

Air Force Architecting Concept of Operations



1 December 2009

Version 1.0

BOBBY W. SMART, SES

Director, Policy and Resources

Office of Warfighting Integration and

Chief Information Officer

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 01 DEC 2009		2. REPORT TYPE		3. DATES COVERED 00-00-2009 to 00-00-2009	
4. TITLE AND SUBTITLE Air Force Architecting Concept of Operations				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) SAF/XCPA,1800 Air Force Pentagon,Washington,DC,20330-1800				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 24	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

This page intentionally left blank



DEPARTMENT OF THE AIR FORCE
WASHINGTON, DC

DEC 01 2009

OFFICE OF THE SECRETARY

MEMORANDUM FOR RECORD

FROM: SAF/XCPA
1800 Air Force Pentagon
Washington DC 20330-1800

SUBJECT: Air Force Architecting Concept of Operations

As the Chief Architect of the Air Force, I approve the Air Force Architecting Concept of Operations for immediate use by all Air Force architecting organizations.

My point of contact is Colonel David Geuting, SAF/XCPA, david.geuting@pentagon.af.mil.

Bobby W. Smart
BOBBY W. SMART, SES
Director, Policy and Resources
Office of Warfighting Integration
and Chief Information Officer

This page intentionally left blank

Foreword

VISION

As leaders of architecture in the Air Force, we deliver timely, relevant, unambiguous information to support informed decision-making by Air Force leaders to maximize military capabilities while optimizing allocation of resources.

Air Force (AF) decision-makers are called upon daily to make decisions across the AF, which is growing in complexity, yet often have to do so without being provided with objective analysis of the second and third order impacts of their decisions. By helping unravel the complexity of AF systems, processes and programs, and presenting decision-makers with clearly articulated analysis, architecting can help eliminate the ‘fog’ associated with decision-making in a complex environment.

This Concept of Operations (CONOPS) highlights how the use of architecture can enable the AF to maximize its contribution to full spectrum dominance for the joint warfighter, and describes how the architecting community can use architecture to support AF decision-making at all levels. Although intended for the architecting community, the secondary goal of this CONOPS is to give those outside the architecting community, including decision-makers, an appreciation for the role architecture can play in the decision-making process.

Contents

Air Force Architecting Concept of Operations	1
Foreword.....	5
Section I – Issue	7
A. Problem Statement	7
B. Architecture Vision.....	7
C. Purpose of the CONOPS.....	7
D. Relationship to other AF Management Processes.....	8
Section II – Overview	8
A. Synopsis	8
B. Operational View (OV)-1	8
C. Description of the Military Challenge	10
D. Desired Effects.....	10
Section III – Context.....	10
A. Time Horizon	10
B. Assumptions.....	10
C. Risks.....	10
Section IV - Employment Concept	12
A. High-Level Context	12
B. Use, Build, and Govern Concepts	13
C. Critical Capabilities	16
D. Enabling Capabilities	17
E. Sequenced Actions.....	18
1. Use Environment	19
2. Build Environment.....	20
3. Govern Environment.....	21
F. End State	23
G. Top-Level Activity Models.....	23
Section V – Summary	24

Section I – Issue

A. Problem Statement

"The great uncertainty of all data in war is a peculiar difficulty, because all action must, to a certain extent, be planned in a mere twilight, which in addition not infrequently — like the effect of a fog or moonshine — gives to things exaggerated dimensions and unnatural appearance."

Carl von Clausewitz – ‘On War’

Air Force (AF) leaders make complex decisions on a daily basis affecting the AF enterprise. However, the second and third order effects of those decisions often impact seemingly disparate portions of the enterprise in fundamental ways (good or bad) that were unforeseen by the decision-maker simply because the relationship data was not available at the time the decision was made. Architecture can eliminate some of the “fog” of decision-making by defining these relationships in a format the decision-maker can easily understand.

Architecture as a decision-making tool has already had impact in ensuring compliance (Clinger-Cohen Act (CCA), Joint Capabilities Integration and Development System ((JCIDS), etc.) and guiding transformation. However, it is not being used in such a way as to live up to the mandate and intent of Congress or the vision of our senior leaders. The challenge is to ensure that the benefits of architecture in the decision-making process are well understood and that architecture becomes a valued and integral part of the decision-making process across the AF.

B. Architecture Vision

The vision for architecture is to enable the delivery of timely, relevant, unambiguous information to support informed decision-making by Air Force leaders to maximize military capabilities while optimizing allocation of resources.

The goal is to use architecture to unravel the complexity of our systems, processes, and programs to reveal their interdependent relationships to decision-makers, in an easily understandable format, so they may be adequately considered as decisions are made. In essence, architecture ought to be used as a tool to eliminate redundancy, build efficiency, and maximize resource distribution to ultimately increase combat effectiveness of the AF.

C. Purpose of the CONOPS

The purpose of this CONOPS is to articulate how architecture will be built and governed to support the decision-making process. Additionally, it will present a model of how the architecting community will ensure architecture supports AF decision-making at all levels.

This CONOPS will also set the context to improve architecting processes, further refine architectures, and provide architecting organizations with a refreshed focus on the concepts necessary for supporting decision-making, supporting transformation, and optimizing governance. Finally, it will ensure architecting efforts are organized and executed effectively.

D. Relationship to other AF Management Processes

This document addresses AF processes not currently documented in any specific CONOPS. This Architecting CONOPS supports the following specific AF processes:

- Panel Support process
- Capability Based Planning Process
- Planning Programming Budgeting Execution Process
- Portfolio Management Process
- System Development and Acquisition Process

Section II – Overview

A. Synopsis

When fully integrated in AF decision-making processes, the use of architecture will ensure maximum combat effectiveness by reducing redundancy, ensuring interoperability, and helping the AF allocate resources in the most efficient means possible. Specifically, the use of architecture will help decision-makers understand:

- Requirement priorities and requirement conflicts
- Gaps, overlaps, and emerging functional capabilities and impact on the warfighter
- AF Enterprise interdependencies and interfaces
- Behavioral impact of change, such as performance, power demand, network demand
- Total ownership cost
- Potential tradeoffs

B. Operational View (OV)-1

The following figure depicts the overall environment described in this CONOPS. In order to successfully integrate architecture into the decision-making process, work is required across the use, govern, and

build environments, as detailed below.

