IT Architecture for Early Warning Systems in Disaster Management

Disaster Mitigation, Monitoring & Management (DMMM)

- Need to
  - Mitigate Risk through a robust IT Architecture
  - Monitor through a Decision Support System & Dissemination
  - Manage through Empowerment

What comes to mind when you hear the term IT architecture?

- Client server architecture?

- 2-Tier Architecture
- 3-Tier Architecture
- N-tier architecture?
- --
- --

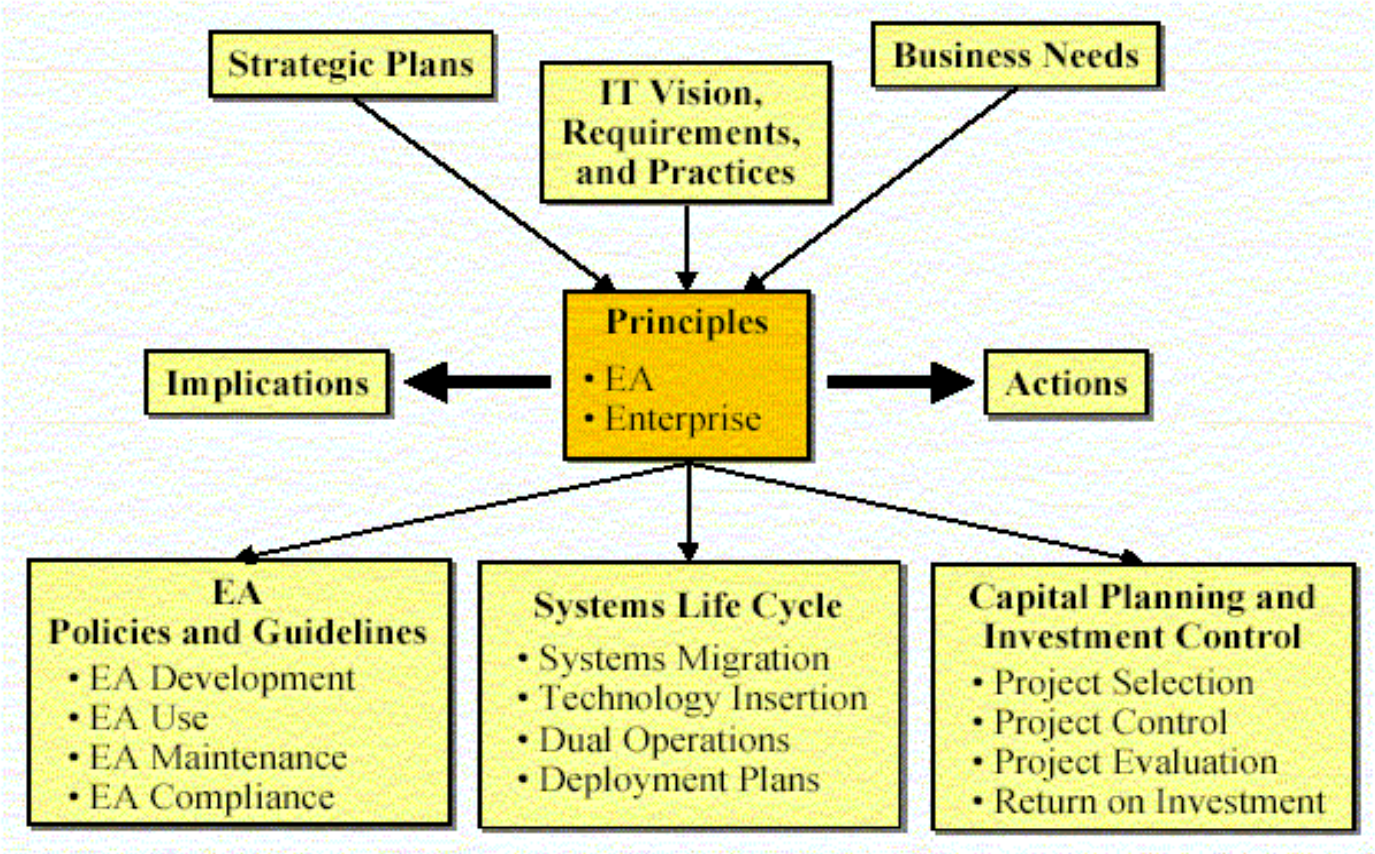
What is architecture?

- The structure of the components, their inter-relationships, the principles and guidelines governing their evolution over time.

