



WA1537 Introduction to Enterprise Architecture

Why Architecture Matters



2-Day Agenda

Day #1: EA Guidance	Day #2: EA Practice and Governance
1. Introductions <ul style="list-style-type: none">Farid MheirParticipantsObjectives and goals	6. Architectural Governance Models <ul style="list-style-type: none">Strategic Management: Balanced ScorecardIT Governance: COBITIT Service Delivery: ITILEA Governance
2. Why Architecture Matters <ul style="list-style-type: none">Architecture in the Real World: Architects and City PlannersStrategic Needs for ArchitectureTactical Needs for ArchitectureOperational Needs for ArchitectureArchitecture Is Not design	7. Developing Reusable and Flexible Architectures <ul style="list-style-type: none">SOABPM
3. Standard Architecture Practices and Processes <ul style="list-style-type: none">EA Domains and Views: Business, Data, Application, TechnologyEA Abstraction Levels: Conceptual, Logical, PhysicalEA Frameworks: Zachman, TOGAF, FEAF and OthersEA Reference Models: eTOM, IBM CBM, Microsoft MOTION	8. Metrics for Architecture <ul style="list-style-type: none">Successful Architecture Metrics
4. Developing Business Alignment <ul style="list-style-type: none">Business Context, ObjectivesDrivers and PrinciplesBusiness Architecture, Capabilities, and Services	9. Developing Buy-In Across the Organization <ul style="list-style-type: none">Planning for EAEA Maturity LevelsEA Process in the OrganizationApplication Portfolio Management Using EAEA Management Structure and ControlsArchitecture Skills and Careers
5. Technology Lifecycle/Technology Change Management <ul style="list-style-type: none">Application, Data, and Technology ArchitecturesPlanning the Transition Between ASIS and TOBEThe Link Between EA and the RUP Software Engineering Methodology	10. Documenting Architectures <ul style="list-style-type: none">EA Software ToolsModeling Languages for Architectures: UML, BPMN, BPEL
	11. Architecture Design Philosophies <ul style="list-style-type: none">Patterns and BricksESB + SOA + BPMAnti-Patterns



Topics


1. Architecture in the real world:
architects and city planners
2. Strategic needs for Architecture
3. Tactical needs for Architecture
4. Operational needs for Architecture
5. Architecture is not design



City Planners

- Views into city plans and maps help highlight key design principles.
- Underground walkways are essential for cities such as Montreal where winter conditions bring temperatures down to -30C





City Planners

- Design a comprehensive high level, total solution, before going into all details

The screenshot shows the Montreal Master Plan website. The navigation menu includes: Home page, Master Plan, Introduction, Part I, Part II, Part III, Part IV, Appendices, Maps, Modifications to the Master Plan, Glossary, Related documents, and Links. The main content area is titled 'City-wide issues' and lists various planning goals and implementation details.

