

Approach
to Technology
Architecture

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Our Approach to Technology Architecture

The role of enterprise architecture (EA) is to integrate the resources necessary to create a complete enterprise architecture view of the Organisation, as well as to provide products and services to facilitate the organisation's transition to an integrated environment with optimised processes that are responsive to change and to the delivery of the business strategy. This EA's role is cross-disciplinary, requiring integration of diverse skills, methods and tools, within and beyond the technology community. Holistic EA is pragmatically developed through the ongoing collaboration between business role players, the IT executive team, and the EA team

Organisations that adopt the holistic EA approach will accelerate the development of information systems, link system requirements to the most important business drivers, and reduce the complexity of their IT investment portfolio. META 2003 Trend

In order to understand EA and our solution offering, it is important to comprehend how the Knowledge Frameworks, the EA Capability, and the Business, Information, Data, Application and Technology (BIDAT) architectures are systemically inter-related



1.1 Knowledge Frameworks

The role of an Enterprise Architecture Framework is to provide a logical structure for classifying and organising the descriptive representations (i.e., models) of an enterprise. The framework used to structure the contents of the Enterprise Architecture Repository is that of John Zachman, the internationally acknowledged authority on Enterprise Architecture. The Zachman framework allows for the description of complex objects by addressing the objects from different perspectives within a framework. It structures models of the Enterprise or Information Management (IM) products, services or solutions from the perspective of various people (or roles) involved with conceptualising, managing or owning, designing, building and operating the system or business. In essence, the framework answers the fundamental questions of What, How, Where, Who, When and Why from differing role perspectives such as those of the functional director, project sponsor, business process owners, process specialists, developers and end-user.

Although the Zachman Framework applies to enterprises, the Framework itself is generic. It is a comprehensive, logical structure for the descriptive representations (i.e. models, or design artefacts) of any complex object, and does not prescribe any particular method, representation technique, or automated tool. The framework's strength is that it provides a method of thinking about an enterprise in an organised way, so that it can be described and analysed. It also enables the individuals

involved in producing enterprise information systems to focus on selected aspects of the system, without losing sight of the overall enterprise context. In designing and building complex systems, such as enterprise systems, there are simply too many details and relationships to consider simultaneously.

At the same time, isolating single variables and making design decisions out of context would result in sub-optimisation, with all the attendant costs and risks. The challenge is the same whether the system is physical, like a smelter, or conceptual, like an enterprise system. How should the system be designed and built, piece-by-piece, and step by step, so that it achieves its purpose without losing its value or raising its cost by optimising the pieces while sub-optimising the overall.

Experience has shown that organisations rapidly reach a critical mass of model content. At this stage a virtuous feedback-loop develops, as individuals perceive that they obtain more value than the cost of their personal contribution to the organisation's knowledge base of models. Business models are, for example, reused for package selection, development and implementation; the same models are also used by the Audit and Risk Management function or Six Sigma business process improvement initiatives. The reuse of an existing model results in a 90-95% return on the development cost of the model.

This systemic approach converts tacit knowledge about the enterprise, its strategies, products, processes and customers into explicit information that is actionable.

1.2 Architecture Domains

Although the Zachman Framework has become the de facto standard in Enterprise Architecture, the framework is perhaps too complicated for general business use. We adopt a simplified framework for business communication while the EA team rigorously applies the Zachman framework to manage models within the Enterprise Architecture repository. This simpler communication-framework addresses the Business, Information, Data, Applications and Technology architecture domains - referred to as the "BIDAT framework". We have developed a direct mapping between the BIDAT model and the Zachman framework and have generated tools that can, for example, generate websites based on a specific architectural layer.

This approach enables the deployment of models that hide complexity and provide simple, easy access to deliverables such as the business model, job descriptions, STOP/RACI matrices, performance measures, application functional specifications, middleware specifications etc. Our technical capability ensures that "the model is the documentation". This means, for example, that the functional specifications (e.g. e-Business software) and training materials are generated directly from the model in the form of Microsoft Word documents and/or a website. This reduces the

fragmentation of documentation, provides a repository that houses key components of the organisation's Intellectual Capital in a format that is actionable, and directly supports organisational agility. We have practically applied the concept of holistic Enterprise Architecture for a number of years; that has now become a best practice recommended by META Group.

