

The Zachman Enterprise Framework

The Origins and Purpose of the Zachman Enterprise Framework

The Zachman enterprise framework was invented by John Zachman in 1980 for IBM, and is now in the public domain. The framework borrows from business design principles in architecture and manufacturing and provides a way of viewing an enterprise and its information systems from different perspectives, and showing how the components of the enterprise are related.

In today's complex business environments, many large organisations have great difficulty responding to change. Part of this difficulty is due to a lack of internal understanding of the complex structure and components in different areas of the organisation, where legacy information about the business is locked away in the minds of specific employees or business units, without being made explicit.

The Zachman framework provides a means of classifying an organisation's architecture. It is a proactive business tool, which can be used to model an organisation's existing functions, elements and processes - and help manage business change. The framework draws on Zachman's experience of how change is managed in complex products such as aeroplanes and buildings.

Although the framework can be used for information systems architecture (ISA) and is widely adopted by systems analysts and database designers, John Zachman has stressed that it extends to the entire *enterprise* architecture, and is not restricted to simply *information* architecture.

“Enterprise Architecture is the process used by a business to make explicit representations of enterprise operations and resources, rather than relying on implicit notions or understanding in individual managers' heads.”

Stan Loche

The Zachman enterprise framework is represented and promoted by the ZIFA (Zachman Institute for Framework Advancement) organisation. It is not a standard and there are similar enterprise frameworks that have been derived from it, such as the Federal Enterprise Architecture Framework (FEAF), The Open Group Architecture Framework (TOGAF), and the Department of Defence Architecture Framework (DoDAF).

The framework provides a consistent and systematic way of describing an enterprise and has been employed in many large organisations, such as Volkswagen, General Motors, Bank of America and Health Canada.

Relevance to Technical Communications

Technical communicators are closely involved in information design and management, whether at the level of the user, the designer, the integrator or the builder. Traditionally, their role has been associated with the Information/IT architecture side of an organisation.

Business analysts are currently the main providers of enterprise architecture services. However, given the depth of business knowledge and information management experience many technical communicators can offer, documenting an enterprise's architecture is potentially a service that technical communicators with a good level of business understanding could provide.

In addition, the way the Zachman model is structured, in terms of a clear breakdown of information by audience and by standard questions, will be familiar to those working in the communications disciplines, such as technical communications.

Using the Zachman Framework for a Knowledge Management Project

I was first introduced to the Zachman Enterprise Architecture in a project to document the architecture, processes and technology deployed in the IT department at a large, distributed organisation.

The task was broader than the traditional technical communicator's role of documenting a specific product or service. It involved managing a broad spectrum of knowledge and finding the most efficient way to capture and store information about the enterprise's processes, procedures, systems, applications and people.

The first requirement was therefore the need for a suitable framework for organising the enterprise's information. The Zachman enterprise model was suggested as a suitable framework for the project.

How it works

The easiest way to understand the Zachman Enterprise architecture framework is to view it as a classification scheme represented visually as a table or matrix, with columns and rows. Each cell within the matrix provides a unique model or representation of the enterprise. The information in each row of the matrix would be relevant to the particular person in the enterprise viewing it. See Figure 1.

	WHAT	HOW	WHERE	WHO	WHEN	WHY
	DATA	FUNCTION	NETWORK	PEOPLE	TIME	MOTIVATION
SCOPE (Contextual) Planner	List of things important to the business Entity = Class of business things	List of processes the business performs Process = Class of business process	List of locations in which the business operates Node = Major business locations	List of organisations important to the business People = Major business unit	List of event cycles significant to the business Time = Major Business Event Cycle	List of business goals/strategies End/Mean = Major Business Goal/Strategy
BUSINESS MODEL (Conceptual) Owner	e.g., Semantic Model Entity = Business Entity Relationship = Business	e.g., Business Process Model Process = Business Process IO = Business Resource	e.g., Business Logistics System Node = Business Location Link = Business Linkage	e.g., Workflow Model People = Organisation unit Work = Work Product	e.g., Master Schedule Time = Business Event Cycle Cycle = Business Cycle	Business Plan End = Business Objective Means = Business Strategy
SYSTEM MODEL (Logical) Designer	e.g., Logical Data Model Entity = Data Entry Relationship = Data Relationship	e.g., Application Architecture Process = Application Function IO = User Views	e.g., Distributed System Model Node = I/S Function Relationship = Line Characteristics	e.g., Human Interface Architecture People = Role Work = Deliverable	e.g., Processing Structure Time = System Event Cycle Cycle = System Event Cycle	e.g., Business Rule Model End = Structural Assertion Means = Action Assertion
TECHNOLOGY MODEL (Physical) Builder	e.g., Physical Data Model Entity = Segment/Table Relationship = Pointer/Key	e.g., System Design Process = Computer Function IO = Data Elements/sets	e.g., Technology Architecture Node = H/w /System s/w Relationship = Line Specifications	e.g., Presentation Architecture People = User Work = Screen Formats	e.g., Control Structure Time = Execute Cycle Cycle = Component Cycle	e.g., Rule Design End = Condition Means = Action
DETAILED REPRESENTATIONS (Out-of-context) Subcontractor	e.g., Data Definition Entity = Field Relationship = Address	e.g., Program Process = Language Statement IO = Control Block	e.g., Network Architecture Node = Address Link = Protocol	e.g., Security Architecture People = Identity Work = Job	e.g., Timing Definition Time = Interrupt Cycle Cycle = Machine Cycle	e.g., Rule Specification End = Sub-condition Means = step
FUNCTIONING ENTERPRISE	e.g DATA	e.g FUNCTION	e.g NETWORK	e.g ORGANISATION	e.g SCHEDULE	e.g STRATEGY

Figure 1: Adaptation of the Zachman Enterprise Architecture Framework

The framework offers a set of descriptive representations or models relevant for describing an enterprise.