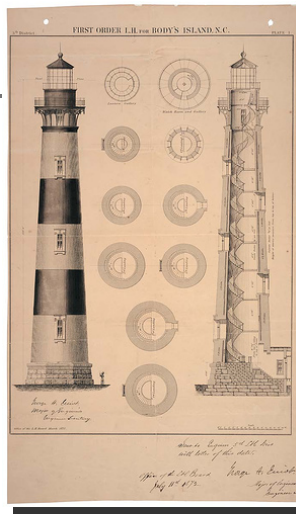
City-wide issues

- Chapter 1 - Planning Approach
- Chapter 2 - Planning goals
 - 2.1 High-quality, diversified and complete living environments
 - 2.2 Structuring, efficient transportation networks fully integrated into the urban fabric
 - 2.3 A green, vibrant, convivial and inhabited Centre
 - 2.4 Dynamic, accessible and diversified employment areas
 - 2.5 High quality architecture and urban landscapes
 - 2.6 An enhanced built, archaeological and natural heritage
 - 2.7 A healthy environment
- Chapter 3 - Implementation of the Master Plan
 - 3.1 Parameters related to land use and building density
 - 3.2 Capital and program investments strategy
 - 3.3 The Plan's implementation partners
- Chapter 4 - Detailed Planning Areas
 - 4.1 Airport Surroundings
 - 4.2 CP Tracks Surroundings
 - 4.3 Anjou
 - 4.4 Autoroute Ville-Marie
 - 4.5 Boulevard Crémazie
 - 4.6 Boulevard Pie-IX
 - 4.7 Bourquet / Forget
 - 4.8 Lachine Canal
 - 4.8.1 Griffioen
 - 4.8.2 Lachine East
 - 4.9 Chemin de la Côte-de-Liesse
 - 4.10 Central Business District
 - 4.11 Olympic Complex and Village
 - 4.12 Corridor Louis-J. La Fontaine
 - 4.13 Delcarré / Cavendish / Jean-Fabien Ouest
 - 4.14 Galeries d'Anjou / Jean-Fabien Est
 - 4.15 Havre de Montréal
 - 4.16 Acadie / Chabanel
 - 4.17 Anse-à-l'Orme
 - 4.18 Laurentien / Lachapelle / Marcel-Laurin



Architects

- Different views of the same building






Architects

- Not all constructions have same level of complexity
- Simple things
 - Can be built by one person
 - Learning by doing is OK
- Requires
 - Minimal modeling
 - Simple process
 - Simple tools
- Complex things
 - Built most efficiently by a team
 - Reuse of experiences is key to success
- Requires
 - Modeling
 - Well-defined process
 - Power tools



Why Do We Need EA?

- Industry and governments have recognized value of EA
 - Clinger – Cohen act, OMB Circular A130
 - Large, expensive installed based of IT systems
 - disparate IT Resources
 - remain competitive and support business continuity
 - Growing complexity of current IT environments and need for package integration
 - Movement from platform-based data processing to value-based services
 - Plethora of software options, overlapping products and standards
-
- clinger-cohen act: assigns CIO the responsibility to « developing, maintaining, and facilitating the implementation of a sound and integrated IT architecture »
 - integrated to achieve the agencies strategic goals
 - defines standards for IT, EA and reference architectures
 - see jaap book chapter 9



The Journey That Lies Ahead

- Customers demanding high service levels at low cost.
 - competitors give those customers exactly what they are asking for
 - market conditions change rapidly
 - competitors who have already automated their process capabilities.
- Greater technology-related risks as well as growing regulation
 - reducing the risks of systems failures, security and privacy breaches, and loss of data integrity
 - manage risk - business continuity, security, data integrity and regulatory compliance
- Partner to enter new markets and create new industries.
 - strategic opportunities will require companies to quickly join forces
 - just as quickly to separate again
- Vendors will increasingly provide industry standard business processes for the same or lower cost than companies can provide internally.
 - outsourcing accelerate the architecture maturity process

- The Journey That Lies Ahead
- Enterprise architecture in many companies refers to a detailed blueprint of IT systems, data and technology. It is now clear that enterprise architecture is instead a business vision. Enterprise architecture begins at the top - with a statement of how a company operates - and results in a foundation of IT and business process capabilities on which a company builds its competitiveness. Establishing this foundation for execution is a joint responsibility of business and IT executives - it shapes the strategic opportunities a company can respond to in the future. We believe that a number of pressures will make a foundation for execution more important in the coming years.
- Customers demanding high service levels at low cost.
 - competitors are increasingly able to give those customers exactly what they are asking for.
 - Market conditions change rapidly, sometimes shaped by customers; sometimes by competitors; but, in all cases, requiring a rapid response.
 - robust foundation for execution will have a tough time battling competitors who have already automated their process capabilities.

