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Enterprise Architecture vs. Collection of Architectures in Enterprise

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Content Summary

Rationale

- EA concept and position
- EA vs. a collection of architectures in enterprise
- The essential elements for EA development
- The focus in each phase and stage of EA development (e.g. based on TOGAF) to ensure successful EA adoptions in solutions, initiatives, programs, and projects

Rationale

- EA practice needs improvement: EA has been practiced visibly for over 10 years, necessity is well recognized, but success is limited; more collection of architectures in enterprise vs. real EA
- The major challenges: architectural leadership, stakeholder participation, architecture modeling, architecture usage, architecture maintenance and program management
- Lessons learned:
 - EA development needs target vision as its soul, and needs core concepts as its art of creation. The common knowledge of architecture is applicable to EA
 - The federated EA development needs to be more effective -> EA vs.
 Collection of Architectures in Enterprise
 - > Too much control will be counter-productive
 - > Too much freedom can be chaotic, self adjustment can be very costly
- Intention: clarify the concept, find the soul, refresh the core, simplify the efforts, promote a balanced approach for success

Architecture Concept

- Original definition of Architecture by Sir Henry Watton: "In architecture as in all other operative arts, the end must direct the operation. The end is to build well. Well building has three conditions: Commodity, Firmness and Delight"
- This definition is applicable to EA as well: EA is an operative art, the EA products must direct the effective enterprise operation
 - Commodity: EA should serve all its relevant audience and stakeholders, should be consistent and understandable by them (e.g. via multiple views)
 - Firmness: EA products should be solid and practicable enough for implementation
 - Delight: EA has to be well appreciated and accepted to be adopted and be effective in implementation

What is Enterprise Architecture?

Enterprise Architecture (EA) is an enterprise blueprint with descriptions of enterprise structure and operating models. It consists of business, application, info/data, and technical architectures as sub-domains (each sub-domain can drive down further beyond EA).



The Purpose of EA

- Establish common vision and views across organizations to support achievement of common goals (via target vision)
- Have a blueprint to support business decision making and decision impact analysis (via both as-is and target EA)
- Provide guidance for enterprise evolution in response to the continuous change requests imposed from business and technologies, to avoid less informed decisions (roadmap)
- Have better understanding of the current business and system implementations, identify improvement and optimization opportunities across board (via as-is EA)
- Enable cost reduction and overall performance improvement from enterprise global optimization. Enable the use of IT effectively and efficiently across enterprise, so to improve automation opportunities (via target EA)

EA vs. Collection of Architectures in Enterprise

Enterprise Architecture

- Plan: EA consists of architecture artifacts in concert by planning ahead with a designated purpose and scope for its views
- Content: EA is an art of creation, with core concepts serving its soul of vision, and has the sense of entirety. The level of details should be just good enough to convey the intent and to serve the purpose. It can be refined in federated manner by sub-organizations and tasks to go further
- **Cultural Fitness:** EA has to be fit in its cultural environment, with global optimization in nature, so to be appreciated and accepted for implementation

Collection of Architecture in Enterprise

- Architecture artifacts may be developed separately, in different timeframes, cover different level of content details, and are created from different perspectives for different purpose
- Lack of an overall guidance for the core, the soul, and the disciplinary elements

Make above two work together in concert -> a balanced approach

- Provide the essential top-down guidance and governance framework to facilitate federated EA development effectively
- The bottom-up EA development should follow the guidance and governance framework, so to keep in concert during organic growth

EA Best Practice Observation

Architectural Leadership - the key to success

- Management and coordination can not replace the true leadership needs
- The Chief Enterprise Architect needs to have solid "Architecture Creation" capabilities to lead the efforts convincingly, and be well positioned inside enterprise
- EA should not be treated like an operational task

EA Stakeholder Participation

- It needs clear target vision or work direction for stakeholders to understand what they need to do and why doing it
- It needs clearly identify the roles and responsibilities in order to proceed for EA development and in collaboration with others

EA Modeling

- Just by using an EA tool and framework, and follow some widely published EA process will not get the EA as the end products
- EA is a creative art, it needs soul and core concepts

EA Best Practice Observation

EA Lifecycle and Management

- EA is a living art with lifecycle, the evolution of architectural vision, drivers, insight, intent, and requirements guide EA through its evergreen process
- EA is in a complex domain of people, systems, and culture, and in a constantly changing environment. It is important to balance top-down guidance/governance with bottom-up flexibility/freedom for organic growth -> collection of federated architectures developed with discipline.

EA Skills

- Bridge technical and business, with breadth and depth in knowledge
- Creative and artistic on vision, insight, models and views with abstraction

The Essential Disciplinary Elements for EA Top-Down Guidance and Governance

- EA target vision: a commonly accepted direction, as the soul of intent and purpose, which is important in identify the scope of EA efforts, e.g. for both current state assessment and target architecture creation
- EA principles: EA Principles are general rules and guidelines last a long time, which support enterprise vision, mission, goals and objectives
- EA governance: policies, rules, guidelines, processes, measurements, and enforcement mechanisms
- EA reference architectures: provide guidance for effective, disciplined, consistent, and cohesive architecture description mechanism across organizations
- EA development approach, methodologies, and tools: these are selectable for the best fit
- EA evolution roadmap: EA products should be alive with evergreen process in place, which will keep it current and effective all the time

The Role and Context of EA Principles

EA principles reflect an enterprise's purpose, vision, and values. It provides a foundation for EA development and implementation.



