the defining of the organization’s governance based on an understanding of the elements to be governed, the relationship of those elements with each other, and the various governance roles needed to effectively manage the elements. Collaboration between the various roles, when executing these processes, will provide a better overall perspective.





## *PROCESS DETAIL*

**Determine Enterprise Elements** - An understanding of the various Enterprise Elements, objects in the enterprise that are governed by structure and/or process, that go into creating, supporting, and utilizing the Enterprise Architecture Framework Elements need to be determined.

**Determine Enterprise Elements Information Flows** - Once the Enterprise Elements are determined, document the relationship between the elements. This allows those objects that are specific to enterprise architecture to be scoped and the interdependencies documented.

**Determine Governance Roles** – Governance roles are determined based on the types of Enterprise Elements defined and the processes that will be executed against those elements. An understanding of these overall roles in the organization aids in setting up the enterprise architecture governance roles.

**Determine Enterprise Architecture Framework Elements** – Identification and documentation of the Enterprise Architecture Framework Elements should consider what is already provided through the Enterprise Elements. The purpose of enterprise architecture is to document the enterprise architecture elements that do not exist and provide ties to the Architecture Blueprint for previously existing objects.

**Determine Enterprise Architecture Framework Elements Information Flow** – Once the Enterprise Architecture Framework Elements are determined, document the relationships between the elements. This will identify the order for creation and update of the objects.

**Determine Architecture Governance Roles** – Architecture Governance roles are determined based on the types of Enterprise Architecture Framework Governance Elements and the processes that will be executed against those elements. Roles include such primary functionality as:

- Advisor
- Manager
- Reviewer
- Documenter
- Communicator
- Audience

The roles can also play supporting positions such as:

- Subject Matter Expert
- Team Member
- Other Managers
- Other Communicators

The remaining three-process steps represent sub-processes that branch off the Determine Architecture Governance Process. They will be presented in the same manner as independent processes in the remainder of this section:

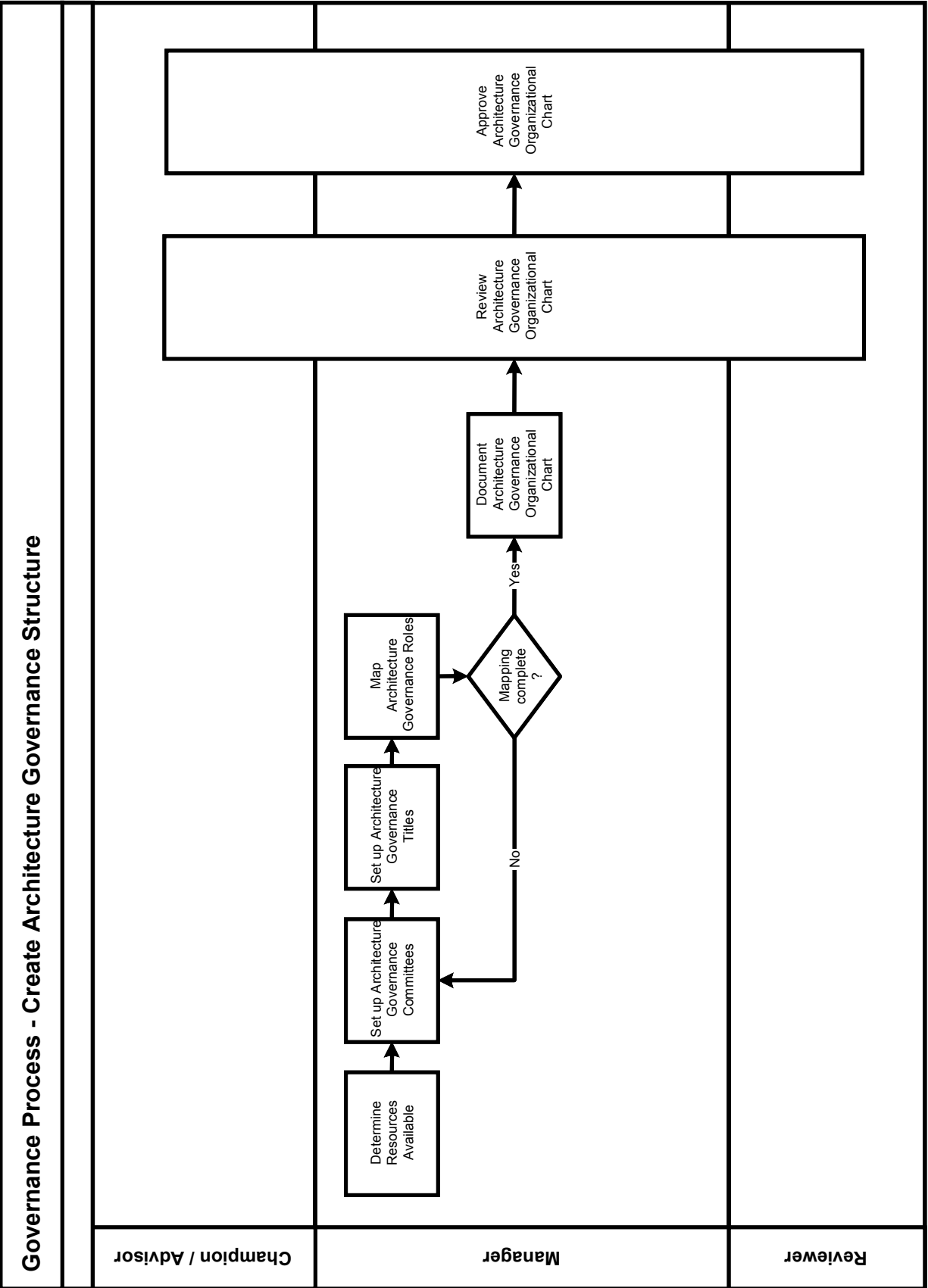
- Create Architecture Governance Structure
- Document/Update Architecture Lifecycle Processes
- Confirm Architecture Governance Structure

The process model for the second of the four sub-processes, “Create Architecture Governance Structure”, is presented on the following page.

## CREATE ARCHITECTURE GOVERNANCE STRUCTURE

### *PROCESS OVERVIEW*

Create the architecture governance structure based on understanding the various Enterprise Architecture Framework Elements and architecture governance roles. Confirmation of the architecture governance structure occurs after the Architecture Lifecycle processes are finalized.



## *PROCESS DETAIL*

**Determine Resources Available** – Determine the resources that are available and allocate the roles between committees and individual titles. Many of the resources are only needed on a part-time basis (see Architecture Governance Roles above).

**Setup Architecture Governance Committees** – Document the Architecture Governance Committee’s roles and responsibilities. Also, setup committee charters, periodic meeting times, and the process of introducing the committees to what they will be doing in the Architecture Lifecycle Processes. As the Lifecycle processes are created, these committees should confirm and modify their roles and responsibilities in the processes.

**Set up Architecture Governance Titles** – Document the Architecture Governance Individual Titles roles and responsibilities. The creation of job descriptions is recommended. The various positions should be involved during the creation of the Architecture Lifecycle processes to confirm and/or modify their roles and responsibilities in the processes.

**Map Architecture Governance Roles** – Map the Architecture Governance Roles to the committees and titles. Document and map any remaining unmapped roles to existing committees or titles.

**Document Architecture Governance Organizational Chart** – Based on the committees and titles that have been created, the organizational structure needs to be determined. What are the relationships between the various groups? Who reports to whom? What is the hierarchy followed during escalation?

**Review Architecture Governance Organizational Chart** – Once the Architecture Organizational Chart is created the various roles in the Architecture Governance need to review the division of labor and the previously identified checks and balances to confirm that the structure will support the various processes to be conducted.

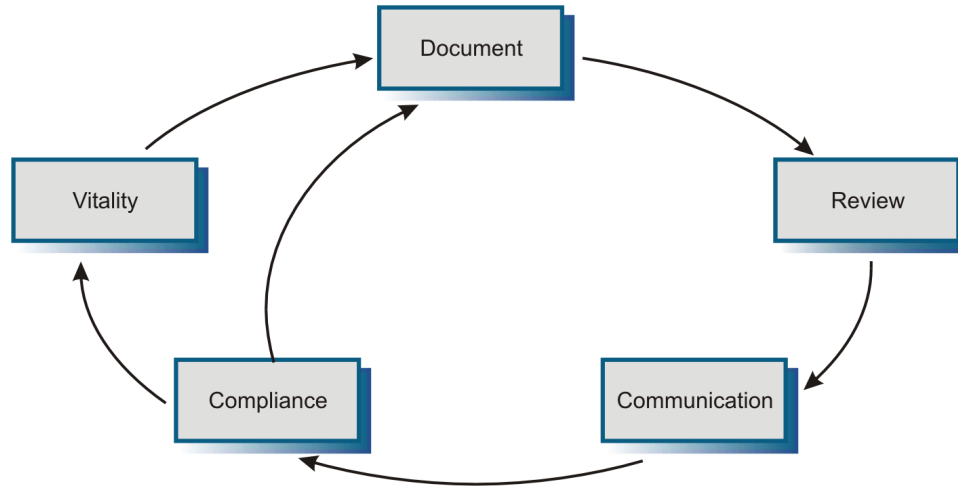
**Approve Architecture Governance Organizational Chart** – After the review of the Architecture Governance Organizational Chart, the various roles in the Architecture Governance will approve the chart. Like any organizational chart, this is a versioned document. It will change over time as the organization’s needs for enterprise architecture are understood and the Architecture Governance aligns itself to meet those needs.

The process model for “Document/Update Architecture Lifecycle Processes,” the third of the four sub-processes, is presented on the following page.

## DOCUMENT/UPDATE ARCHITECTURE LIFECYCLE PROCESSES

### *PROCESS OVERVIEW*

Determine and document the Architecture Lifecycle processes. Figure 9 illustrates the cyclical nature of Architecture program and content development

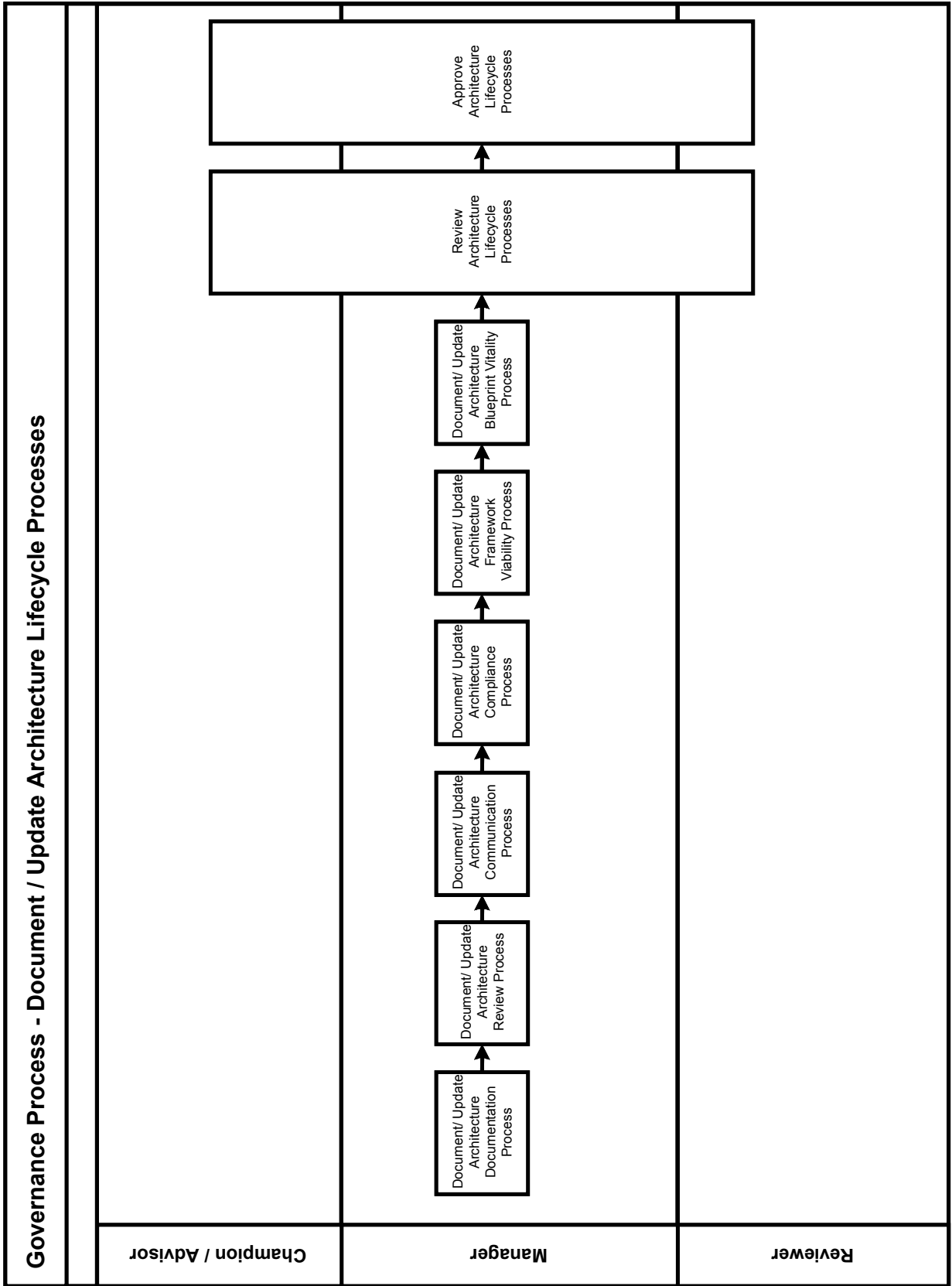


*Figure 9. Architecture Lifecycle*

The lifecycle processes begin with documenting the various Governance Elements and continue with documenting the Architecture Blueprint. The various Architecture Governance roles should review all created documentation. Once reviewed, the Communicator relays the review results to the Audience. Compliance Process describes the process to request a variance from the approved EA components. Results of the Compliance review typically results in updates to the EA documentation, which would begin the “inner cycle” again.

