Architecture

Information Need Description

Information Need	Evaluates the maturity of an organization with regards to implementation and deployment of an architecture process that is based on an accept set of industry standards and guidelines
Information Category	• Product Quality • Process Performance • Customer Satisfaction (?)

Measurable Concept and Leading Insight

Measurable Concept	• Is the process definition based on industry accepted standards • Is SE using a defined architecture process through the leadership of certified architects • Do the architecture work products conform to an industry accepted set of standards
Leading Insight Provided	• Indicates whether the organization has an architectural process that will assist in maturing the system design • Indicates whether the organization has the architectural skill set in order to execute an architectural process • May indicate future need for different level or type of resources / skills • Indicates whether the system definition is maturing • Indicate schedule and cost growth risk

Base Measure Specification

Base Measures	1. Commitment 2. Capability 3. Plans and Products 4. Performance Metrics 5. Strategic Direction 6. Interfaces and Interoperability 7. Data 8. Security
Measurement Methods	Self-assessment or independent appraisal
Unit of Measurement	Each Base Measure has a level associated with it. See Table A.1.

Entities and Attributes

Relevant Entities	• Requirements • Interfaces • Work Products • Action Items • Risks and Opportunities • Staffing and skills
Attributes	• Defined process based on an industry standard • Training program • Certification program based on an industry standard • Architecture Review Board

Derived Measure Specification

Derived Measure	1. % Processes with discrepancies 2. Profile of discrepancies 3. % artifacts complete 4. Number of certified architects
Measurement Function	1. (# of processes with discrepancies)/(# of processes) * 100 2. Number of discrepancies for each selected discrepancy category 3. (# of artifacts complete)/(# of artifacts required by process standard) * 100 4. N/A

Indicator Specification	
Indicator Description and Sample See 3.3	TBD
Thresholds and Outliers	Organization-dependent
Decision Criteria	TBD
Indicator Interpretation	• General non-compliance indicates increased risk in ongoing process performance and potential increases in variance. • Non-compliance of individual processes indicates a risk to downstream processes
Additional Information	
Related Processes	• Technical Risk • Requirements Analysis • Modeling • Design
Assumptions	TBD
Additional Analysis Guidance	TBD
Implementation Considerations	TBD
User of Information	1. Program Manager 2. Chief Systems Engineer 3. Chief Architect 4. Process Lead 5. Architecture Review Board
Data Collection Procedure	TBD
Data Analysis Procedure	TBD

References

1. "A Framework for Assessing and Improving Enterprise Architecture Management (Version 1.1)," United States General Accounting Office Report GAO-03-584G, April 2003.
2. "Guidelines for Enterprise Architecture Assessment Framework," OMB FEA Program Management Office, April 2004.
3. "Improving Agency Performance Using Information and Information Technology (Enterprise Architecture Assessment Framework v3.0)," OMB, December 2008.
4. O'Brien, Liam, Len Bass, and Paulo Merson, "Quality Attributes and Service-Oriented Architectures," CMU/SEI/2005-TN-014, September 2005.
5. Feiler, Peter H., David P. Gluch, and John J. Hudak, "The Architecture Analysis & Design Language (AADL): An Introduction," CMU/SEI-2006-TN-011, February 2006.
6. Kazman, Rick, Mark Klein, and Paul Clements, "ATAM: Method for Architecture Evaluation," CMU/SEI-2000-TR-004, August 2000.
7. The US DoC IT Architecture Capability Maturity Model (ACMM), The Open Group, undated white paper.
8. ESC Enterprise Integration Toolkit, Self-Assessment Checklist–Program Level, undated DRAFT.
9. "ESC/EN Guidelines for Leading Indicators, DRAFT v1.0d," 8 January 2008.
10. ESC Enterprise Architecture Process, DRAFT, 24 September 2007.

Table A.1

Score-->	1	2	3	4	5
Base Measure 1: Commitment	• Adequate resources exist	• Responsibility for directing, overseeing, and approving the architecture has been assigned	• Written and approved organization policy exists for architecture development	• Written and approved organization policy exists for architecture maintenance	• Written and approved organization policy exists for IT investment compliance with architecture
Base Measure 2: Capability	• A chief architect has been appointed • An office responsible for architecture development and maintenance has been established • An architecture review board exists at the program level	• A formally defined and documented architecture process exists for the organization • A formal architecture training programs exists	• Architecture products and management processes undergo independent verification and validation • There are certified architects on the program • An architecture review board exists at the business unit level	• A formal process exists and is followed to manage architecture change	• Architecture is an integral component of the investment management process • An architecture review board exists at the enterprise level
Base Measure 3: Plans and Products	• Architecture is being developed using a framework, methodology, and automated tool • Architecture plans address the "as-is" and "to-be" architecture in terms of business, performance, information/data, application/service, and technology	• Key stakeholder business drivers are documented • The architecture process incorporates the use of domain-specific reference models • The architecture process defines a minimum set of architecture artifacts	• Cognizant organization or individual has approved the architecture plans and products • Process for identifying, managing, and closing gaps between "as-is" and "to-be" is well-documented	• Architecture products are periodically updated • Investments comply with architecture	• The architecture demonstrates the relationships between the "as-is," transition, and "to-be," to investment planning and execution
Base Measure 4: Performance Metrics	• Architecture plans call for developing metrics for measuring progress	• Progress against architecture plans is measured and reported	• Compliance with architecture is measured and reported	• Detailed performance measures are defined and linked to the service and technical portions of the architecture	
Base Measure 5: Strategic Direction	• Architecture demonstrates "front office" and stakeholder buy-in is documented. • Architecture demonstrates management structure and control is established.	• Architecture defines architectural processes • There is a baseline architecture	• Architecture defines a "to-be" (target) architecture • Architecture defines change and risk management strategy or approach	• Architecture defines a transition and sequencing strategy and plan • Architecture defines a communications strategy	• Architecture demonstrates application of the architecture for purposes of creating and maintaining investment programs • Architecture demonstrates an implemented process for managing changes and updates to the architecture
Base Measure 6: Interoperability	• Interoperability standards are defined conceptually (patterns, web services, etc.)	• Interoperability standards are defined at the business function level and are aligned to organizational reference models	• Interoperability standards are described through patterns and are related to business functions	• Business functions are aligned to components and services at the enterprise level	• Interoperability and sharing of information is one of the backbones of the target architecture
Base Measure 7: Data	• Data architecture Is only broadly defined	• Data relationships and interdependencies are defined at a conceptual level	• A common and well-defined approach to integrating data with business processes and mission priorities has been established		
Base Measure 8: Security	• Security standards are conceptually defined	• Security standards align to a technical reference model	• Security standards are tightly defined and are presented as part of transition planning	• Security standards are tightly defined and are presented as part of investment planning	