- An enterprise is an organization consisting of people, process, and technology which must coordinate functions and share information to accomplish its mission.

- The objective is to create an enterprise architecture which relates business goals to IT architecture.

Architectural Principles



Why an Enterprise architecture?

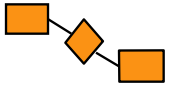
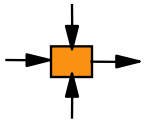
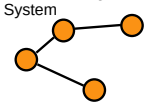
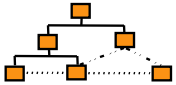
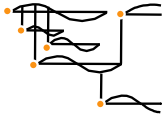
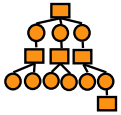
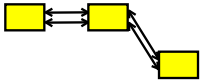
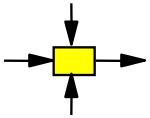
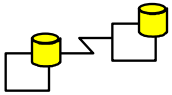
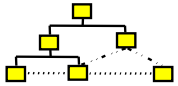
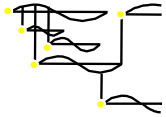
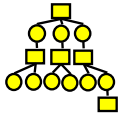
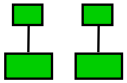
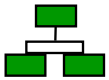
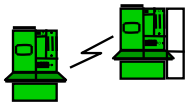
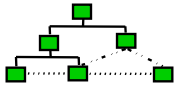
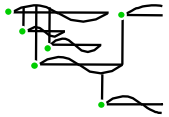
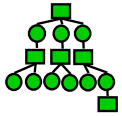
- Alignment between business goals and IT

- Inventory of baseline architecture, specification of target architecture and steps to guide transition from baseline to desired target architecture

- Managing integration – consistency of business rules, interoperability of systems, and systems integration

- Managing change/migration

ENTERPRISE ARCHITECTURE - A FRAMEWORK™

	DATA *What*	FUNCTION *How*	NETWORK *Where*	PEOPLE *Who*	TIME *When*	MOTIVATION *Why*	
SCOPE (CONTEXTUAL) *Planner*	List of Things Important to the Business  ENTITY = Class of Business Thing	List of Processes the Business Performs  Function = Class of Business Process	List of Locations in which the Business Operates  Node = Major Business Location	List of Organizations Important to the Business  People = Major Organizations	List of Events Significant to the Business  Time = Major Business Event	List of Business Goals/Strat  Ends/Means=Major Bus. Goal/ Critical Success Factor	SCOPE (CONTEXTUAL) *Planner*
ENTERPRISE MODEL (CONCEPTUAL) *Owner*	e.g. Semantic Model  Ent = Business Entity Reln = Business Relationship	e.g. Business Process Model  Proc. = Business Process I/O = Business Resources	e.g. Business Logistics System  Node = Business Location Link = Business Linkage	e.g. Work Flow Model  People = Organization Unit Work = Work Product	e.g. Master Schedule  Time = Business Event Cycle = Business Cycle	e.g. Business Plan  End = Business Objective Means = Business Strategy	ENTERPRISE MODEL (CONCEPTUAL) *Owner*
SYSTEM MODEL (LOGICAL) *Designer*	e.g. Logical Data Model  Ent = Data Entity Reln = Data Relationship	e.g. Application Architecture  Proc .= Application Function I/O = User Views	e.g. Distributed System Architecture  Node = I/S Function (Processor, Storage, etc) Link = Line Characteristics	e.g. Human Interface Architecture  People = Role Work = Deliverable	e.g. Processing Structure  Time = System Event Cycle = Processing Cycle	e.g., Business Rule Model  End = Structural Assertion Means =Action Assertion	SYSTEM MODEL (LOGICAL) *Designer*
TECHNOLOGY MODEL (PHYSICAL) *Builder*	e.g. Physical Data Model  Ent = Segment/Table/etc. Reln = Pointer/Key/etc.	e.g. System Design  Proc.= Computer Function I/O = Data Elements/Sets	e.g. Technology Architecture  Node = Hardware/System Software Link = Line Specifications	e.g. Presentation Architecture  People = User Work = Screen Format	e.g. Control Structure  Time = Execute Cycle = Component Cycle	e.g. Rule Design  End = Condition Means = Action	TECHNOLOGY MODEL (PHYSICAL) *Builder*
DETAILED REPRESEN-TATIONS (OUT-OF-CONTEXT) *Sub-Contractor*	e.g. Data Definition  Ent = Field Reln = Address	e.g. Program  Proc.= Language Stmt I/O = Control Block	e.g. Network Architecture  Node = Addresses Link = Protocols	e.g. Security Architecture  People = Identity Work = Job	e.g. Timing Definition  Time = Interrupt Cycle = Machine Cycle	e.g. Rule Specification  End = Sub-condition Means = Step	DETAILED REPRESEN-TATIONS (OUT-OF CONTEXT) *Sub-Contractor*
FUNCTIONING ENTERPRISE	e.g. DATA	e.g. FUNCTION	e.g. NETWORK	e.g. ORGANIZATION	e.g. SCHEDULE	e.g. STRATEGY	FUNCTIONING ENTERPRISE

