



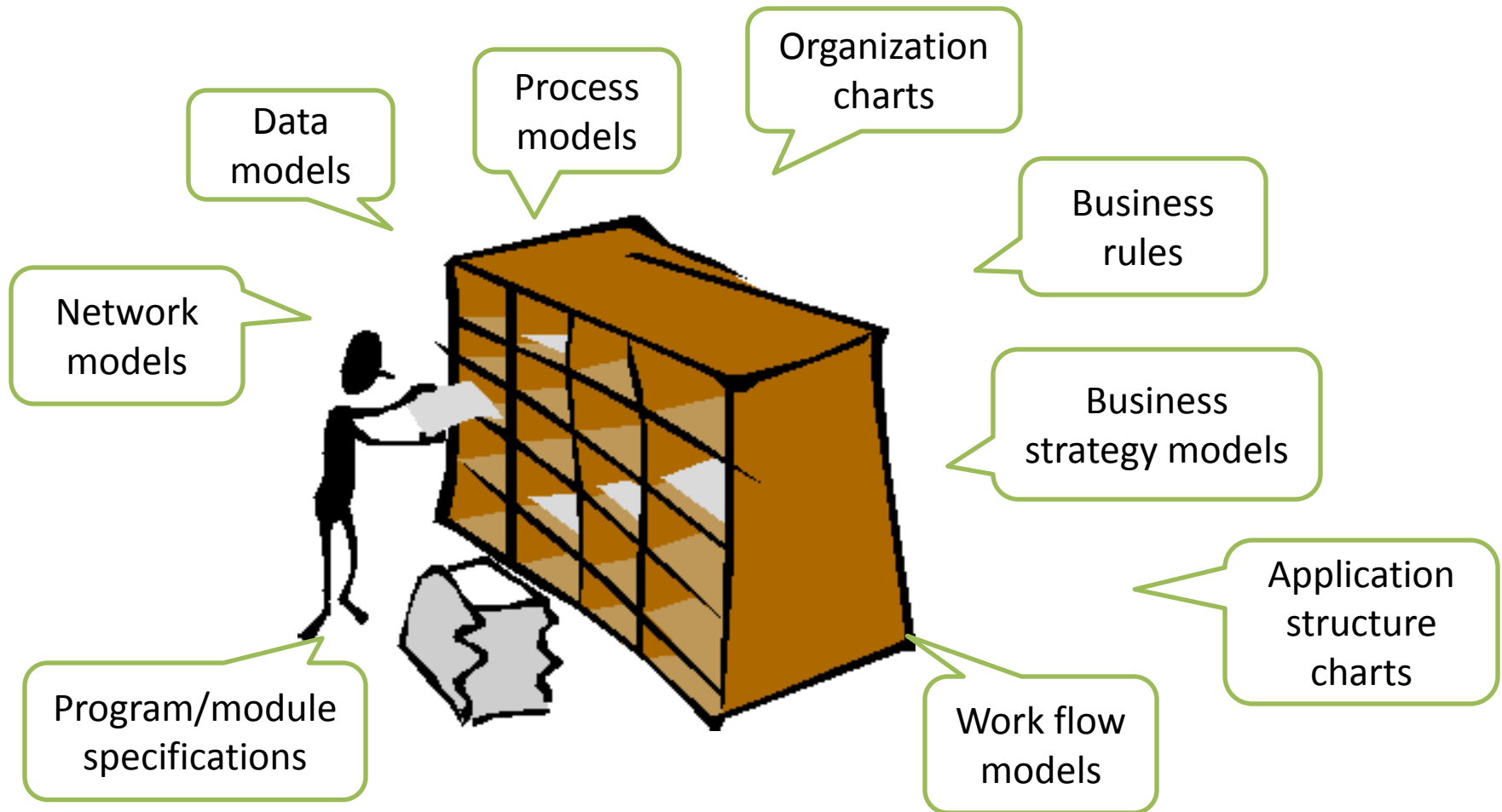
John A. Zachman

Zachman Framework

Published in 1987

An Approach to Document Architecture

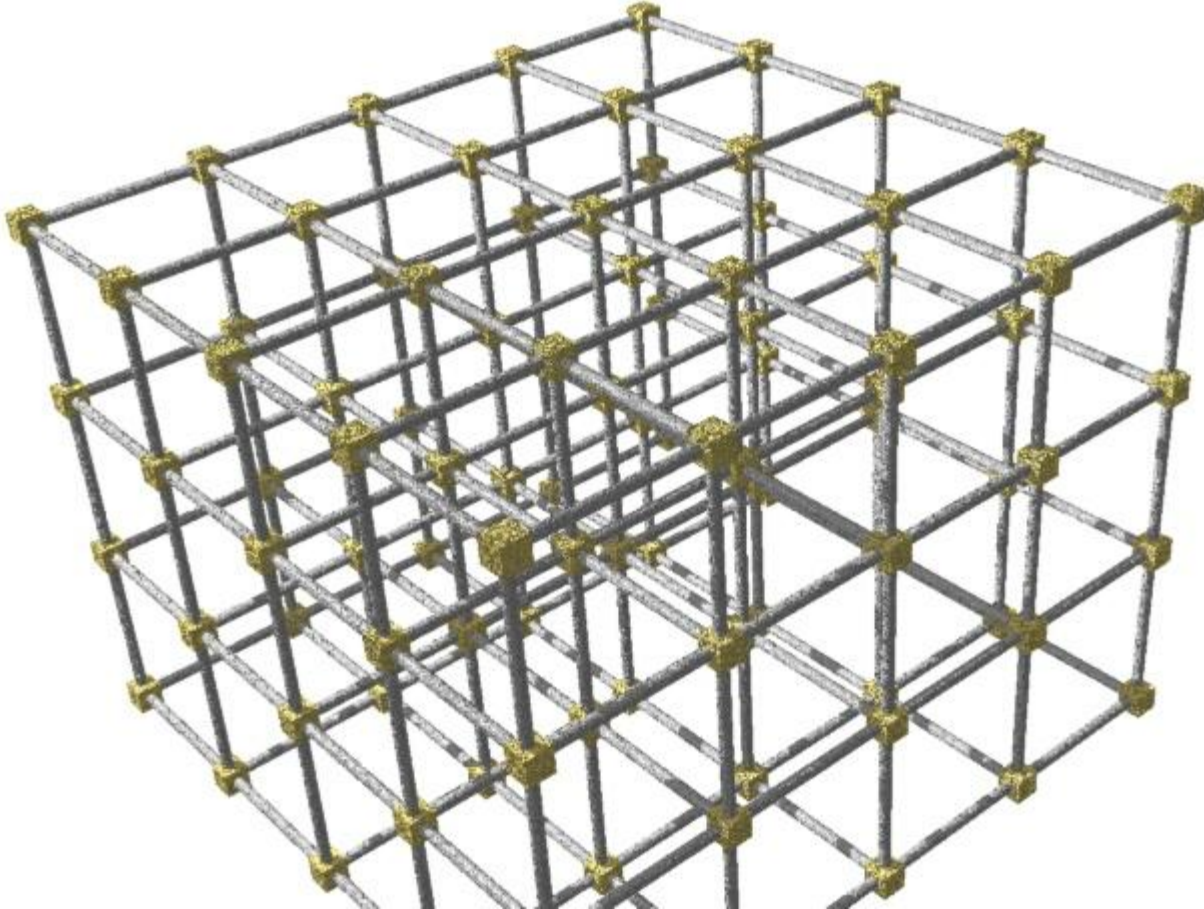
Zachman Framework



The framework acts as “glue” that holds together the artifacts of an enterprise.

The Zachman Framework cannot be considered as either a modeling language, or a methodology, or a modeling notation.

Zachman Framework



Zachman Framework can present only a static view of software development.

Zachman Framework is **not** a Framework

It is actually a **taxonomy** for organizing
architectural artifacts









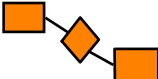
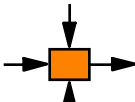
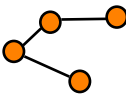
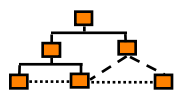
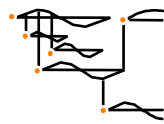
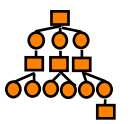
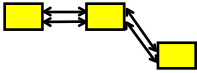
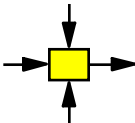
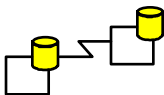
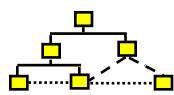
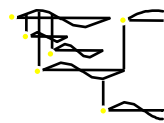
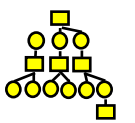
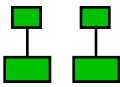