- Greater technology-related risks as well as growing regulation.
A well designed foundation simplifies the IT and business environment, thus reducing the risks of systems failures, security and privacy breaches, and loss of data integrity. A simplified IT and business process environment is critical to reducing a company's vulnerability to a wide range of risks. Companies do not have a choice as to whether they want to manage risk - business continuity, security, data integrity and regulatory compliance must be managed, and managed well.
- Partner to enter new markets and create new industries.
Many of the most exciting strategic opportunities will require companies to quickly join forces - and just as quickly to separate again - exploiting their distinctive competences by linking modular business capabilities. These dynamic partnerships are already becoming important, even though few companies have the technology or business process infrastructure to support them. Companies whose foundation for execution can easily reach across company boundaries and "plug and play" their modular business capabilities with partners will win in this fast-paced world of global opportunities.
- Vendors will increasingly provide industry standard business processes for the same or lower cost than companies can provide internally.
Increased outsourcing will accelerate the architecture maturity process, so companies will develop more robust foundations. Companies that have not learned how to implement and manage standardized and integrated processes will struggle with the realities of the marketplace. Some companies will forge ahead with the help of vendors; others will struggle to make vendor relationships work.



Architecture Definitions (Wikipedia)

- The term Enterprise Architecture refers to many things. Like architecture in general, it can refer to a description, a process or a profession.
- To some, "Enterprise Architecture" refers either to the structure of a business, or the documents and diagrams that describe that structure.
- To others, "Enterprise Architecture" refers to the business methods that seek to understand and document that structure.
- A third use of "Enterprise Architecture" is a reference to a business team that uses EA methods to produce architectural descriptions of the structure of an enterprise.
- A formal definition of the structure of an enterprise comes from the MIT Center for Information Systems Research:
Enterprise Architecture is the organizing logic for business processes and IT infrastructure reflecting the integration and standardization requirements of the firm's operating model.

- It is often said that the architecture of an enterprise exists, whether it is described explicitly or not. This makes sense if you regard the architecture as existing in the system itself, rather than in a description of it. Certainly, the business practice of Enterprise Architecture has emerged to make the system structures explicit in abstract architecture descriptions. Practitioners are called "enterprise architects."



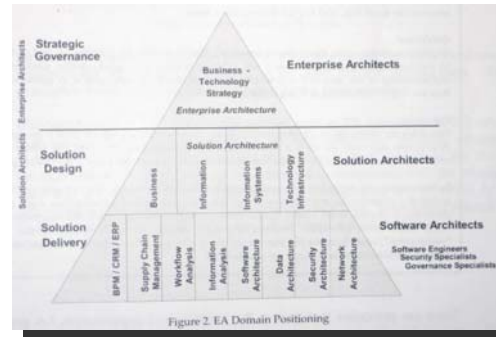
Architecture Definitions (Gartner)

- IEEE 1472-2000 defines an architecture as follows:
 - "... the fundamental organization of a system, embodied in its components, their relationships to each other and the environment, and the principles governing its design and evolution."
 - According to TOGAF, an enterprise architecture is both:
 - 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.
 - Enterprise architecture is the process of translating business vision and strategy into effective enterprise change by creating, communicating and improving the key principles and models that describe the enterprise's future state and enable its evolution. The scope of the enterprise architecture includes the people, processes, information and technology of the enterprise, and their relationships to one another and to the external environment. Enterprise architects compose holistic solutions that address the business challenges of the enterprise and support the governance needed to implement them.
-
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Enterprise, Solution, and Software Architectures

Architecture varies with the scope of the **problem**, **scope** and **duration**

- Enterprise architecture
 - align business-technology
 - strategic
- Solution Architecture
 - provides technology solution to a business need
 - tactical
- Software Architecture
 - delivers a software that business users can act upon
 - operational



Solution Architecture

Level	Scope	Detail	Impact	Audience
Enterprise Architecture	Agency/ Organization	Low	Strategic Outcomes	All Stakeholders
Segment Architecture	Line of Business	Medium	Business Outcomes	Business Owners
Solution Architecture	Function/ Process	High	Operational Outcomes	Users and Developers

