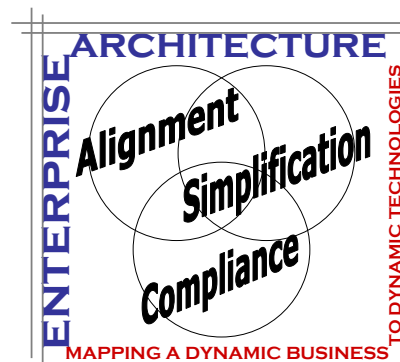

Information Services Architecture Council Charter

COMPANY IS Solution Architecture

Version 0c
November 28, 2005

DRAFT



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IS ARCHITECTURE COUNCIL

The IS Architecture Council is a collaborative team comprised of leaders representing all IS technology teams. It is a steering group that oversees all significant IS technology changes within COMPANY, sponsors research and proof-of-concept projects, participates in annual reviews of the technology portfolio, leads TQA reviews and recommends technology strategy and solutions.

The core members of this team include the CIO, members of Solution Architecture, and selected technology teams within IS. Extended members are Subject Matter Experts who are included as needed.

MISSION

The mission of this team is to provide COMPANY IS direction on information technology (IT) strategy, mitigate technology risks and guide projects on appropriate architecture designs and decisions.

SCOPE

The scope of this team is all COMPANY information technology.

ROLE

A key element in a successful Architecture Governance strategy is a cross-organization Architecture Council to oversee the implementation of the strategy. This body will be representative of all the key stakeholders in the architecture, and will include a group of executives responsible for the review and maintenance of the overall architecture.

The cost of establishing and operating the Council will be more than offset by the savings that accrue as a result of preventing one-off solutions and unconstrained developments across the enterprise, which invariably lead to:

- High costs of development
- High costs of operation and support:
 - Numerous run-time environments
 - Numerous implementation languages
 - Numerous interfaces and protocols
- Lower quality
- Higher risk
- Difficulty in replicating and re-using solutions.

GOALS

COMPANY operates in a dynamic and competitive environment. This environment demands agility from any company that hopes to survive and thrive. Two competing forces are driving COMPANY's information technology decisions:

- **New technologies** are constantly being introduced to (or are opportunities for) our environment as the demands on information systems increase. New technologies require new skills and increase the complexity of managing our environment.
- Simultaneously, in order to compete we must implement and operate solutions with **greater efficiency** maximizing in a responsiveness and minimizing costs.

The goals of the Architecture Council, therefore are to find ways to strike an appropriate balance between these competing forces by:

- Aligning technology decisions with the business strategy – Ensuring technical platforms choices are consistent with the needs of the business.
- Simplifying our technical environment – Using standard technologies to best leverage the skilled resources who implement and manage COMPANY's information technologies.

OBJECTIVES

To achieve the goals, the IS Architecture Council will specifically focus on the following objectives:

- IT Strategy & Architecture Definition – defining and maintaining the IT Technological **Direction** and the IT Architectures according to new business drivers and industry trends
- IT Architecture **Governance** – managing the process for realizing the target architectures through ensuring IT investments appropriately incorporate the architecture decisions
- IT Architecture **Guidance** – providing assistance to the IS delivery teams in interpreting and leveraging the Strategy & Architecture
- **Communication** – Ensuring two-way exchange of information between Strategy development community and implementation community

RESPONSIBILITIES

The responsibilities of the Council include the following:

- Consistency between sub-architectures
- Identifying reusable components
- Flexibility of enterprise architecture
 - to meet changing business needs
 - to leverage new technologies
- Enforcement of architecture compliance
- Improving the maturity level of architecture discipline within the organization
- Ensuring that the discipline of architecture-based development is adopted
- Providing the basis for all decision-making with regard to changes to the architectures
- Supporting a visible escalation capability for out-of-bounds decisions

Further responsibilities from an **operational** perspective include:

- All aspects of monitoring and control of the architectures contract
- Meeting on a regular basis
- Ensuring the effective and consistent management and implementation of the architectures
- Resolving ambiguities, issues or conflicts that have been escalated
- Providing advice, guidance, and information
- Ensuring compliance with the architectures, and granting dispensations that are in keeping with the technology strategy and objectives
- Considering policy (schedule, SLA etc.) changes where similar dispensations are requested and granted: e.g., new form of service requirement
- Ensuring that all information relevant to the implementation of the architecture contract is published under controlled conditions and made available to authorized parties
- Validation of reported service levels, cost savings etc.

From a **governance** perspective, the Council is also responsible for:

- The production of usable governance material and activities
- Providing a mechanism for the formal acceptance and approval of Architecture through consensus and authorized publication
- Providing a fundamental control mechanism for ensuring the effective implementation of the Architecture
- Establishing and maintaining the link between the implementation of the Architecture, the architectural strategy and objectives embodied in the Enterprise Architecture, and the strategic objectives of the business
- Identifying divergence from the architecture and planning activities for realignment through dispensations or policy updates

TECHNIQUES

In order to achieve the enterprise objectives the Council will sponsor and oversee a variety of activities across the IS delivery and support teams.

- Define & communicate **Frameworks** for architecture management, including:
 - Governance model
 - Roles & Responsibilities
 - Organization & Skills
 - Common Terminology
 - Documents Repository
 - Measurements & Metrics
- Establish & ensure conformance to fundamental **Principles** that IS will use to drive technology investments and design decisions.
- Oversee establishment of **processes, standards, and guidelines** to guide teams to create domain-specific Roadmaps.
- Oversee establishment of **Blueprints** for the following architecture domains:
 - Applications
 - Integration
 - Development Lifecycle Tools
 - Network
 - Security
 - Platforms/ OS/ Hardware
 - Data
 - Business Intelligence
- Establish **Roadmaps** for key components in the above domains:
 - 6/ 12/ 18 month views of the model
- Sponsor and monitor **Technical Quality Assurance (TQA)** reviews for a prioritized list of architecturally significant projects.
- Sponsor **Proof of Concept** projects.

PERMANENT MEMBERS (PROPOSED)

Team Name	Member Name
Office of the CIO	Karen Kirwan
Solutions Architecture	Kevin Carberry, Chairman
	Ashvin Vellody
	Andy Sofranos
Infrastructure	Frank Feagans
	Murali Sunkara
	Matt Haynes

MEETING FACILITATION & SUPPORT ROLES AS NEEDED (PROPOSED)