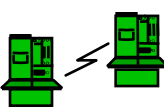
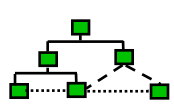
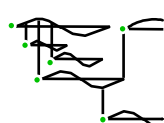
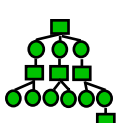






It takes into account

1. Who the artifact targets (Planner, Business, Architect, Designer, Builder)
2. What issue is being addressed (Who, What, How, Where, When, Why)

Zachman Framework for Enterprise Architecture

	What	How	Where	Who	When	Why
Planner	The content of these cells defines the scope of the enterprise, identifying what should possibly be modeled.					
Owner	These cell models comprise the Business Model - the Owner's expectations from a business perspective for the operating enterprise.					
Designer	These cell models comprise the technology neutral System Model - the Designer's plan for enabling the Business Model.					
Builder	These cell models comprise the Technology Model - the Builder's plan for applying technology to the System Model.					
Sub-contractor	These cells are listings, identifying the actual solutions that have been implemented.					
Functioning Enterprise	The functioning enterprise.					

Zachman Framework for Enterprise Architecture

abstractions perspectives	DATA <i>What</i>	FUNCTION <i>How</i>	NETWORK <i>Where</i>	PEOPLE <i>Who</i>	TIME <i>When</i>	MOTIVATION <i>Why</i>
SCOPE <i>Planner</i> contextual	List of Things - <i>Important to the Business</i>  Entity = Class of Business Thing	List of Processes - <i>the Business Performs</i>  Function = Class of Business Process	List of Locations - <i>in which the Business Operates</i>  Node = Major Business Location	List of Organizations - <i>Important to the Business</i>  People = Class of People and Major Organizations	List of Events - <i>Significant to the Business</i>  Time = Major Business Event	List of Business Goals and Strategies  Ends/Mean=Major Business Goal/Critical Success Factor
ENTERPRISE MODEL <i>Owner</i> conceptual	e.g., Semantic Model  Entity = Business Entity Rel. = Business Relationship	e.g., Business Process Model  Process = Business Process I/O = Business Resources	e.g., Logistics Network  Node = Business Location Link = Business Linkage	e.g., Work Flow Model  People = Organization Unit Work = Work Product	e.g., Master Schedule  Time = Business Event Cycle = Business Cycle	 End = Business Objective Means = Business Strategy
SYSTEM MODEL <i>Designer</i> logical	e.g., Logical Data Model  Entity = Data Entity Rel. = Data Relationship	e.g., Application Architecture  Process = Application Function I/O = User Views	e.g., Distributed System Architecture  Node = IS Function Link = Line Characteristics	e.g., Human Interface Architecture  People = Role Work = Deliverable	e.g., Processing Structure  Time = System Event Cycle = Processing Cycle	 End = Structural Assertion Means = Action Assertion
TECHNOLOGY CONSTRAINED MODEL <i>Builder</i> physical	e.g., Physical Data Model  Entity = Tables/Segments/etc. Rel. = Key/Pointer/etc.	e.g., System Design  Process = Computer Function I/O = Data Elements/Sets	e.g., Technical Architecture  Node = Hardware/System Software Link = Line Specifications	e.g., Presentation Architecture  People = User Work = Screen/Device Format	e.g., Control Structure  Time = Execute Cycle = Component Cycle	 End = Condition Means = Action
DETAILED REPRESENTATIONS <i>Subcontractor</i> out-of-context	e.g. Data Definition  Entity = Field Rel. = Address	e.g. Program  Process = Language Statement I/O = Control Block	e.g. Network Architecture  Node = Addresses Link = Protocols	e.g. Security Architecture  People = Identity Work = Job	e.g. Timing Definition  Time = Interrupt Cycle = Machine Cycle	 End = Sub-condition Means = Step
FUNCTIONING ENTERPRISE	DATA Implementation	FUNCTION Implementation	NETWORK Implementation	ORGANIZATION Implementation	SCHEDULE Implementation	STRATEGY Implementation