A critical step in the lifecycle of EA is the continuous refresh (Vitality) of the EA content (EA Blueprint) and the EA program elements (EA Framework). The refresh of the EA Blueprint (Blueprint Vitality Process) is recommended at a minimum of every six months, or on an as needed basis. On a less frequent basis, determined by changes in enterprise direction and technology, the Enterprise Architecture Framework will also undergo a refresh (Framework Viability Process).

All of the processes identified and created are updated during the Confirm Architecture Governance Structure process or the Architecture Governance Elements Vitality Process. The processes described on the following pages must be accomplished in order to set the stage for this lifecycle to begin.



## *PROCESS DETAIL*

**Document/Update Architecture Documentation Process** – The process steps and information required for creating the Architecture Blueprint will be articulated in the section entitled Architecture Documentation Process. Create and update this process with much consideration. Here are just a few considerations:

- What are the goals and objectives that an adaptive enterprise architecture striving to fulfill for the organization?
- What technology should be controlled from an Enterprise perspective?
- What is the best way to communicate the Architecture Blueprint information?
- What is the immediate need in the organization that the Architecture Blueprint Documenters could aid in researching? (Biggest bang for the buck.)
- How many levels of categories need to go into sorting the products and compliance criteria? (The example presented later in the Tool-Kit has three levels prior to getting to the product and compliance criteria levels.)
- What will be the solution to a product that can be categorized in many of the categories?
  - Will one of the categories be the owner of the product and the others associated categories?

Will a “cross-category” documentation team be set up to document those products that don’t fit into a single category?

**Document/Update Architecture Review Process** – The Architecture Review process articulates the process steps and items for review. Typically, this will include one or more of the Governance Elements. Reviews can be regularly scheduled and/or requested based on a specific need. The Architecture Review Process and the Architecture Compliance Process are where a majority of the architecture governance’s primary and supportive roles get involved. Considerations when creating this process would include:

- Availability of Review Committees to meet
- Level of information to be presented
- Governance committees/titles that can provide clarity and expertise
- What criteria determines if IT or business executive perspective is needed.
- How the results will be communicated.
  - To the Audience – Allowing them to know their expected areas of compliance
  - To the Documenters – To capture the history of the decision be it an approval or a rejection

**Document/Update Architecture Communication Process** – The Architecture Communication Process articulates the information and method of communicating the Enterprise Architecture Framework Elements. Include considerations for the following areas when establishing or updating the Architecture Communication Process.

- Who is the audience?
- At what steps in the Architecture Lifecycle process, should information be provided?
- What are the types of information to be provided? Examples include:
  - Static Information – Architecture Governance Framework
    - Governance (Roles, Elements, and Processes)
    - Architecture Lifecycle Processes



- Architecture Blueprint Templates
- Semi- Static Information –
  - Business Architecture Framework
  - Information Architecture Framework
  - Solution Architecture Framework
  - Technology Architecture Framework
- Dynamic Information –
  - Business Architecture Blueprint
  - Information Architecture Blueprint
  - Technology Architecture Blueprint
  - Solution Architecture Blueprint
- Methods of communication could include:
  - Publishing information in a push fashion
  - Providing ability to search the information based on specific criteria in a pull fashion
- Audience identification:
  - Subscription Audiences
  - Pre-defined Audiences
  - Ad-hoc Audiences

**Document/Update Architecture Compliance Process** – The Architecture Compliance Process provides the guidelines, process steps, and information required to seek Architecture help and to request deviation from the Architecture Compliance Components. Address the following considerations when establishing or updating this process:

- What Projects and Service enhancements fall under Architecture Compliance’s scope?
- How will Architecture Compliance be enforced?
  - Through mandatory step in the Procurement procedures
  - Through mandatory project task in the Project Methodology
  - Through mandatory step in the Change/Release Management process for Services
- Will Architecture Compliance be audited?
- How will the Project and Services Team seek help from the Documenters and Subject Matter Experts?
- What information will be required for requesting a variance from the stated Architecture Product and Compliance Components?

**Document/Update Architecture Framework Viability Process** – The Framework Viability Process provides the periodic times, normally annually or semi-annually, or triggers that will initiate a change in the various portions of the Adaptive Enterprise Architecture Framework Manual.

Consideration when creating the Architecture Framework Viability Process must include:

- Events that can trigger changes:
  - New Business Strategic Elements, which could generate changes in:
    - Business Architecture Framework

- Information Architecture Framework
- Technology Architecture Framework
- Solution Architecture Framework
- New IT Strategic Elements, which could generate changes in the Technology Architecture Framework
- Modification to Enterprise Architecture Framework elements (Governance, Architecture Lifecycle Processes, and/or Architecture Blueprint Templates), which could generate changes in:
  - Business Architecture Framework
  - Architecture Blueprint
- Modification to Business Architecture Framework, which could generate changes in:
  - Information Architecture Framework
  - Technology Architecture Framework
  - Architecture Blueprint
- Modifications to Technology Architecture Framework, which could generate changes in the Technology Architecture Blueprint
- Best time for initiating periodic reviews
- Feedback methods to improve the processes, templates, and governance in the adaptive enterprise architecture
- Training on changes to the Adaptive Enterprise Architecture Framework Manual

**Document/Update Architecture Blueprint Vitality Process** – The Architecture Blueprint Vitality Process provides the periodic times (a minimum of every six months due to short technology cycles is recommended), or triggers that will initiate a review of the Architecture Blueprint. Considerations when creating this process include:

- Who will be responsible for the Architecture Blueprint Vitality Process?
- How to determine the last time something has been examined?
- What are the critical technologies that need to be reviewed?
- What Business Strategic Elements (Initiatives) are coming in the future that may require new technology solutions? Technology scans for products could begin to help clarify possible solutions.

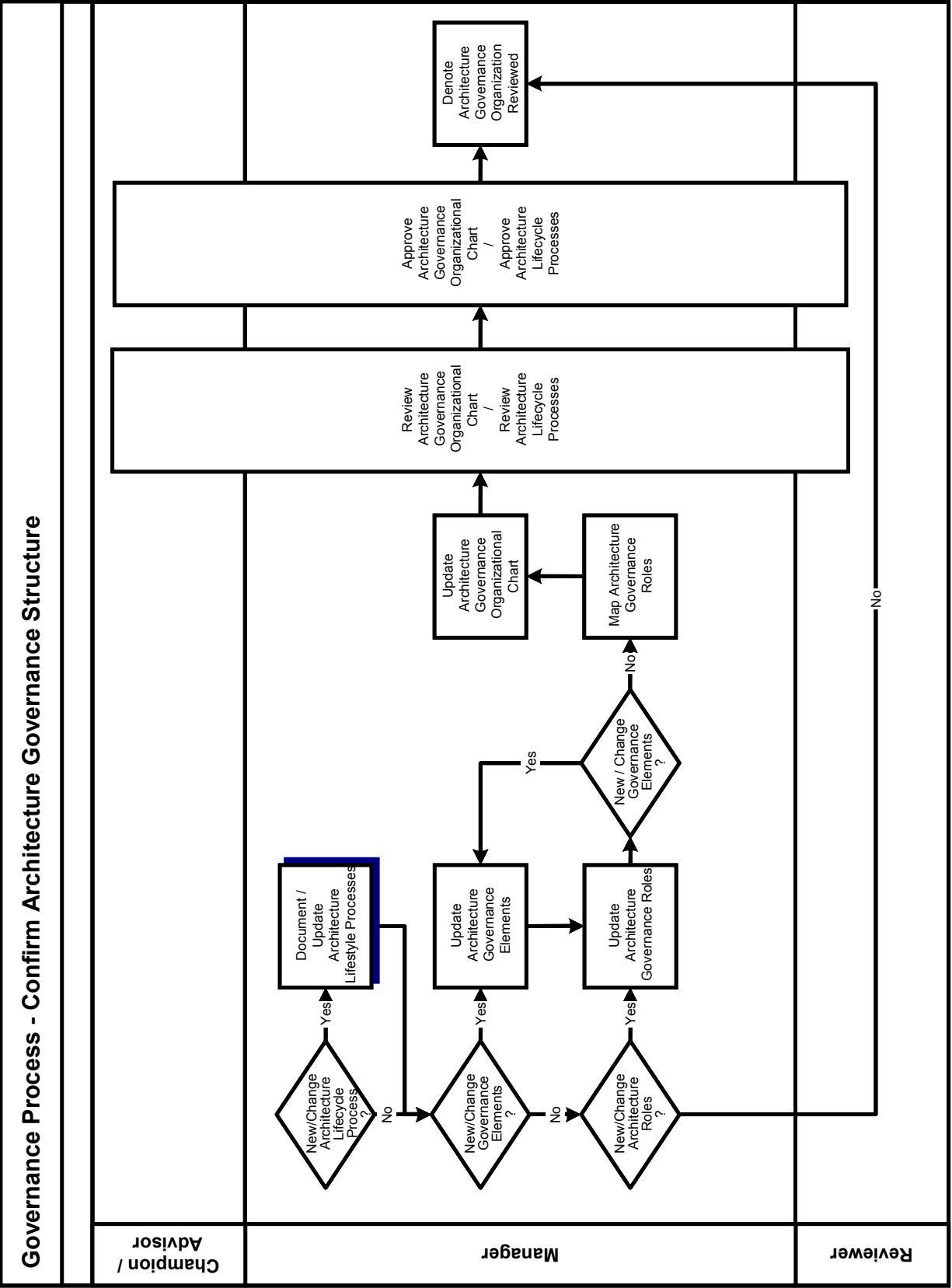
**Review Architecture Lifecycle Processes** – Once the Architecture Lifecycle processes are documented or updated, each of the governance roles should review the individual processes and their integration. In addition, review any forms or templates used in the execution of the processes.

**Approve Architecture Lifecycle Processes** – After the review of the Architecture Lifecycle Processes, each of the governance roles should approve the processes. Process models are versioned documents that will change over time as the organization’s needs for enterprise architecture are understood and the Architecture Governance aligns its processes to meet them.

## CONFIRM ARCHITECTURE GOVERNANCE STRUCTURE

### *PROCESS OVERVIEW*

Confirmation of the Architecture Governance Structure is a continuous process. Initiate this process on a recurring basis, as well as for new and changed governance processes, governance roles, and/or enterprise architecture framework elements. There are relationships between the governance processes, roles and elements; therefore, when one of them changes, review all.



## *PROCESS DETAIL*

**Document/Update Architecture Lifecycle Processes** – If changes to the lifecycle processes are identified, document or update the affected process. Review the remaining lifecycle processes for possible changes.

Examples of process initiating changes include:

- Identification of a new lifecycle process or an update to a process step narrative
- Identification of a new governance role or updates to an existing governance role
- Identification of a new enterprise architecture framework elements or updates to existing architecture framework elements

**Update Architecture Governance Roles** – This process must be completed for additions or changes in the Architecture Roles. The following information must be created or updated for the additional or changed role:

- Role type - Identifies whether the role is a main role or a supportive role.
- Description - Describes the role and its relationship to other roles.
- Implementation Recommendations – Provides information as to whether the role is better implemented as a committee or as a single position.
- Checks and Balances – Provides information as to whether this role can be implemented in combination with other roles and which roles should not be combined.
- Full time / Part Time – Provides information as to whether the role is typically considered to be full or part-time.
- Role Significance – Provides information on whether the role is critical, necessary, or helpful. If the role is identified as critical or necessary, a comment addressing the risk of non-implementation is also provided under “Missing Role Risk”.
- Missing Role Risk – Explains the risk incurred if the role is missing from the governance model.

**Update Enterprise Architecture Framework Elements** – This process must be completed for additions or changes to the Framework Elements. The following steps, at minimum, should be accomplished for the additional or changed element:

- Review existing Enterprise Architecture Framework Elements for impacts.
- Identify affected areas or new areas to update in the Enterprise Architecture Framework Elements.
- Incorporate changes to the Enterprise Architecture Framework Elements.
- Review Changes to the Enterprise Architecture Framework Elements.
- Approve Changes to the Enterprise Architecture Framework Elements.
- Communicate Changes to the Enterprise Architecture Framework Elements.

**Map Architecture Governance Roles** – During this process, the new or changed role is mapped to a committee or an individual title. The following questions help determine where to map the role:

- Is the role one that is best accomplished in a committee or as a single position?
- Will mapping this role to a specific committee or position cause a check and balance issue with another role the committee or individual is performing?
- Does the workload of the committee/position have room for one more role?

Update the documentation for the Architecture Governance Committee and Architecture Governance Titles with required changes.

**Update Architecture Governance Organizational Chart** – Denoted the new/updated committees and positions in the Architecture Governance Organizational Chart. Keeping this information current and available will aid in the working relationships of the Architecture groups. The currency of this information is critical to support an IT community not participating in Enterprise Architecture activities on a daily basis. Keeping the information current will ensure the IT community knows who to contact to help them resolve issues, answer questions, or exchange information in an expedient manner.