From US OMB 2006 FEA Practice Guidance

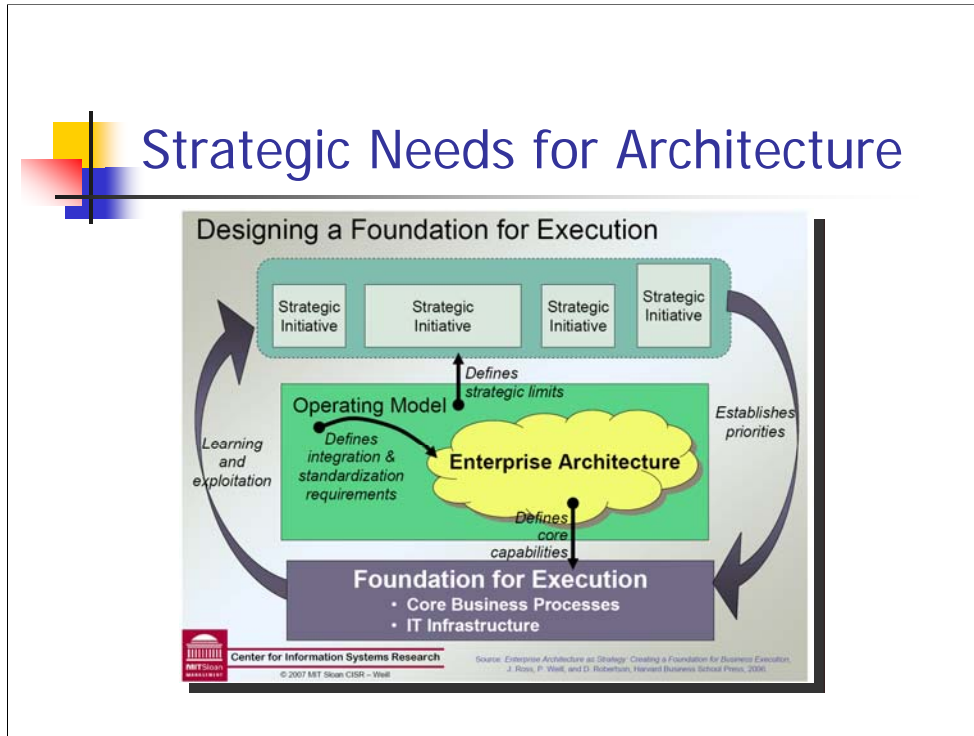
- Solution Architecture is either
 - 1: documentation describing the structure and behavior of a solution to a problem
 - 2: a process for describing a solution and the work to deliver it
- Solution architecture is a kind of architecture that aims to address specific problems and requirements, usually through the design of specific information systems or applications.
- A Solutions Architect is often but not always focused on technical architecture and the meeting of non-functional requirements, often in the context of deploying specific applications.

The documentation is typically divided into a broad views, each known as an architecture domain.

Solution architecture is relative of enterprise architecture (reference 1). The solution described may be all or part of what an enterprise architect's migration plan delivers. The solution might be unrelated to any such plan.

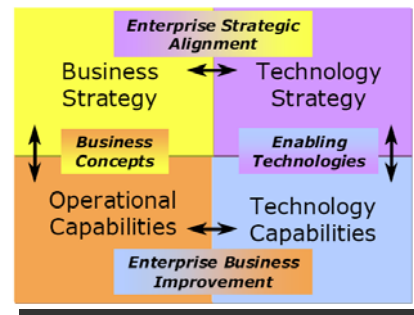
Solution architecture often leads to software architecture work (reference 2) and technical architecture work, and often contains elements of those.

Strategic Needs for Architecture



Strategic Needs for Architecture

- In a modern enterprise, a rigorously defined enterprise architecture approach is necessary to be able to capture a vision of the "entire organization" in all its dimensions and complexity.
- Enterprise Architecture (EA) is a Program (EAP) supported by processes, methods, tools and frameworks, which are able to coordinate the many facets that make up the fundamental essence of an enterprise at a holistic way.

