

Rules: Necessary, But Not Sufficient

How IT all fits together

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SIM EA Working Group: (SIMEAWG)



Who we are
&
what we do



<http://eawg.simnet.org>

The **SIMEAWG** is ...

... an all-volunteer group of over 80 EA practitioners, academics, and thought leaders, representing over 50 organizations from industry, government, and academia, dedicated to understanding and improving EA practices, and helping IT professionals and their organizations capitalize on the opportunities of EA.

SIMEAWG Member Organizations

As of 22-
August-08

- **ABN AMRO**
- **Allstate Insurance**
- **Association of Enterprise Architects**
- **Atos Origin**
- **Auxis**
- **Aviall**
- **BAE Systems**
- **Basic Designs**
- **BizRules.com**
- **CapitalOne**
- **Chubb & Son**
- **Ciber**
- **CIT Group**
- **Citigroup**
- **Community College of Southern Nevada**
- **DePaul University**
- **Document Sciences Corporation**
- **Diversified Technology Services**
- **EADirections**
- **EDS**
- **Forrester**
- **HCSC (Health Care Service Corporation)**
- **IBM**
- **Information Systems Research Center**
- **International Paper**
- **Interstate Batteries**
- **iRobot**
- **L-3 Communications- Avionics Systems**
- **LiquidHub**
- **Lockheed Martin**
- **Marsh Risk Consulting**
- **Microsoft**
- **Net.Net**
- **New Madison Avenue**
- **NextPression, Inc.**
- **Northwestern Mutual**
- **Pariveda Solutions**
- **Pennsylvania State University**
- **People's Bank**
- **PepsiCo**
- **Pernod Ricard**
- **Pinnacle Technical Resources**
- **PNM Resources**
- **Price Chopper**
- **Russell Reynolds Associates**
- **Syracuse University**
- **Texas Instruments - Education Technology**
- **Universidad Católica del Norte**
- **University of Maryland University College**
- **University of Missouri - Rolla**
- **University of North Texas**
- **Westchester County, NY**
- **Zachman Framework Associates / Zachman International**

Mission of the SIMEAWG

(SIM Executive Board Oct-2006)

- Enable IT organizations to understand, create, and manage EA in partnership with the business;
- Identify and share processes, methods, tools, concepts, and best practices;
- Help IT organizations substantially enhance the way they manage change, reduce complexity, reengineer processes, plan, strategize, govern, manage projects, and deliver value.

The SIMEAWG will achieve its mission by:

- ✓ Developing a common understanding of what “EA” is and why it is important to the organization.
- ✓ Proposing materials for CIOs to use to make EA simple to comprehend & verbalize to their peers & others in the enterprise.
- ✓ Determining, through a survey of SIM membership (and other groups if possible), the current state of EA practices.
- ✓ Understanding the challenges and opportunities for the CIO’s organization in leading EA.
- ✓ Sharing how organizations have successfully implemented and managed EA.
- ✓ Identifying EA best practices including critical initiatives and enabling processes for the successful leadership and management of EA.

SIMEAWG – What we do

- ✓ **COLLABORATE:**
 - ✓ Meet three times a year.
 - ✓ Have three conference calls a year.
 - ✓ Work together on ...
- ✓ **STUDY:**
 - ✓ Conduct an annual study to determine the “state of EA”.
 - ✓ Sponsor and participate in research to understand and further the practice of EA
- ✓ **SHARE:**
 - ✓ Publish reports, case studies, and collection of articles.
 - ✓ Give presentations at SIMposium, SIM chapter meetings, and other events.
 - ✓ Work with SIM public information folks and IT press
 - ✓ Through <http://EAWG.SIMNET.ORG>

Society for Information Management Enterprise Architecture Working Group

New members welcomed

<http://eawg.simnet.org>

Next presentations: SIMposium, Orlando, Nov. 9-12

Next meeting: Dallas, January 13-14, 2009

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What's wrong with this picture?

- **“IT and business alignment remains CIO's top concern.... Some things never change.”** (*InformationWeek*, 3-Sept-08)
- **“Yet again, alignment is the top priority for CIOs.”** Business Alignment: The Eternal Priority” (*CIO Insight*, 22Mar07)
- **“top IT management concerns of CIOs in 2006 ... the alignment of IT and business at their companies ...according to ...survey by the Society for Information Management. ”** (*InformationWeek*, 18Sep06)

Figure 1: Management Concerns

2005 Rank	Issue (2004 rank in parenthesis)
1	IT and business alignment (1)

Table 5: Management Concerns - Ranking of Importance Based on Years in the Information Technology Industry (Number of Respondents Shown in Parentheses)

	<i>Years in IT</i>			
	0-10 (32)	11-20 (106)	21-30 (117)	30+ (40)
IT and business alignment	1	1	1	1

Figure 5: Management Concerns—Ranking of Importance Based on Industry

<i>All Respondents</i>	<i>Financial (15%)</i>	<i>Manufacturing (12%)</i>	<i>Information Technology (11%)</i>	<i>Education (11%)</i>
1. Alignment	1. Alignment	1. Alignment	1. Alignment	1. Alignment
2. Staffing	2. Staffing	1. Planning	2. Staffing	1. Security
2. Security	2. Security	1. True Return on IT Investments	2. Planning	3. Planning
4. Planning	4. Government Regulations	4. Security	4. Governance	4. Business Process Reengineering
5. Business Process Reengineering	5. Project Management Capability	4. Complexity	4. Agility	4. Governance
6. Rapid Business Solutions	6. Planning	6. Business Process Reengineering	6. Security	6. Staffing

Although not of one mind, the **SIMEAWG** believes that ...