John A. Zachman, Zachman International

FOCUS









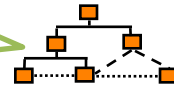


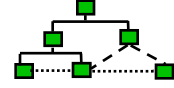








VIEW
POINT



Zachman Framework Enterprise Architecture

Who is involved in the business

Stake Holders, Organizational units and their mission

abstractions perspectives	DATA What	How	Where	PEOPLE Who	When	Why
SCOPE <i>Planner</i>	List of Things - Important to the Business 	List of Processes - the Business Performs 	List of Locations - in which the Business Operates 	List of Organizations - Important to the Business 	List of Major Business Events 	List of Major Business Goals 
ENTERPRISE MODEL <i>Owner</i>				People = Class of People and Major Organizations e.g., Work Flow Model	Time = Major Business Event e.g., Master Schedule	Ends/Mean=Major Business Goal/Critical Success Factor e.g., Business Plan
SYSTEM MODEL <i>Designer</i>	Entity = Business Entity Rel. = Business Relationship e.g., Logical Data Model	I/O = Business Resources e.g., Application Architecture	Node = Business Location Link = Business Linkage e.g., Distributed System Architecture	People = Organization Unit Work = Work Product e.g., Human Interface Architecture 	Time = Event Processing Cycle e.g., Control Structure 	End = Structural Assertion Means = Action Assertion e.g., Rule Design 
TECHNOLOGY CONSTRAINT MODEL <i>Builder</i>	Entity = Tables/Segments/etc. Rel. = Key/Pointer/etc. e.g. Data Definition	Process= Computer Function I/O =Data Elements/Sets e.g. Program	Software Link = Line Specifications e.g. Network Architecture	People = User Work = Screen/Device Format e.g. Security Architecture 	Time = Interrupt Cycle = Machine Cycle 	End = Sub-condition Means = Step 
DETAILED REPRESENTATIONS <i>Subcontractor</i> out-of-context	Entity = Field Rel. = Address 	Process= Language Statement I/O = Control Block 	Node = Addresses Link = Protocols 	People = Identity Work = Job 		
FUNCTIONING ENTERPRISE	DATA Implementation	FUNCTION Implementation	NETWORK Implementation	ORGANIZATION Implementation	SCHEDULE Implementation	STRATEGY Implementation

Full Organizational Chart (Actors), linked to the functional goals. Security requirements.

Interface graphics, navigation paths, security rules and presentation style are addressed.

What roles do each play and What data are necessary for those roles, which role is permitted access to what data.

User interface Code, Access privileges coded to control access (Xml , Tables, Code)

Framework for Enterprise Architecture

Geographical distribution of the enterprise's activities

List of location where the enterprise operates

Distributed System Architecture . what information is created where and where it is to be used





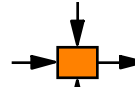

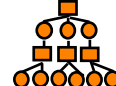
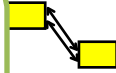
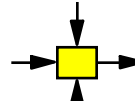

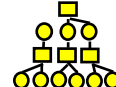
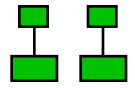
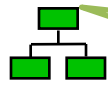

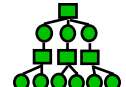










Detailed communications chart, describing how the various locations interact with each other, describe geographical deployment for business process

Technical Architecture. Deployment Model. Kind of infrastructure required in each location

Network Architecture

SCOPE	DATA	FUNCTION	NETWORK	ORGANIZATION	SCHEDULE	STRATEGY
Planner	Important to the Business	List of Processes - the Business Performs	List of Locations - in which the Business Operates	List of Organizations Important to the Business	Time = System Event Cycle = Processing Cycle	End = Structural Assertion Means = Action Assertion
contextual	Entity = Class of Business Thing e.g., Semantic Model	Function = Class of Business Process e.g., Business Process Model	Node = Major Business Location e.g., Logistics Network	People = Class of People and Major Organizations e.g., Work Force	Time = System Event Cycle = Processing Cycle	End = Structural Assertion Means = Action Assertion
			Node = Business Location Link = Business Linkage e.g., Distributed System Architecture	People = Organization Work = Work e.g., Presentation Architecture		
			Node = IS Function Link = Line Characteristics e.g., Technical Architecture	People = Role Work = Deliverable e.g., Presentation Architecture		
TECHNOLOGY CONSTRAINED MODEL			Node = Hardware/System Software Link = Line Specifications e.g., Network Architecture	People = User Work = Screen/Device Form e.g., Security Architecture		
Builder	Entity = Table/Component/etc Rel. = Address	Process = Computer Function Data Elements/Sets Program	Node = Addresses Link = Protocols	People = Identity Work = Job	Time = Interrupt Cycle = Machine Cycle	End = Sub-condition Means = Step
DETAIL REPRESENTATION						
Subcontractor						
out-of-context						
FUNCTIONING ENTERPRISE	DATA Implementation	FUNCTION Implementation	NETWORK Implementation	ORGANIZATION Implementation	SCHEDULE Implementation	STRATEGY Implementation