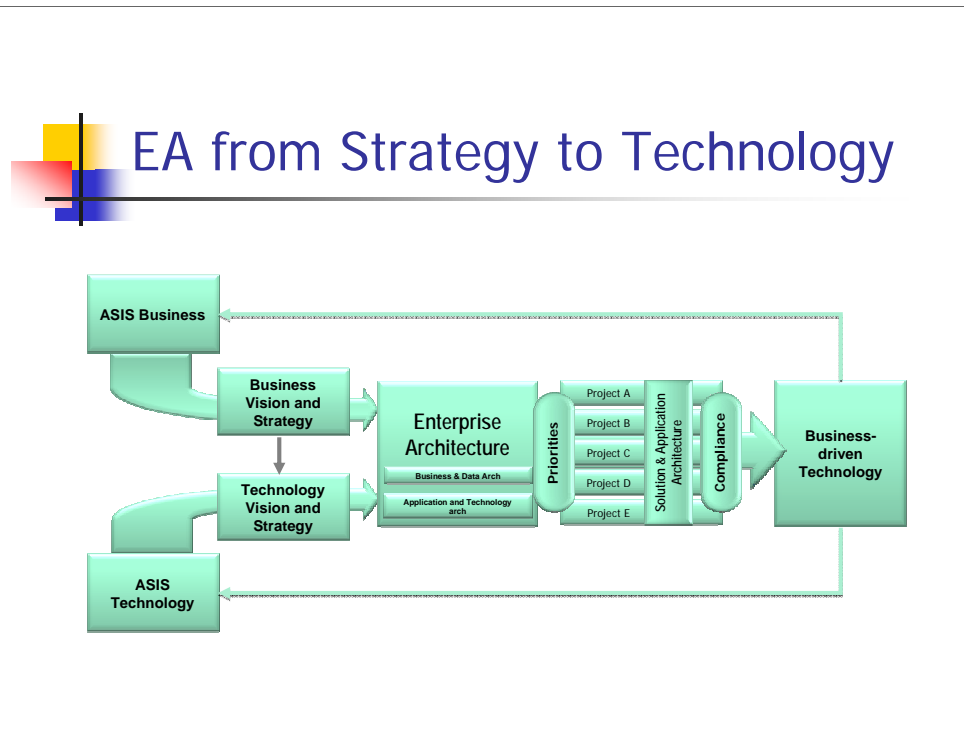


- If defined, maintained, and implemented effectively, these zoning-city plans assist in optimizing the interdependencies and interrelationships among the business operations of the enterprise and the underlying IT that support these operations. It has shown that without a complete and enforced EA (Strategic) Business Units of the enterprise run the risk of buying and building systems that are duplicative, incompatible, and unnecessarily costly to maintain and interface.



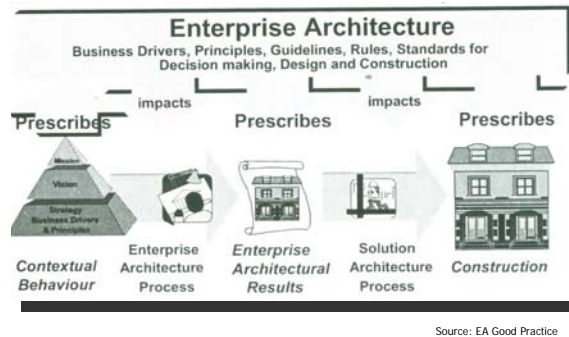
Strategic Needs for Architecture

- An Enterprise Architecture establishes the organization-wide roadmap to achieve an organization's mission through optimal performance of its core business processes within an efficient information technology (IT) environment.
- Simply stated, Enterprise Architectures are "zoning or city plans" for systematically and completely defining an organization's current (baseline) or desired (future) environment and the transformation path between. Enterprise Architectures are essential for corporate governance, change management and portfolio management as well as for sourcing situations where (parts) of the business and or IT are co located at a third party.
- This is accomplished in a coherent set of landscapes of business & IT, expressed in business elements (e.g., vision & strategy, business functions / activities, information flows, and systems environments) and technical elements (e.g., software, hardware, communications, networks), and includes a transition plan from the current environment to the future environment.