From EA Principles to Executions



EA Governance Structure

- **Constitution:** EA principles
- Legislation: guidelines, process, standards, rules, policies, measurement, etc.
- Judiciary: governance board for enforcement of execution -> results, and consequences
 - Continuous Operation: for process execution and sustainable performance
 - Change of Operation: for determination and management of changes



EA Framework with Reference Models

Views	What	How	Where	Who	When	Why
	Entity/Data	Function	Network	People	Time	Motivation
Business Environment (Planner)	B1. List of Entities Important to the Business (security entity included)	B2. Operational Concept Diagram: Enterprise View B3. Business Footprint Diagram BUS	B4. List of Business Locations B5. Context Diagram B6. Business iness and E	B7. List of Stakeholders: Role Catalog: Actor/Role Matrix B8.Organization Model for nterprise R	B9. List of Events and Cycles Important to the Reference M	B10. Architecture Vision: Driver'Goal/Objective Catalog B11. Architecture Principles B12. List of Critical Business COCELS Risks
Capabilities, Functions, Services (Owner)	Models	F3. Business Functional Freices and Decomposition: Architecture Blocks: Business Serve for the Diagram F4. Activity Model F5. Business Process Model: Process Flow Diagram F6. Security Capability Specification	usiness and Services PS. Communication Interfaces: Interface Catalog	Enterprise	Level Archi	tecture
Logical Systems (Designer)	erence a Archit	L1. Application and hervise Lapped System Mindle: Availability and Availability Sories Magnet L2. Process Phys. Response L5. System:Filter Maria L5. System:Filter Maria L5. Application Society Sories Mark App	plication/S	LTL Role/System Matrix LT2. System/Organization Matrix LT3. Use Case Diagram ervice Refe	L14 Event Diagram	L17. Business Rule Model L18. Business Rule ES ^{sign}
Physical Systems (Builder)	ata Rel lfo/Dat	 P2. Physical System Architecture: Platform Decomposition Diagram P3. Logical System Components to Physical System Components Mapping P4. Physical Security Service Spec. 	P5 An and a comparison of the second	ication Arch	itecture	
Technology References	Dictor Ir	T2. Farmie Mae Technical Reference Model (TEM): Technology Principles; Technology Standards Catalog T3.System/Technology Matrix	T4. Technology Portfolio Technolog	y Referenc	e Models	
Technology Details Specification			Defor Techr implementation	ology Arch	itecture ed	DS6. Rule Specification

Reference Architectures across EA Sub-Domains

- Business Reference Architecture: consists of Business Reference Models (BRM) describing business environment, capabilities, functions, and services (in yellow area)
- Application/Service Reference Architecture: consists of Application/Service Reference Models (ARM) describing logical and physical systems for implementing business functions (in blue area)
- Info/Data Reference Architecture: consists of Info/Data Reference Models (DRM) describing presentation for information and data structures (in green area)
- Technology Reference Architecture: consists of Technology Reference Models (TRM) covers technology architecture relevant matters and technology standard specifications (in pink area)
- Security Reference Architecture: consists of Security Reference Models (SRM) addressing security solution options across layers
- Performance Reference Model (PRM): serves as motivation and measurement mechanism for capabilities, functions, and services improvement

*Note: Many reference models that compose the reference architectures can be found in EA modeling tools

EA Development Approaches, Methodologies, and Tools

Examples of EA Development Approaches

- Service-orientation
- Component-based
- Model-driven

Examples of EA Development Methodologies

- TOGAF ADM
- DoDAF

Examples of EA Development Tools

- Modeling tools (System Architect, Metis, MEGA, SPARX, ArchiMate, etc.)
- Repositories (Troux EA Repository, Rational System Architect Repository, etc.)
- Requirements management tools (DOORS, Requisite Pro, etc.)
- Presentation tools (EA Modeling Tools, Visio, PowerPoint, etc.)

Examples of Frameworks and Best Practice References

- Zachman Framework (a framework)
- TOGAF (a framework and best practice reference)
- Gartner Framework (a framework with best practice reference)
- A Practical Guide to Federal EA (best practice reference)

The Focus in TOGAF ADM Phases to Ensure EA Adoption

Preliminary Phase

- Stakeholder identification
- EA program and governance structure establishment (e.g. federated)
- EA development approach, methodologies, and tools decision

Phase A: Architecture Vision

- EA target vision (driven by enterprise strategic plan)
- EA principles and guidance
- EA reference architectures
- EA evolution roadmap

Phase B, C, D: Architecture Development

Can be accomplished in federated manner across organizations

Phase E: Solution Development

- Identify sub-domains, and develop solution architectures
- Identify initiatives, programs and projects for implementation

Phase F, G, H: Architecture Implementation

- Define and implementation roadmap and transition plan in a federated manner across organizations, initiatives, programs and projects
- Manage EA with lifecycle process and governance

EA Framework with Scope of Focuses

Views	What	How	Where	Who	When	Why			
	Entity/Data	Function	Network	People	Time	Motivation			
Business Environment (Planner)		Enterprise Architecture							
Capabilities, Functions, Services (Owner)	cture ()	(scope of focus)							
Logical Systems (Designer)	Archite of focus	Solution Architectures (scope of focus)							
Physical Systems (Builder)	/ Data /								
Technology References	Info	Technology Architectures							
Technology Details Specification		(scope of focus)							

Recommended Action Items

- Have a target vision as the soul (e.g. in response to next generation Internet, shared services, cloud computing, Internet of things, etc.) and have the core concepts in place before EA development; EA development is not an engineering process, it is an art of creation for enterprise operation, like the building architecture for building construction
- Enhance guidance, discipline, coordination, and governance for EA development. EA is not merely a collection of architectures in an enterprise
- Balance the centralized efforts and control from top-down with the flexible federated development efforts from bottomup to be productive in organic growth, where insightful and wise decisions have to be made in the Chief Enterprise Architect level