**STUDY GUIDE FOR MODULE NO. 1**

**THE CONCEPT OF ENTERPRISE ARCHITECTURE**

**MODULE OVERVIEW**

This module aims to provide an overview of Enterprise Architecture (EA), its types and structure. It will also include information on architecture value, myths and risks.

**MODULE LEARNING OBJECTIVES**

**By the end of this module you should be able to:**

* Demonstrate an understanding on the concept of Enterprise Architecture (EA)
* Identify the different types and structure
* Understand the architecture value and identify existing myths and risks in implementing an Enterprise Architecture (EA)

**LEARNING CONTENTS**

Enterprise Architecture has arisen as a field that may assist a ship through the ocean of great waves to a safe and streamlined path to its destination, it may also be compared to town planning and urban design. The field has grown in popularity in recent years, but its principles date back to when the termed information age was used. The people, regulations, strategies, hardware, software, and technology components are what make this complicated man-made system. With EA, analysis, design, planning, and implementation are well put together for the successful development, and execution of these different components.

**What is an Architecture?**

The ISO/IEC 42010 standard defines architecture as: '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'.

**What is an Enterprise?**

An enterprise is another word for-profit business organization or company. It is often associated with entrepreneurial ventures or systematic purposeful activity.

**Definition of Enterprise Architecture**

* EA serves as a blueprint for a successful IT strategy, utilizing and taking advantage on the evolution of IT in a way that it benefits the company while remaining cost-effective
* Well-defined practice/technique of evaluating, creating, planning, and implementing enterprise analyses to successfully execute on corporate strategies
* A discipline that defines, standardizes, organizes, and documents the entirety of a business architecture and all its important elements
* Identifies and analyzes the execution of change based on desired business vision and results to formulate and plan proactive enterprise responses to disruptive forces
* A broad operational framework that examines all aspects of a company's operations while determining how technology helps and supports the company's overall objective

**Where does EA started?**

According to the Enterprise Architecture Book of Knowledge or EABOK, Enterprise Architecture was developed in the 1960s because of “various architectural publications on Business Systems Planning (BSP) by Professor Dewey Walker” (EABOK). John Zachman, a student of Dewey Walker assisted in the preparation and formulation of a more structured EA format. At that time, both of them are also working for IBM, which by that time Zachman published the framework in 1987 in the IBM Systems Journal.

The EA framework was created in reaction to the rise of corporate technology, particularly in the 1980s, this is also the period when computer systems were only beginning to gain traction in the workplace. Companies quickly realized that they would need a plan and a long-term strategy to keep up with technology's rapid expansion.

The idea of enterprise architecture was extended as was modernized to the entire business and not only in IT, ensuring that organization applying it is aligned with its digital transformation goals and can cope up with the technical advancement. With this processes and apps together to build a seamless environment even on large enterprises that are undergoing digital transformation.

**Goals of Enterprise Architecture**

* For businesses striving to keep up with new technologies like the cloud, IoT, machine learning, and other upcoming trends that will force digital transformation, EA is perfect for laying out how information, business, and technology interact.
* According to EABOK, “The framework successfully combines people, data and technology to show a comprehensive view of the inter-relationships within an information technology organization.”
* Another goal reflected in EABOK, The process is driven by a “comprehensive picture of an entire enterprise from the perspectives of owner, designer and builder.” It doesn’t include a formal documentation structure and is intended to offer a more holistic view of the enterprise.
* An effective EAP strategy considers the most recent advancements in corporate processes, organizational structure, information systems, and technology.
* Any EAP strategy's ultimate purpose is to increase the efficiency, timeliness, and dependability of corporate data. Including adapting best processes, practices, as well conduct analysis of where procedures might be integrated or eliminated across the organization for better outcomes.

**Evolution of Enterprise Architecture**

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**Figure 2: An Analogy of the Core Concept of Enterprise Architecture**

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*From www.sciencedirect.com*

**Three Schools of Thought**

There are three schools of thought on business architecture, each with their own set of beliefs (definitions, concerns, assumptions, and limitations). It serves as point for resolving terminological issues and establishing enterprise architecture as a discipline.