**Review Architecture Governance Organizational Chart/Review Architecture Lifecycle Processes** – Once the Architecture Governance Organizational Chart and Architecture Lifecycle processes are documented or updated, review the various roles in the Architecture Governance.

**Approve Architecture Governance Organizational Chart/Approve Architecture Lifecycle Processes** – After the review of the Architecture Governance Organization Chart and the Architecture Lifecycle Processes, the appropriate roles in the Architecture Governance will approve the chart and the processes.

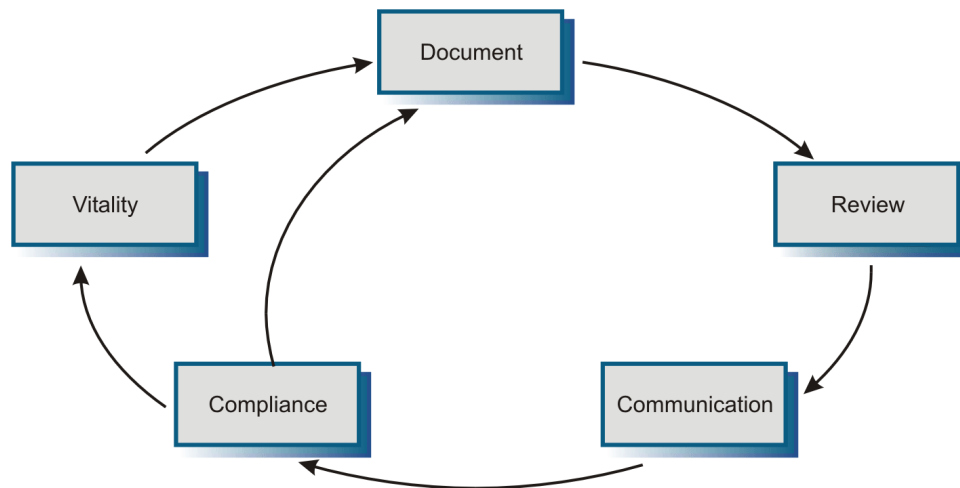


# ARCHITECTURE LIFECYCLE PROCESSES

The Architecture Lifecycle Processes section of the Enterprise Architecture Development Tool-Kit documents the processes and templates used to manage, initiate, and review the Architecture Blueprints.

The Architecture Lifecycle processes and templates are vital to the success of the adaptive enterprise architecture. Enterprise architecture is made up of a set of dynamic elements. The Architecture Lifecycle Overview (Figure 10) shows the continuous cycle of renewal of these dynamic elements.

*The Architecture Lifecycle processes are vital to the success of the adaptive enterprise architecture.*



*Figure 10. Architecture Lifecycle Overview*

The cycle of renewal is achieved with a structure of re-usable processes, discussed in detail in this section. The Architecture Lifecycle processes are integral pieces of the overall Architecture Governance Framework used to implement business and technology solutions within government. There are six primary processes:

- Architecture Documentation Process
- Architecture Review Process
- Architecture Compliance Process
- Architecture Communication Process
- Architecture Framework Viability Process (Refresh of the EA Program structural elements)
- Architecture Blueprint Vitality Process (Refresh of the EA content)

Major deliverables from these processes include:

- Updates to the Adaptive Enterprise Architecture Framework Manual (manual developed by governments for their organization, that describes the structure, templates and EA processes in place within their enterprise)
- Architecture Blueprints
- Architecture Communication Document

Documentation utilized by the processes include:

- Adaptive Enterprise Architecture Framework Manual
- IT Strategic Elements
- Business Strategic Elements

Associated management processes include:

- Project Management
- Procurement
- Change and Release Management

See Figure 9 for the data flow of the Architecture Lifecycle processes.



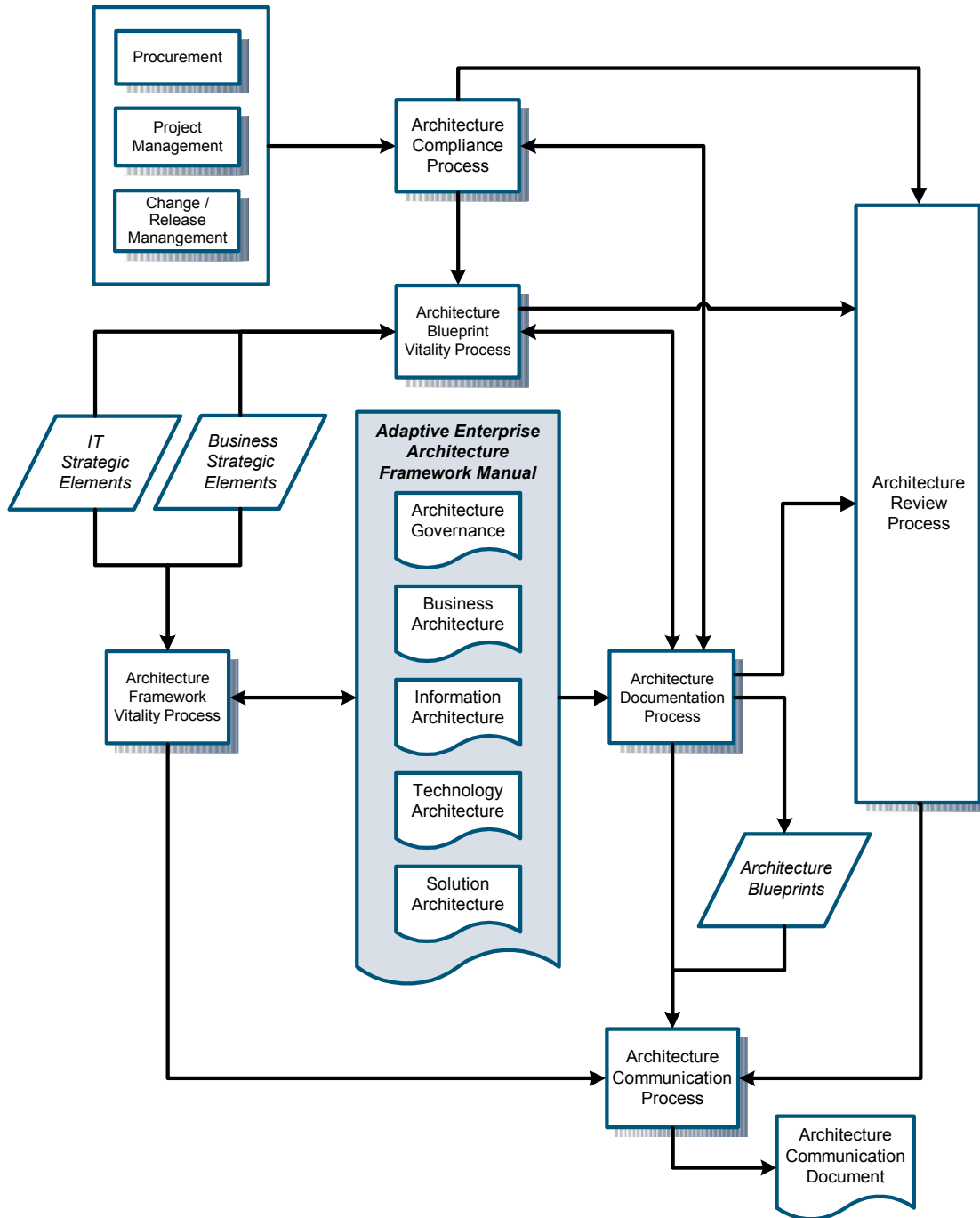


Figure 10 Architecture Lifecycle Processes



## Architecture Documentation Process

The Architecture Blueprint articulates the organization's Business, Information, and Technology architecture content. During the Documentation process the components relative to each of the architecture are documented and classified. Acceptance or rejection of the component is also denoted after the review of the Architecture Blueprint items by the appropriate architecture review committees. During the Architecture Documentation Process, a wealth of information will be generated, which can aid agencies in determining business, information and technology solutions.

The Architecture Documentation Process describes the systematic process for developing and maintaining the Architecture Blueprint.

Documenters, identified by the Architecture Manager, are responsible for the development and vitality of the Architecture Blueprint. The committee of Documenters is made up of Subject Matter Experts who are familiar with the organization's IT environment.

The Architecture Documentation Process provides the steps necessary for creating the initial Technical Architecture Blueprint and may be triggered from other Architecture Lifecycle processes including:

- Architecture Framework Viability Process
- Help request generated during the Architecture Compliance Process.
- Architecture Blueprint Vitality Process
- Documenting the results from the Architecture Review Process

The Architecture Documentation Process provides the dynamic information that the Architecture Communication Process uses.

The Architecture Documentation Process applies to both Business and Technology with two sub-processes:

- Outline Domain and train Documenters
- Conduct Documenter work sessions

### INITIATE ENTERPRISE DOCUMENTATION PROCESS

#### *PROCESS OVERVIEW*

The architecture documentation process may be initiated based on three events:

- The initial development of the adaptive enterprise architecture
- Following the Architecture Blueprint Vitality Process
- Following the Compliance Process (Architecture Help Request)

The starting point depends on the event that triggered the documentation process. The following explains the starting points and rationales:

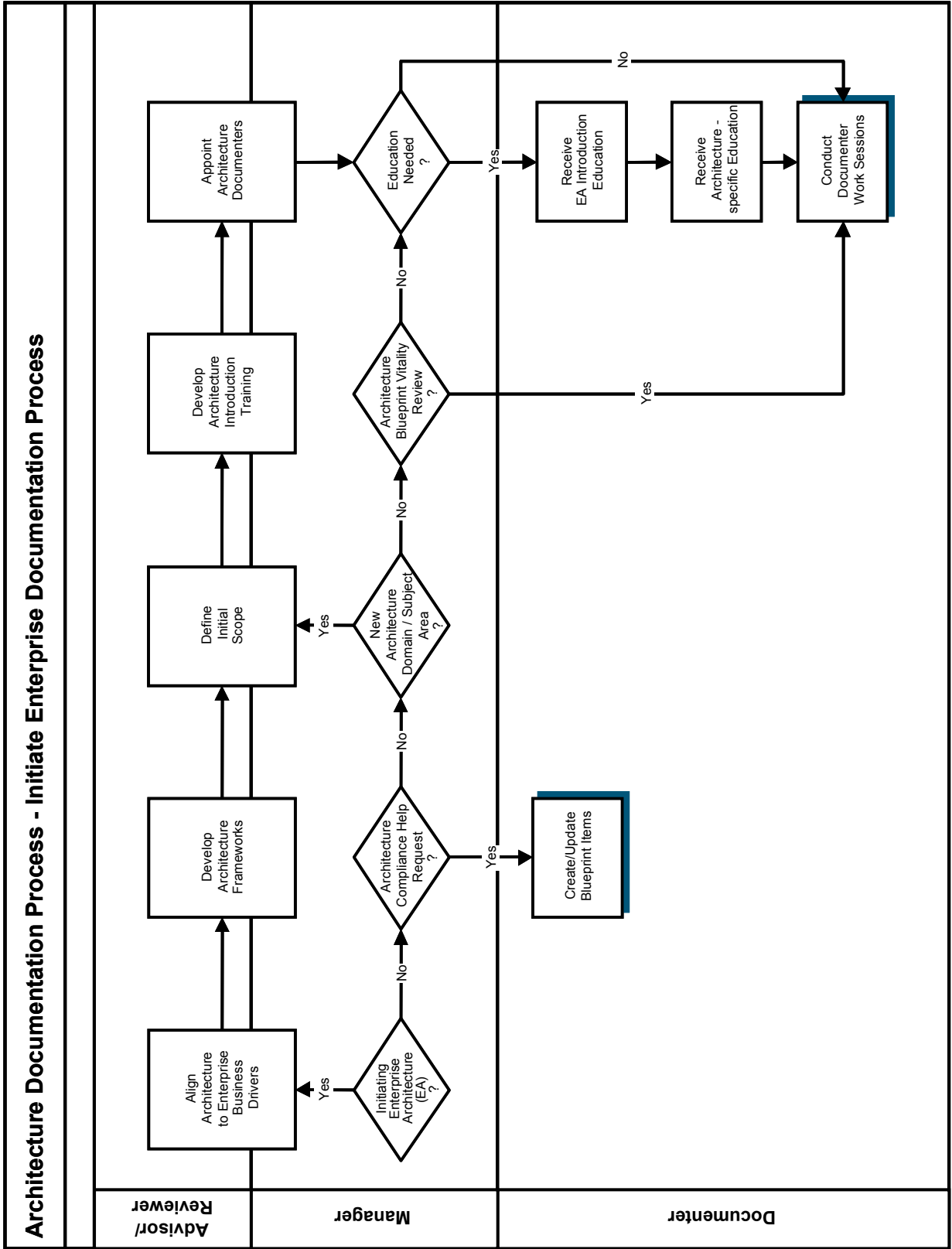
- *Enterprise Architecture Initiation Trigger* – The first time the Architecture Blueprint is documented supply the Documenters with basic information for each of the Domains and Disciplines, such as definition, rationale, benefits, boundary statements and an initial set of subject areas to be covered

within each. Also, train the Documenters on the various enterprise architecture processes and templates.

- *Architecture Blueprint Vitality Process Trigger* – This periodic process verifies that the Architecture Blueprint is staying current with the changes in the business and in the technology world. Vitality can impact the Architecture Blueprint from the Domain level down.
- *Compliance Process Trigger* – The Compliance Process is the point where IT groups outside of the Architecture group interact with the various Architecture processes and blueprints. This process is initiated from an Architecture Help Request. Compliance can impact the Architecture Blueprint from the technology area down.