Each cell in the table must be aligned with the cells immediately above and below it. All the cells in each row also must be aligned with each other. Each cell is unique. Combining the cells in one row forms a complete description of the enterprise from that view.

Matrix Columns

The columns represent the *interrogatives* or questions that are asked of the enterprise. These are:

- **What** (data) – what is the business data, information or objects?
- **How** (function) – how does the business work, i.e., what are the business’ processes?
- **Where** (network)– where are the businesses operations?
- **Who** (people) – who are the people that run the business, what are the business units and their hierarchy?
- **When** (time) – when are the business processes performed, i.e., what are the business schedules and workflows?

- **Why** (motivation) – why are the processes, people or locations important to the business, i.e., what are the business drivers or business objectives?

The framework enables complex subjects to be distilled into systematic categories, using these six basic questions. The answers to these questions will differ, depending on the perspective or audience (represented in the rows).

The columns can be presented in any order.

Table 1 provides an example of the contents in the *Who* or *People* column.

Row	Perspective	Cell Example	Agent	Work
1	Planner	Organisation list	Class of agent	
2	Owner	Organisation chart	Organization unit	Work product
3	Designer	Human interface architecture	role	Deliverable
4	Builder	Human/technology interface	user	Job
5	Subcontractor	Security architecture	identity	Transaction

Table 1 : Contents of Cells in the *People (Who)* Column

Matrix Rows

Each row represents a distinct view of the organisation, from the perspective of different audiences. These are ordered in a desired priority sequence.

A row is allocated to each of the following audiences:

- **Planner** – understands the business scope and can offer a *contextual view* of the enterprise.
- **Owner** – understands the business model and can provide a *conceptual view* of the enterprise.
- **Builder** - develops the system model and can build a *logical view* of the enterprise.
- **Designer** – produces the technology model and can provide a *physical view* of the enterprise.
- **Integrator (sub-contractor)** – will understand detailed representations of specific items in the business, although they will have an *out-of-context view* of the enterprise.
- **User** – provides a view of the *functioning enterprise*, from the perspective of a user (e.g., an employee, partner or customer).

The first matrix row – the Planner’s View

This is the first row in the matrix. The planner’s view of the enterprise is contextual. The planner looks at external requirements and business drivers, and is concerned with representing the business functions. The following information is of interest to the planner:

	What or Data	How or Process	Where or network	When or schedule	Who or people	Why
Planner’s view	A list of objects that the Enterprise is interested in.	A list of processes or functions that the organisation performs.	The business locations.	The cycles and events related to each function. .	A list of organisations important to the business.	A list of business objectives.

For example:

	Research areas, markets, products, services – whatever is important at a high level to the business.	Designing, testing, manufacturing, documenting, selling, distributing, marketing.	A list of business offices or regions in which the business operates.	Development schedules	Suppliers, partners, resellers, contractors and other third parties	High-level goals and targets
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Table 2: Example of the Planner’s view

Putting the Framework into Practise

A logical point to start would be at the top left of the matrix and work your way down and across the table. The relevant business information or ‘models’ used to represent a specific area of the business may already exist in formalised business plans, project schedules, system specifications, procedure guides, organisation charts and other corporate documents.

As you go through the rows and columns of the matrix, there will be gaps that need to be filled, where implicit information known only to a single person or a few ‘experts’ needs to be made explicit and available to a wider audience. There may be instances of overlap or redundancy.

As a technical communicator your role would be to ensure the information you gather is comprehensive, reliable and appropriately categorised. At the same time, the business objective in this would be to gain a better understanding of the organisation’s architecture, with the goal of managing change and reducing redundancies and overlaps.

The information could be stored in a database or other file management system that allows easy retrieval. The categories of the matrix will help the enterprise not only to clearly categorise information, but also to easily retrieve relevant information.

In my particular project, we created an internal support website, with links through to detailed information, directly from a page representing the rows and columns of the matrix.

Templates and examples

You can view our own working template at the following location:

<http://www.technical-communicators.com/framework/>

Examples of working implementations of the Zachman enterprise framework are available at:

<http://apps.adcom.uci.edu/EnterpriseArch/Zachman/>

Recommending the Framework for your Organisation

The Zachman enterprise framework can be viewed as a tool for creating knowledge and clarifying thinking, and as an aid in analysis and decision-making. It is a strategic information asset that can help shape an organisation. The benefits include:

- Readily available documentation for the enterprise
- Ability to unify and integrate business processes and data across the enterprise
- Increased business agility by lowering the complexity barrier
- Reduced solution delivery time and development costs by maximising reuse of enterprise models
- Ability to create and maintain a common vision of the future shared by both the business and IT communities.

References

- John Zachman, 1987, **The Zachman Framework for Enterprise Architecture**.
- Stan Loche, 2003, **The Zachman Enterprise Architecture**, Metadata Systems Software Inc.

Links

- Zachman Institute for Framework Advancement:
- <http://www.zifa.com/>
- Extending the RUP with the Zachman Framework:
<http://www.enterpriseunifiedprocess.com/essays/zachmanFramework.html>
- JPEG and PDF version of the framework :
<http://www.zifa.com/framework.html>

- Alex Hoffman: What is the Zachman Framework for Enterprise Architecture?
http://weblogs.asp.net/ahoffman/archive/2004/10/21/Reference_3A00_-_What-is-the-Zachman-Framework-for-Enterprise-Architecture_3F00_.aspx
- Zachman Framework Applied to Administrative Computing Services:
<http://apps.adcom.uci.edu/EnterpriseArch/Zachman/>
- Zachman Framework Implementation:
http://www.mega.com/index.asp/1/en/wp/mega_zachman

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