- **Mis-alignment and lack of alignment are symptoms** of deeper problems. They are not causes.
- **EA includes many things you are already do**; such as requirements analysis, system design, strategic planning, network design, standard setting, knowledge management, data warehousing, SOA, BPR, etc., etc.
 - **BUT EA is much, much more than that.**
- **EA is all about a different way of seeing, communicating about, and managing the enterprise and all of its assets, including its technologies.**

- ✓ **EA gets to essence of IT success: Knowing & communicating the organization's requirements.**
- ✓ **EA is key to achieving business-IT alignment and helping the organization succeed at creating value.**

Fred Brooks got it 33 years ago!

“The hardest single part of building a software system is deciding precisely what to build. No other part of the conceptual work is as difficult as establishing the detailed technical requirements.... No other part of the work so cripples the system if done wrong. No other part is more difficult to rectify later.” – *No Silver Bullet – Essence and Accident in Software Engineering*, 1975.

Rules are absolutely necessary but not sufficient by themselves

- **No matter how perfectly you discover, document, & implement the enterprise rules for a particular information system, it will be a failure to one degree or another if the rest of the requirements are not discovered, documented, & implemented well too.**
- **Requirements are architecture:**
 - **The “ready, aim” before you “fire”.**
 - **The plan before you act.**

What is Architecture?

- **Architecture** = "the set of descriptive representations about an object"

~John Zachman

- **Enterprise Architecture** = "the holistic set of descriptions about the enterprise over time"

~SIM Enterprise Architecture Working Group

- **EA** is about communications and the creation of a **shared language to “think and talk”** about the enterprise so that all the requirements are explicit.
- ***CONSIDER THIS:*** If the people in the enterprise cannot adequately communicate in order to synchronize their thinking (an intangible), then how can we expect the tangible “things” managed by those people to be synchronized & aligned with intangibles like strategy, goals, and objectives?

What is EA?

- **US government's GAO says an EA :**
- **... provides “a clear & comprehensive picture of an ... organization.”**
 - *Information Technology: Enterprise Architecture Use Across The Federal Government Can Be Improved, GAO-02-6, February 2002, <http://www.gao.gov/new.items/d026.pdf>.*
- **“... is a blueprint for organizational change defined in models [of words, graphics, & other depictions] that describe (in both business and technology terms) how the entity operates today and how it intends to operate in the future; it also includes a plan for transitioning to this future state.”**
 - *Enterprise Architecture: Leadership Remains Key To Establishing And Leveraging Architectures for Organizational Transformation, GAO- 06-831, August 2006, <http://www.gao.gov/new.items/d06831.pdf>.*

What is EA?

- It's a revolution
- It's all about ...
 - new way of thinking, and doing.
 - communications and “language.”
 - change in culture, hearts, minds of those in the enterprise.
 - the process, not a project.
 - the journey, not a task.
 - the big picture, and the little picture.
 - balance between the whole & the parts.
 - capturing & managing all the knowledge about enterprise
 - “modeling” any and all of the enterprise.
 - using those models to communicate about the enterprise.
 - using those models to manage complexity and change.
 - using those models to manage the enterprise.