Zachman Framework for Enterprise Architecture

<div>abstractions</div> <div>perspectives</div>	DATA <i>What</i>	FUNCTION <i>How</i>	VIEW <i>Where</i>	PERSON <i>Who</i>	TIME <i>When</i>	ENDS/MEANS <i>Why</i>
	List of Things - Important to the Business	List of Processes - the Business Performs	List of Locations in which the Business Operates	People = Class of People and Major Organizations	Time = Major Business Event	Ends/Mean=Major Business Goal/Critical Success Factor
						
	Entity = Business Entity Rel. = Business Relationship e.g., Logical Data Model	Function = Class of Business Process e.g., Business Process Model	Node = Major Business Location e.g., Logistics Network	People = Class of People and Major Organizations e.g., Work Flow Model	Time = Major Business Event e.g., Master Schedule	Ends/Mean=Major Business Goal/Critical Success Factor e.g., Business Plan
MODEL Owner conceptual						
	Entity = Business Entity Rel. = Business Relationship e.g., Logical Data Model	Process = Business Process I/O = Business Resources e.g., Application Architecture	Node = Business Link = Business e.g., Distributed Architecture			End = Business Objective Means = Business Strategy e.g., Business Rule Model
Use case Realization						
	Entity = Business Entity Rel. = Business Relationship e.g., Logical Data Model	Process = Application Function I/O = User Views e.g., System Design	Node = IS Function Link = Line Characteristics e.g., Technical Architecture	People = Role Work = Deliverable e.g., Presentation Architecture	Time = System Event Cycle = Processing Cycle e.g., Control Structure	End = Structural Assertion Means = Action Assertion e.g., Rule Design
TECHNOLOGY CONSTRAINED MODEL Builder physical						
	Entity = Tables/Segments/etc. Key/Pointer/etc. e.g., Physical Data Model	Process = Computer Function I/O = Data Elements/Sets e.g., Program	Node = Hardware Software Link = Line Specification e.g., Network Architecture			End = Condition Means = Action e.g., Rule Specification
Application Source Code						
	Entity = Tables/Segments/etc. Key/Pointer/etc. e.g., Physical Data Model	Process = Language Statement I/O = Control Block e.g., Program	Node = Addresses Link = Protocols e.g., Network Architecture	People = Identity Work = Job e.g., Organization	Time = Interrupt Cycle = Machine Cycle e.g., Schedule	End = Sub-condition Means = Step e.g., Strategy
Executable Code						
	Entity = Tables/Segments/etc. Key/Pointer/etc. e.g., Physical Data Model	Process = Language Statement I/O = Control Block e.g., Program	Node = Addresses Link = Protocols e.g., Network Architecture	People = Identity Work = Job e.g., Organization	Time = Interrupt Cycle = Machine Cycle e.g., Schedule	End = Sub-condition Means = Step e.g., Strategy
	DATA Implementation	FUNCTION Implementation	NETWORK Implementation	ORGANIZATION Implementation	SCHEDULE Implementation	STRATEGY Implementation

Describe the process of translating the mission of the enterprise into successively more detailed definitions of its operations

List of process the business performs

Detailed Business Process describing all activities. (uses cases)

Use case Realization

System Design. Modules, Components, ..

Application Source Code

Executable Code

enterprise's
data

Human Framework for Enterprise Architecture

Entities
important to
business







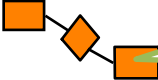



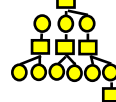
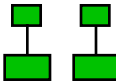




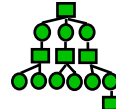






Business Entities and
their Interrelationships.
ER Diagram

Logical Data
Model (Fully
Normalized)

Physical data model. Database
Design. Entities are converted to
table definitions, object classes,
hierarchy segments.