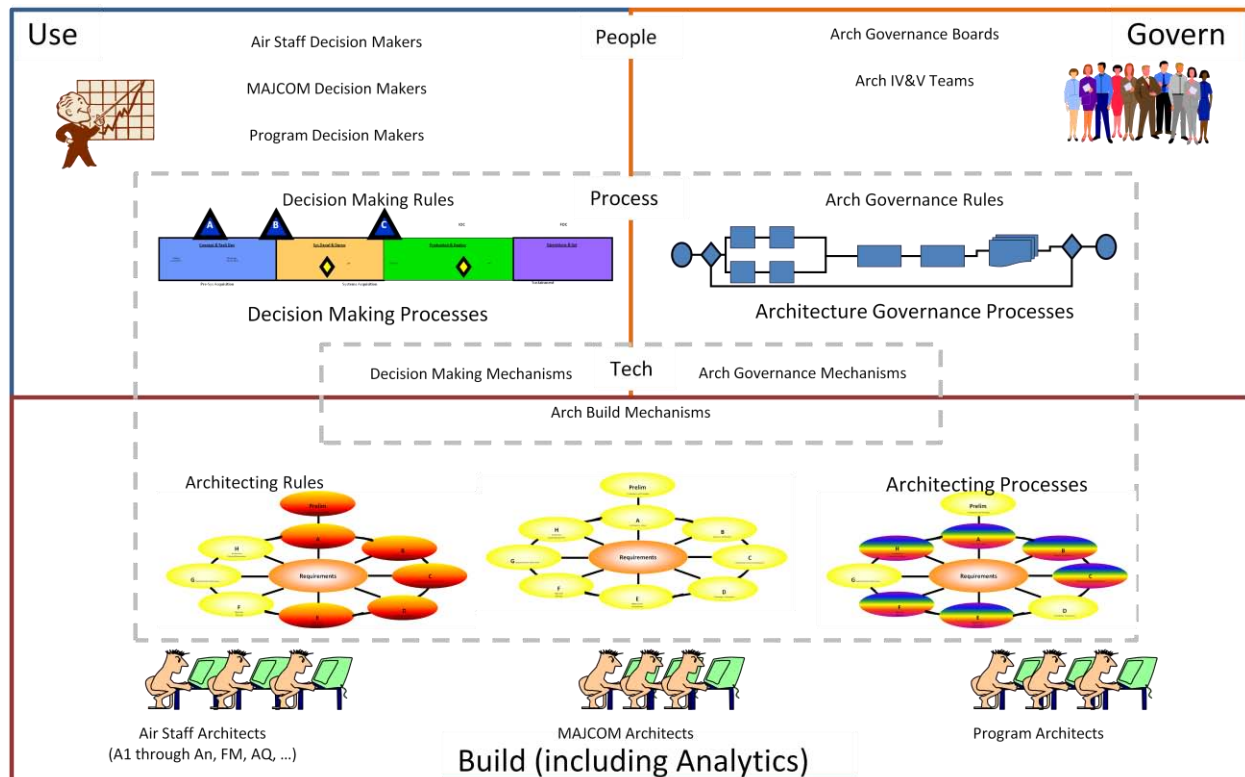


Figure 1: Architecting Environment

Use Environment. The Use environment includes people, processes, and technologies involved in AF decision-making. Those involved in the decision-making processes are the “users” of architecting processes. These decision-making processes include processes such as those used by AF panels in the AF Corporate Structure (e.g. the acquisition or Capabilities Review and Risk Assessment processes). Examples where architecture is used in this environment include describing warfighting requirements, identifying duplications and gaps, providing analysis for Program Objective Memorandum (POM) efforts, and ensuring compliance for processes such as JCIDS. In the Use environment, architecture is a tool to support decision-making and is described from an architect’s perspective as “governing with architecture.”

The Govern Environment. The Govern environment consists of people, processes, and technologies that govern the quality of the AF architectures. Members in this Govern environment are those AF bodies that utilize the architecture assessment and certification processes. These processes and associated technologies are focused on “governing architectures” and ensuring that architectures are fit for their intended purpose.

Build Environment. Finally, the Build environment includes those people, processes, and technologies that support architecting for the various areas such as Air Staff (including direct reporting units), Major Commands (MAJCOMs) (including forward operating agencies and centers), and Programs. Architects and analysts are members of this environment. It not only

includes building architectures, but analyzing them and constructing reports in support of the decision-making processes.

C. Description of the Military Challenge

As well as confronting enemy air, space and cyberspace power in the future, the AF will have to deal with austere budget cycles, along with increasing complexity and interdependencies. Where it may once have been possible for decisions regarding individual systems or capabilities to be made in isolation, the continued drive for networked capability means that it is essential for decision-makers to consider the impact on the wider network. The ability to make objective decisions in this highly-complex, networked environment, will determine how well the AF is positioned to dominate air, space, and cyberspace in the future.

D. Desired Effects

The desired effect is to optimize the AF's contribution to full spectrum dominance, by providing decision-makers with objective analysis of the current and future AF enterprise.

Section III – Context

A. Time Horizon

This AF CONOPS focuses on the Planning, Programming, Budgeting and Execution processes and is designed to facilitate the associated decisions through objective, structured, and interrelated information. Through continued decision-support across the AF area of responsibility, the time horizon of this CONOPS and its iterations are a continual process. The planned initial effect is the FY12 POM and FY13 execution years.

B. Assumptions

This CONOPS assumes that the complexity of the Federal, DoD, and USAF organizations requires an objective decision-support “toolbox” to effectively manage scarce resources. Additionally, it is assumed that one of the tools in this “toolbox” is generically identified as architecting. Furthermore, the assumption is that at every layer of the enterprise, architectures are required to support that particular layer's decisions.