Productivity and Quality

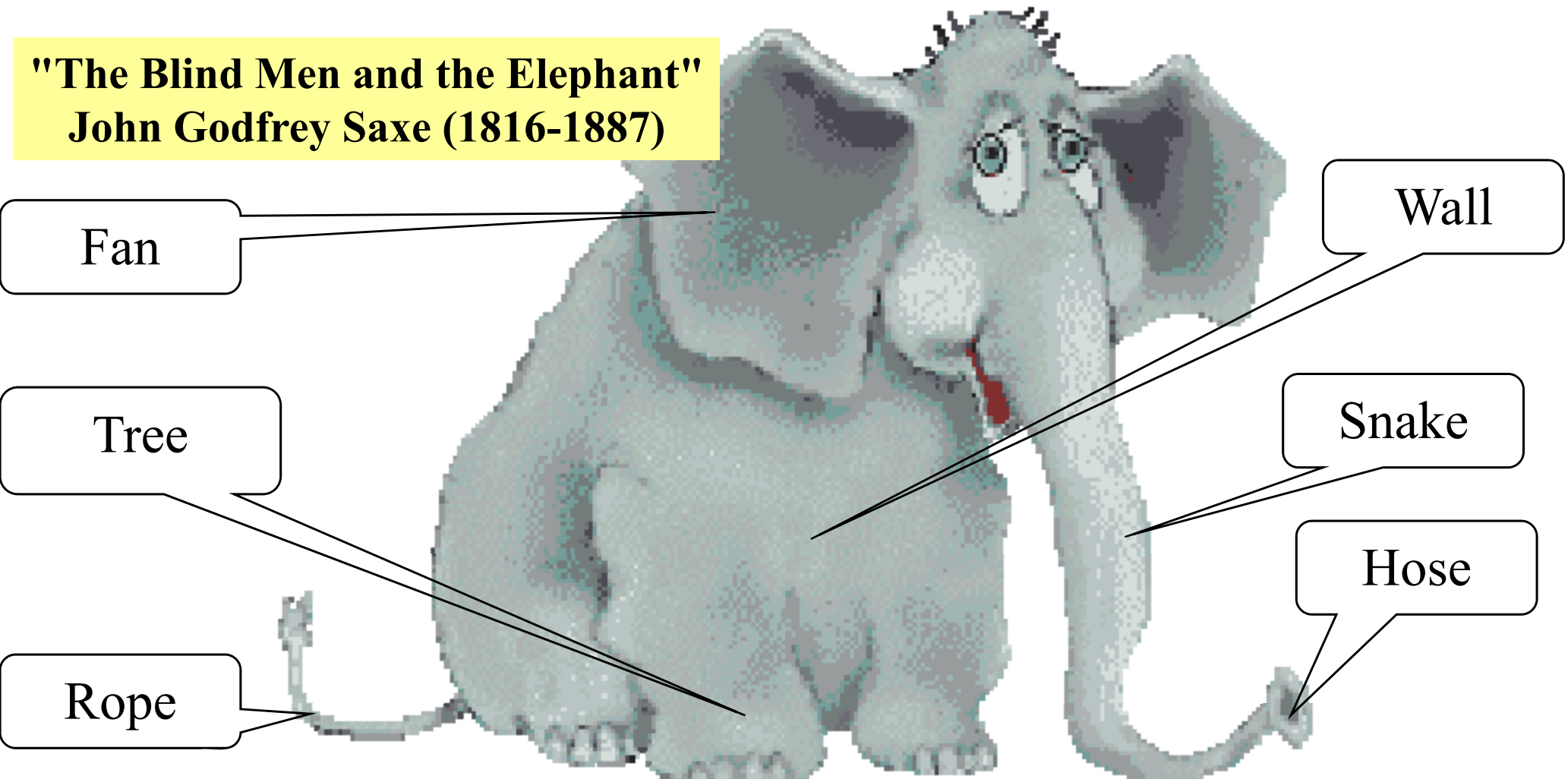
- **Industrial Age:** Enormous productivity & quality gains due to intellectual/intangible capital of “scientific management” & “quality control” as described by Frederick Taylor & Joseph Juran.
- **Information Age:** “EA” is also about enormous increases in productivity & quality.
- **THINK ABOUT IT:** Managing for productivity and quality is central to management practice today.
 - But when we say “efficiency” or “productivity” most don’t think of Taylor, his 1881 paper, 1911 book, or the words “scientific management”
 - Nor do we think of Juran, his 1928 pamphlet, 1951 *Quality Control Handbook*, or the words “statistical quality control” when we say “quality” or “effectiveness.”

Fed Chairman Bernanke puts it this way:

- "In the case of **information and communication technologies**, new economic research suggests that the **investments in associated *intangible capital* -- *figuring out what to do with the computer once it's out of the box* -- are quite important indeed.**
- In my view, **important investments in intangible capital remain to be made, as much still remains to be learned about how to harness these technologies most effectively.** Thus, it should not be surprising that the benefits of these technologies have taken a long time to show up in the productivity statistics.
- This research also suggests that the current productivity revival still has some legs, as **the full economic benefits of recent technological changes have not yet been completely realized."**

EA is about “modeling” the enterprise in order to understand & manage what you cannot “see.”

**"The Blind Men and the Elephant"
John Godfrey Saxe (1816-1887)**



Current state of affairs in most enterprises.

EA is about “modeling” the enterprise in order to understand & manage what you cannot “see.”

“The unexamined life is not worth living.”

– Socrates

The unexamined organization is not worthy of your time or money.

What is *ontology*?

- The **metaphysical study of the nature of being and existence**.
- The branch of metaphysics that
 - deals with the nature of being.
 - **investigates and explains the nature and essential properties** and relations of all beings, as such, or **the principles and causes of being**.
- **Metaphysics =**
 - **General: The branch of philosophy that examines the nature of reality**, including the relationship between mind and matter, substance and attribute, fact and value.
 - **Specific: The theoretical or first principles of a particular discipline**: e.g., the metaphysics of law.