Database
Schema

Physical
Database

	DATA <i>What</i>	FUNCTION <i>How</i>	NETWORK <i>Where</i>	PEOPLE <i>Who</i>	TIME <i>When</i>	MOTIVATION <i>Why</i>
perspectives						
SCOPE <i>Planner</i>	List of Things - <i>Important to the Business</i> 	List of Business Functions - <i>Important to the Business</i> 	List of Business Locations - <i>Important to the Business</i> 	List of Organizations - <i>Important to the Business</i> 	List of Events - <i>Significant to the Business</i> 	List of Business Goals and Strategies 
contextual	Entity = Class of Business Thing e.g., Semantic Model	Function = Business Process e.g., Business Process Model	Node = Business Location Link = Business Linkage e.g., Distributed System Architecture	People = Organization Unit Work = Work Product e.g., Human Interface Architecture	Time = Major Business Event e.g., Master Schedule	Ends/Mean=Major Business Goal/Critical Success Factor e.g., Business Plan
ENTERPRISE MODEL <i>Owner</i>	Entity = Business Entity Rel. = Business Relationship e.g., Logical Data Model 	Process = Business Process I/O = Business Resources e.g., Application Architecture	Node = Business Location Link = Business Linkage e.g., Distributed System Architecture 	People = Organization Unit Work = Work Product e.g., Human Interface Architecture 	Time = Business Event Cycle = Business Cycle e.g., Processing Structure 	End = Business Objective Means = Business Strategy e.g., Business Rule Model 
logical	Entity = Data Entity Rel. = Data Relationship e.g., Physical Data Model 	Process = Action I/O = User View e.g., System Architecture 	Software Link = Line Specifications e.g., Network Architecture 	People = User Work = Screen/Device Format e.g., Security Architecture 	Time = Business Event Cycle = Business Cycle e.g., Processing Structure 	End = Structural Assertion Means = Action Assertion e.g., Rule Design 
TECHNOLOGY CONSTRAINED MODEL <i>Builder</i>	Entity = Tables/Segments/etc. Rel. = Key/Pointer/etc. e.g. Data Definition	Process= Computer Function I/O =Data Elements/Sets e.g. Program	Software Link = Line Specifications e.g. Network Architecture	People = User Work = Screen/Device Format e.g. Security Architecture	Time = Execute Cycle = Component Cycle e.g. Timing Definition	End = Condition Means = Action e.g. Rule Specification
physical	Entity = Field Rel. = Address 	Process= Language Statement I/O = Control Block 	Node = Addresses Link = Protocols 	People = Identity Work = Job 	Time = Interrupt Cycle = Machine Cycle 	End = Sub-condition Means = Step 
DETAILED REPRESENTATIONS <i>Subcontractor</i> out-of-context						
	DATA Implementation	FUNCTION Implementation	NETWORK Implementation	ORGANIZATION Implementation	SCHEDULE Implementation	STRATEGY Implementation

Zachman Framework for Enterprise Architecture

Constraints that apply to an enterprise






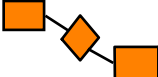
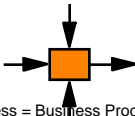
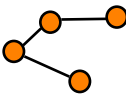

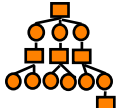
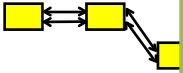



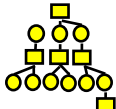
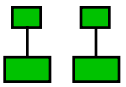



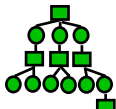





List of business goals & strategies

Policies for each process
















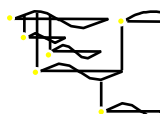
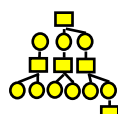
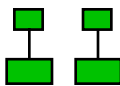



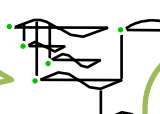






Business rules expressed in terms of information that is and is not permitted to exist