The process model on the following page provides a generic overview of the documentation process at a high level and applies to each of Business, Information, Technology and Solution Architectures. The details pertaining to the documentation process specific to each of the architectures is provided in the respective section of the Tool-Kit, as follows:

- Business Architecture – *Initiate Business Architecture Documentation Process*
- Information Architecture – *Initiate Information Architecture Documentation Process*
- Technology Architecture – *Initiate Technology Architecture Documentation Process*
- Solution Architecture – *Initiate Solution Architecture Documentation Process*



## *PROCESS DETAIL*

**Align Architecture with Enterprise Business Drivers** – The alignment of the architecture with the Enterprise Business Drivers, is an important activity relative to all of Enterprise Architecture. Business Drivers include internal goals and strategies and external trends, such as legislation or regulatory items that influence the business. The Enterprise Business Drivers provide strategic business concepts for Business, Information and Technology Architectures. They also influence Implementation Planning and the enterprise solutions built as part of Solution Architecture.

Three common categories of Business Drivers include Principles, Best Practices and Trends. A detailed discussion of Business Drivers and the process for developing them as Principles, Best Practices, and Trends are under consideration for inclusion in a subsequent version of the NASCIO Tool-Kit.

Business Drivers may be documented in various strategic documents within the organization, such as Strategic Plans and/ or budget documents. It may be necessary to pull the Business Drivers together from these sources so they are readily available to those who will be working with the architecture.

Including a review of the Enterprise Business Drivers prior to developing any of the architecture frameworks will provide an understanding the pulse of the organization in regards to items such as the functional and topical Business Domains, Information Subject Areas, Technology Domains, etc. This information can provide insight into the fields that should be included on templates or specific reviews that should be included in the architecture processes.

**Develop Architecture Framework** – The information documented within the Architecture Framework will play an important role in the development of the Architecture Blueprints. The NASCIO Architecture Frameworks provide the structure, processes and templates necessary for capturing this information. An enterprise may decide to use the framework described in the NASCIO Tool-Kit or may choose other processes, template and governance structure.

**Define Initial Scope** – Develop the initial definition of the Business/Technology Domain or Information Subject Area and add any detail that will be helpful in identifying the documentation team members. Also, add any information that will help the team develop the appropriate level of documentation for this domain/subject area.

**Develop Architecture Education Sessions**– The Architecture Education Sessions provide high-level overviews of the Enterprise Architecture Program and prepare Documenters for their role in the Business Architecture effort. Developers of education materials should consider inclusion of the following materials:

- Purpose
- Presenters
- Intended audience
- Session structure
- Prerequisites
- Syllabus
- Objectives
- Class materials for both instructors and attendees

**Appoint Architecture Documenters** – At this point, the Documenters are appointed from subject matter experts familiar with the business, information or technology of the enterprise, depending on the architecture to be documented. The team will be responsible for steering, shaping, and developing the Architecture Blueprints.

The educational sessions described below, are progressive in nature. The sessions will be conducted after the architecture team is identified:

**Receive EA Introduction Education** – Documenters should receive initial training that covers the overview of enterprise architecture and architecture governance.

**Receive Architecture-specific Education** – After receiving initial enterprise architecture training, the Documenters will receive specialized instruction, addressing the business, information or technology architecture documentation templates and respective architecture documentation processes that they will use to document the Architecture Blueprint.

**Conduct Documenter Work Sessions** – Applying knowledge gained in first two sessions, Documenters will begin development of the Architecture Blueprint documentation. The detail pertaining to architecture-specific work sessions is presented as a separate process (see *Conduct Documenter Work Sessions*).

## CONDUCT DOCUMENTER WORK SESSIONS

### *PROCESS OVERVIEW*

These architecture-specific work sessions are intended to produce the documentation that initially populates the Architecture Blueprint. Ongoing Documenter meetings are required to maintain the vitality of the Architecture Blueprints.

Documenter Work Session: The first session will include:

- Defining roles and responsibilities
- Reviewing architecture blueprint documentation requirements
- Determining expectation of on-going meetings

After the first meeting, on-going working sessions are triggered from Architecture Lifecycle Processes including:

- Architecture Review Process
- Architecture Compliance Process
- Architecture Blueprint Vitality Process

The process model and details pertaining to the work sessions specific to each of the architectures is provided within the respective sections of the Tool-Kit:

- Business Architecture – *Conduct Business Architecture Work Sessions*
- Information Architecture – *Conduct Information Architecture Work Sessions*
- Technology Architecture – *Conduct Technology Architecture Work Sessions*
- Solution Architecture – *Conduct Solution Architecture Work Sessions*



## Architecture Review Process

The Architecture Review Process allows the architecture governance groups to review, debate, discuss, and make decisions about the various additions and changes to the Architecture Blueprint and Enterprise Architecture Framework. This process also determines which variances will be accepted into the organization's technology portfolio.

The proposed architecture changes may be triggered from any of the following processes:

- Architecture Compliance Process
- Architecture Blueprint Vitality Process
- Architecture Documentation Process
- Architecture Framework Viability Process

The process of reviewing changes to the Enterprise Architecture Framework, Architecture Blueprint, and/or variance requests is made up of three sub-processes. The sub-processes include:

- Propose Architecture Change
- Determine Architecture Review Decision
- Document Review Decisions

Each of the sub-processes follows the same format, providing a Process Model followed by the process detail.

### PROPOSE ARCHITECTURE CHANGE

#### *PROCESS OVERVIEW*

The Architecture Review Process is typically part of a regularly scheduled Architecture Review meeting. Individual organizations should define the frequency of Review meetings, based on the needs of their organization.

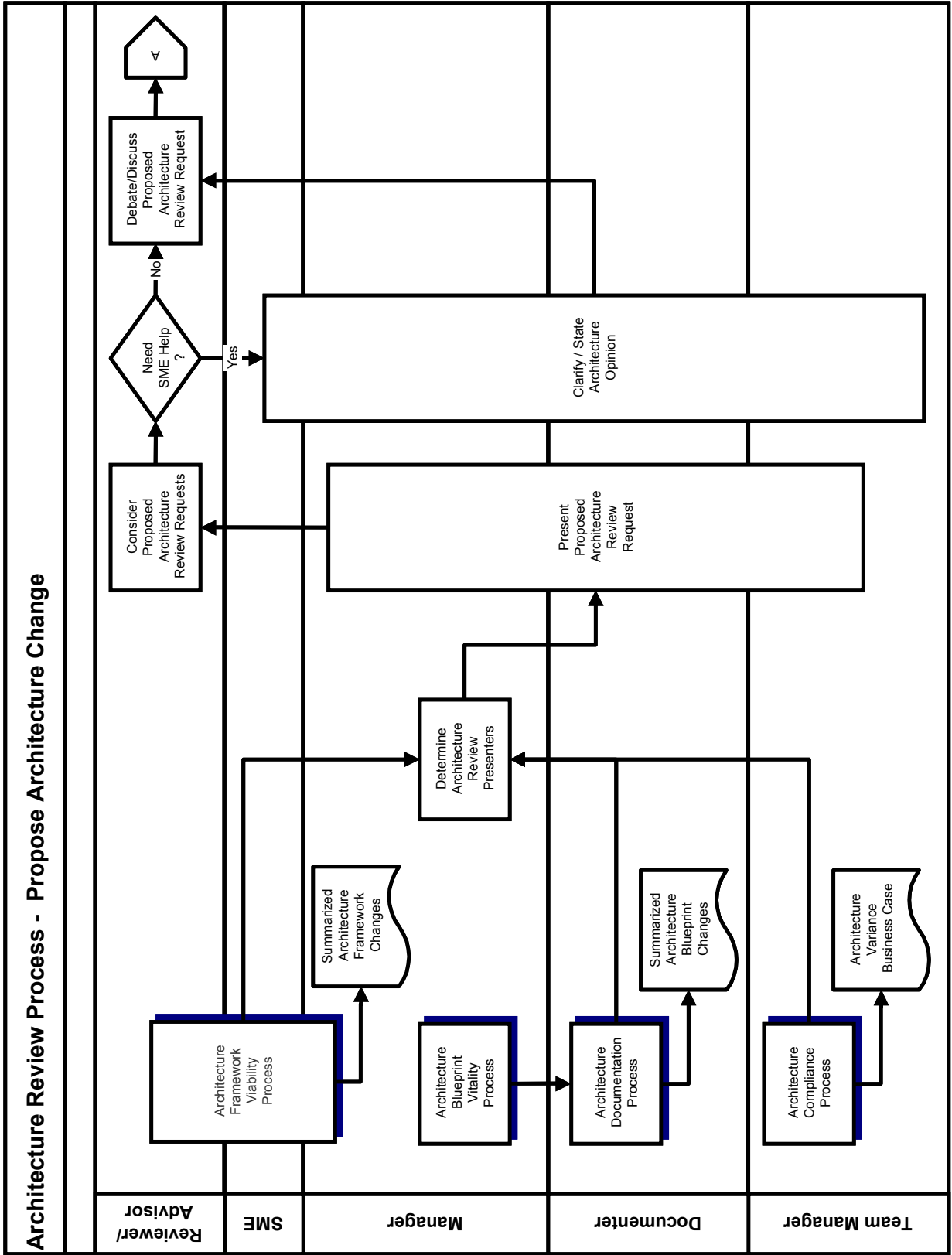
The Architecture Review Process is triggered by the completion of the following Architecture Lifecycle Processes:

- Architecture Framework Viability Process
- Architecture Blueprint Vitality Process
- Architecture Documentation Process
- Architecture Compliance Process

Depending on the process that triggered the review, the Proposed Architecture Review Request will contain different information, as depicted in the following chart:

<i>Process That Triggered Review</i>	<i>Information For Review</i>
<ul style="list-style-type: none"> <li>• Architecture Framework Viability Process</li> </ul>	<ul style="list-style-type: none"> <li>• Summarized changes to the Adaptive Enterprise Architecture Framework Manual</li> </ul>
<ul style="list-style-type: none"> <li>• Architecture Blueprint Vitality Process</li> </ul>	<ul style="list-style-type: none"> <li>• Summarized changes to the Architecture Blueprints</li> </ul>
<ul style="list-style-type: none"> <li>• Architecture Documentation Process</li> </ul>	<ul style="list-style-type: none"> <li>• Summarized changes to the Architecture Blueprints</li> </ul>
<ul style="list-style-type: none"> <li>• Architecture Compliance Process</li> </ul>	<ul style="list-style-type: none"> <li>• Architecture Variance Business Case</li> </ul>





## *PROCESS DETAIL*

Determine Architecture Review Presenters, Present Proposed Architecture Review Request –Changes to the architecture can be triggered by the following processes:

- Architecture Framework Viability Process
- Architecture Blueprint Vitality Process
- Architecture Documentation Process
- Architecture Compliance Process

The Architecture Manager will determine the role best suited to present the changes to the Reviewers/Advisors. The Manager may choose to make the presentation or may choose a Team Leader, or Documenter to make the presentation.

**Consider Proposed Architecture Review Requests** – For each proposed change the Reviewers should consider:

- Impact on the Architecture Blueprint
- Physical implementation requirements
- Impact on installed applications or services
- Impact on existing installation standards
- Funding

The Reviewers may also request the assistance of an Advisor.

**Clarify/State Architecture Opinion** – During the consideration of the request, the Reviewer may seek technical opinions from Subject Matter Experts in regard to the requested change. The Reviewer may also ask for clarification of some of the information provided with the request.

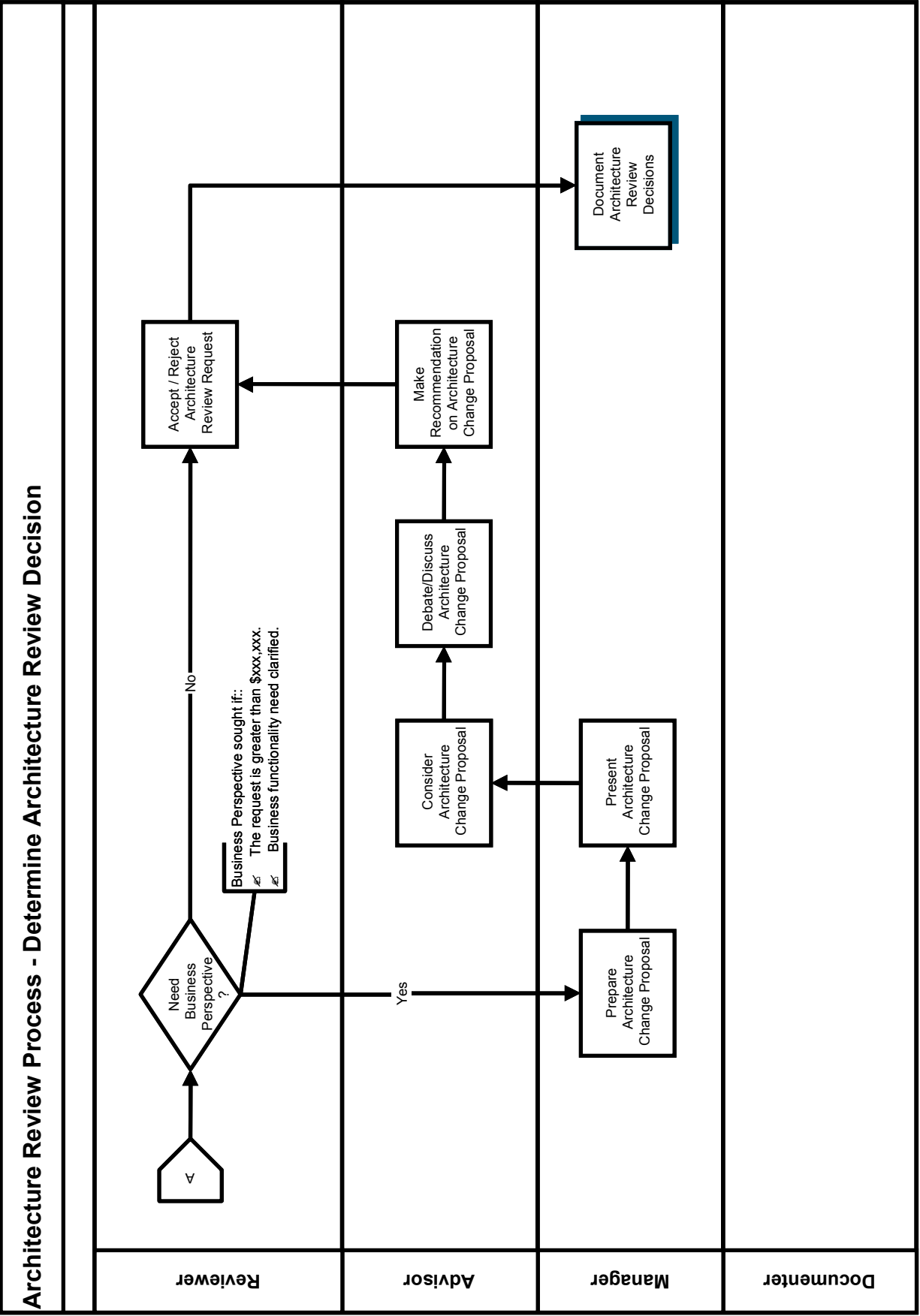
**Debate/Discuss Proposed Architecture Review Request** – The Reviewers weigh the pros and cons to make a decision toward accepting or rejecting the change. The Reviewers will also consider the immediate, as well as the long-term needs of the organization. It is essential that both perspectives be given proper consideration.