C. Risks

The following risks were derived from a community of stakeholders: misallocated resources, sub-optimal AF capabilities, unstable economies (across layers), exposure to threats, loss of architecting efficiency, loss of ability to audit, loss of credibility, loss of enterprise efficiency, and loss of funding. These categories are briefly explained as:

- Misallocated resources refers to poorly aligning people and funds to achieve identified goals
- Sub-optimal AF capabilities refers to the ineffectual ability to achieve desired effects
- Unstable economies refers to negative second and third order economic effects of AF investment
- Exposure to threats refers to a heightened risk environment across operational levels
- Loss of architecting efficiency refers to wasted architecture resources
- Loss of audit-ability refers to clouded traceability and measurability of decisions and resources
- Loss of architecture credibility refers to low architecture data/information confidence
- Loss of enterprise efficiency refers to decreased mission effectiveness
- Loss of funding refers to reduced enterprise resources

In response to the identified risks, the following risk mitigations were derived: relevant and effective application of architecture, govern architecture with appropriate communications, effective architectural content and relationships, enhance architectural quality. These categories are briefly explained as:

- Relevant and affective application of architecture refers to the appropriate development use and governance of architecture
- Govern architecture with appropriate communications refers to the appropriate standardization of architecture development and known placement within the federated architecture community
- Effective architectural content and relationships refers to the appropriate federation and integration of architectures to support the identified purpose and scope
- Enhance architectural quality refers to improving the data used, structure of, and analysis of architectures.

These risks and mitigations have been placed into a risk identification and mitigation table. This table's identified mitigation plans and risks are addressed in this CONOPS.

Table 1 Risk Identification and Mitigation¹

Risk ID	Risk Description	Preliminary Risk			Mitigation	Residual Risk		
		Effect	Frequency	Impact		Effect	Frequency	Impact
1	Misallocated resources	Critical	Frequent	Extremely High Risk	Relevant & Effective Application of Architecture	Marginal	Seldom	Low Risk
2	Sub-optimal USAF Capabilities	Critical	Occasional	High Risk	Relevant & Effective Application of Architecture	Marginal	Unlikely	Low Risk
3	Unstable Economies	Catastrophic	Seldom	High Risk	Relevant & Effective Application of Architecture	Critical	Unlikely	Low Risk
4	Exposure to Threats	Critical	Frequent	Extremely High Risk	Relevant & Effective Application of Architecture	Marginal	Seldom	Low Risk
5	Loss of Architecting Efficiency	Critical	Frequent	Extremely High Risk	Govern Architecture with Appropriate Communications	Negligible	Unlikely	Low Risk
6	Loss of Audit-ability	Marginal	Likely	Moderate Risk	Effective Architectural Content & Relationships	Marginal	Unlikely	Low Risk
7	Loss of Architecture Credibility	Critical	Frequent	Extremely High Risk	Enhance Architecture Quality	Marginal	Seldom	Low Risk
8	Loss of Enterprise Efficiency	Critical	Likely	High Risk	Relevant & Effective Application of Architecture	Marginal	Seldom	Low Risk
9	Loss of Funding	Catastrophic	Likely	Extremely High Risk	Govern Architecture with Appropriate Communications	Critical	Occasional	High Risk

Section IV - Employment Concept

A. High-Level Context

The high-level context that relates to AF architecting activities is depicted in Figure 2. The key lanes of activity include decision-making, architecting, and transformation processes, which occur at multiple levels. For example, the Department of Defense (**DoD**) level includes decision-making processes at the **department** level and covers architecting that needs to occur at the **department** level to support the decision-making processes and guide the **department** level changes. Likewise, within the AF there are key decision-making processes at the Air Staff, MAJCOM, and Program levels. These processes can all be inter-related through the population and use of architecture data.

The relationships between the architecting activities are depicted, in Figure 2, with different arrows that have specific foci. Between the architecture and decision-making processes, the red

¹ The Open Group Architecture Framework (TOGAF) 9.0 Part III Risk Management (<http://www.opengroup.org/architecture/togaf9-doc/arch/>)

arrows denote architecture providing decision-support. Likewise, the blue arrow between the architecture and transformation denotes the concept that architecture must guide the transformation in such a way as to maintain the intent of the decision made. Finally, the purple arrow denotes a two-way relationship, one of which is architecture compliance, and the other is reflection between architectures. Architectures should adhere to the rules of other architectures if there is interdependency – this is compliance. When there is interdependency between architectures this should be appropriately represented in each architecture – this is reflection.