**Table 1: Scopes and Purposes of the 3 Schools of Thought**

Graphical user interface, application

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*From www.computer.org*

**Read (3 Schools of Enterprise Architecture):** [jameslapalme-threeschools.pdf (eapad.dk)](https://eapad.dk/wp-content/uploads/2014/11/jameslapalme-threeschools.pdf)

**Components of Enterprise Architecture**

1. **People**

It is important to determine where the EA team belongs inside the organization and to define their position within the operational model. It's worth noting that the scope of a project is always constrained by the EA team's responsibility within an organization.

**Read:** [The Scope Of Enterprise Architecture (goodelearning.com)](https://blog.goodelearning.com/subject-areas/togaf/scope-enterprise-architecture/)

1. **Business Process**

Understanding the business process and flow will be enough to allow you to understand the key areas that are important for an Enterprise Architecture that are answerable with the following questions:

* 1. Is it a standard or non-standard process?
  2. What completes this process?
  3. What business capability(s) does this process supports?
  4. What application(s) does it use?

**Read (Modeling Business Processes using an EA Tool):** [Business Processes - Essential Project Documentation (enterprise-architecture.org)](https://enterprise-architecture.org/docs/business_architecture/business_process_modelling/)

1. **Information and Technology of the Enterprise and its Relationships**

Hardware and software resources including standards, and architectural philosophies that direct the design and installation of IT structures for the use and support of business process, analytics, communications, and services.

1. **External Environment**

The term commonly applies to elements that are no longer the in the organization’s control such as economy, society, technological changes, and institutional drive which includes government regulations, and political systems.

**Importance of the Implementation of EA**

1. Reduces redundancy
2. Simplifies complexities
3. Organizes information
4. Reduces business risks with IT investments

**Enterprise Architect**

They are practitioners who typically report to the Chief Information Officer (CIO). Enterprise Architects are in-charge of analyzing company structures and processes, and they're frequently called on to make conclusions from the data to meet the enterprise architectural goals of efficiency, effectiveness, agility, and continuity of complicated business operations.

Hands-on familiarity with computer systems, hard drives, mainframes, and other architecture technology is required in this position. To be effective, enterprise architects must have a variety of soft skills, including communication, critical thinking, problem-solving, leadership, and knows how to be a team player. Knowledge on the following technologies are also encouraged:

1. Service Oriented Architecture (SOA)
2. Software and Systems Architecture
3. IT and Project Management
4. Strategy Development
5. Cloud Computing

**Other Important Roles in an EA**

1. **Chief Technology Officer (CTO)**

Also called as chief technical officer or chief technologist, is an executive-level position in an organization who is focused on scientific and technological issues. A CTO is also responsible for guiding the organization in venturing to new technologies for the companies future endeavors and plans.

1. **Chief Information Officer (CIO)**

A chief information officer or CIO works alongside with the technical team of the organization or the IT staff members that perform everyday operations. Ensuring that all everyday processes are running smoothly while achieving the company’s desired outcomes on a daily basis.

**Enterprise Architecture Planning (EAP)**

Enterprise Architecture focuses on what needs to be done, while planning is the process of defining an architecture when it is ready to be implemented to support the business. In a top-down approach, EA looks at the business processes plan, builds the IT plan or applications plan, and creates a functional plan where we align business with IT. The Enterprise Architecture Life Cycle or EALC is the fundamental planning format for Enterprise Architecture and strategic planning.

**Activities Involved in EAP**

1. Envision and define the scope of the architecture environment
2. Identify the stakeholders
3. Create business case for systems
4. Create the project, evaluate and maintain

**Steps in the Enterprise Architecture Life Cycle (EALC)**

* EA Development
* Project Management
* Portfolio Management
* Solution Delivery
* Organization Change Management

**Benefits of EAP (According to CompTIA)**

1. Allowing more open collaboration between IT and business units
2. Giving business the ability to prioritize investments
3. Making it easier to evaluate existing architecture against long-term goals
4. Establishing processes to evaluate and procure technology
5. Giving comprehensive view of IT architecture to all business units outside of IT
6. Providing a benchmarking framework to compare results against other organizations or standards

**Types of Enterprise Architecture (Sparx systems)**

Also called the four architecture domains, according to Spewaks EAP in 1993.

1. Business Architecture
2. Data Architecture
3. Applications Architecture
4. Technology Architecture

**Read:** [Types of Architecture | Enterprise Architect User Guide (sparxsystems.com)](https://sparxsystems.com/enterprise_architect_user_guide/14.0/guidebooks/ea_types_of_architecture.html#:~:text=Types%20of%20Architecture.%20The%20overall%20architecture%20of%20an,Business%20Architecture.%20Information%20Architecture.%20Application%20Architecture.%20Technology%20Architecture.)