## DETERMINE REVIEW DECISION

### *PROCESS OVERVIEW*

Typically, organizations will set cost criteria for projects, above which additional business approval is required. If a request exceeds this limit or additional information is required related to the business functionality, the Manager may seek the opinion of the appropriate business Advisor on behalf of the Reviewers.

If no Advisor input is required, the process continues with the Accept/Reject Proposed Architecture Review Items process step, documented below.



## *PROCESS DETAIL*

**Prepare Architecture Change Proposal** – When the Business perspective is needed, the Manager will prepare the proposals to be submitted to the Advisors. The proposal should contain information pertaining to the request and the business requirement to be addressed by the Advisor. This could vary from request to request.

**Present Architecture Change Proposal** – the government entity should determine when and how the presentation occurs, but the Architecture Manager will typically present the Architecture Change Proposal to the Advisors during a regularly scheduled Advisor meeting. The Advisors may ask for the requesting Team Leader or Documenter to attend the presentation to answer questions or make clarifications.

**Consider Architecture Change Proposal** – For proposed changes that need consideration from a business perspective, the Advisor should consider:

- Impact on the Business Architecture Blueprint
- Impact on the organization’s IT Portfolio.
- Physical implementation requirements on the business
- Impact on installed applications or services that currently support the business.
- Funding

**Debate/Discuss Architecture Change Proposal** – The Advisors weigh the pros and cons from the business perspective to make a determination toward accepting or rejecting the change. As with the Reviewers, the Advisors will also consider the immediate, as well as the long-term needs of the organization.

**Make Recommendation on Architecture Change Proposal** – The Advisors will make recommendations to the Reviewer and Architecture Manager regarding whether to accept or reject the Proposed Architecture Review Items.

**Accept/Reject Architecture Review Request** – Based on the business case and the immediate and long-term needs of the organization, the Reviewer will either accept or reject the proposed architecture review request or line items. Note that each organization should determine whether Requests are accepted or rejected as a whole or whether the requests may be separated into line items addressed separately. Document Architecture Review Decisions: Whether a change was accepted or rejected, the results should be documented. This provides a better picture of the evolution of the decision process and history for the Enterprise Architecture Framework and Architecture Blueprint.

The documentation of the Architecture Review Decision is provided in the following sub-process model and description

## DOCUMENT ARCHITECTURE REVIEW DECISION

### *PROCESS OVERVIEW*

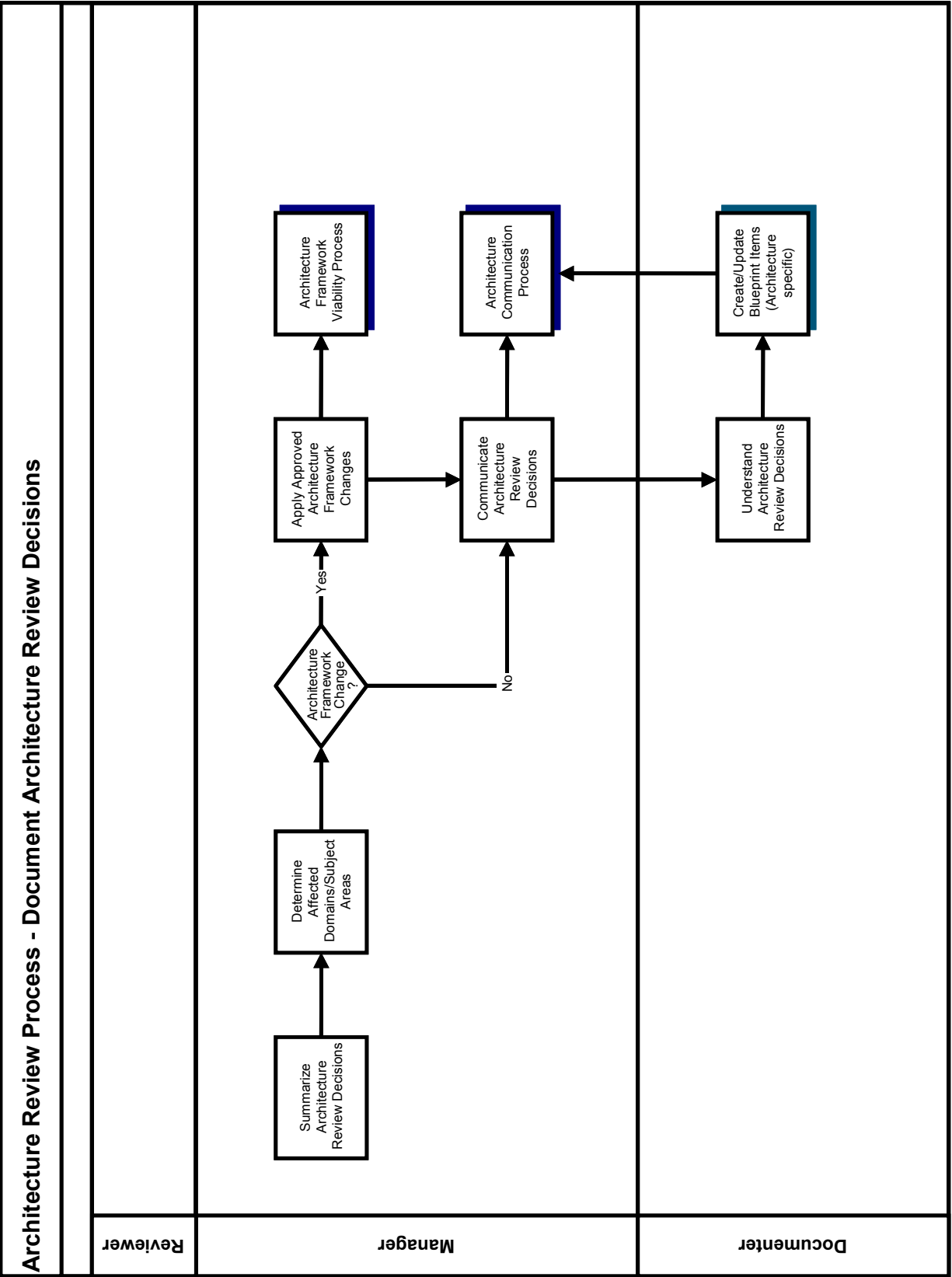
The results of the architecture change are documented regardless of whether a change was accepted or rejected. This provides a record of the decision process for the Enterprise Architecture Framework and Architecture Blueprint.

The process steps for documenting the review decision include

- Summarize Architecture Review Decisions
- Determine Affected Domains
- Apply Approved Enterprise Architecture Framework Changes
- Communicate Architecture Review Decisions
- Understand Architecture Review Decisions

NOTE: The following processes are sub-processes of the Architecture Documentation Process and are used for updating the Architecture Blueprints.

- Complete/Update Domain Blueprint
- Complete/Update Discipline Blueprint
- Create/Update Technology Areas
- Create/Update Product Components
- Create/Update Compliance Components



## *PROCESS DETAIL*

**Summarize Architecture Review Decisions** – The Architecture Manager will summarize the decision of the Reviewer meeting.

**Determine Affected Domains** – Multiple Domains may be affected based on the results of the review. The Manager should determine the affected Domains and the required updates.

**Apply Approved Enterprise Architecture Framework Changes** – These Enterprise Architecture Framework elements are maintained in the sub-process Confirm Architecture Governance Structure of the Architecture Framework Viability Process. After the updates are completed, the Architecture Blueprint Vitality Process is triggered to determine if the Architecture Blueprint also requires updating. This is a continuation of the Architecture Lifecycle processes.

**Communicate Architecture Review Decisions** – Major changes or decisions of the Architecture Review Process should be communicated to the IT community through the Architecture Communication Process. Domain-specific information should be provided to the Documenters of all Domains affected by the reviews.

**Understand Architecture Review Decisions** – The Documenters should understand the decisions communicated to them. Once they have an understanding, they should review the Architecture Blueprint and make updates as required to document the decisions. Update each level of the Architecture Blueprint affected by the review.

**Create/Update Blueprint Items (Architecture specific)** – Based on the review decision, the various Blueprint items should be updated within the affected architecture. The process model and details pertaining to updating the Blueprint Items specific to each of the architectures is provided within the respective sections of the Tool-Kit:

- Business Architecture – *Create/Update Business Architecture Blueprint Items*
- Information Architecture – *Create/Update Information Architecture Blueprint Items*
- Technology Architecture – *Create/Update Technology Architecture Blueprint Items*



## Architecture Communication Process

The Architecture Communication Process ensures the contents of the enterprise architecture contents are communicated in a timely and accurate manner. This is a vital process in the success of the enterprise architecture. Without a thorough communication process, the enterprise architecture is simply a document, providing no real substance to the organization.

All users must have access to the latest version of the enterprise architecture documents and blueprints. A mechanism must exist to communicate the status and updated documentation to all users. Adequate communication of the enterprise architecture plays a vital role in ensuring that enterprise activities will be synchronized with the Architecture Blueprint and the organization's strategic plans.

The communication document should be available to contractors and vendors required to conform to the organization's enterprise architecture.

To ensure the shared enterprise architecture information meets the communication requirements, conduct a review of all audience members and their information needs. Some communication is automatically distributed; other times information is requested and subsequently distributed to the requester.

Any time the enterprise architecture makes a noticeable change due to an Architecture Review, Architecture Vitality, or Architecture Documentation Process, the information must be communicated to the Architecture Audience in a timely manner.

The process of communicating the documented enterprise architecture includes one sub-process to help determine, document and send the architecture communication document. The sub-process is entitled Communicate Architecture Information and includes a Process Model, followed by the process detail.