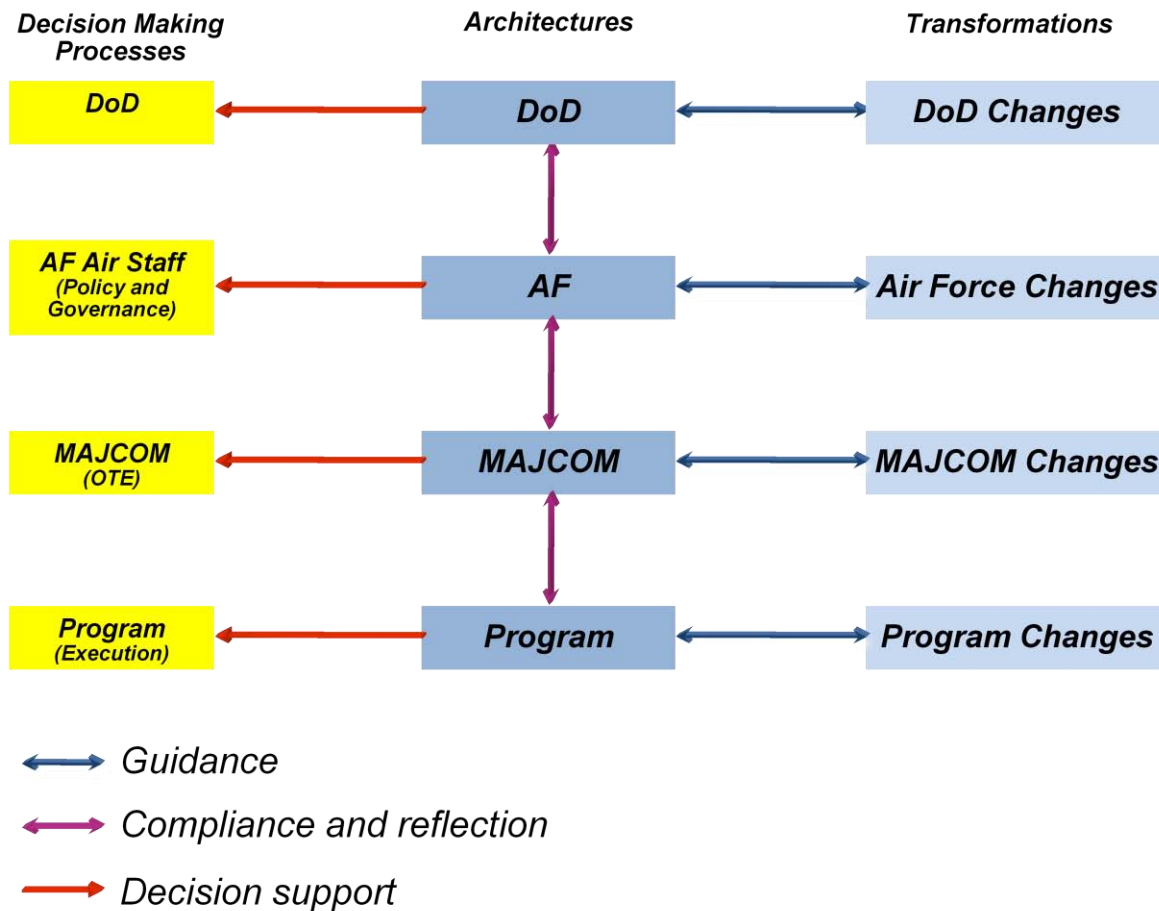


Figure 2: High Level Relationships

B. Use, Build, and Govern Concepts

Use Concept. Figure 3 highlights the two major uses of architecture: to support decision-making at the various related levels and to guide the transformation associated with any decision. To serve these purposes, architecture data must be collected specifically to support the needs of decision-makers and must include the rules established that ensure the intent of decisions are realized. As the types of decisions made depend on the level (i.e., policy decisions at the higher levels and program/engineering decisions at the lower levels) it is not possible to create a single template for all architectures, but there will be a minimum set of standard architecture data that

spans all architectures to ensure decisions are implemented throughout the entire decision-making chain.

The linkage between the decision-making and the transformation is shown in Figure 3. Without maintaining those linkages and interdependencies, it is unlikely that the intent of the original decision will be met. Architectures hold the context and rules necessary to maintain the interdependencies. As such the architecture should be used to guide and govern the transformation in the context of the decision made. This re-enforces the concept of governing with architecture.

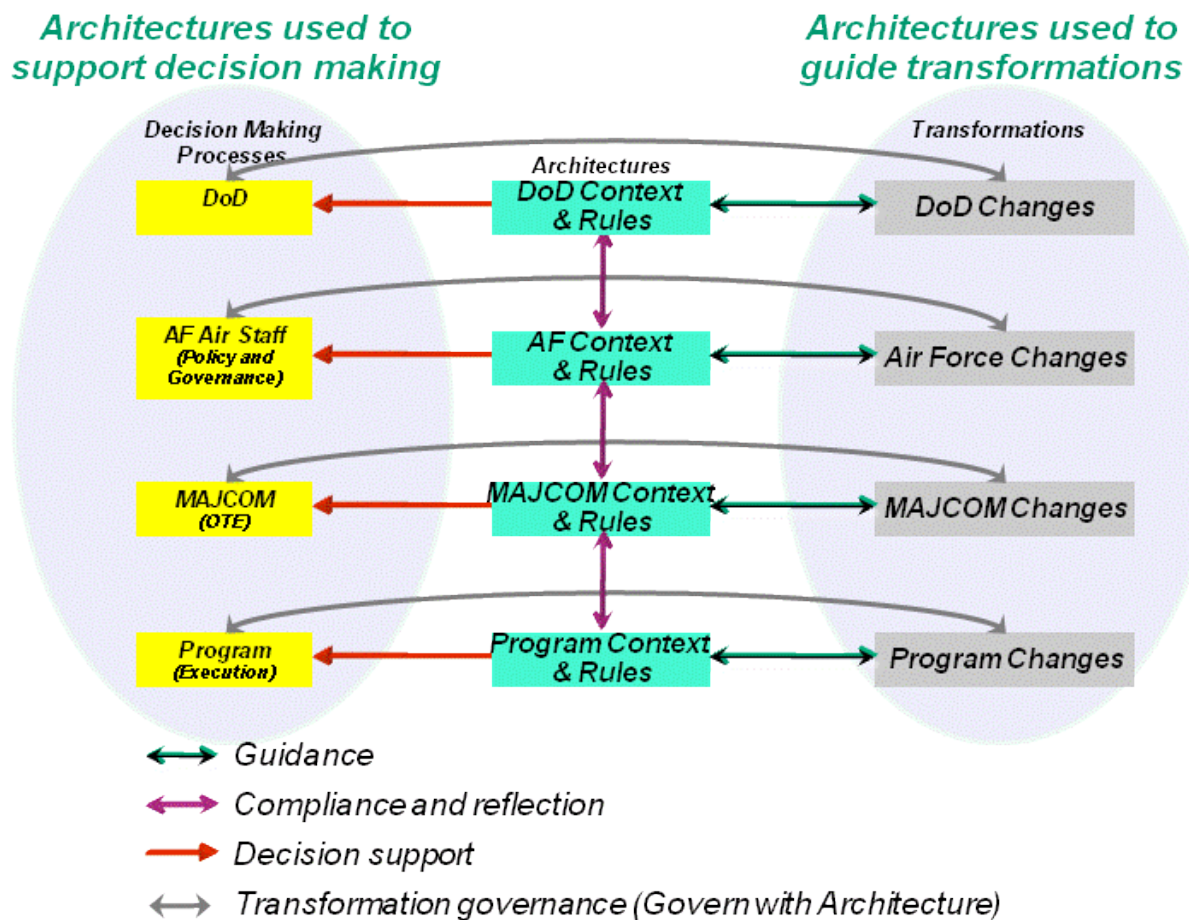


Figure 3: Use of Architectures

Build Concept. The architectures in Figure 4 are built to support decision-making and guide the resulting transformation. They must also be built to ensure the appropriate context is maintained to deliver the intended outcomes, and that rules are communicated to partnering organizations that will help realize those outcomes. Fundamentally, architecting must not be done in a vacuum – it must be done collaboratively and the architecting process must include stakeholder involvement. The stakeholders must include decision-makers, those that will develop and deploy the transformation, and those partnering organizations that support the transformation.