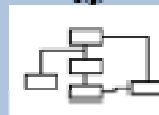



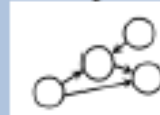
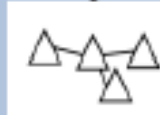
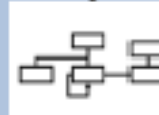

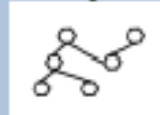
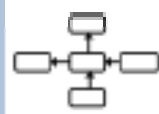
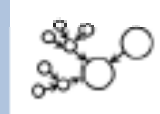

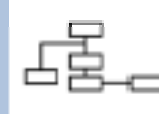

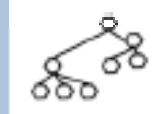












What is *ontology*?

Applied to enterprises ...
ontology is the study of
the nature of their
existence, the nature of
what it means to be an
enterprise.

What is an ontology?

- An ontology is a **shared understanding** of some domain of interest, some subject. This is also referred to as **a conceptualization**.
- An ontology entails some sort of *world view* with respect to a given domain. It **contains**:
 - a **set of concepts** (e.g., representing entities, attributes, processes), together with
 - their **definitions** and
 - their **inter-relationships**.
- In other words, an ontology is an explicit, agreed *specification* about a shared conceptualization.
- In other words, **an ontology is a framework, a model, a theory, a paradigm, ...**

The Zachman Enterprise Framework²™

	WHAT	HOW	WHERE	WHO	WHEN	WHY	
Scope	Inventory Identification e.g.  Inventory Types	Process Identification e.g.  Process Types	Network Identification e.g.  Network Types	Organization Identification e.g.  Organization Types	Timing Identification e.g.  Timing Types	Motivation Identification e.g.  Motivation Types	Strategists
Business	Inventory Definition e.g.  Business Entity Business Relationship	Process Definition e.g.  Business Transform Business Input	Network Definition e.g.  Business Location Business Connection	Organization Definition e.g.  Business Role Business Work	Timing Definition e.g.  Business Cycle Business Moment	Motivation Definition e.g.  Business End Business Means	Executive Leaders
System	Inventory Representation e.g.  System Entity System Relationship	Process Representation e.g.  System Transform System Input	Network Representation e.g.  System Location System Connection	Organization Representation e.g.  System Role System Work	Timing Representation e.g.  System Cycle System Moment	Motivation Representation e.g.  System End System Means	Architects
Technology	Inventory Specification e.g.  Technology Entity Technology Relationship	Process Specification e.g.  Technology Transform Technology Input	Network Specification e.g.  Technology Location Technology Connection	Organization Specification e.g.  Technology Role Technology Work	Timing Specification e.g.  Technology Cycle Technology Moment	Motivation Specification e.g.  Technology End Technology Means	Engineers
Component	Inventory Configuration e.g.  Component Entity Component Relationship	Process Configuration e.g.  Component Transform Component Input	Network Configuration e.g.  Component Location Component Connection	Organization Configuration e.g.  Component Role Component Work	Timing Configuration e.g.  Component Cycle Component Moment	Motivation Configuration e.g.  Component End Component Means	Technicians
Operations	Inventory Instantiation e.g.  Operations Entity Operations Relationship	Process Instantiation e.g.  Operations Transform Operations Input	Network Instantiation e.g.  Operations Location Operations Connection	Organization Instantiation e.g.  Operations Role Operations Work	Timing Instantiation e.g.  Operations Cycle Operations Moment	Motivation Instantiation e.g.  Operations End Operations Means	Workers
	INVENTORY	PROCESS	NETWORK	ORGANIZATION	TIMING	MOTIVATION	Version 2.01

EA is ontology of the E

Enterprise architecture is ontological examination of a particular enterprise in order to explain its nature, essential properties, and the relationships among them.

The Zachman Enterprise Framework²™







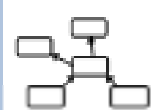


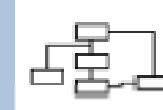


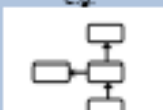
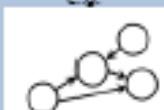
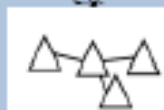


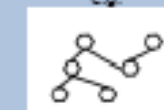
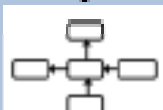
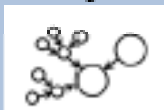

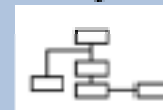
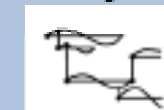
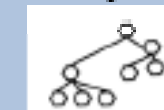











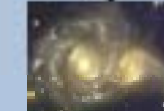
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	INVENTORY	PROCESS	NETWORK	ORGANIZATION	TIMING	MOTIVATION	Version 2.01

Figure 4. The Zachman Quadrant phrase structures

	What	How	Where	Who	When	Why	
Strategists interpreting the theorists	Resource Ideas			Behaviour Ideas			Identify the Scope Boundaries
Executive Leaders for the owners							define the Business Concepts
Architects as the designers							represent the System Logic
Engineers as the builders	Resource Reality			Behaviour Reality			specify the Technology Physics
Technicians as the contractors							configure the Component Elements
Workers as the participants							operate the Enterprise
	of Inventory Sets	of Process Functions	of Network Positioning	of People Organizations	of the Timing	of Motivation Reasons	