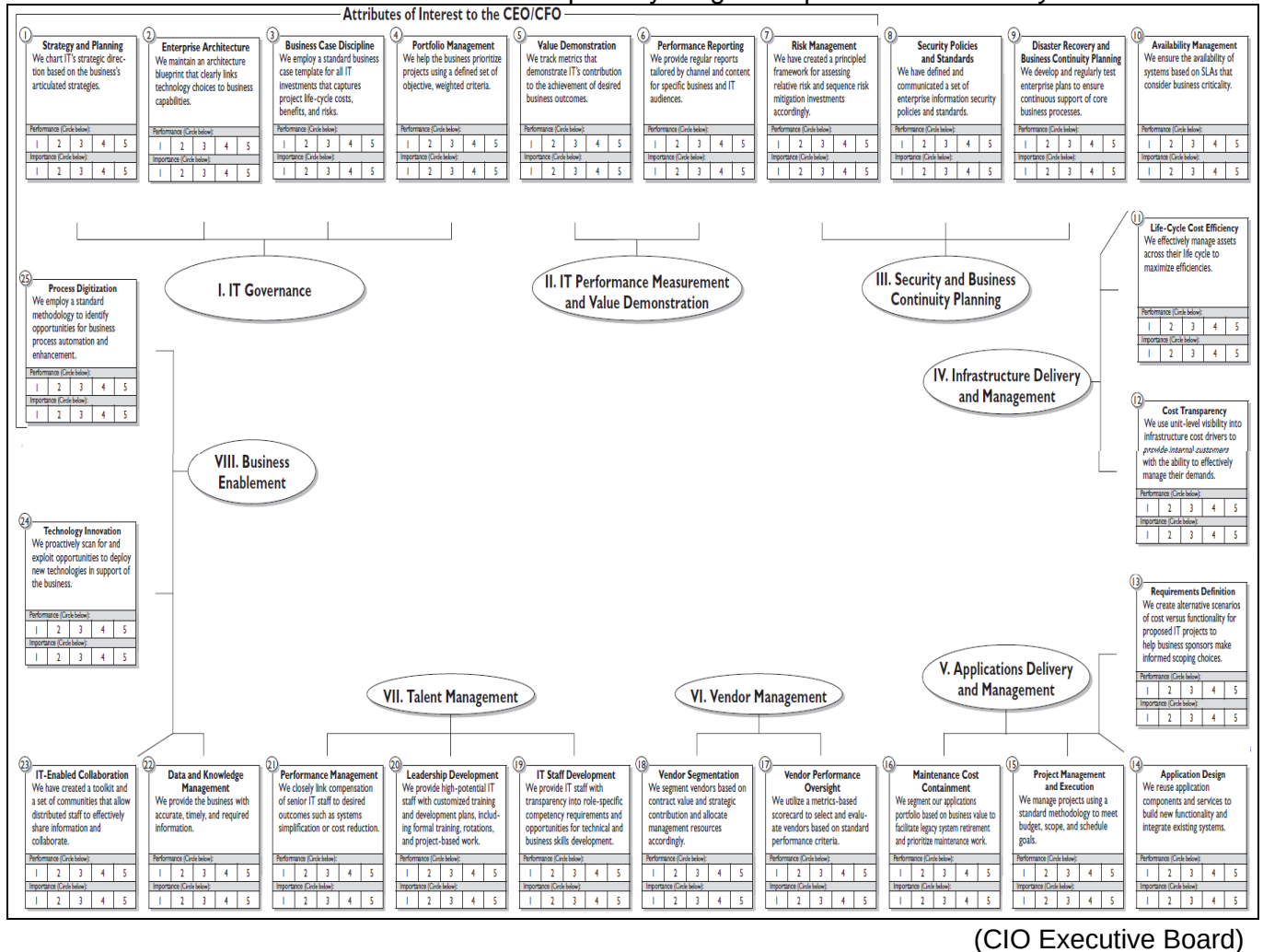
Solutions Architecture	John Redford
	Mark Tumillo
	Mark Dattoli

COUNCIL OPERATING GUIDELINES

CONTEXT

Key Attributes of IT

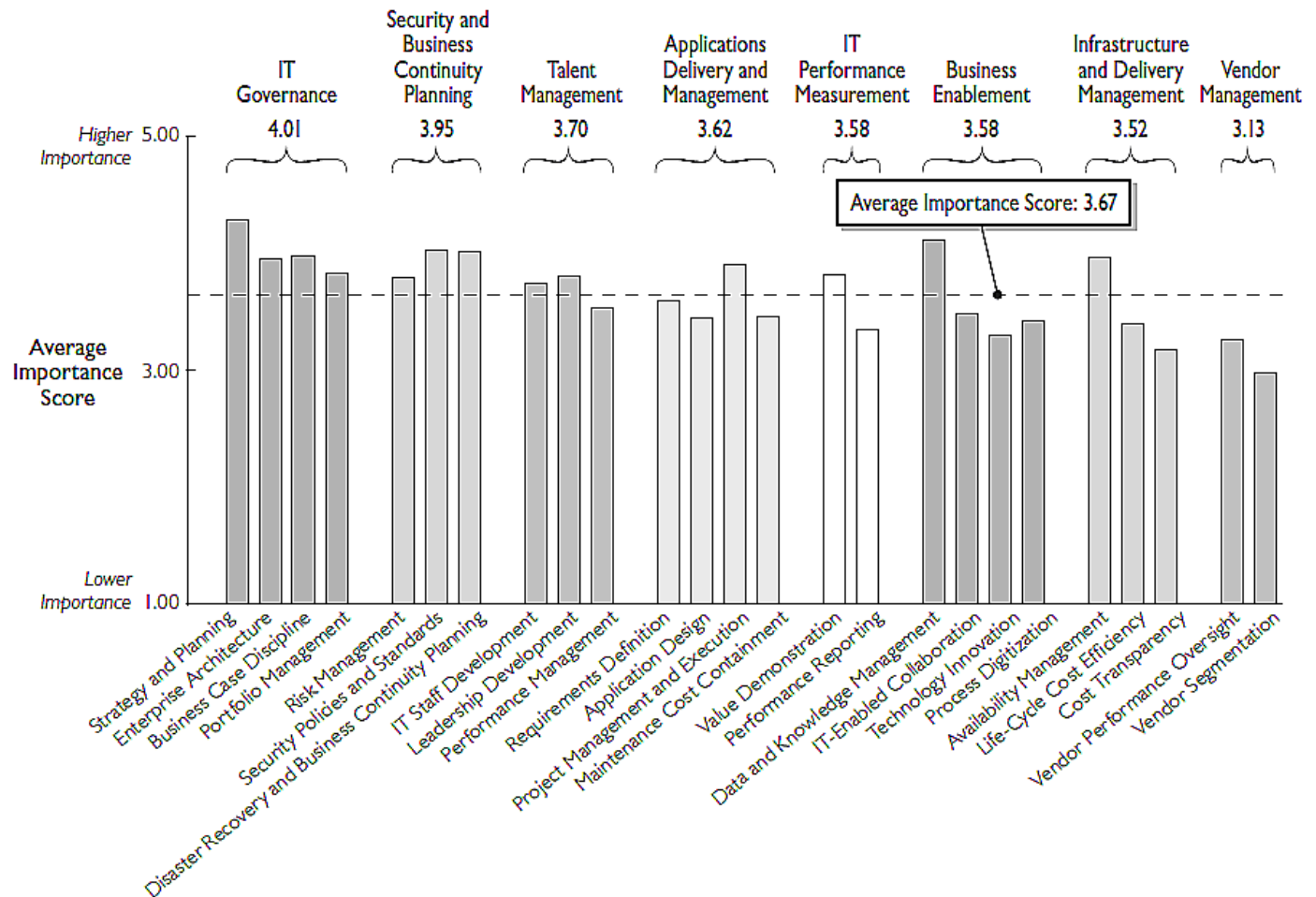
Enterprise Architecture (EA) is one of the 25 “Key Attributes of the World-Class IT Organization” as identified in the CIO Executive Board’s Competency Diagnostic published in January 2005.



In this model, EA (block ②) is shown as one of those attributes of interest to the CEO/CFO, and is included in the I.T. Governance category. It is most closely aligned then with ① Strategy & Planning, ③ Business Case Discipline, and ④ Portfolio Management.

Relative Weightings of the Key Attributes

When these 25 items were ranked by participants in the benchmarking process (189 companies, 829 respondents), the average importance of each resulted in the following:



(CIO Executive Board)