Architectures built for purpose of supporting separate, yet related, decision making and transformations

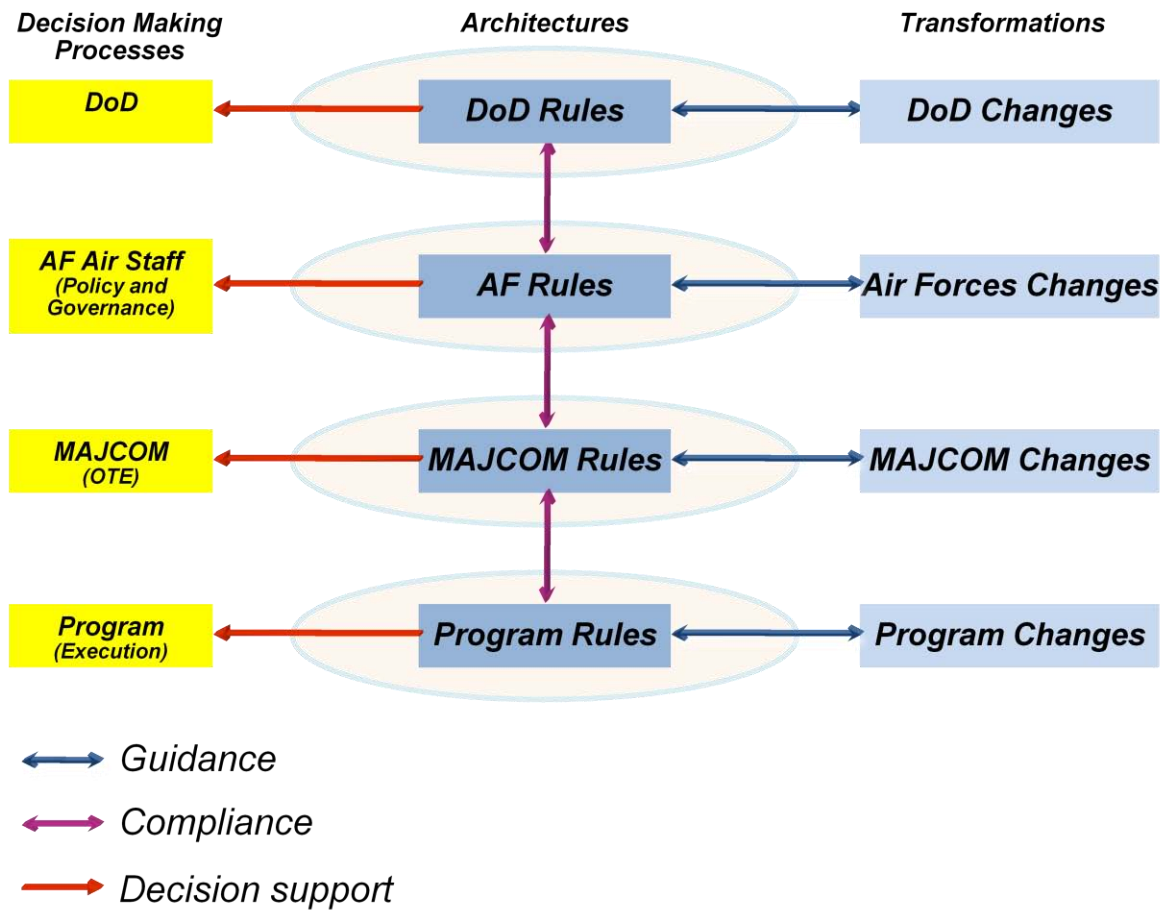


Figure 4: Building Architectures

Govern Concept. Architecture governance is about governing architecture quality, to ensure outcomes are realized. Figure 5 depicts the major areas associated with architecture governance, which is accomplished in two dimensions. First, there is a ‘fit-for-purpose’ assessment to ensure the quality of data in the architecture supports the appropriate decision-making process and guides the transformation effort. This should be accomplished through stakeholder review of the architecture data. The second type of assessment addresses compliance to ensure the architectures are complete, adhere to the rules of related architectures, and the rules of developing architectures, including being fit for inclusion into the AF Enterprise Architecture (EA) (otherwise referred to as ‘fit-for-federation’). This ensures that architectures can be easily used and understood – as required by their inter-relationships.

Architectures assessed as “fit for purpose” and “compliance” to ensure decisions stick