Every model is imperfect

- The map is not the highway.
 - Every model contains assumptions, enunciated or not.
 - Every model filters reality, whether you realize it or not.
 - "Our models may get closer and closer, but we will never reach direct perception of reality." Stephen Hawking⁽¹⁾
- Important truths:
 - "All we ever know is our models." Stephen Hawking⁽¹⁾
 - Data are a model.
 - Language is a model.
 - News media, pundits, and talking heads represent models.
 - Architecture is models.
- The important question is: ***Is the model useful for the purposes at hand?***

(1) Quoted by George Zebrowski, *Nature*, 408,14 Dec. 2000, 775.

	WHAT	HOW	WHERE	WHO	WHEN	WHY	
Scope	W H A T ?	H O W ?	W H E R E ?	W H O ?	W H E N ?	W H Y ?	Strategists
Business							Executive Leaders
System							Architects
Technology							Engineers
Component							Technicians
Operations							Workers
							INVENTORY

WHAT	HOW	WHERE	WHO	WHEN	WHY
------	-----	-------	-----	------	-----

Inventory Identification	Process Identification	Network Identification	Organization Identification	Timing Identification	Motivation Identification
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Scope

Planner's View

Strategists

Business

Business Model

Executive Leaders

System

Logical Model

Architects

System Relationship	System Input	System Connection	System Work	System Moment	System Means
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Technology

Physical Model

Engineers

Technology Relationship	Technology Input	Technology Connection	Technology Work	Technology Moment	Technology Means
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Component

Subcontractor's View

Technicians

Component Relationship	Component Input	Component Connection	Component Work	Component Moment	Component Means
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Operations

Functioning Enterprise

Workers

INVENTORY	PROCESS	NETWORK	ORGANIZATION	TIMING	MOTIVATION
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Version 2.01

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Zachman's Framework ...

... is an ontology, a data model for all the knowledge about the enterprise.

... is process and method agnostic. It doesn't care how you do it.

... only says that if you want to be aligned, agile, optimized, or whatever your enterprise design objectives, then these are the data you must capture and use in order to effectively:

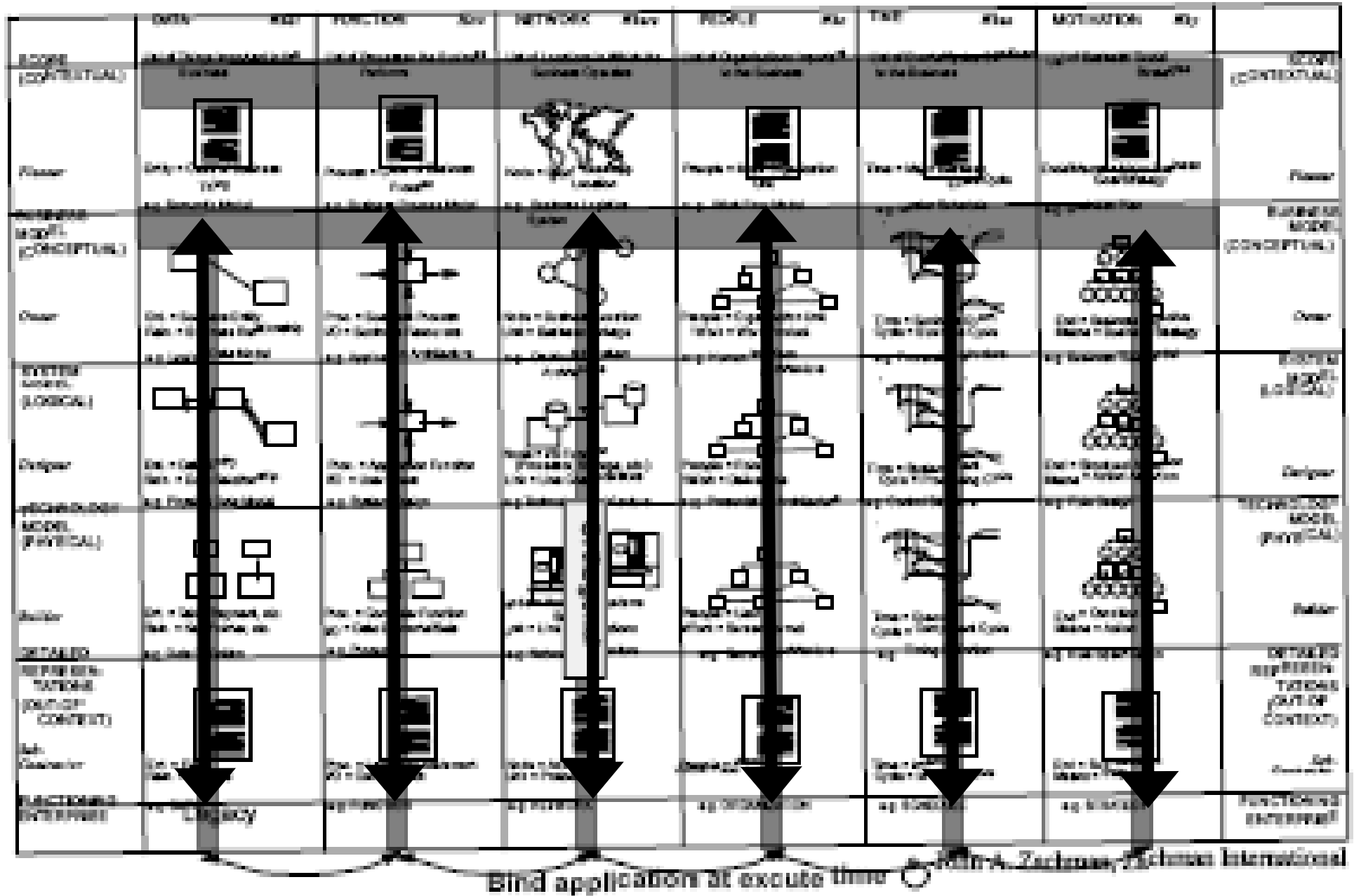
- achieve those objectives;**
- manage change and complexity;**
- manage the enterprise & its technologies.**