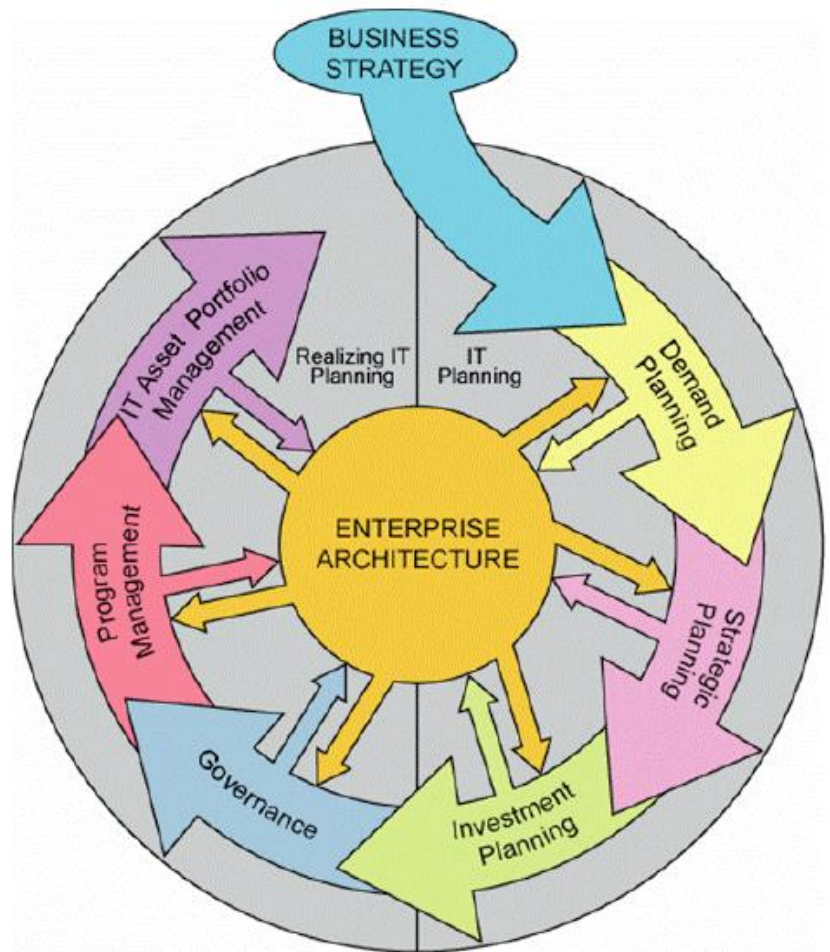
EA was ranked above average in importance, along with all the other items in the IT Governance category, which was the highest-ranked category overall (4.01/5.00). The benchmark also showed that EA was near the very bottom of how well the respondents rated their competence in the area.

EA as a Critical Piece of an Integrated Strategy

GartnerGroup presents the following diagram to depict how EA fits into an overall, integrated strategy.

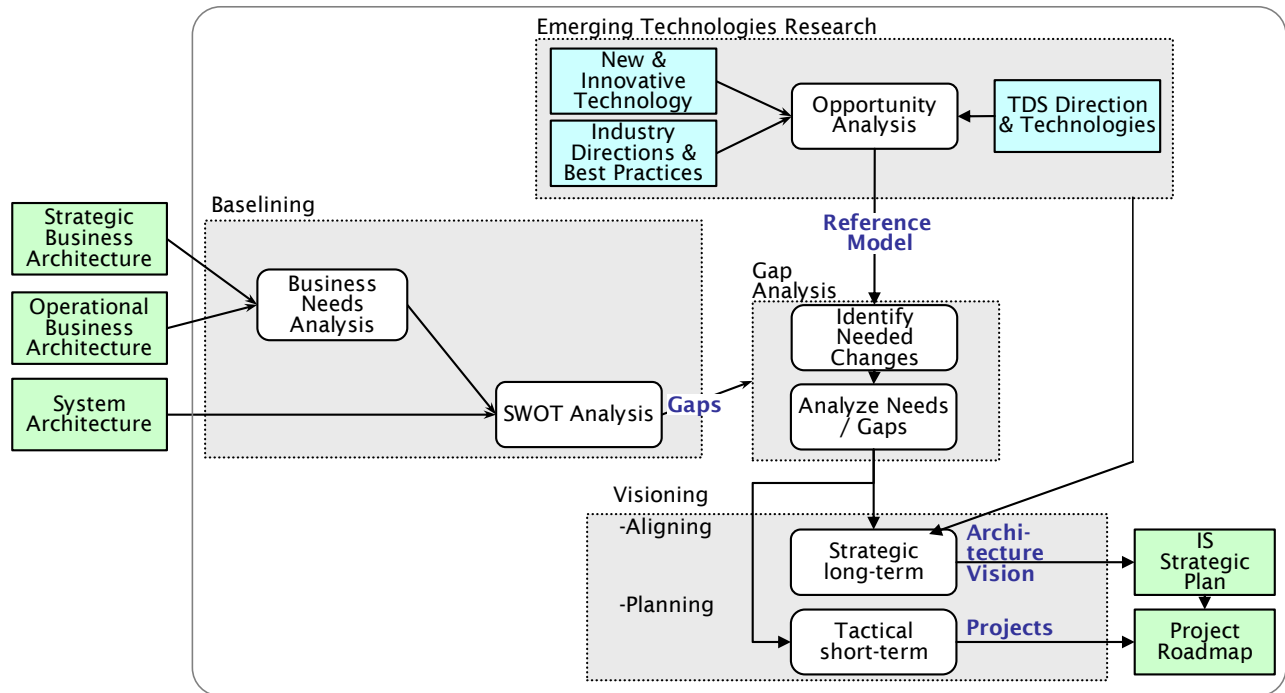
The Ideal Enterprise Architecture: A Critical Piece of an Integrated Strategy

- Enterprise Architecture:
 - A description of a complex system (the enterprise) at a point in time
 - The standards, rules and guidelines that govern the development of new capabilities
- Enterprise architecture focuses on maximizing business alignment and optimizing value provided to the business



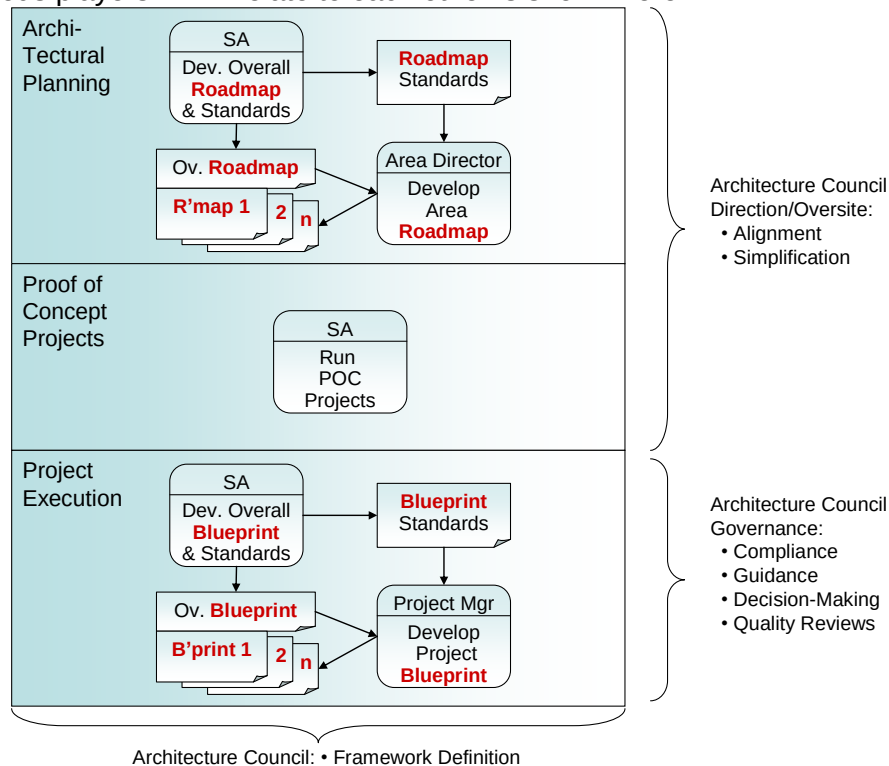
Process Overview: EA Planning

The general process flow for Enterprise Architecture planning is shown here:



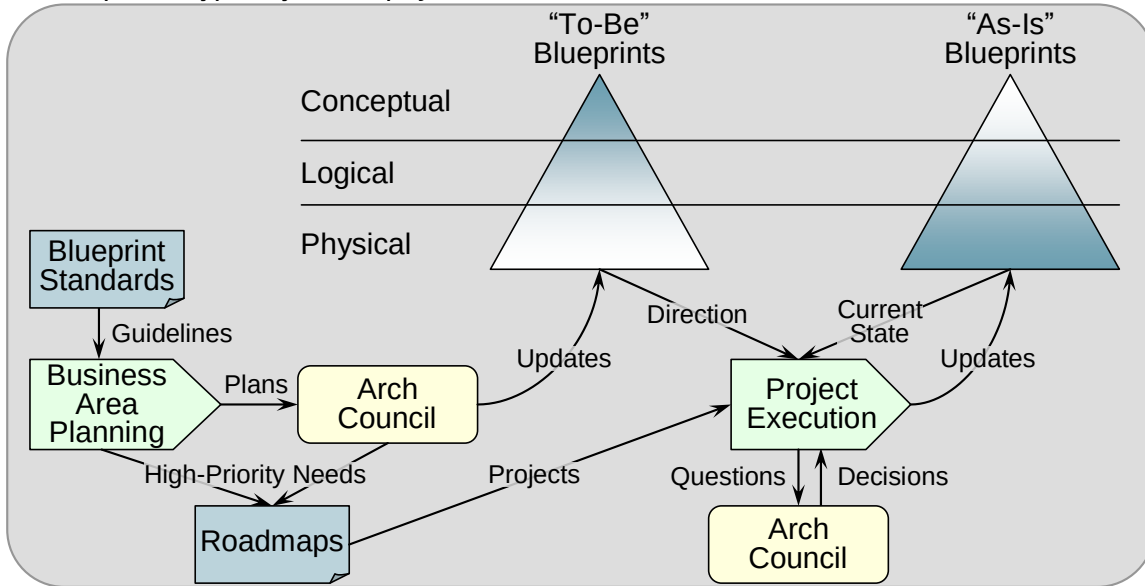
INTERACTIONS

How the various players in EA relate to each other is shown here:



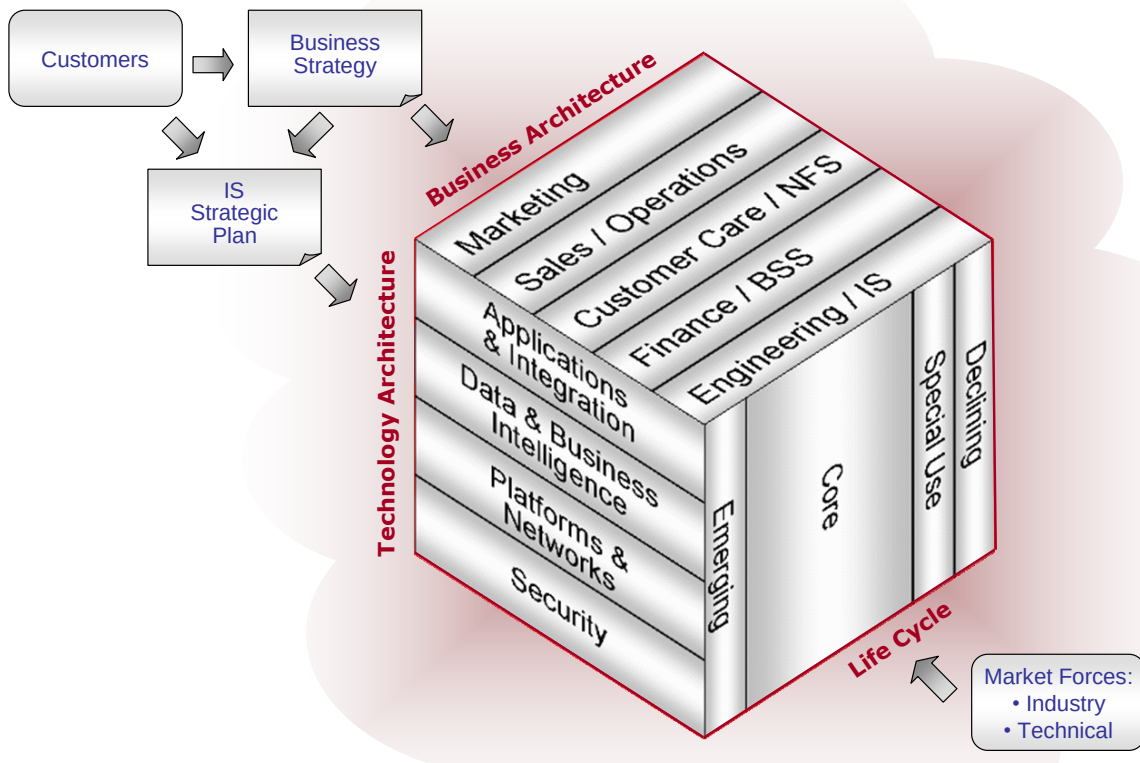
BLUEPRINT DEVELOPMENT

As shown in the diagram below, the Architecture Council, usually acting through the Solutions Architect group, will generally define the “to-be” blueprints. These are typically specified at the conceptual and logical levels. Project managers or systems designers will generally define the “as-is” blueprints, typically at the physical level.



ARCHITECTURE CONTEXT

The following diagram depicts the dimensions of architecture that are managed by the Council.



ARCHITECTURE ROLES

Many IS team members are required to collaborate to ensure our technology environment continues to evolve in a way that is consistent with COMPANY's goals. To that end, the table below summarizes the relationship between key roles across the IS organization, the domain those roles operate within, and the scope of their responsibility.

		Domain					
		Data	Application	Infrastructure	Security		
SCOPE	Enterprise-Wide	Senior Data Architect is responsible for managing Data Architecture and tying to Enterprise Data Definitions and Information Repositories	Senior Application Architect is responsible for managing overall Application Portfolio Direction & contents of the Application Architecture	Senior Infrastructure Architect is responsible for managing Infrastructure Standards and Evolution	Senior Security Architect is responsible for managing Security Policies, Procedures, Standards and monitoring evolution	EAS Architect	IS Role
		IT Functional/System Leader is responsible for managing portfolio of data stores that support analysis of a 1+ subject areas	IT Application Leader is responsible for managing portfolio of applications that support 1+ business process areas	IT Infrastructure Leader are responsible for managing the set of technologies and platforms within a technical domain	IT Security Leaders are responsible for managing a set of security components enabling 1+ security capabilities (IDS, Identity Mgmt., etc.)	Architecture Council	
	Solution	Solution Architects are responsible for coordinating Architectural Conformance across all four architectures for a specific release or project. Solution Architects use the enterprise-wide architectural standards (when available) to help them avoid technical risk and ensure technical viability of their projects. They propose additions or changes to standards as required.				Systems Integrator	
	Domain	Data Domain Architects include Data Modelers, Data Technologists who manage data movement & transformation, and DBAs.	Application Domain Architects include systems analysts, application designers, developers.	Infrastructure Domain Architects include project support technologists who manage the infrastructure (middleware, servers, network)	Security Domain Architects include project support technologists who manage the Security infrastructure	Architect	

DECISION MODEL

Collaboration among these roles is required to achieve the goals of the Architecture Council. The RACI outlines the responsibilities for each role in the architecture decision-making process.

ROLE DESCRIPTIONS

Senior Data Architect

Role Expectations

- Have a good understanding of data management principles and data architecture best practices
- Have a good understanding of COMPANY's data environment
- Able to use COMPANY's standard data tools to produce standard data models and documents

Role Responsibilities

- Developing and maintaining the ESCC Data Architecture directional statement
- Maintain the COMPANY Enterprise Data Definitions
- Maintain the COMPANY Enterprise Information Repositories
- Communicating the artifacts and their changes to all appropriate parties

COUNCIL MEETING LOGISTICS

MEETINGS

The Council will meet for 2 hours twice a month (every 2nd and 4th Wednesday).

FACILITATION

The Solutions Architecture group will facilitate the meeting setup, sending Outlook invitations, agendas, and minutes. Kevin Carberry will chair the meetings.