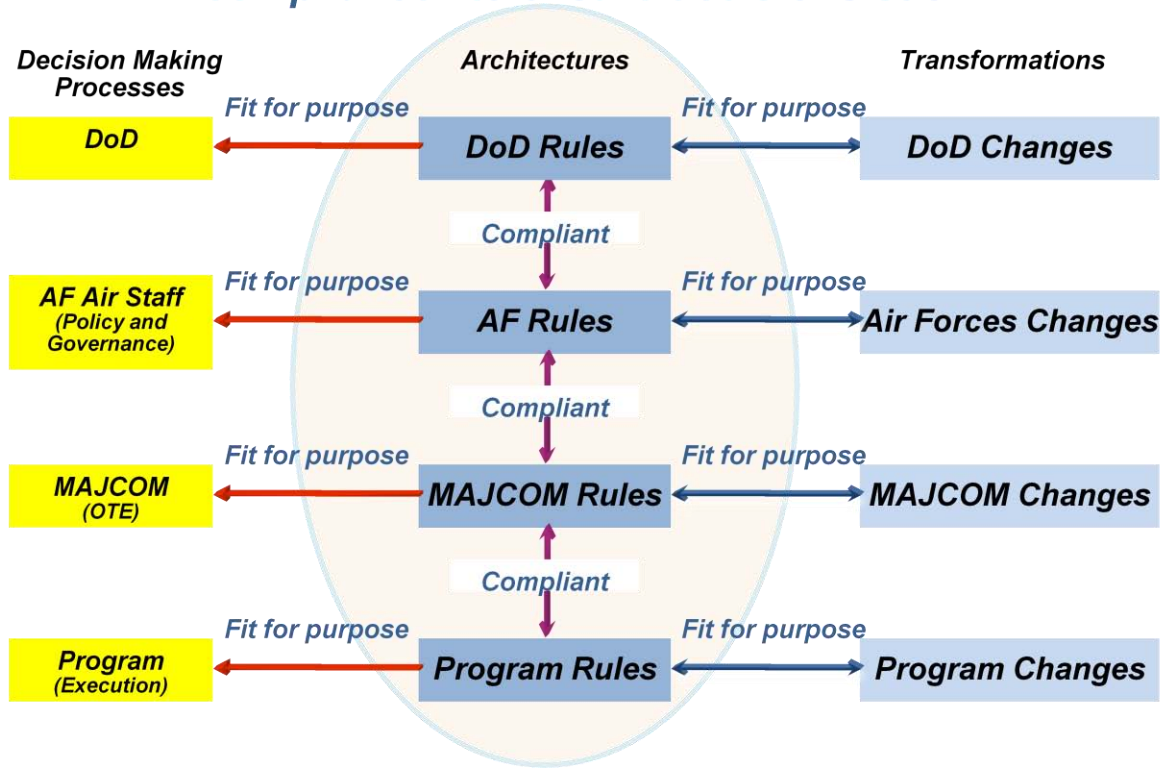


Figure 5: Governing Architectures

C. Critical Capabilities

The benefits of architecting can only be achieved when the following three critical capabilities are functioning and interacting as required.

Effective Decision-Support Capability. In order to achieve the desired end-state, architectures must be requirement driven. Architects must actively engage with the decision-making community, in order to articulate the value of using architecture as a tool for objective decision-making, and to work with decision-makers to identify the scope and purpose of the architecture. Architects must ensure that the product delivered to the decision-maker is accurate, understandable, and meets the agreed-upon requirements.

Optimal Build Capability. In order to meet the requirements of decision-makers, it is essential that architectures be built to a common, high standard, using consistent, repeatable processes and procedures. Any data used to build the architecture must be shareable, in standard formats, and accurate.

Functioning Governance Capability. To assure the quality of the architectures produced, a functioning governance capability and appropriate processes must be in place. This governance

must ensure that architectures are fit-for-purpose and are fit-for-federation within the wider AF EA and DOD EA. A certification process will ensure the information decision-makers are using is accurate and trustworthy. This certification process will also ensure architectures can be easily discovered and re-used wherever possible through the use of architecture repositories.

D. Enabling Capabilities

There are enabling capabilities the AF must possess in order to support the critical capabilities identified above.

Ability to architect consistently in the Air Force. Defined architecting roles, responsibilities and processes are required across the AF architecture community. To architect properly, organizations must possess the appropriate architecting tools (which are based on common commercial standards), including modeling tools that support standards, and certified architects. Further, architecting organizations must maintain architecture configuration control over the architectures within their purview. Additionally, an official USAF Architecture Community of Practice will be established to support the collection of lessons learned, best practices, and information sharing. Policy will also direct basic architecture training for appropriate decision-makers at all levels.

Ability to optimize architecting activities. AF architectures must consist of consumable architecture data and content, which must be accessible, understandable and shareable. Additionally, there must be a means to develop and formally approve that data/content. To assist with this effort, the Air Staff will maintain approved, reference models for use in architecting efforts. Additionally, the structure of the AF Architecture Repository (AFAR) will be standardized to allow the discovery and reuse of existing artifacts. The AFAR will support interoperability with the Defense Architecture Repository System (DARS). To further support reuse, architecture data structures for a minimum set of data will be standardized.

Ability to optimize compliance processing and quickly ascertain applicable criteria. The AF will optimize the compliance assessment processes and identify applicable compliance criteria. The capability must exist to assess any architecture for compliance with any other architecture. Where non-compliance is identified the AF Chief Architect will recommend that the AF Chief Information Officer pursue measures to cease execution of program funding until compliance is established.

Effective Communications. The benefits of architecting must be clearly articulated to, and understood by, decision-makers. Architecting success stories, which demonstrate how architecting has been effective in driving down costs and increasing capability to the warfighter, must be captured and communicated. Crucially, architects must refrain from using architecture-

specific language when dealing with non-specialists and must seek to engage decision-makers using clearly understood language. In effect, if the benefits of using architecture cannot be clearly articulated and understood, it will not be relevant.

E. Sequenced Actions

Full operating capability will be achieved when the use, build and govern environments are fully functioning and operating synergistically. To migrate from the current capability to the full operating capability, those procedures and processes that are already optimized and functioning will continue to be used. Action will be taken to amend or implement those capabilities that are either sub-optimal or lacking in total. As the overall capability grows incrementally in response to new requirements and the quality of the underlying data improves in response to the governance structure, the architecting community will be able to answer ever more complex questions, across the AF enterprise, with ever-increasing confidence and accuracy.

The sequence of actions that will improve the AF architecting capabilities are depicted in Figure 6. There are connected sequences in each of the use, build, and govern environment, resulting in a cycle that begins and ends in the use environment. Each sequence is described below starting with the sequence in the “use environment” which is focused on understanding the needs of the decision-making process.