Rules: Necessary, But Not Sufficient – How IT all fits together

Leon A. Kappelman, Ph.D.

October Rules Fest (22-Oct-08)

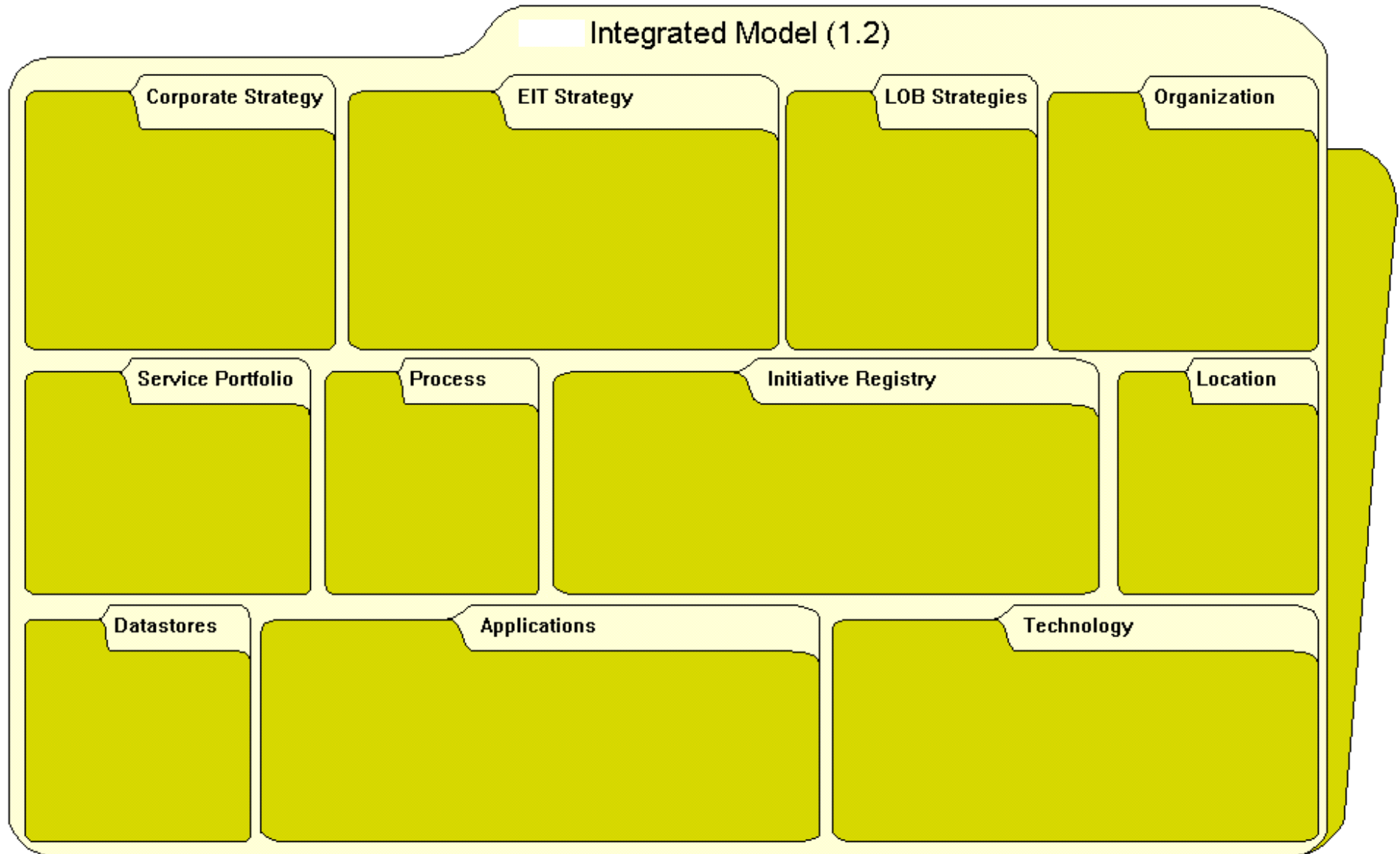
The Framework Is Process Agnostic



“Someday you’re going to really wish you had all those models; so you might as well get started now.”