PROPOSED AGENDA TOPICS (TO BE MODIFIED AS WE GO)

Build the Foundations	Monitor Active Initiatives	Alignment, Simplification, Compliance	Communicate Plans, Standards & Documents
Immediate focus			
• Charter & Logistics	• High-Priority Focus	• Exception Review	• To ISLC
• Governance Model	• Council Roadmap	• TQA Status	• To IS Management
• Near-Term Goals	• Blueprint Updates	• Dispute Mediation	• To IS Associates
• Arch Principles	• POC Initiatives	• Compliance Reviews	• To Business
• Decision Model			
• Doc Framework			
• Roadmap Standards			
• Blueprint Standards			
• Web Site			
Longer-term focus			
• Change Control			
• Metrics			
• R&D Function			
• Journey Map			

2006 CALENDAR

Jan 11, 25	Apr 12, 26	Jul 12, 26	Oct 11, 25
Feb 8, 22	May 10, 24	Aug 9, 23	Nov 8, 22
Mar 8, 22	Jun 14, 28	Sep 13, 27	Dec 13

PARTICIPANT EXPECTATIONS

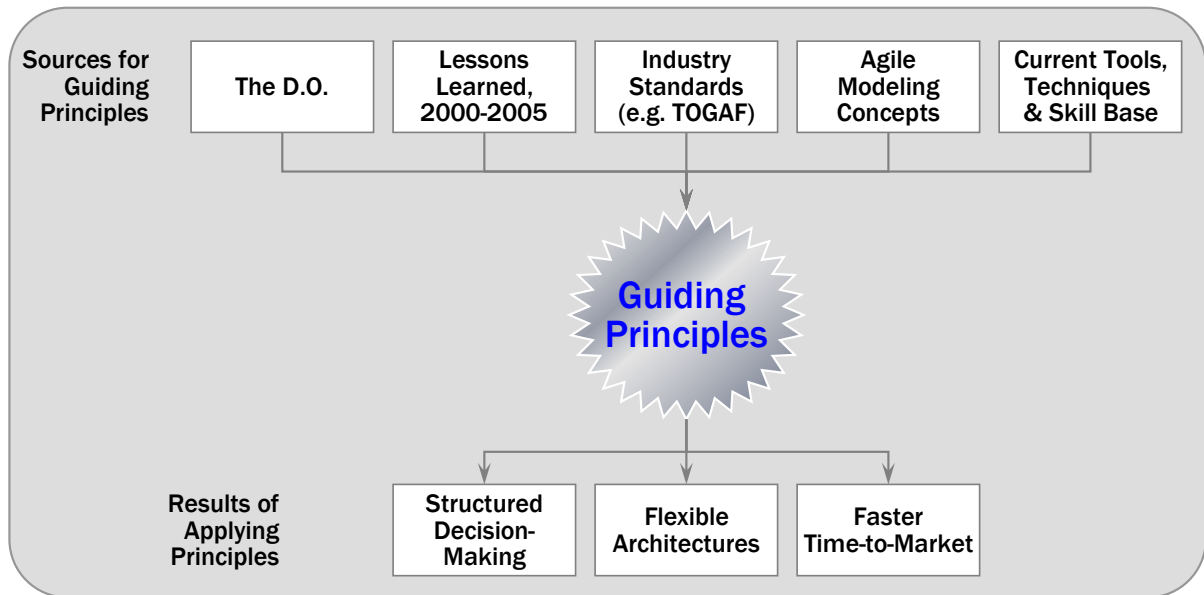
Council members should expect to spend about 8 hours per month to support the Council, 4 in meetings and 4 in preparation. If unable to attend, a member must notify a backup who will be authorized to act in the member's behalf as necessary -- making decisions, voting, etc. The substitute ought to be notified in advance to allow time for preparation such as reading assigned pre-work, etc.

TEMPLATES

Templates for standard Council documents will be developed as needed.

ARCHITECTURAL PRINCIPLES (PROPOSED)

Sources for Guiding Principles



Assumptions Regarding Development Projects

Providing a context for the architecture principles are a set of assumptions regarding the project development environment (adapted from: <http://www.hud.gov/offices/cio/ea/newea/resources/devguide.doc>):

- ▶ Solutions are created based on a **fully documented requirements specification** that is reviewed for mission (business architecture) compliance, baselined, and maintained throughout the development life cycle.
- ▶ Solutions are **architected** before they are designed. Systems architecture is documented for each system. Systems architecture documentation is verified for EA compliance, baselined, and maintained throughout the life cycle of the system.
- ▶ Solutions are **designed** before they are built. System designs are documented, baselined, reviewed for technical merit, and maintained throughout the life cycle of the system.
- ▶ Systems design components are **modeled** using some modeling tool. Models are maintained in a model repository. Configuration management practices are used to work with the model repository throughout the development life cycle.
- ▶ Applications code is **fully documented**. Systems documentation is maintained throughout the life cycle. For COTS systems, application components and configurations take the place of the application code.
- ▶ Application **code is maintained** using a standard code repository. Configuration management practices are used to work with the code throughout the development life cycle.
- ▶ Solutions are created in conformance with **SOX** policies and practices.
- ▶ The choice of a **systems acquisition method** (buy/build decisions) must take into account functional characteristics of proposed systems.

General Principles Applicable Across All Domains

1. Use marketplace decision logic
 - A. Ensure that technology choices reflect key business drivers, business roadmap & industry trends
2. Stick to the Roadmap
 - A. Any deviations from the architecture indicate an impact to TCO & SLAs
3. Adaptive Architecture
 - A. An adaptive architecture supports swifter integration of applications, customer services and products; accommodates business acquisition and divestitures; enables business change
 - B. Represents design best practices
 - C. Enables high-scalability
 - D. Follows open standards and non-proprietary approaches
4. Use proven technology
 - A. Technology portfolio focuses on products and de facto standards within the market mainstream, i.e. proven, tested, widely available, with future viability, and fit to purpose
 - B. Maximizes the reuse of as many artifacts or components as possible
5. Think globally, interpret locally
 - A. Ability to implement and support across the enterprise is a criteria for selecting technologies and products, particularly for enterprise and common/shared systems
 - B. Select “good enough” solutions
6. Use the 80/20 Rule
 - A. Technology choices balance business capabilities and total cost of ownership
 - Business capabilities define a minimum threshold of feature/function and other value delivery considerations such as time-to-deliver
 - Total cost of ownership includes: procurement, implementation, integration and interfaces, design, support, training, maintenance, operations, availability management, business continuity support, retirement and global support costs

Infrastructure Principles

7. Standardized Platforms
 - A. Streamline our operations on a consistent set of platforms
 - B. The technology infrastructure must accommodate purchased application packages
8. Improve Monitoring Environment
 - A. Continuously improve monitoring of systems
 - B. Quantify and measure metrics around monitoring

Application Principles

- 9. Clear roles
 - A. Each application system must have a single business owner and an IT steward
 - There must be a business process owner at the associated level of sharing (divisional, shared, common, enterprise)
 - There must be an IT steward who is responsible for assembling and managing the application to support the business process
 - Business owners and IT stewards will partner with the business system owner to manage the IT systems
- 10. Fewer is Better
 - A. COMPANY manages the application portfolio to minimize application variety
 - COMPANY will designate a set of core systems that support the core business processes in the portfolio
 - Packages and solutions will be leveraged across functions when possible (i.e. seek integrated packages)
- 11. Think integration
 - A. Integration capabilities of purchased packages is a selection criterion. Applications will be designed to integrate
- 12. Minimize package customization
 - A. If a package enhancement is required, the changes should not impact implementation of future releases (e.g., implement enhancements through “bolt-ons”)
 - B. COMPANY adopts the business processes and leading practices embodied in the acquired packages

Data / BI Principles

- 13. Pride in Ownership
 - A. The Business Data Owner is responsible for data integrity
 - The Business Data Owner is the primary business user or creator of the data (Business Data Owner may be the Business Systems Owner and/or the Business Process Owner that is supported by that data)
 - IT Data Steward supports and consults to the Business Data Owner
- 14. Common and consistent data definitions
 - A. COMPANY data has common and consistent definitions
- 15. Design for performance
 - A. Informational and transactional data are separated where there is a potential impact to transactional performance of systems accessing the data
- 16. Enter data once
 - A. All data stores adhere to the standard data architecture and all data will be traceable to an authoritative source
 - B. Design applications and information repositories using the “Enter data once” approach
 - C. De-couple data from the applications (i.e. data is defined separately from the applications that use it)