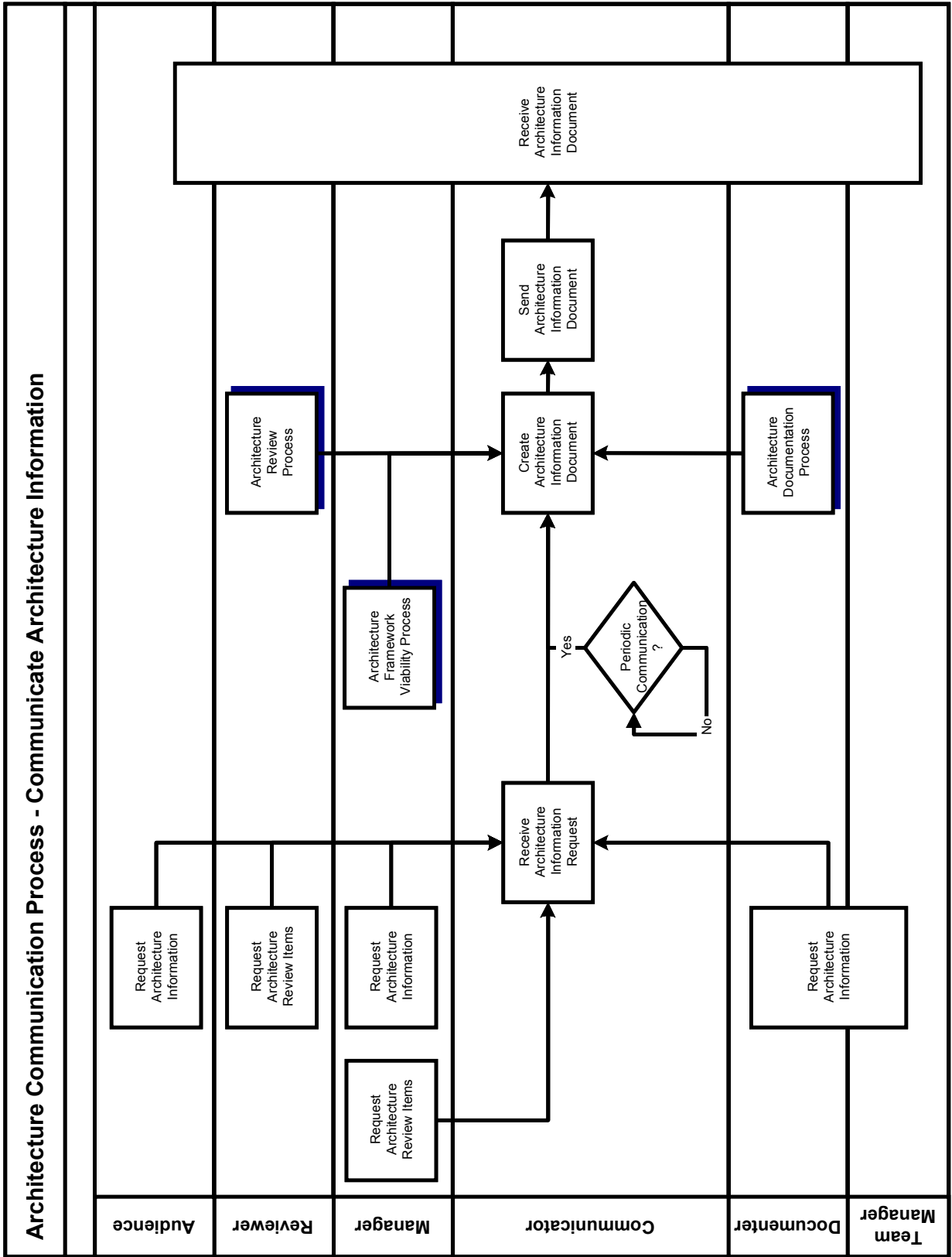
## COMMUNICATE ARCHITECTURE INFORMATION

### *PROCESS OVERVIEW*

The Architecture Communication is a set of communication “documents” that can be disseminated or requested from enterprise architecture information to the various Architecture Audience members. Some of the communication is best queried from the enterprise architecture information itself, while other communication is best summarized, with the added ability to query for the details.

This process model shows the Architecture Roles and Lifecycle processes that can trigger the production and delivery of the Architecture Communication Document.





## *PROCESS DETAIL*

**Request Architecture Information** – The Architecture Audience, Architecture Manager, and/or Architecture Documenter/Author can request architecture information. This can include requests such as:

- All information for a Domain or any of the Architecture Blueprint Levels
- All architecture blueprint information not reviewed in the last six months
- All Compliance Components for a specific Product (For example: Compliance Components for DB2 database.)
- All architecture blueprint information associated with a keyword (i.e., keyword: web)
- All product components that are classified as current in the technology architecture blueprint

The type of requests is dependent upon the requirements of the requesters. Organizations should determine such items as:

- What information can be shared
- At what point in the Architecture Lifecycle processes will sharing be allowed
- Which Architecture Roles should have access to what information
- The balance between need and efficiency

**Request Architecture Review Items** – During periodic Architecture Reviews, the information that is documented in the Architecture Blueprint or Enterprise Architecture Framework Elements, but not reviewed, should be collated and summarized for the Reviewers. The status allows the Architecture Communicator to gather the information and provide it in a Communication Document.

**Create Architecture Communication Documents** – The content of the Architecture Communication Document will vary based on the information collection trigger. The following processes provide the information for the document:

- Architecture Review Process
- Architecture Framework Viability Process
- Architecture Documentation Process

The following types of information are available to share:

- Architecture Blueprint information
- Enterprise Architecture Framework Elements
- Summaries of the Architecture Review
- Summaries of the Architecture Documentation effort
- Highlights from enhancements due to the Architecture Framework Viability Process

**Send Architecture Communication Document** – Based on what triggered the Architecture Communication Document to be produced, the document will be sent out to the appropriate Architecture Audience. Each organization should determine guidelines addressing the audience for each communication.

**Receive Architecture Communication Document** – The Architecture Audience member receives the requested Architecture Communication Document. The audience member receives information based on the following criteria:

- The audience member is a subscriber to the Architecture Communication Process
- The audience member is a requester of Ad-hoc Architecture Communication Document
- The audience member holds a primary Architecture Governance role
- Management has designated the audience member as a required receiver of specific Architecture Communication documents

## Architecture Compliance Process

The Architecture Compliance Process describes the process to request a variance from the components approved within the organization. Having an established Architecture Compliance Process is an appropriate and tactically sound approach to managing information technology from an enterprise perspective.

In every organization, there will be circumstances that will preclude the use of the documented standards. A formal compliance process is essential to allow for the review and acceptance of variances from the enterprise-wide architecture standards. Members of the organization will be allowed to submit requests for deviation from the standard. These requests for deviation should be presented with an appropriate business case stating the reasons for the variance. Legitimate business cases will be reviewed, and those accepted will be documented as approved variances during the Architecture Review Process.

Results accepted from the Architecture Compliance Process review will flow into the Architecture Blueprint Vitality Process.

The compliance process consists of three sub-processes that determine, document and request architecture variances. These sub-processes include:

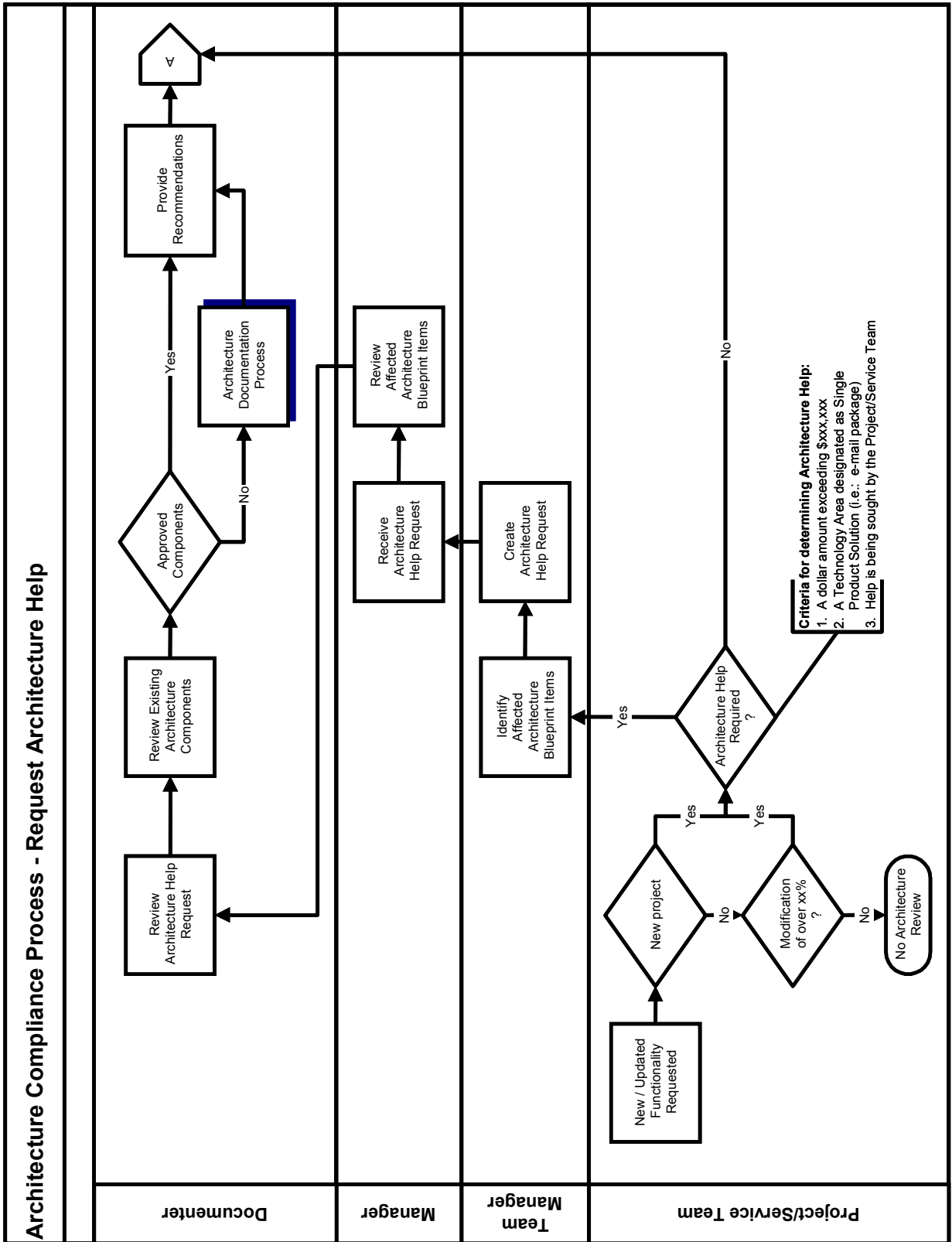
- Request Architecture Help
- Determine Options
- Create Architecture Variance Business Case

Each of the sub-processes follows the same format, providing a process model followed by the process detail.

### REQUEST ARCHITECTURE HELP

#### *PROCESS OVERVIEW*

The Request Architecture Help Process describes the process for handling request for new functionality or updates to current functions. It is typical for organizations to set criteria, such as estimated project cost etc. to determine those projects that require reviews or recommendations based on the architecture. The Documenters review the existing architecture component and provide recommendations to the project/service teams.



## *PROCESS DETAIL*

**New/Updated Functionality Requested** – When there is a request to create or update functionality in the organization’s project or service teams, the scope of the request and document the requirements will need to be determined. Once this analysis is complete, review the possible solutions.

Based on the analysis of the requirements, determined whether a formal project will start or a production support request initiated. Identify architecture compliance reviews in the project plan schedule.

Project/Service Teams determine whether their project/enhancement requires a formal review to verify compliance with the documented architecture blueprint. This compliance review is required for either:

- All new projects, or
- Modifications of greater than x% on existing technology

If neither of these exists, the project/change requires no compliance review.

If a project/maintenance team requires help in reviewing their project or a new technology against the documented architecture blueprint, the Documenters are available to assist.

Architecture groups are required to review/assist a team if:

- The dollar amount of the solution being suggested is greater than \$xxx,xxx.
- The technology area they are requesting a variance for has designated a single product solution. (Because of maintenance and inoperability issues, a single product has been designated as the only acceptable product in the currently documented architecture blueprint.)

**Identify Affected Architecture Blueprint Items** – The Team Leader should identify the Documenters impacted by the project/enhancement. This identification may not be complete until reviewed by the Architecture Manager, and Reviewers/Advisors.

**Create Architecture Help Request** – Team Leader will fill out an Architecture Help Request. This request allows the Architecture Manager to determine which of the Documenters can assist. The solutions may already exist in the Architecture Blueprint and the Architecture Manager will direct the Team Leader to the correct information.

**Receive Architecture Help Request** – Architecture Manager receives the Architecture Help Request and reviews it for completeness. The Architecture Manager will ask several questions to determine completeness, including:

- Is there enough information to determine possible solutions?
- Has contact information for the person requesting been supplied?
- Has the resolution date been communicated?

**Review Affected Architecture Blueprint Items:** The Architecture Manager, with help from the Reviewers and Advisors, will ensure that all affected domains/subject areas have been identified. They may also direct Team Leaders to possible solutions already approved and documented in the Architecture Blueprint.

**Review Architecture Help Request, Review Existing Architecture Components, and Architecture Documentation Process:** Based on the type of Architecture Help Request requested, the Documenters will set up time to aid the project/service team. The types of help requests:

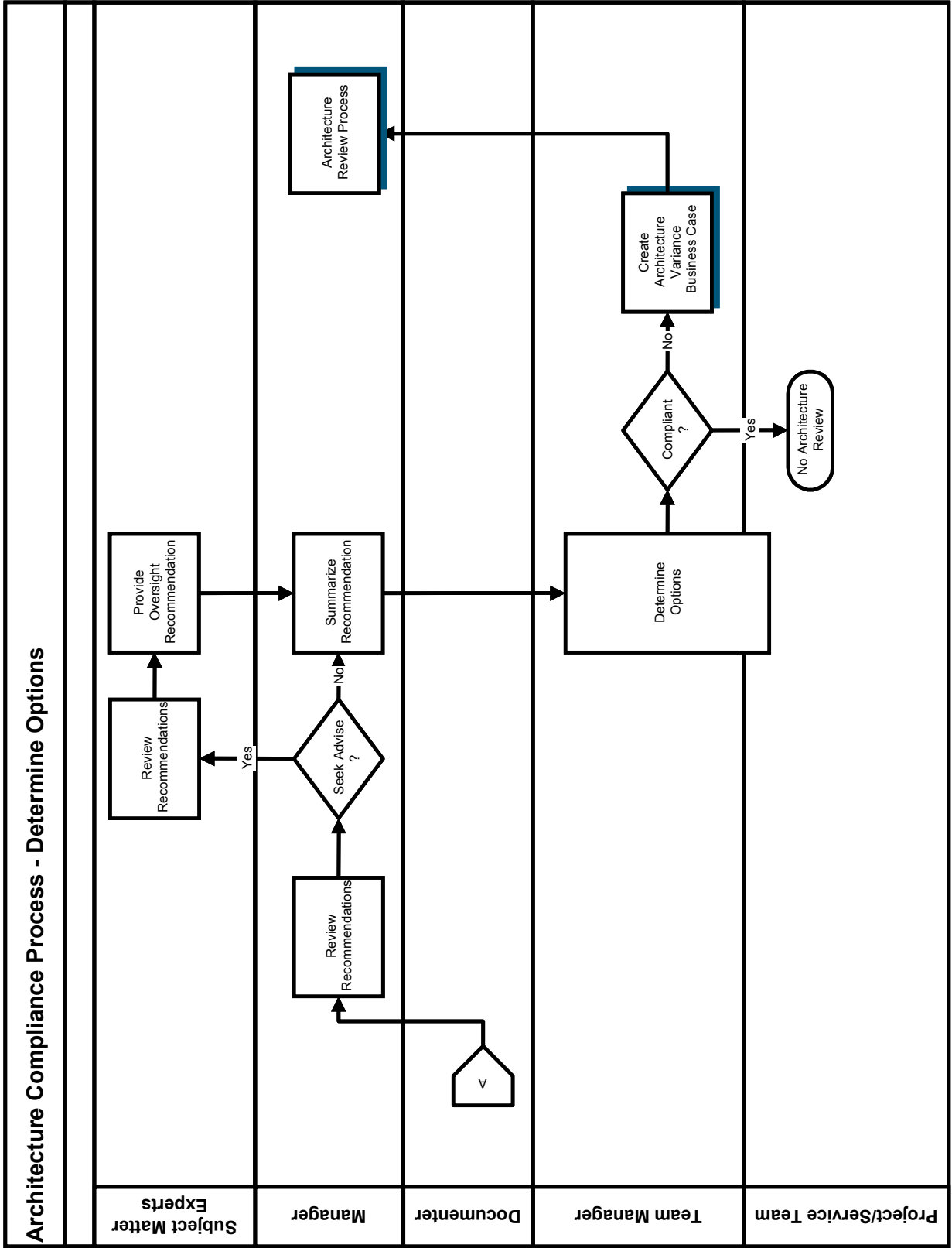
- Identifying or reviewing Business Architecture Components such as Business Drivers or other strategic elements that may be impacted
- Identifying or reviewing Process Components or Information Meta Components that may be impacted
- Identifying existing technology in the organization's products that may meet the requirements of the new or updated functionality requested.
- Conducting a technology scan to identify products that may meet the requirements of the new or updated functionality being requested. After finding potential products, execute the Evaluate Product/Compliance Component Process in the Architecture Documentation Process.
- Reviewing products that the Team Leaders bring forward to determine the possible fit into the documented architecture blueprint.

**Provide Recommendations** – Based on the reviews and evaluations conducted, the Documenters will make recommendations to the Architecture Manager. This information will be used to aid in the project/service team's selection of a solution for their functional requirements.

## DETERMINE OPTIONS

### *PROCESS OVERVIEW*

The Architecture Manager works with the SMEs to review, clarify and summarize the technology recommendations. Options for solving the functional requirements are reviewed and an option is chosen. If this option is compliant with the documented architecture blueprint, no further information is required. If not, an architecture variance business case is developed.



## *PROCESS DETAIL*

**Review Recommendations** – The Architecture Manager will review the recommendations presented by the Documenters. Based on this review, the Architecture Manager may seek advice from the Subject Matter Experts.

**Review/Clarify Recommendations** – The Subject Matter Experts aid the Compliance Process by reviewing and clarifying the recommendations provided by the Documenters.

**Provide Oversight Recommendation** – Once the Subject Matter Experts have reviewed and clarified the Recommendations, they provide their recommendation.

**Summarize Recommendations** – The Architecture Manager will prepare a summary from the Documenters' Recommendation and the Subject Matter Experts' Oversight Recommendation. This information is given to the Team Leader to aid the project/service team in determining a solution.

**Determine Options** – Various options for solving the functional requirements will be reviewed and an option will be chosen. If this option is compliant with the documented architecture blueprint, no further information is required.

**Create Architecture Variance Business Case** – If the option chosen is not compliant with the documented architecture blueprint, the Team Leader will need to create a business case for requesting the architecture variance. This process is documented in the sub-process: Create Architecture Variance Business Case.

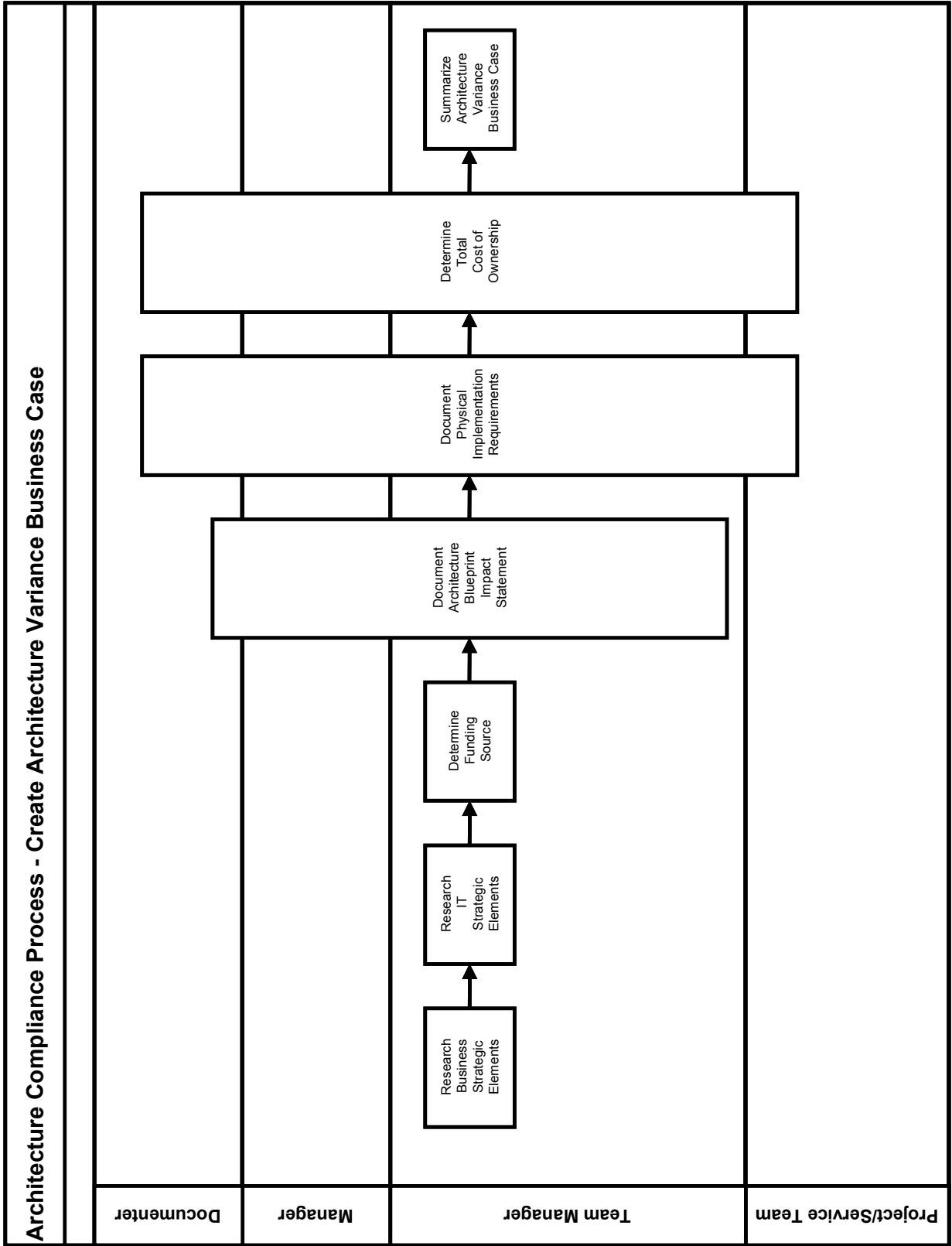
Once the Architecture Variance Business Case is documented, it will undergo the normal Architecture Review Process.

## CREATE ARCHITECTURE VARIANCE BUSINESS CASE

### *PROCESS OVERVIEW*

To create an Architecture Variance Business Case, the Team Leader will research Business and IT Strategic Elements and determine the funding sources to offset the cost of introducing a non-compliant product into the architecture blueprint. Then working with the rest of the team, the impact of the variance and the physical implementation requirements are documented. As part of this process, the costs associated with the variance are identified. All this information is summarized for presentation to the reviewers.





## *PROCESS DETAIL*

**Research Business Strategic Elements** – The Team Leader will research relevant business inputs. These can include updated Business Strategy Plans.

**Research IT Strategic Elements** – The Team Leader will research relevant technology inputs. These can include updated IT Strategy Plans.

**Determine Funding Source** – To show the offset of introducing a non-compliant product into the architecture blueprint, the Team Leader will identify the funding sources that will be responsible for the total cost of ownership during the product's lifecycle.

**Determine Architecture Blueprint Impact Statement** – With the help of the Documenters and the Architecture Manager, the Team Leader will craft an impact statement for the variance being sought.

**Determine Physical Implementation Requirements** – The Project/Service team, Team Leader, Architecture Manager and the Documenters will work together to document the physical implementation requirements that will be required for the new product and/or compliance component.

**Determine Total Cost of Ownership** – During the impact analysis, the Team Leader is responsible for identifying costs associated with the product such as the licensing fees, initial product cost, implementation cost, and on-going maintenance cost. These costs should include the cost of personnel required to maintain and enhance the product as it goes through its product lifecycle.

**Summarize Architecture Variance Business Case** – Once everything is determined and documented, the Team Leader should compile a summary of the technical and business inputs to present to the Reviewers.



## Architecture Framework Viability Process

Architecture Framework Viability Process is the process that insures the content of the Adaptive Enterprise Architecture Framework Manual remains current and accurate. This is a major requirement of the governance processes.

To ensure Viability, the Enterprise Architecture Framework must be reviewed from a perspective of business strategic elements, IT strategic elements and recommendations for enhancements. Advisors should provide input for the business strategy and the IT strategy.

Any time business strategies or IT strategies make a noticeable shift, an architectural framework review may be required. Enterprise Architectural Framework reviews should occur every one to two years at a minimum.

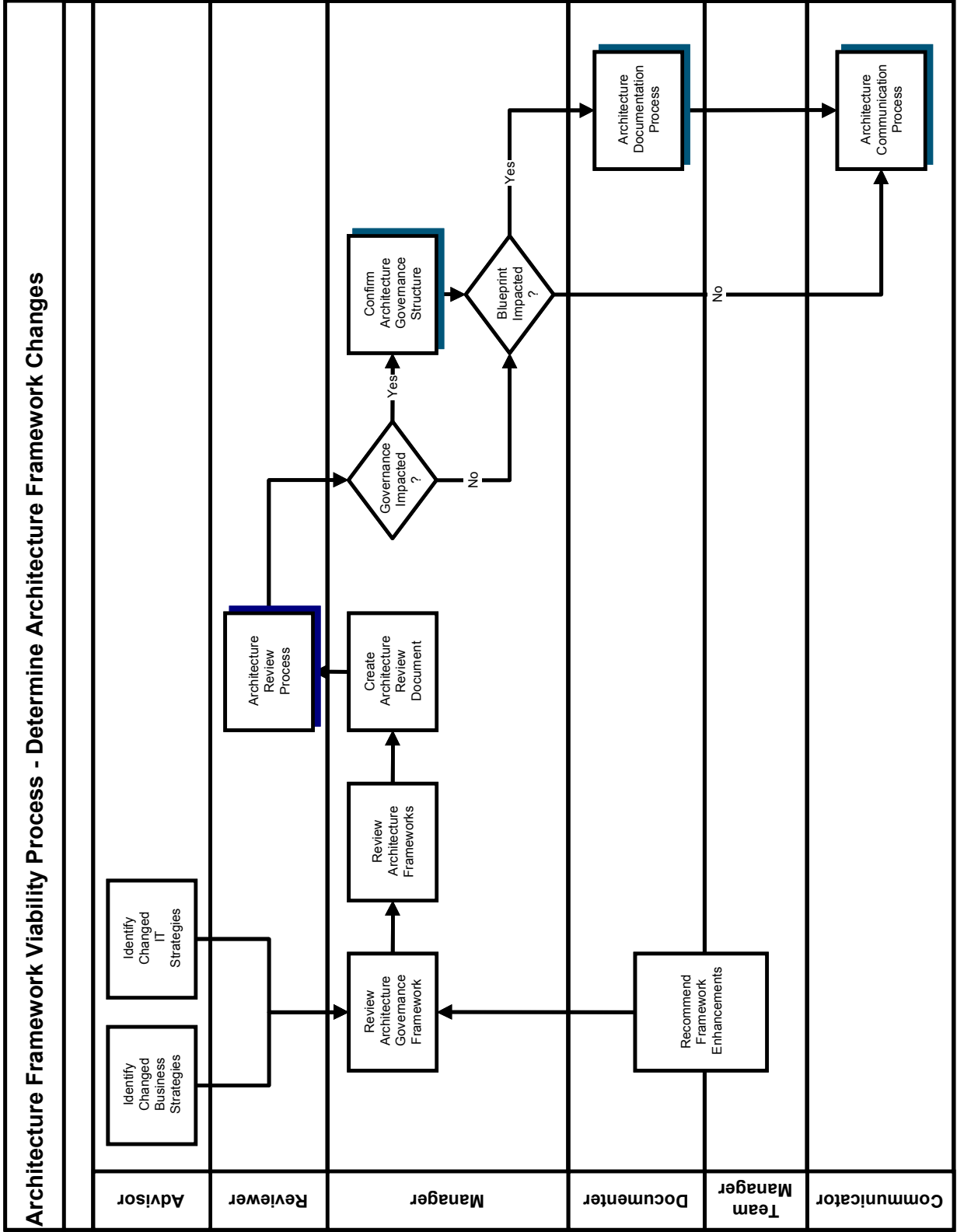
The process of routinely reviewing the documented Enterprise Architecture Framework is made up of one sub-process to help determine, document and request architecture changes. The process follows the format of a process model followed by the process detail.