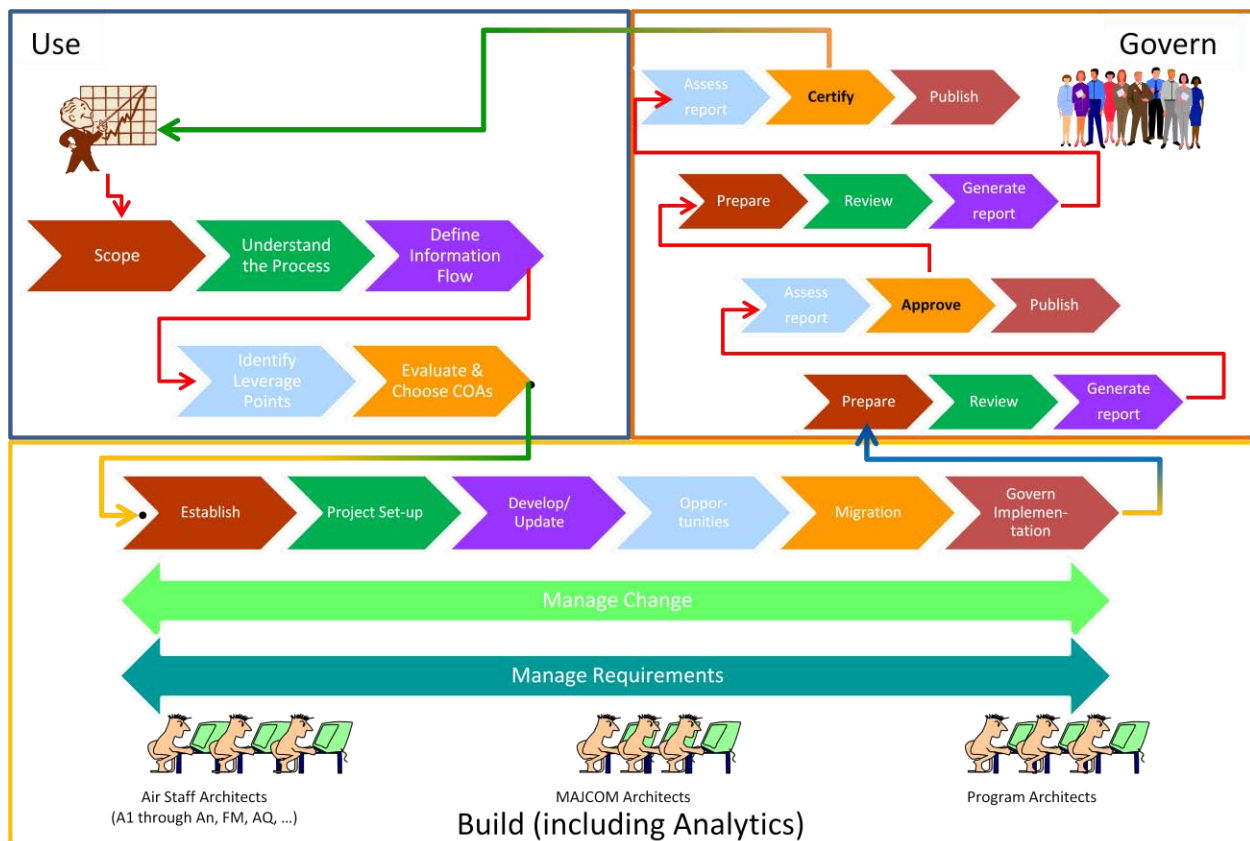


Figure 6: Sequenced Actions

1. Use Environment

To realize the potential of architecture, it is essential to ascertain the information requirements of decision-makers and leverage the power of the data within architecture repositories to meet those requirements. This method, shown in Figure 7, can be replicated across the AF by architecture support organizations at all levels and should be used in the front end of any architecture development effort.

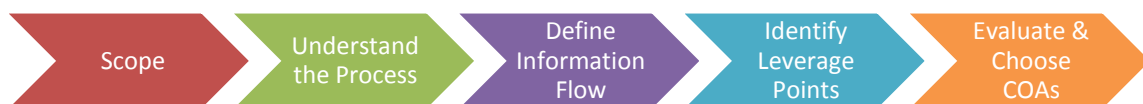


Figure 7 Architecture Link to Decision Support Processes

- Scope.** The first step in leveraging architecture is to scope the problem. Architecture support personnel must determine what types of information are required by decision-makers in a given process.

- **Understand the Process.** In order to gain context of the problem the architecture support personnel must gain an understanding of the process in which the complex decisions are made.
- **Define Information Flow.** After understanding the process, the architecture support team can begin to define the information flows resident in the process.
- **Identify Leverage Points.** Now, the architecture support team is in a position to determine where in the process architecture can be leveraged to fully inform the decision makers being supported.
- **Evaluate and choose Course of Action (COA).** Finally, the architect evaluates the information and generates a course of action to deliver the architecture support necessary for the decision-maker.

2. Build Environment

The following sequenced actions², as shown in Figure 8, address the “build environment.”

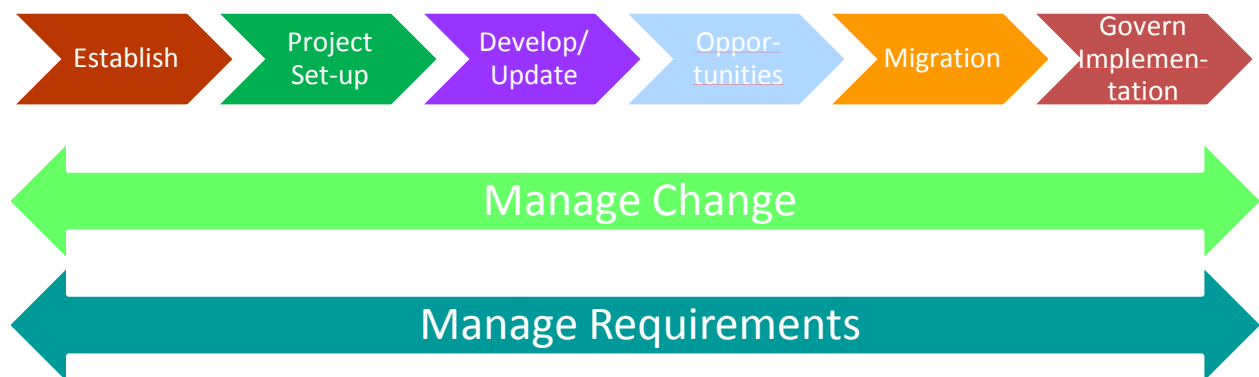


Figure 8: Architecture Build Process

- **Establish Framework and Principles.** This action ensures commitment to success by establishing the expectations, framework and principles for proceeding. The following must also be documented: constraints on the work, the people responsible for performing architecture work, where they are located, and their responsibilities, the scope and assumptions (particularly in a federated architecture environment), and methods to be employed.
- **Develop Architecture Project and Context.** The next action ensures that this architecture development has proper recognition and endorsement from the management of the enterprise, as well as the support and commitment of the necessary line management.