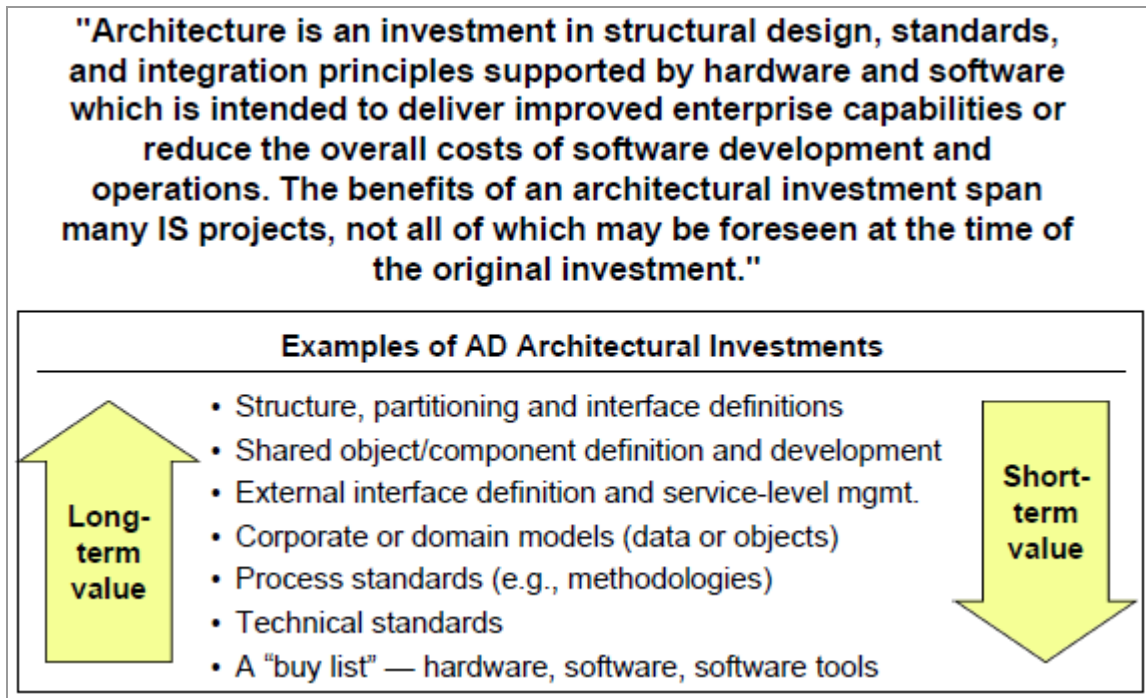
Security Principles

17. Defense in depth
 - A. Any single security measure will have problems, therefore any attacker should be forced to break through at least two defensive countermeasures
18. Eliminate single points of vulnerability
 - A. Elements of the architecture where an attacker can do a great deal of damage should not exist or should be strongly protected. Systems and data should be distributed to minimize the potential impact of a compromised environment
19. Diversity of vendors
 - A. If any one vendors products become vulnerable it is unlikely that other vendors will share that vulnerability
20. Minimize the security burden on our associates
 - A. To some extent security inevitably reduces productivity or may slow down the pace of change. It is important that COMPANY choose security architectures and elements that minimize this impact
21. Information Security
 - A. Privacy of customer data is of paramount importance
 - B. Secure our data assets
22. Manage by rule, not by exception
 - A. Secure systems as standard operational principle, then deal with exceptions as they arise.

APPENDIXES

• 1 • REFRESHER NOTES – ARCHITECTURE BASICS

What Architecture Is



(GartnerGroup)

- ▶ "If it gets so complex, you can't remember how it all works, you have to write it down... ARCHITECTURE"
- ▶ "If you want to connect it with the work of others, they need to know how it fits...ARCHITECTURE"
- ▶ "If you want everyone's to work the same, you need to define how...ARCHITECTURE"
- ▶ If you want to change how it works, you start with what you have written down...ARCHITECTURE"

(Zachman)

Architecture:

- A formal description of a system, or a detailed plan of the system at component level to guide its implementation.
- The structure of components, their interrelationships, and the principles and guidelines governing their design and evolution over time.

Architecture Description:

- A formal description of an information system, organized in a way that supports reasoning about the structural properties of the system. It defines the components or building blocks that make up the overall information system, and provides a plan from which products can be procured, and systems developed, that will work together to implement the overall system. It thus enables you to manage your overall IT investment in a way that meets the needs of your business.

(TOGAF)

Why Architecture is Needed

- ▶ The enterprise is a complex system like a building or aircraft. Architecture is critical for managing that complexity. The discipline of bringing engineering rigor to design of the enterprise is known as ENTERPRISE Architecture. (DCI's SEA)
- ▶ The primary reason for developing an enterprise architecture is to support the business by providing the fundamental technology and process structure for an IT strategy. This in turn makes IT a responsive asset for a successful, modern business strategy.
- ▶ Today's CEOs know that the effective management and exploitation of information through IT is the key to business success, and the indispensable means to achieving competitive advantage. An enterprise architecture addresses this need, by providing a strategic context for the evolution of the IT system in response to the constantly changing needs of the business environment.
- ▶ Furthermore, a good enterprise architecture enables you to achieve the right balance between IT efficiency and business innovation. It allows individual business units to innovate safely in their pursuit of competitive advantage. At the same time, it assures the needs of the organization for an integrated IT strategy, permitting the closest possible synergy across the extended enterprise. (TOGAF)
- ▶ Application Development / Business Challenges:
 - Death by complexity
 - Application development cost & performance
 - Application development agility
 - Reliability / robustness
 - Lack of integration
 - System fragility
 - Business volatility(GartnerGroup)

Why an Architecture "Framework" is Needed

An **architecture framework** is a tool which can be used for developing a broad range of different architectures. It should describe a method for designing an information system in terms of a set of building blocks, and for showing how the building blocks fit together. It should contain a set of tools and provide a common vocabulary. It should also include a list of recommended standards and compliant products that can be used to implement the building blocks. Benefits of a framework are:

- ▶ Using an architecture framework will speed up and simplify architecture development, ensure more complete coverage of the designed solution, and make certain that the architecture selected allows for future growth in response to the needs of the business.
- ▶ Architecture design is a technically complex process, and the design of heterogeneous, multi-vendor architectures is particularly complex. A framework will play an important role in helping to "demystify" the architecture development process, enabling IT users to build genuinely open systems-based solutions to their business needs.
- ▶ Why is this important?
- ▶ Those IT customers who do not invest in enterprise architecture typically find themselves pushed inexorably to single-supplier solutions in order to ensure an integrated solution. At that point, no matter how ostensibly "open" any single supplier's products may be in terms of adherence to standards, the customer will be unable to realize the potential benefits of truly heterogeneous, multi-vendor open systems.

(TOGAF)

Why Architecture is Inherently Difficult

Some (Inconvenient) Characteristics of Architectural Investments



AD Architecture is a bet. *You bet that if you spend today, some aspect of future business or IS performance will be improved.*

The number and type of bets you can place will depend on how much you know (or can guess) about the future.

AD architecture is an investment principle, not a specific process or technology.

AD architecture is effectively a set of constraints. *Everyone agrees to follow the architecture for the greater good.*

Cost justifying bets is hard.

There may be conflicts between scope and leverage. *Wide scope implies weaker constraints and less leverage.*

(GartnerGroup)

Why Is Architecture Hard to Do?



Its value is often only proved retrospectively

If we knew the future it would be system design, not architecture

It usually obstructs someone

Tension between local needs and the common good

Perceived risk and delay

Sometimes nothing can be erected until the foundations are built

What's in it for me?