– **John Zachman**

Delivery Systems Architecture



Rules: Necessary, But Not Sufficient – How IT all fits together

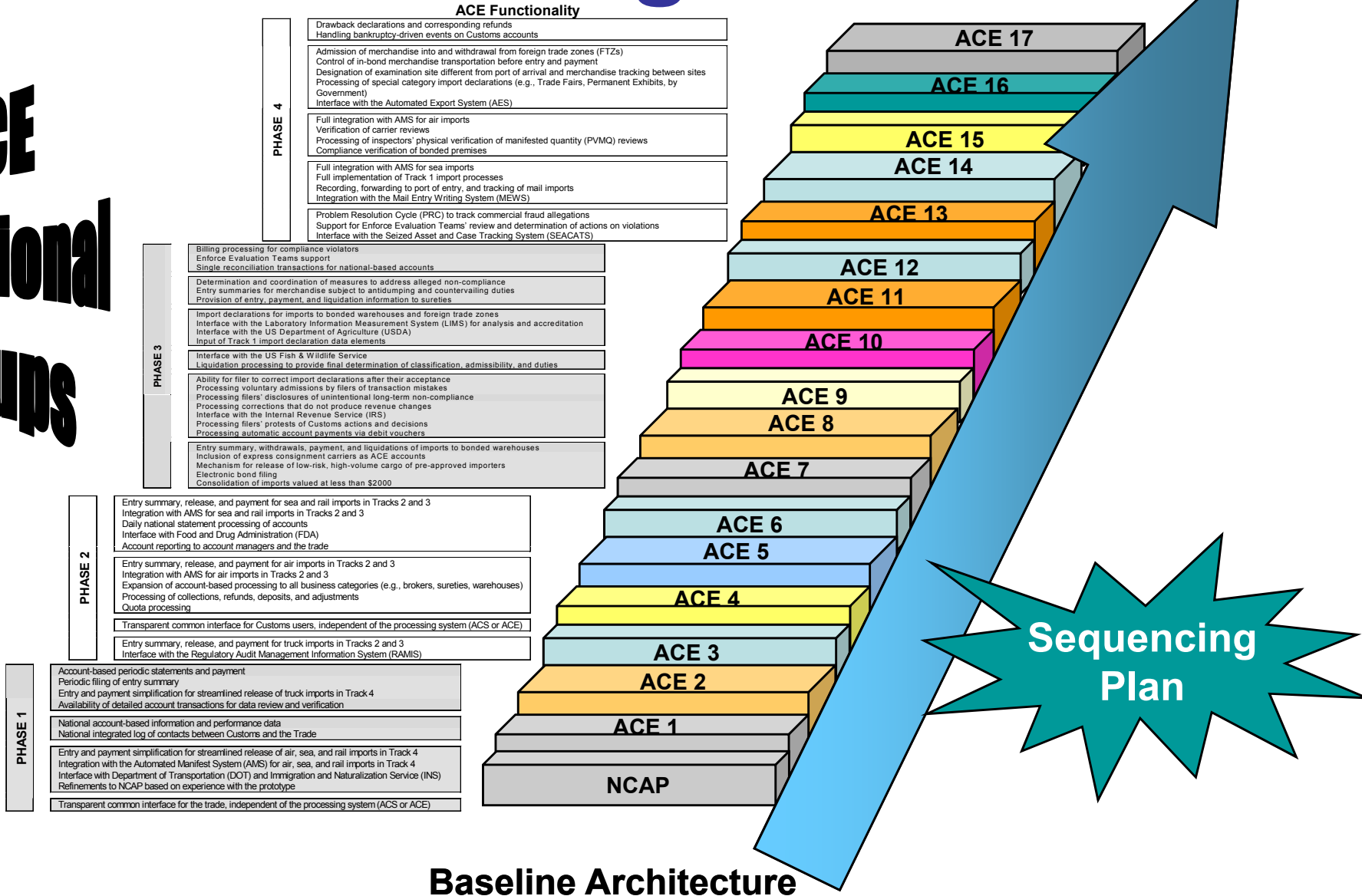
Leon A. Kappelman, Ph.D.