² This set of sequenced actions is based on TOGAF™ 9.0. TOGAF is a trademark of The Open Group.

- **Develop/Update Required Architecture Views.** The next action is the core architecture development and/or maintenance activity, which should be planned according to the specific needs of the stakeholders.
- **Identify Opportunities and Solutions.** Once the architecture is complete, the next step is to move toward the transformation. Initial steps include understanding, evaluating and selecting the options identified in the development of the various target architecture views.
- **Create Migration Plan.** The objective of this next action is to sort the various implementation projects into priority order. Activities include assessing the dependencies, costs and benefits of the various migration projects.
- **Govern Implementation.** After the migration plan has been established (funded and allocated) it is time to communicate the architecture compliance criteria for each implementation project and construct an architecture agreement that will be used to govern the overall implementation and deployment process.
- **Perform Change Management.** Throughout the sequence of actions, it is important to establish and execute an architecture change management process.
- **Engage Requirements Management.** There will also be continued engagement with the requirements management process to ensure requirements are identified, stored, and represented throughout the relevant sequenced actions.

3. Govern Environment

The following two sequenced actions address the “govern environment.” The first set of sequenced actions addresses architecture approval, while the second set addresses architecture certification. The following sequenced actions³ address the “govern environment.”

Approval. The sequenced actions depicted in Figure 9 ensure the architecture is fit-for-purpose.



Figure 9: Architecture Approval Process

- **Prepare.** The preparation action ensures that all the logistics issues are addressed prior to review. This includes scheduling, obtaining resources for the review, communicating and planning.
- **Review.** The next action is to hold the review in a facilitated session and ensure formal collection of feedback. The focus of this review is the content of the architecture.

³ This set of sequenced actions is based on TOGAF™ 9.0. TOGAF is a trademark of The Open Group.

- **Generate report.** This action includes analyzing the feedback and documenting the findings in a formal report.
- **Assess report.** The assess action takes the report and the intended purpose of the architecture and documents whether the architecture is good enough to proceed despite the findings – this assessment is an architecture risk assessment. This action will produce an approval recommendation in the form of an approval letter (regardless of whether the approval is positive or negative).
- **Approve.** The approve action is the review and sign-off of the approval letter by the approval authority.
- **Publish.** The final action is the publication of an approved architecture in the appropriate repositories.

Certification. The sequenced actions depicted in Figure 10 ensure the architecture is fit-for-federation.



Figure 10: Architecture Certification Process

- **Prepare.** This action ensures that the certification package is created and sent to the appropriate architecture certification authority.
- **Review.** The architecture certification authority reviews the architecture against the AF certification criteria.
- **Generate report.** This action includes analyzing review feedback and documenting the findings in a formal report.
- **Assess report.** The assess action takes the report and the intended purpose of the architecture and documents whether the architecture is good enough to proceed despite the findings – this assessment is an architecture risk assessment. This action will produce a certification recommendation in the form of a certification letter (regardless of whether the approval is positive or negative).
- **Certify.** The certify action is simply the review and sign-off of the certification letter by the architecture certification authority.
- **Publish.** The final action is the publication of a certified architecture in the appropriate repositories.

F. End State

The end state will be achieved when the architecture capability described is integrated into AF decision-making processes and enables AF decision-makers to make objective decisions concerning capability enhancement and resource allocation across the AF enterprise.

G. Top-Level Activity Models

The High Level Activities depicted in Table 2, are derived from the roles and responsibilities of organizations found in AF Architecting Policy (AFPD 33-4 and AFI 33-401). Each activity corresponds with an organizational level and the respective Architecture Operational Environment (Build, Use and Govern).

Table 2 High Level Activities

		Architecting Environments		
		Use	Build	Govern
O R G L E V E L	DoD	• Use architecture for decision-making	• Develop/maintain DoD architectures • Develop/maintain DoD Architecture Repository System	• Establish architecture policy • Establish governance structure • Establish architecture strategy • Establish compliance criteria
	AF Air Staff	• Develop design/build plan • Assess architectures • Analyze architecture impact • Use architecture for decision making • Evaluate AF Enterprise Architecture • Analyze interdependencies • Train users • Communicate to domains	• Develop/maintain AF architectures • Develop/maintain DoD Architecture Repository System	• Establish AF architecture policy • Establish AF governance structure • Establish AF architecture strategy • Establish compliance criteria • Certify architectures
	MAJCOM	• Evaluate COTS products for interoperability • Develop, recommend and maintain AF Architecture Technical Standards • Train users • Track C2 shortfalls (ISPs, ICDs, analyses) • Use architecture for decision making • Conduct architecture assessments • Identify related architectures	• Develop design/build plan • Prepare ISP • Develop/maintain architectures • Develop process improvements • Implement architecture as necessary • Build integrated baseline architecture models	• Implement AF Architecture Policy • Monitor use of architecture and plan

		• Assess sub-architectures • Analyze architecture impact • Analyze interdependencies • Provide architecture training • Communicate to domains • Assess architecture repository		
	Program	• Identify related architectures • Develop design/build plan • Train users	• Prepare ISP • Develop/maintain architectures • Develop process improvements • Implement architecture as necessary • Build integrated baseline architecture models	• Comply with architecture governance

Section V – Summary

While AF decision-makers are faced daily with having to make decisions affecting the whole of the AF, which is increasingly complex and interdependent, they often have to do so without knowing the second and third order effects of such decisions. Although the use of architecture has already had some success in supporting such decision-making, objective decision-making can only be achieved by integrating the use of architecture into decision-making across all levels of the AF.

This CONOPs provides an employment concept for the use of architecture within the AF and identifies those critical and enabling capabilities required to realize the benefits of using architecture in the decision-making process. Fundamentally, the CONOPs recognizes that by optimizing the way architectures are built, used and governed, AF decision-makers will be able to make objective decisions regarding capabilities and resources, therefore optimizing the AF contribution to full spectrum dominance for the Joint Warfighter.