By 2006, 50% of enterprises will move beyond a pure technology architecture focus to include enterprise business architecture, enterprise information architecture, and enterprise solution architecture. Architecture teams that fail to move beyond the technical focus will come under increasing pressure to demonstrate business value. **META 2003 Trend**

The following are the architecture domain definitions:

- **Business Architecture** - The business policies, strategies, people, processes, business rules, products, services, customers, geographical span, partners and competitors define the enterprise. The business architecture is thus the context within which the business operates.
- **Information Architecture** - All the sources of information, supporting business and decision processes, including paper, graphics, video, speech and thought that defines the sources and destinations of information, its flow through the organisation, as well as the rules for persistence, security and ownership.
- **Data Architecture** - As a subset of the information that drives the enterprise, the data architecture defines the types of data, their form, and the rules that govern their use. The elements of this layer are the only forms of information that must be stored by information technology.
- **Applications Architecture** - The applications that the enterprise chooses to access and manipulate its data also help to define its ability to communicate internally and, through electronics commerce, externally.
- **Technology Architecture** - Underpinning the other layers, the technology of the enterprise enables or disables the ability of the enterprise to execute its business strategy. The implication for the technology architecture is that the choice of servers, client devices, databases, middleware and network components must be linked ultimately to the policies and goals of the business architecture.



The Enterprise Architecture capability provides multiple views of the BIDAT framework such as:

- 1. Time-Based View:** Time-based views are defined for the architecture domains where the Organisation would be represented by several different architecture instances, each representing the enterprise at a particular point in time. One architecture instance will represent the current enterprise state (the “as-is”, or baseline). Another architecture instance, perhaps defined only partially, will represent the ultimate target end-state (the “vision”). In-between, intermediate or “transitional” architecture instances may be defined, each comprising its own set of target architecture descriptions. These time-based views support strategic and tactical planning, budgeting and enterprise portfolio management.

their collaboration and knowledge transfer. Existing documentation such as presentations, training material, technical diagrams etc. is linked to the business processes and is often stored in a documentation management system and subjected to configuration management and change control. The intranet provides easy and relatively inexpensive access to the model content.
- 2. Role-Based View:** The Enterprise Architecture Capability provides role-based views of the architectural domains, tailored to the specialised needs of, for example, software deployment, application integration, organisational design, training and development, risk, audit, business process improvement etc. This capability supports Knowledge Management as personal, tacit knowledge is capture in models and directly linked to the business process at an activity level. The linking of information to the business process and business role is superior to conventional knowledge management approaches that simply focus on content management because this “human centred” approach links those who “know” to those who need to know and supports
- 3. Globalisation and Portfolio Management:** The design of the architecture domains provides a Global, Regional and Local views of the Enterprise Architecture. A current best operating practice template provides a benchmarking capability and the means of transferring best practice systems across the group. Variants of the architecture domains such as Europe, America, South Africa etc. could be used to drive pragmatic globalisation (globally consistent processes) based on regional business needs, process maturity and the need to harness local innovation for the group's advantage.
- 4. Strategic Planning View:** The Enterprise Architecture capability provides organisation with a unique opportunity for moving to an Enterprise Architecture repository with the business objective of transforming a static approach to development of business strategies into a “living” and dynamic business capability.

5. Other Viewpoints: The Enterprise Architecture Capability provides a number of views that support requirements for an IT Enterprise Architecture blueprint and the e-Business programme. These views include a:

- **Risk View**
- **Data Stewardship View**
- **Information Security View**

1.3 Enterprise Architecture Capability

The purpose of the Enterprise Architecture Capability is to integrate the resources necessary to create a complete Enterprise Architecture view of the organisation, as well as to provide products and services to facilitate the organisation's transition to an integrated environment with optimised processes that are responsive to change and to the delivery of the business strategy. This EA role is cross-disciplinary, requiring integration of diverse skills, methods and tools, within and beyond the technology community and comprises of:

- **People** – The roles and skills of the individuals are aligned with the BIDAT architecture domains (Business Process Engineers, Information and Data Architects, Application Architects and Technology Architects), Modelling Office Support who primarily manage the modelling office, and the Technical team who develop and support the modelling office tools and technical products.
- **Tools** – The toolset includes modelling tools that support numerous BIDAT modelling methods, utilities for managing model quality and integration, reverse engineering

tools that synchronise database structures, reverse engineering of application code, reports and website generation tools for providing broad-based access to the model content, business process improvement tools such as simulation, and change impact assessments.

- **Content** - The contents of the Enterprise Architecture repository include principles, standards, inventory (such as the applications portfolio), models and roadmaps for the Enterprise Architecture domains.
- **Process** - The Enterprise Architecture process, combines people, tools, and content in the delivery of EA products and services that add value to the customers of the BI-DAT architectural domains. The Enterprise Architecture capability is packaged in order to transfer skills to our clients.

In summary, eSoftware Solutions defines Enterprise Architecture as an iterative process to align the Business Strategy and Information Technology capability (what technology is available to improve the business):

- It is a process not a point in time event
- It is iterative , requiring reviews and changes when the organisation develops and technology develops.
- The key is the alignment of business strategy and Information Technology capability
- Enterprise Architecture sets direction for the Information Technology function in an organization
- Ensures that Information Technology spend are spent on value creation activities for the organisation



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