## DETERMINE ARCHITECTURE FRAMEWORK CHANGES

### *PROCESS OVERVIEW*

The Enterprise Architecture Framework is a set of interrelated elements that provide the processes, templates, and governance to implement the Architecture Blueprints. Three events cause changes to the Enterprise Architecture Framework:

- Recommendations from the Documenters and Audience of the architecture for Enterprise Architecture Framework Element enhancements
- Shifts in Business Strategies provided to the Manager
- Shifts in IT Strategies provided to the Manager



## *PROCESS DETAIL*

**Identify Changed Business Strategies** – The Business Advisor identifies and gathers relevant business inputs from updated Business Strategic Plans and forwards the information to the Architecture Manager. The Architecture Manager will need to research changes to the Business Drivers.

**Identify Changed IT Strategies** – The IT Advisor identifies and gathers relevant IT inputs from updated IT Strategic Plans and forwards the information to the Architecture Manager. The Architecture Manager will need to research changes to the Technology Drivers.

**Recommend Framework Enhancements** – While interacting with the Enterprise Architecture Framework elements, the Documenters and other users of the architecture may have suggestions for improvement that could benefit everyone. Consider these recommendations for new versions of the Adaptive Enterprise Architecture Framework Manual.

**Review Architecture Governance Framework** – Changes in the Business and IT Strategies or recommendations from the Documenters/users of the Enterprise Architecture Framework Elements may cause further enhancements to be identified. These enhancements need to undergo the Confirm Architecture Governance Structure sub-process to change the Architecture Lifecycle Processes, Architecture Governance Roles, and/or Enterprise Architecture Framework Elements. These changes can have a rippling effect on other components of the Enterprise Architecture Framework or the Architecture Blueprint.

**Review Architecture Frameworks** – Changes in the Business and IT Strategies may cause the Business Drivers to change. If the strategy changes have caused changes to the Business Drivers, there could be a rippling effect. Review each architecture framework to determine if the structure is still viable.

The other dimension of change may occur in the Architecture Framework enhancements to processes and/or templates. These could impact existing Architecture Blueprint documentation and communication tools.

**Create Architecture Review Document** – The Architecture Manager summarizes the business, information and technical inputs into a draft review document.

The governance inputs come from:

- Architecture Governance Framework Review Results
- Updated IT Strategic Elements
- Updated Business Strategic Elements

The business inputs come from:

- Business Architecture Framework Review Results
- Updated Business Strategic Elements

The information inputs come from:

- Information Architecture Framework Review Results
- Updated Business Strategic Elements

The technical inputs come from:

- Technology Architecture Framework Review Results
- Updated IT Strategic Elements

**Architecture Review Process** – Once the Architecture Review Document is prepared, it will be presented by the Architecture Manager to the Reviewers for the Architecture Review Process.

**Confirm Architecture Governance Structure** – All review items that impact the Architecture Governance Structure must go through this sub-process. Lifecycle processes, Governance Roles, and Enterprise Architecture Framework Elements are maintained in this sub-process.

**Architecture Documentation Process** – Based on the triggering event that caused the Architecture Framework to go back through the Architecture Documentation Process, the various levels of the architecture blueprint will need to be reviewed. Changes to the overarching Business Drivers will cause review of the Architecture Blueprint from the Domain/Subject level down.

The review during this process will address questions such as:

- Is a new piece of the architecture blueprint required?
- Is change required for classifications of existing pieces of the Architecture Blueprint?
- Is change required for the Disciplines, Domains or Subject Areas?

Document this information for submission to the Architecture Manager.

**Architecture Communication Process** – Communicate changes or enhancements to the Enterprise Architecture Framework or Architecture Blueprint to the Architecture Audience. The information, whether approved or rejected, should be available to the audience to aid in future service enhancements or Business/IT Portfolio additions.



## Architecture Blueprint Vitality Process

Architecture Blueprint Vitality Process is the process that insures the architecture blueprint content remains current and accurate. This is a major requirement of the overall architecture lifecycle processes. To ensure Architecture Blueprint vitality, the Architecture Blueprint must be reviewed from a business strategy, an IT strategy and a study of technology directions. Input from the providers of the organization's strategic documents is essential and the subject matter experts must insure that technology solutions are extensible and sustainable.

Any time business strategies, IT strategies or technology solutions make a noticeable shift, an architectural review may be required. The enterprise will decide on the frequency of reviews that best suit their organization; however, these Blueprint Architectural reviews are typically conducted at a minimum of every four to six months.

The enterprise architecture review of projects should be included as a standard part of project plans. These reviews, along with compliance reviews, become the most prominent part of the Architecture Blueprint Vitality Process.

Once the Architecture Blueprint Vitality Process is initiated, the bulk of the changes will be documented in the Architecture Documentation Process. A Summary of the Architecture Blueprint Changes will be produced and presented as part of the Architecture Review Process.

## DETERMINE ARCHITECTURE BLUEPRINT CHANGES

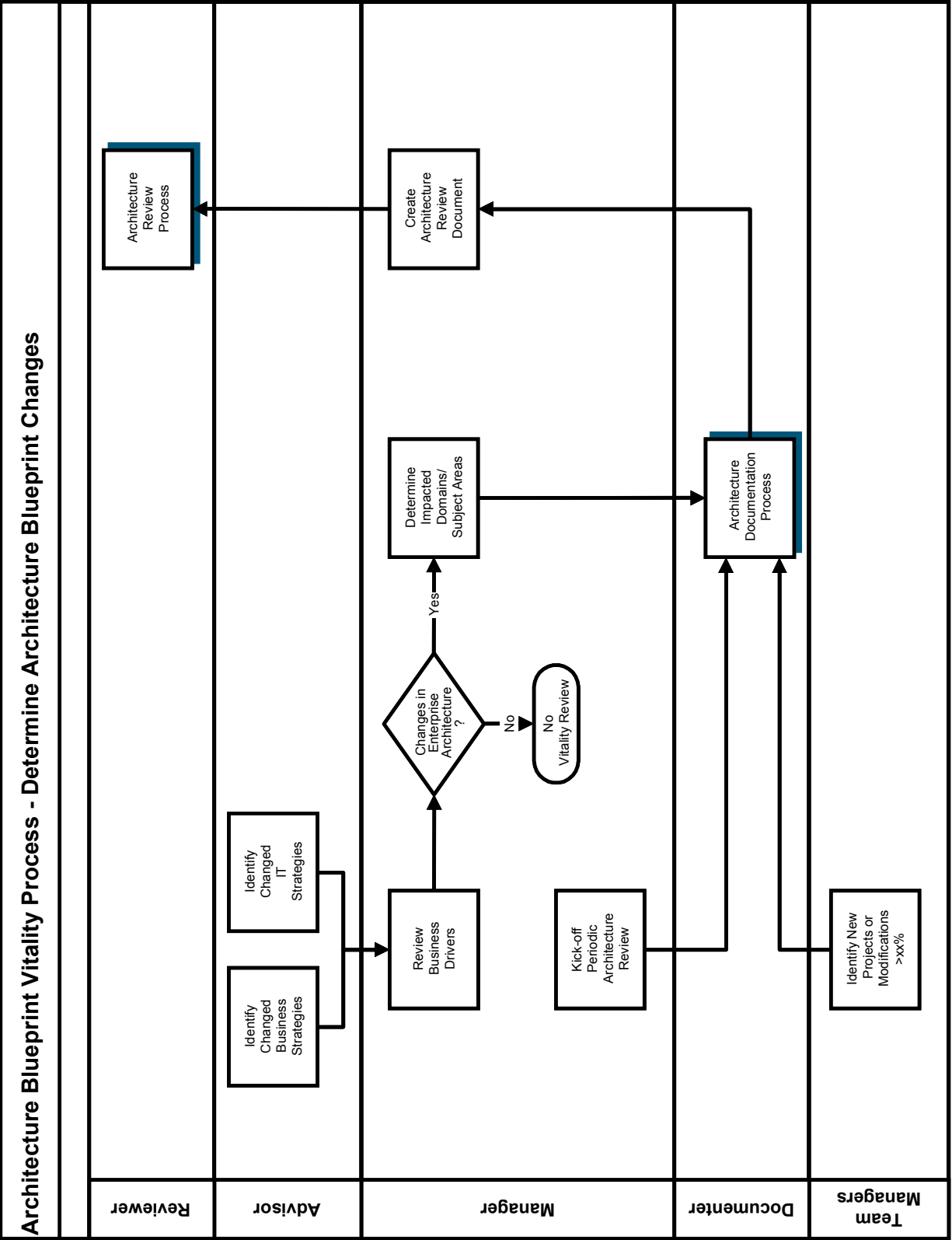
### *PROCESS OVERVIEW*

Several events can trigger changes to the Architecture Blueprints:

- Business Strategic Elements cause the Business Drivers or priorities for the current Business Drivers to change
- IT Strategic Elements cause the Business Drivers or priorities for the current Business Drivers to change
- The Kick-off for Periodic Reviews
- The identification of new project or functionality

If the Strategy changes have caused changes to the drivers, there will be a rippling effect. Domains, Subject Areas, Disciplines and Perspectives that have relationships with the changed Business Drivers should be taken through the Architecture Documentation Process to verify they are still valid and updated as needed. The impacted areas are determined in preparation for an architecture review.

Architectural Blueprint reviews should become a standard part of project/service plans. These reviews, along with compliance reviews, become the most prominent trigger to the Architecture Documentation Process and Determine Architecture Blueprint Changes sub-process. When these reviews are complete, they should be summarized and presented to the Reviewers.





## *PROCESS DETAIL*

**Identify Changed Business Strategies** – The Business Advisor identifies and gathers relevant business inputs from updated Business Strategic Elements and forwards the information to the Architecture Manager. The Architecture Manager will need to research changes to the business as well, such as business principles, best practices and business industry trends.

**Identify Changed IT Strategies** – The IT Advisor identifies and gathers relevant IT inputs from updated IT Strategic Elements and forwards the information to the Architecture Manager.

**Review Business Drivers** – Changes in the Business and IT Strategic Elements may cause the Business Drivers to change. If the Strategy changes have caused changes to the drivers, there will be a rippling effect. Domains and Disciplines that have relationships with the changed Business Drivers should be taken through the Architecture Documentation Process to verify they are still valid and updated as needed.

Review the Business Drivers to determine whether any of the drivers require stronger emphasis in the Architecture Blueprints. For example, an item currently stated as a Best Practice may be elevated to a Principle or a Trend may be elevated to a Best Practice due to a change.

These types of changes will also affect the Domains/Subject Areas and Disciplines that are related to or conflicted with the changed Business Drivers.

**Determine Impacted Domains/Subject Areas** – Based on additions or changes to the Architecture Frameworks, identify the Domains/Subject Areas that are impacted in preparation for the review of the Architecture Blueprint.

**Kick-off Periodic Architecture Review** – Architectural Blueprint reviews should occur every four to six months at a minimum. Based on the audit stamp information, a Documenter/Author can determine which of the levels of the Architecture Blueprint may need to go through the Architecture Documentation Process.

**Identify New Projects or Modifications > x%** – The architecture review of projects and significant modification to existing technology should become a standard part of project/service plans. These reviews, along with compliance reviews, become the most prominent trigger to the Architecture Documentation Process and Determine Architecture Blueprint Changes sub-process.

**Architecture Documentation Process** – Based on the event that caused the Architecture Blueprint to go back through the Architecture Documentation Process, the levels of the architecture blueprint to be reviewed will be determined as follows:

- Changes to the overarching Business Drivers or periodic Architecture Review cycles will cause the Architecture Blueprint items to be reviewed.
- Changes triggered by project/change team requests will necessitate review of the specific technology areas and below.

The review during this process will address questions such as:

- Is a new piece of the Architecture Blueprint required?
- Is change required for classifications of existing pieces of the Architecture Blueprint?
- Is change required for the Disciplines, Domains or Subject Areas?

This information will be documented for submission to the Architecture Manager.

**Create Architecture Review Document** – The Architecture Manager summarizes the technical and business inputs into a draft review document.

The technical inputs come from:

- Architecture Blueprint Results (output from the Architecture Documentation Process)
- Summaries of recent technology and application revisions
- Details of any approved variances from standards

The business inputs come from:

- Updated Business Strategic Elements
- Updated IT Strategic Elements

**Architecture Review Process** – Once the Architecture Review Document has been prepared, it will be presented by the Architecture Manager to the Reviewers.



## SUMMARY/CONCLUSION

To this point, the Tool-Kit has focused on the overarching principles and practices associated with an Enterprise Architecture Program. A well implemented and vital architecture program can provide the organization with data that can be used for many purposes.

In the following sections we will focus on the specifics associated with developing and maintaining the allied architectures framework and blueprints.

- Business Architecture
- Information Architecture
- Technology Architecture
- Solution Architecture

Each of these architectures can stand-alone, however the enterprise will realize highest return when the Business, Information and Technology Architectures have been developed in a manner that allows common elements to be shared. When this is achieved, the architectures can be mapped to each other allowing quick identification of dependencies across the organizations.

**NASCIO Online**

Visit NASCIO on the web for the latest information on the Architecture Program or to download the current version of the Enterprise Architecture Development Tool-Kit.

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