Business doesn't see the value of architectural investments

Short-term vs. long-term tension

Long-term value is more difficult and complex to achieve

It's political

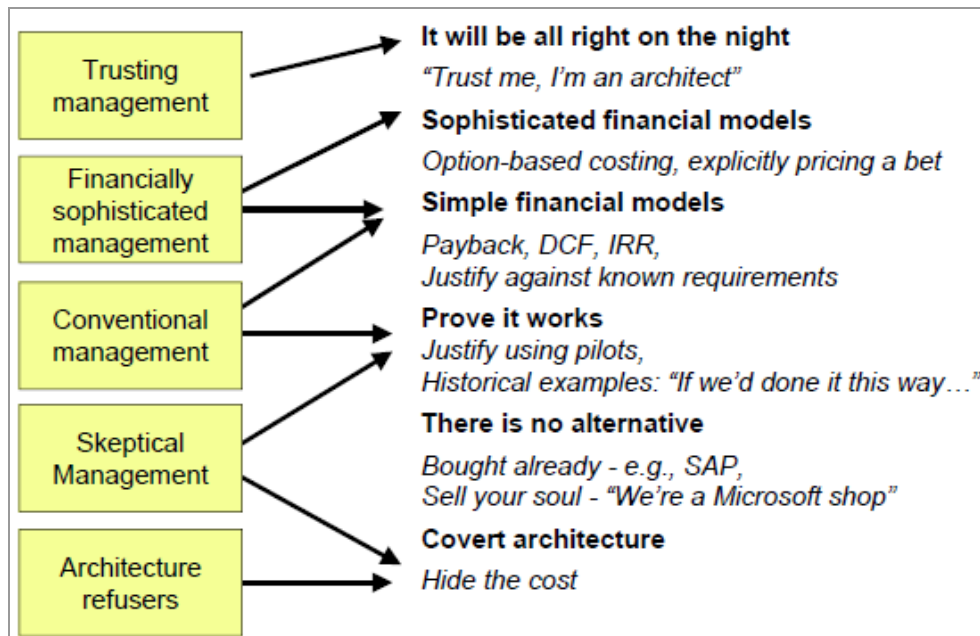
It changes the balance of power. People are resistant to change

Plate tectonics

Earthquakes when architectures collide, e.g., SAP vs. IBM

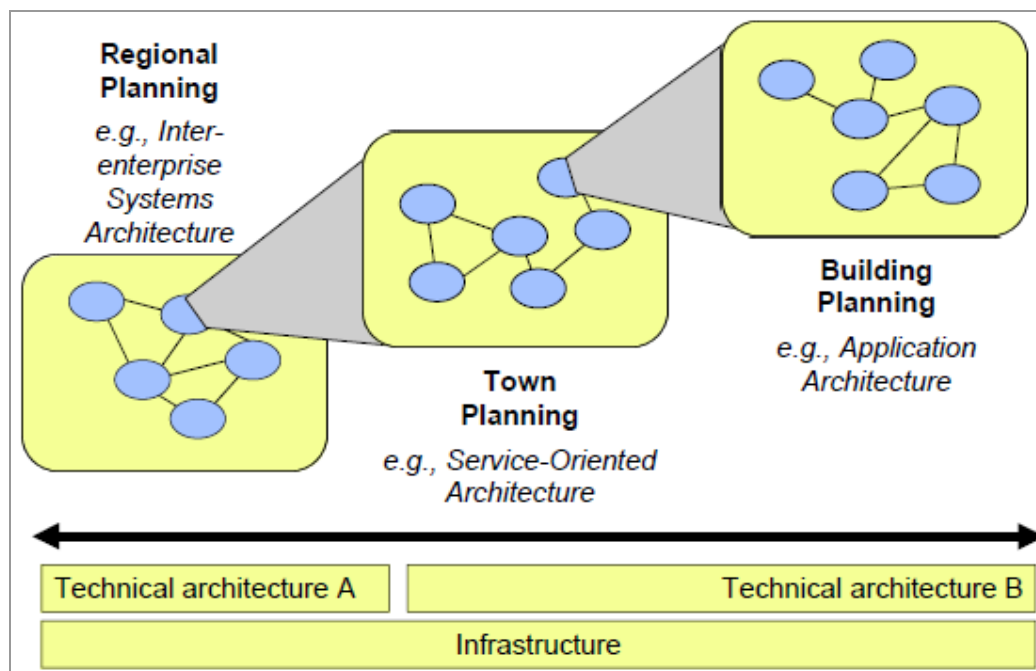
(GartnerGroup)

Justifying Architecture Investments in Various Corporate Cultures



(GartnerGroup)

The Fractal Nature of Architecture

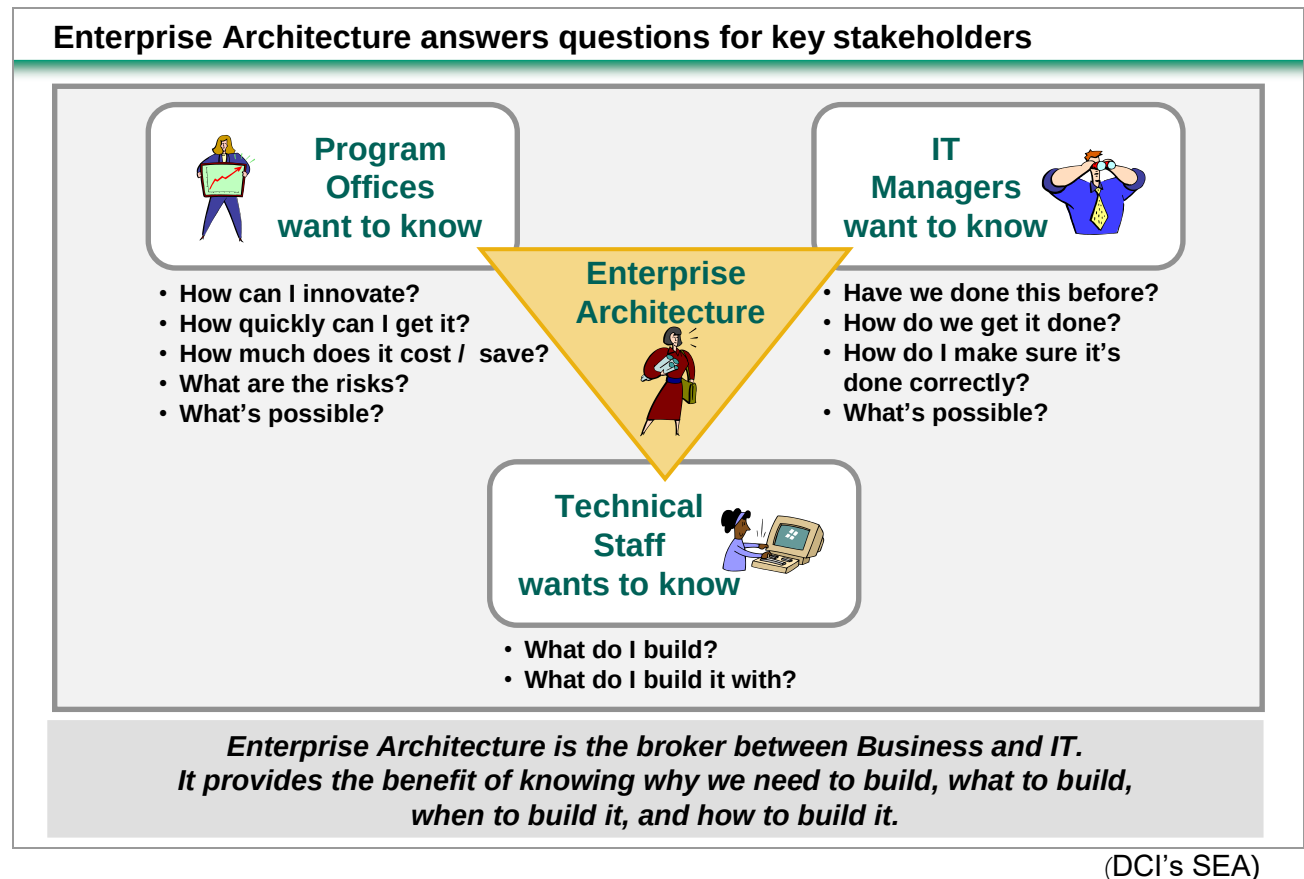


(GartnerGroup)

The Benefits of Enterprise Architecture

- ▶ Theoretical IS Benefits
 - Cost reduction through reuse and simplicity
 - Controlling complexity & interdependencies
 - Reduced operations & diagnostic costs
 - Extensibility
- ▶ Theoretical Business Benefits
 - Flexibility
 - Agility
 - Reduced time to market
 - Integration
 - Lower application development costs
 - Access to information

(GartnerGroup)



•2• A SAMPLE ARCHITECTURE CAPABILITY MATURITY MODEL

The Department of Commerce IT Architecture Capability Maturity Model consists of six levels and nine architecture characteristics. The six levels are:

0. None
1. Initial
2. Under Development
3. Defined
4. Managed
5. Measured

The nine IT Architecture Characteristics are:

- IT Architecture Process
- IT Architecture Development
- Business Linkage
- Senior Management Involvement
- Operating Unit Participation
- Architecture Communication
- IT Security
- Architecture Governance
- IT Investment and Acquisition Strategy

IT Architecture Process Maturity Levels

The following example shows the detail of the IT Architecture Maturity Levels as applied to the first of the nine characteristics, IT Architecture Process.