**Architecture Myths**

1. Long-winded program with no tangible benefits

EA efforts usually takes years to cover a number of projects. Just like any other program, it needs to be plan and carefully managed for outcomes to be evident. It does not always have to be tangible such producing ease of communication, and consistency because of the program.

1. Enterprise Architecture is Solution architecture

Enterprise architecture is strategic in nature and is extended across different boundaries of an organization. Considering the company’s strategy and operating model and translate it to principles, practices, and standards while Solution Architecture is about following an existing design of an Enterprise Architect or implementing an industry-standard practices.

1. Enterprise architecture only belongs to the IT domain

An enterprise architecture focuses on 4 domains or has 4 types: business, data, applications, and technology. While data, applications and technology are under information technology, business processes and strategies play major roles in EA planning.

1. Diagramming is the same as modelling

Modelling may be in written text in Strategy Document/tools (Essential Project, Sparx Systems, SAP) and identify the connections across the these models.

1. Integrating solutions always mean technology-based

Formulating solution is about tracing every connection in between. It is a combination of alternatives, business process, applications, and technology and must always be aligned with the organization’s business goals.

1. Innovative solution is always from best practices

Best practices solutions do not always mean that it is align to the organization’s business strategy since each is unique. An enterprise architect needs to analyze and understand all connections so come up with many solution options that best fit the target company.

**Enterprise Structure**

For effective functioning of an organization, all units must be interlinked to perform a common goal. In an enterprise management system like SAP (Systems Applications and Products in Data Processing), the structure is the basis for the configuration of other parameters.

**Figure 3: Enterprise Structure in SAP**

Diagram

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*From www.techconcepthub.com*

**Read (Concept of Enterprise Structure):** [What is sap enterprise structure? - TECH CONCEPT HUB](https://techconcepthub.com/sap-enterprise-structure-explained/)

**Enterprise Architecture Value**

EA delivers value by offering business and IT leaders with tested and carefully planned recommendations for modifying policies and projects to achieve desired business outcomes that take advantage of relevant business disruptions.

**The IT Value Chain**

Below is an IT supply chain to satisfy business IT demands. Throughout the value chain, EA provides services to ensure that it will provide the best IT supply to satisfy the demand.

**Figure 4: *From Nestan Pty Ltd/Tse, A, Enterprise Architecture Value (2014)***

Diagram, shape

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**IT Activity Groups**

1. Direct (IT Planning)
2. Develop (Design enterprise operation)
3. Deliver (Implement projects to deliver services)

**Specific Activities in the Group**

**IT Planning**

It includes IT related initiatives to support business strategies and govern the execution of these initiatives

* **EA Role**
  + Assist the development of IT strategies and assist management to prioritize IT investments
* **EA Value**
  + Provides strong business IT alignment
  + Enable the optimization across IT projects

**Enterprise Design**

Includes activities to formulate enterprise blueprint for solution development.

* **EA Role**
  + Develop architecture models and frameworks
* **EA Value**
  + Provide a coherent and consistent business processes across various business units
  + Provide clear direction and guidance in constructing solutions
  + Create a cost-effective IT development for new business capabilities

**Solution Development**

Includes activities to develop IT-focused solutions to satisfy business requirements.

* **EA Role**
  + Develop integrated application systems
  + Provide architectures that will serve as basis for solution development
* **EA Value**
  + Better ROI
  + Enable innovation within the organization
  + Reduce time and development cost

**Project Implementation**

Includes project implementation and deployment activities.

* **EA Role**
  + Review on the project’s requirements
  + Provide structured approach in identifying designs to be retained, remove or trade-off based on the needed requirements
  + Ensure that solution adheres to standards
* **EA Value**
  + Reuse of IT assets and resources
  + Return of IT investments
  + Align IT solutions and resources to what the organization needs
  + Reduce failure

**IT Support**

Includes activities that support the solution after it was deployed or implemented.

* **EA Role**
  + Maintain technical standards
  + Guide future developments and provide system support
* **EA Value**
  + Increase in operational efficiency and effectiveness
  + Reduce complexity and cost

**Figure 5: EA Value**

Diagram

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***From Nestan Pty Ltd/Tse, A, Enterprise Architecture Value (2014)***