October Rules Fest (22-Oct-08)

Transition/Migration

Target Architecture

• ACE
• Functional
• Groups



Implementation Guidelines: Getting Started

- **Use collaborative approaches to doing and governing EA:**
 - Organize an EA working group.
 - Develop understanding and agreement about language, models, and methods.
- **Get participation & commitment from IT & business management:**
 - At all levels (but start as high as possible).
- **Determine the goals, focus, scope, and priorities:**
 - Aim for completeness & comprehensiveness
- **Embrace change and learning:**
 - Remember, it's a journey and a process.
 - Communicate, communicate, communicate!!!!
- **Start small and show early success:**
 - Identify EA initiatives of most value to organization.
 - Success creates champions and wins hearts and minds.
- **Monitor, evaluate, and improve on a continuous basis:**
 - Quantify the benefits
 - Regularly take a hard look at its cost and value, and make it better.
- **Use EA in IT to continuously improve systems development, security, operations, and user support to better serve enterprise needs**
 - **AND TO COMMUNICATE WITH YOUR CUSTOMERS & STAKEHOLDERS.**

Implementation Guidelines: Getting Started (2)

- Don't do EA in isolation:
 - Integrate EA w/ enterprise planning & management
 - Tie EA decisions to enterprise governance
 - Integrate EA into IT planning, operations, develop, security, continuity, & project management
 - Use EA in training, policy & procedures manuals, ...
- Focus on benefits: Integrate EA & value creation:
 - EA doesn't create value any more than weighing yourself causes weight loss.
 - People taking action make the difference, and EA is a key tool in their "toolkit" for faster and better decisions.
 - So always know who will be using EA, and what actions EA will support.

Implementation Guidelines: Getting Started (3)

- Agree on:
 - Control:
 - Governance (representative & collaborative)
 - Ownership (centralized vs. distributed)
 - Communications:
 - Definitions and terminology
 - Models to use (by architects and by business)
 - Processes, and the place of EA in:
 - Enterprise planning (strategic, tactical, & operational)
 - Resource allocation
 - Project management
 - Cyber and physical security
 - IT standards development

Road to the Future: Institutionalizing EA

- **This is a new way of life:** There is no quick fix; no silver bullet.
- **This will take time and determination, as well as vision, courage and commitment:** Do not underestimate the difficulty and complexity of architecting and engineering one of humankind's most complex objects – the Enterprise.
- **Do not get discouraged:** This is a revolution in thinking, a discipline, an engineering process. **Change of this magnitude takes time and perseverance.**
- **Set realistic expectations:** Things have to be implemented and modified periodically so you have to accept some risk of "scrap and rework." **Progress trumps perfection.**
- **Don't assume anything:** Make executive education and technical training a continuous process. It is easy to forget long-term issues in the short-term stress of daily life.
- **Learn!:** The state of the art is only about 25 years old and the "playing field" still pretty level – there is still much to learn & discover, & many opportunities to create advantage & value.



EA represents a new way of thinking about the enterprise, and a new way of managing the enterprise, and its IT. Federal Reserve Chairman Ben Bernanke calls it “intangible capital.”

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Bridging the Chasm

Those who study advances in health care and other fields find a “generation” lag of about 20 years before discoveries are adopted haphazardly into standard practice. And three or four generations before an innovation, be it technical or intellectual, becomes so common that we no longer think of it as an innovation at all. Thus it is said that “science proceeds by the death of scientists.”

Management is no different, so it's not surprising that despite many strategic transformations via IT by the mid 1970s, most officers and directors were oblivious or indifferent to IT in 1990. Yet by the turn of the century almost all were aware of IT's promise and peril. But awareness is not mastery, or even competence.

EA represents a new way of thinking about the enterprise, and a new way of managing the enterprise, and its IT. Federal Reserve Chairman Ben Bernanke calls it “intangible capital.” In his June 2006 MIT commencement speech, he said: “Important investments in intangible capital remain to be made, as much still remains to be learned about how to harness these technologies.”

Enormous productivity gains occurred in the Industrial Age thanks to the intellectual or intangible capital of “scientific management” as described by Frederick Taylor. EA has the potential to contribute similarly to the Information Age.

Managing for productivity and quality is central to management practice today. But when we say “efficiency” or “productivity” most don't think of Taylor, his 1881 paper, 1911 book, or the words “scientific management” any more than we think of Joseph Juran, his 1928 pamphlet, 1951 *Quality Control Handbook*, or the words “statistical quality control” when we say “quality” or “effectiveness.”

I don't know what the “EA” of today will be called in a few generations. I do know we will achieve the EA vision of bridging the chasm between strategy and implementation, of capturing all the knowledge about the enterprise and making it available in real time for every imaginable management need, and of having a shared “language” of words, graphics, and other depictions to discuss, document, and manage every important aspect of the enterprise. I know this because the enterprises that survive those next few generations will be agile, adaptable, interoperable, integrated, lean, secure, responsive, efficient, effective, and thereby more able to succeed in a world that demands we do more with less, faster, while traditional boundaries blur, and the rules of engagement change.

Succeeding in such a world requires that the enterprise masters the management of all the knowledge about itself. We are in the early stages of developing such skills. EA is the name of this emerging discipline.

EA isn't the organization any more than a map is the highway, blueprints the building or the idea the invention. But maps, blueprints, ideas, and EA are tools to help us efficiently and effectively get where we want to go. Without them, we're lost. **A&G**