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THE CHALLENGE IS CHANGE: A MANAGEMENT PAPER

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Article

Change is happening. Few thoughtful people would argue with this observation as multitudes of people are being impacted personally

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as well as organizationally. Virtually every enterprise is being stretched to the limit, attempting to maintain its viability and/or profitability in the face of unparalleled uncertainty and change in every dimension of its environment ... from consumer to supplier, from competition and regulation to its own culture ... and, there is no respite in sight. Credible social and business prognosticators, notably Alvin Toffler ("Future Shock" 1970) and Peter Drucker ("Managing in Turbulent Times" 1980) have been anticipating this ever-increasing rate of change for decades, so no enterprise, no manager, no person should allow themselves to be caught by surprise.

Paradoxically, it seems that few enterprises have developed strategies for addressing change as an issue in its own right, not merely change in its products, but change in the enterprise itself. It can be convincingly argued that unless an enterprise has developed an explicit strategy to accommodate the dramatically increasing rate of change, the enterprise is likely either:

- banking on "more of the same" ... that is, depending for survival on working harder and faster, or
- hoping beyond hope that some technological "silver bullet" will appear and (mystically) remove the complexity and trauma of assimilating radical change.

Working harder and faster leads to organizational burn-out, and chasing after "silver bullets" only leads to disillusionment, both of which further complicate the enterprise's ability to accommodate change, neither of which is realistic for addressing an issue of such significance that it effects the very destiny of the enterprise.

There is substantive precedent for assimilating high rates of change..

Learning from Airplanes and Buildings

Conclusions can be drawn about strategies for managing change that are not merely based on theoretical speculation, but on proven experience with how change is managed in complex *physical* products (like airplanes or buildings.) Some substantive effort has been invested in observing the process of building complex engineering products, studying the disciplines of Architecture and Construction as well as Engineering and Manufacturing, with the intent to apply their experience to "building" enterprises. Resident in these older industries is a wealth of knowledge about how to produce relevant, complex products into a dynamic marketplace as well as knowledge about how to maintain and change those products once

they are built, even in the face of ever-changing usage requirements and technologies. That is the challenge of the modern enterprise: to be relevant in the context of its dynamic marketplace and to maintain that relevance even in the face of a dramatically changing environment and technological base.

When one applies Architecture and/or Engineering concepts to enterprises, it becomes evident that designing and changing enterprises is not any different and is certainly not any easier than designing and changing buildings or airplanes. As a matter of fact, in both cases, when change is not explicitly anticipated, the result is early obsolescence and the only difference between building or airplane junk yards and enterprise "junk yards" is that enterprise "junk yards" get strewn with people and non-depreciated assets rather than metallic parts and plastic components. This would suggest that an explicit strategy for accommodating change must be defined and employed in order to ensure the life of the complex product (e.g. enterprise) is long enough to recover the investment that produced the product (enterprise) in the first place.

Making Enterprise Design and Change Comprehensible

A useful approach to make enterprise design and change management comprehensive and yet, comprehensible, is to describe the architectural (or, engineering) process, identifying the descriptive representations that are created and used for *physical* products. With this as a basis, it is straight-forward to identify the equivalent process and descriptive representations for conceptual "products" (i.e. enterprises.) It is by no accident that many of these enterprise representations are recognizable as models or, "deliverables" from the process of developing information systems. Furthermore, it is easy to see the logical relationships (structure) of the various descriptive representations of the enterprise and its systems which can be depicted as a "Framework for Enterprise Architecture." (See Figure 1 below.)

The older disciplines of Architecture and Manufacturing have accumulated considerable bodies of product knowledge through disciplined management of the "product definition" design artifacts from which the Framework was derived. This has enabled enormous increases in product sophistication and the ability to manage high rates of product change over time. Similarly, disciplined production and management of "*Enterprise* definition" (i.e. the set of models identified in the Framework for Enterprise Architecture) should

likewise provide for an accumulation of a body of *Enterprise* knowledge to facilitate enormous increases in *Enterprise* sophistication and accommodation of high rates of *Enterprise* change over time.