- **Level 0 – None.**
No IT Architecture Program. No IT Architecture to speak of.
- **Level 1 – Initial.**
Informal IT Architecture Process Underway
 1. Processes are ad hoc and localized. Some IT Architecture processes are defined. There is no unified architecture process across technologies or business processes. Success depends on individual efforts.
 2. IT Architecture processes, documentation and standards are established by a variety of ad hoc means and are localized or informal.
 3. Minimal, or implicit linkage to business strategies or business drivers.
 4. Limited management team awareness or involvement in the architecture process.
 5. Limited. Operating Unit acceptance of the IT Architecture process.
 6. The latest version of the Operating Unit's IT Architecture documentation is on the Web. Little communication exists about the IT Architecture process and possible process improvements.
 7. IT Security considerations are ad hoc and localized.
 8. No explicit governance of architectural standards.
 9. Little or no involvement of strategic planning and acquisition personnel in enterprise architecture process. Little or no adherence to existing Standards.
- **Level 2 – Under Development.**
IT Architecture Process Is Under Development
 1. Basic IT Architecture Process program is documented based on OMB Circular A - 130 and Department of Commerce IT Architecture Guidance. The architecture process has developed clear roles and responsibilities.
 2. IT Vision, Principles, Business Linkages, Baseline, and Target Architecture are identified. Architecture standards exist, but not necessarily linked to Target Architecture. Technical Reference Model and Standards Profile framework established.
 3. Explicit linkage to business strategies.
 4. Management awareness of Architecture effort.
 5. Responsibilities are assigned and work is underway.
 6. The DoC and Operating Unit IT Architecture Web Pages are updated periodically and is used to document architecture deliverables.
 7. IT Security Architecture has defined clear roles and responsibilities.
 8. Governance of a few architectural standards and some adherence to existing Standards Profile.
 9. Little or no formal governance of IT Investment and Acquisition Strategy. Operating Unit demonstrates some adherence to existing Standards Profile.
- **Level 3 – Defined.**
Defined IT Architecture Including Detailed Written Procedures and Technical Reference Model
 1. The architecture is well defined and communicated to IT staff and business management with Operating Unit IT responsibilities. The process is largely followed.
 2. Gap Analysis and Migration Plan are completed. Fully developed Technical Reference Model and Standards Profile. IT goals and methods are identified.
 3. IT Architecture is integrated with capital planning & investment control.
 4. Senior-management team aware of and supportive of the enterprise-wide architecture process. Management actively supports architectural standards.

5. Most elements of Operating Unit show acceptance of or are actively participating in the IT Architecture process.
6. Architecture documents updated regularly on DoC IT Architecture Web Page.
7. IT Security Architecture Standards Profile is fully developed and is integrated with IT Architecture.
8. Explicit documented governance of majority IT investments.
9. IT acquisition strategy exists and includes compliance measures to IT Enterprise Architecture. Cost-benefits are considered in identifying projects.

- **Level 4 – Managed.**

Managed and Measured IT Architecture Process

1. IT Architecture process is part of the culture. Quality metrics associated with the architecture process are captured.
2. IT Architecture documentation is updated on a regular cycle to reflect the updated IT Architecture. Business, Information, Application and Technical Architectures defined by appropriate de-jure and de-facto standards.
3. Capital planning and investment control are adjusted based on the feedback received and lessons learned from updated IT Architecture. Periodic re-examination of business drivers.
4. Senior-management team directly involved in the architecture review process.
5. The entire Operating Unit accepts and actively participates in the IT Architecture process.
6. Architecture documents are updated regularly, and frequently reviewed for latest architecture developments/standards.
7. Performance metrics associated with IT Security Architecture are captured.
8. Explicit governance of all IT investments. Formal processes for managing variances feed back into IT Architecture.
9. All planned IT acquisitions and purchases are guided and governed by the IT Architecture.

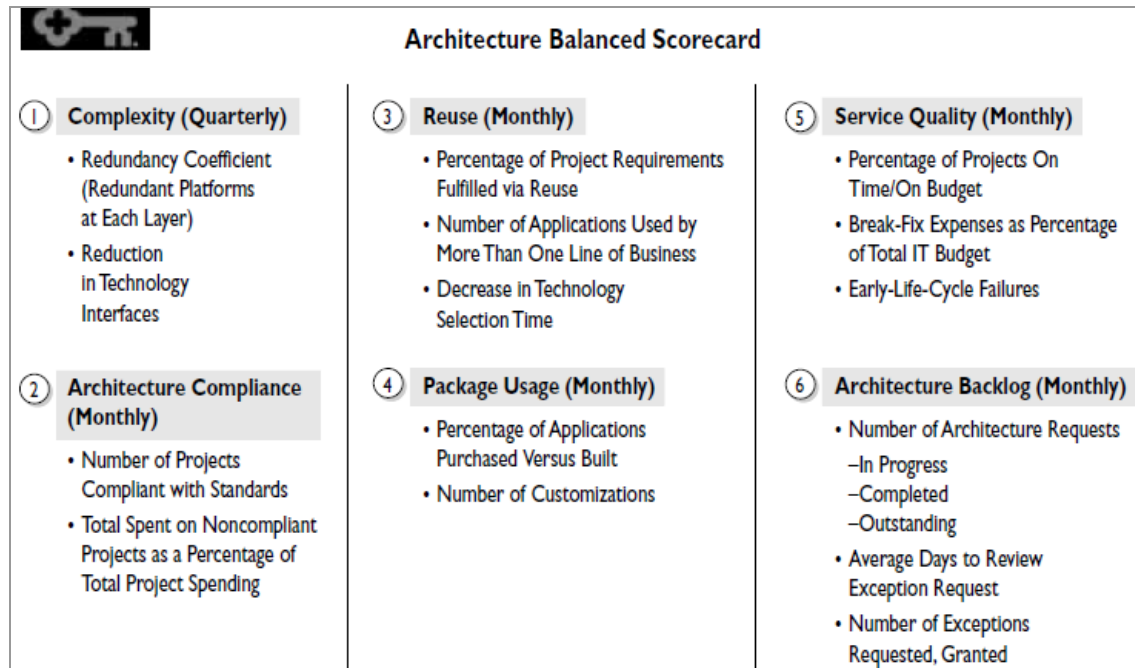
- **Level 5 – Optimizing.**

Continuous Improvement of IT Architecture Process

1. Concerted efforts to optimize and continuously improve architecture process.
2. A standards and waivers process are used to improve architecture development process improvements.
3. Architecture process metrics are used to optimize and drive business linkages. Business involved in the continuous process improvements of IT Architecture.
4. Senior management involvement in optimizing process improvements in Architecture development and governance.
5. Feedback on architecture process from all Operating Unit elements is used to drive architecture process improvements.
6. Architecture documents are used by every decision maker in the organization for every IT-related business decision.
7. Feedback from IT Security Architecture metrics are used to drive architecture process improvements.
8. Explicit governance of all IT investments. A standards and waivers process is used to improve governance-process improvements.
9. No unplanned IT investment or acquisition activity.

• 3 • A SAMPLE ARCHITECTURE BALANCED SCORECARD

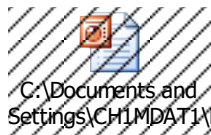
The following diagram illustrates how one company measured the impact of the Architecture group:



(CIO Working Council)

• 4 • RESEARCH ATTACHMENTS

EA Operating Models Evaluated



EA Frameworks Evaluated