Strategic Needs for Architecture

- EA embodies
 - principles
 - rules
 - standards
 - guidelines
- express and visualize the vision, culture, behavior
- implements concepts that prescribe design and construction of certain key elements
- combines style, engineering, construction
- guarantees uniformity and quality of resulting projects



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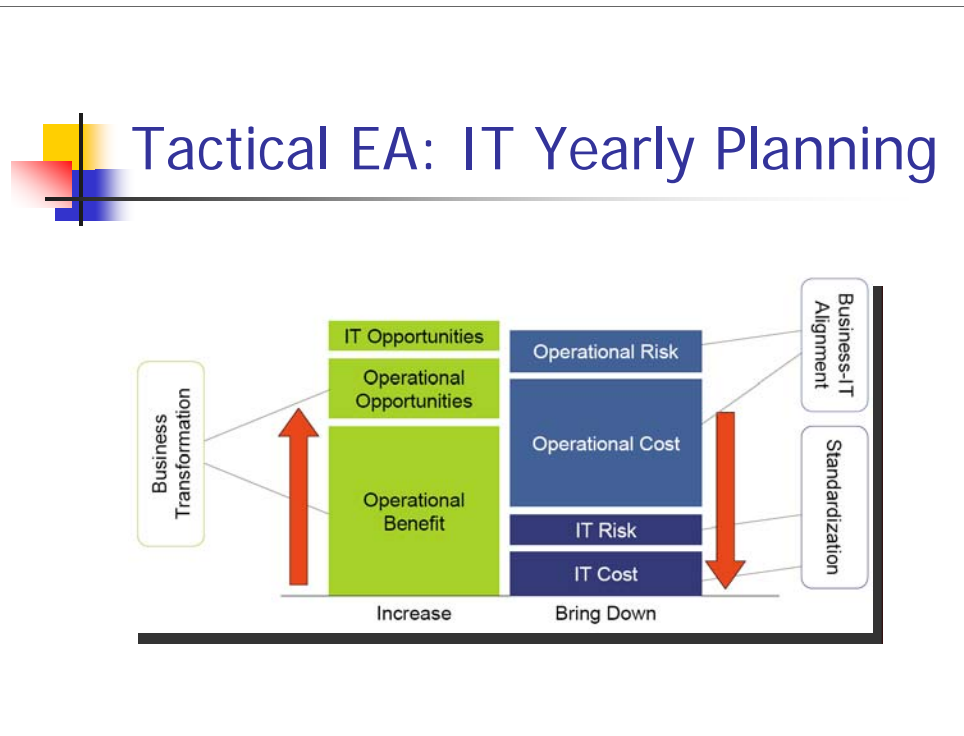
combines

style

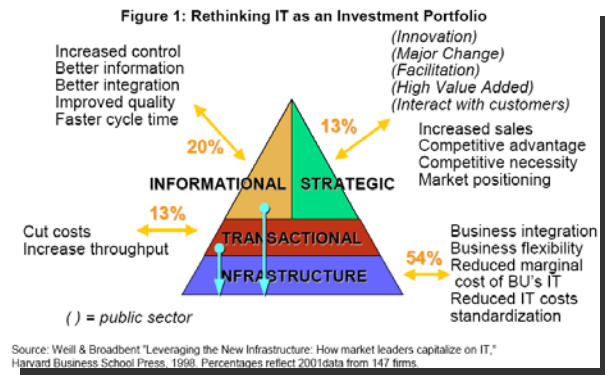
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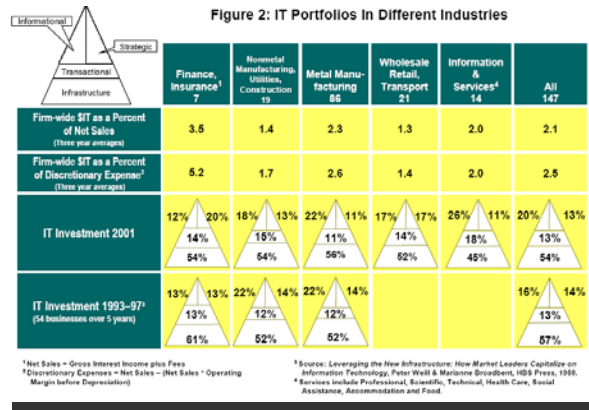