ENTERPRISE ARCHITECTURE - A FRAMEWORK




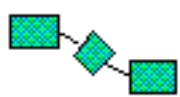
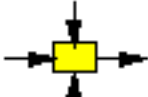
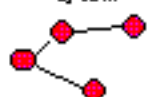

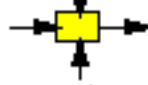
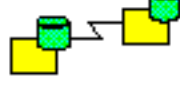
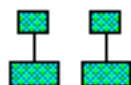





	DATA <i>How</i>	FUNCTION <i>How</i>	NETWORK <i>Where</i>
OBJECTIVES/ SCOPE	List of Things important to the business 	List of Processes the Business Performs 	List of Locations in which the Business Operates 
<i>Owner</i>	ENTITY = Class of Business Thing e.g. "Semantic Model" 	PROCESS = Class of Business Processes e.g. "Business Process Model" 	MODE = Major Business Location e.g. "Business Logistics System" 
MODEL OF THE INFORMATION SYSTEM	e.g. "Logical Data Model" 	e.g. "Application Architecture" 	e.g. "Distributed System Architecture" 
<i>Designer</i>	ENT = Data Entity REL = Data Relationship e.g. "Physical Data Model"	PRO = Application Function I/O = User Views (Set of Data Elements) e.g. "System Design"	MODE = I/O Function (Processor, Storage, etc) LINK = Line Characteristics e.g. "System Architecture"
TECHNOLOGY MODEL			
<i>Builder</i>	ENT = Equipment/Resources REL = Pointers/Key/Info. e.g. "Data Definition"	PRO = Computer Function I/O = Screen/Device Formats e.g. "Program"	MODE = Hardware/System Software LINK = Line Specifications e.g. "Network Architecture"
DETAILED REPRESENTATIONS			
<i>Sub-Contractor</i>	ENT = Field REL = Address e.g. DATA	PRO = Language Statement I/O = Control Block e.g. FUNCTION	MODE = Address LINK = Protocol e.g. NETWORK
FUNCTIONING SYSTEM	e.g. DATA	e.g. FUNCTION	e.g. NETWORK

Figure 1 - The set of descriptive representations (models) relevant for describing an Enterprise, analogous to the set of descriptive representations relevant for describing an airplane, or a building, etc.

The key to accommodating change in the knowledge-based, Information Age enterprise lies in the "engineering" discipline for

building and managing the enterprise models coupled with the cultural discipline to employ the resultant models in the on-going operation of the enterprise.

In short, there is excellent precedent in the older disciplines of Architecture and Manufacturing that provide guidelines for addressing the challenge of change confronting the modern enterprise. The key lies in producing and managing the descriptive representations of the Enterprise which are analogous to the descriptive representations of of any complex physical product, and which are defined by the Framework for Enterprise Architecture. Build models, store models, manage (enforce) models and change models ... the only rational Enterprise response (with substantive precedence) to meet and accommodate the "Challenge of Change" that is so evident a characteristic of the "Information Age."

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The Author

[John Zachman](#) is the author of the "*Framework for Information Systems Architecture*", which has received broad acceptance throughout the world as an integrative framework for managing change in Enterprises and in the systems that support them. He is

not only known for this work, but also for his early contributions to *Business Systems Planning*, IBM's widely used information planning methodology in the 1970s, as well as *Intensive Planning*, the basis for IBM's executive, team planning techniques.

Mr Zachman has focused on planning and information strategies, and on architecture, since 1970 and has written many articles on these subjects. He travels nationally and internationally, teaching and consulting, and has facilitated innumerable executive team planning sessions. He is a popular conference speaker known for motivating messages on information issues. He has spoken to thousands of information professionals and business managers on every continent.

John Zachman is a member of the International Advisory Board of the Data Administration Management Association, DAMA International; a member of the International Information Resource Management Advisory Council of Smithsonian Institution in Washington DC; and of the Board of Directors of the Repository/Architecture/Development Users Group.

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