EA Development

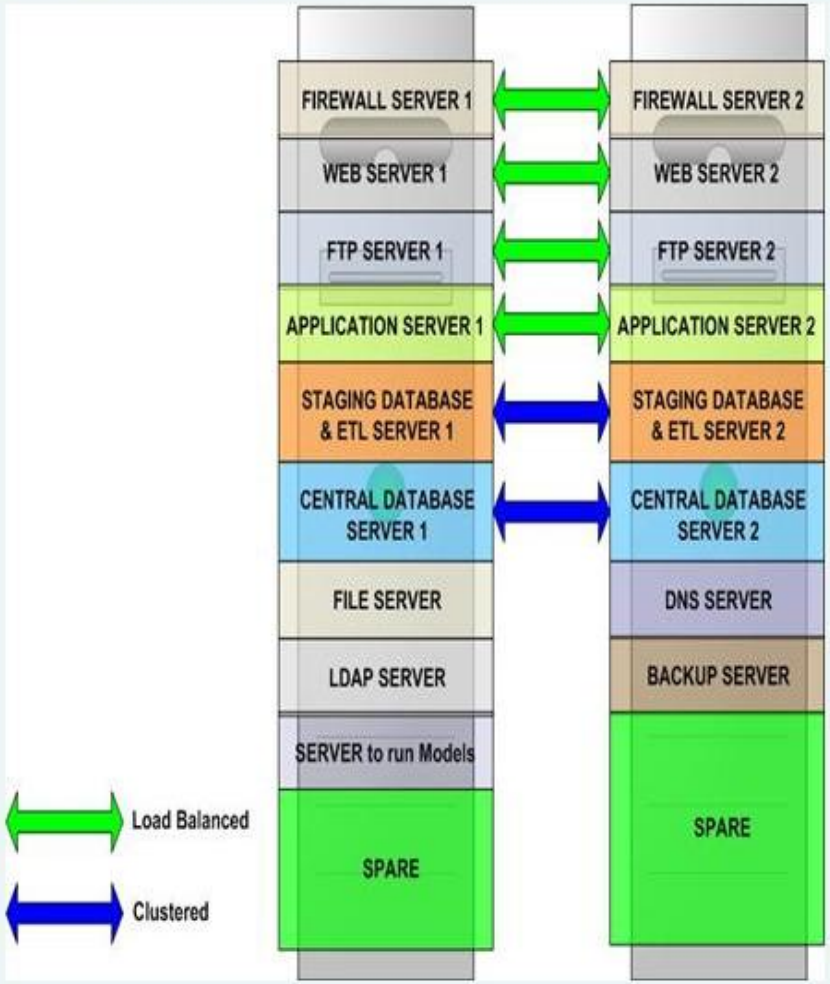
EA Implementation

- ✓ Develop Proof of Concept (POC) for defined EA
- ✓ Develop foundation architecture (Enterprise Service Bus, Standards, Security Infrastructure, etc)
- ✓ Assist in developing a Business case for IT projects using ROI analysis
- ✓ Maintain the alignment of the IT solution with the target architecture and sequencing plan.
- ✓ Evolve EA at the end of every IT project, based on the experience and lessons learned during its implementation to ensure its robustness.

Server Consolidation - Future

Server Consolidation Through Virtualization Delivers the Following Benefits:

1. Good amount of headroom for internal growth and dynamic resource sharing
2. Resizing activity becomes almost seamless.
3. Reduced server management costs – fewer systems to manage
4. Higher application uptime – better RAS in higher-end servers and fewer components to fail
5. Reduced server sizing through amortization of peaks across applications
6. Increased normal utilization of servers
7. Dynamic re-utilization of system resources to meet computing needs
8. Faster launch of projects – no delay in waiting for hardware resources
9. Resizing – sizing is a RoIT (Return on IT) exercise and production requirements may be different from initial sizing.



Thank You