Tactical EA: IT as an Investment Portfolio



Source: CISR wp368

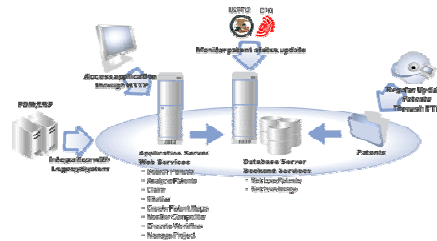
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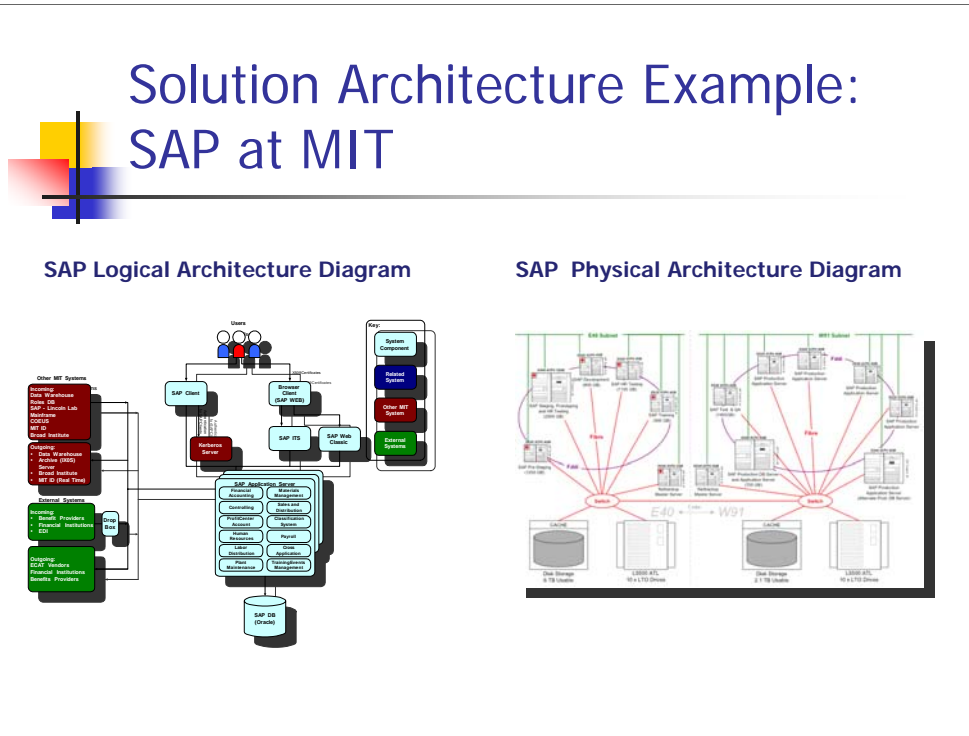


Source: CISR wp368

Operational Needs for Architecture

- Software and hardware must be operational, often 24-7-365
- Architectural considerations and requirements for operations
 - availability
 - redundancy
 - archives and backups
 - break& fix, updates and evolutions





Architecture Is Not Only Design

- Enterprise Architects must walk the talk
 - Strategy is not enough
- it is critical to partner with the business application folks in early stages of design and development
- must accompany resources and projects throughout John Deere Life Cycle