Business Rules in terms of program design elements

Rule specification in program logic, Rule repository

abstractions perspectives	DATA <i>What</i>	FUNCTION <i>How</i>	NETWORK <i>Where</i>	MANAGEMENT <i>When</i>	MOTIVATION <i>Why</i>
SCOPE <i>Planner</i> contextual	List of Things - Important to the Business  Entity = Class of Business Thing	List of Processes - the Business Performs  Function = Class of Business Process	List of Locations - in which the Business Operates  Node = Major Business Location	List of Business Goals and Strategies  People = Class of Major Organizational Unit Time = Business Event Cycle = Business Cycle	List of Business Goals and Strategies  Ends/Mean = Major Business Goal/Critical Success Factor Business Plan
ENTERPRISE MODEL <i>Owner</i> conceptual	e.g., Semantic Model  Entity = Business Entity Rel. = Business Relationship	e.g., Business Process Model  Process = Business Process	e.g., Logistics Network  Node = Major Business Location Link = Line of Communication	e.g., Work Flow  Organization Unit Product Interface Time = Business Event Cycle = Business Cycle	e.g., Business Plan  End = Business Objective Means = Business Strategy
SYSTEM MODEL <i>Designer</i> logical	e.g., Logical Data Model  Entity = Data Entity Rel. = Data Relationship	e.g., System Design  Entity = Data Entity Rel. = Data Relationship	e.g., Technical Architecture  Node = Hardware Software Link = Line Specification	e.g., Presentation Architecture  Presentation Unit Time = System Event Cycle = Processing Cycle	e.g., Business Rule Model  End = Structural Assertion Means = Action Assertion
TECHNOLOGY CONSTRAINED MODEL <i>Builder</i> physical	e.g., Physical Data Model  Entity = Tables/Segments/etc. Rel. = Key/Pointer/etc.	e.g., System Design  Process = Computer Function I/O = Data Elements/Sets	e.g., Technical Architecture  Node = Hardware Software Link = Line Specification	e.g., Presentation Architecture  Presentation Unit Time = System Event Cycle = Processing Cycle	e.g., Rule Design  End = Condition Means = Action
DETAILED REPRESENTATIONS <i>Subcontractor</i> out-of-context	e.g. Data Definition  Entity = Field Rel. = Address	e.g. Program  Process = Language Statement I/O = Control Block	e.g. Network Architecture  Node = Addresses Link = Protocols	e.g. Security Architecture  Security Unit Time = System Event Cycle = Processing Cycle	e.g. Rule Specification  End = Sub-condition Means = Step
FUNCTIONING ENTERPRISE	DATA Implementation	FUNCTION Implementation	NETWORK Implementation	MANAGEMENT Implementation	STRATEGY Implementation

Zachman Framework for Enterprise Architecture

abstractions perspectives	DATA What	FUNCTION How	NETWORK Where	PEOPLE Who	TIME When	MOTIVATION Why
SCOPE Planner contextual	List of Things - Important to the Business  Entity = Class of Business Thing	List of Processes - the Business Performs  Function = Class of Business Process	List of Locations - in which the Business Operates  List of Organizations - Important to the Business 	List of Events - Significant to the Business  Time = Major Business Event	List of Business Goals and Strategies  Ends/Mean=Major Business Goal/Critical Success Factor	
ENTERPRISE MODEL Owner conceptual	e.g., Semantic Model  Entity = Business Rel. = Business	e.g., Business Process Model  Logical events and their triggered responses constrained by business events and their responses	e.g., Logistics Network 	e.g., Work Flow Model  Time = Business Event Cycle = Business Cycle	e.g., Master Schedule  List of events significant to the business Means = Business Strategy	
SYSTEM MODEL Designer logical	e.g., Logical Data Model  Entity = Data Entity Rel. = Data Relationship	Process. = Application Function I/O = User Views  Specification of triggers to respond to system events on specific platforms and technologies	Node = IS Function Link = Line Characteristics 	People = Role Work = Deliverable 	e.g., Processing Structure  Time = System Event Cycle = Processing Cycle	e.g., Business Rule Model  End = Structural Assertion Means =Action Assertion
TECHNOLOGY CONSTRAINED MODEL Builder physical	e.g., Physical Data Model  Entity = Tables/Segments/etc. Rel. = Key/Pointer/etc.	e.g., System Design  Timing definitions coded on specific platforms and technologies	e.g., Technical Architecture 	e.g., Presentation Architecture 	e.g., Control Structure  Time = Execute Cycle = Component Cy	e.g., Rule Design 
DETAILED REPRESENTATIONS Subcontractor out-of-context	e.g. Data Definition  Entity = Field Rel. = Address	Process= Language Statement I/O = Control Block 	Node = Addresses Link = Protocols 	People = Identity Work = Job 	Time = Interrupt Cycle = Machine Cycle 	
FUNCTIONING ENTERPRISE	DATA Implementation	FUNCTION Implementation	NETWORK Implementation	ORGANIZATION Implementation	SCHEDULE Implementation	Implementation

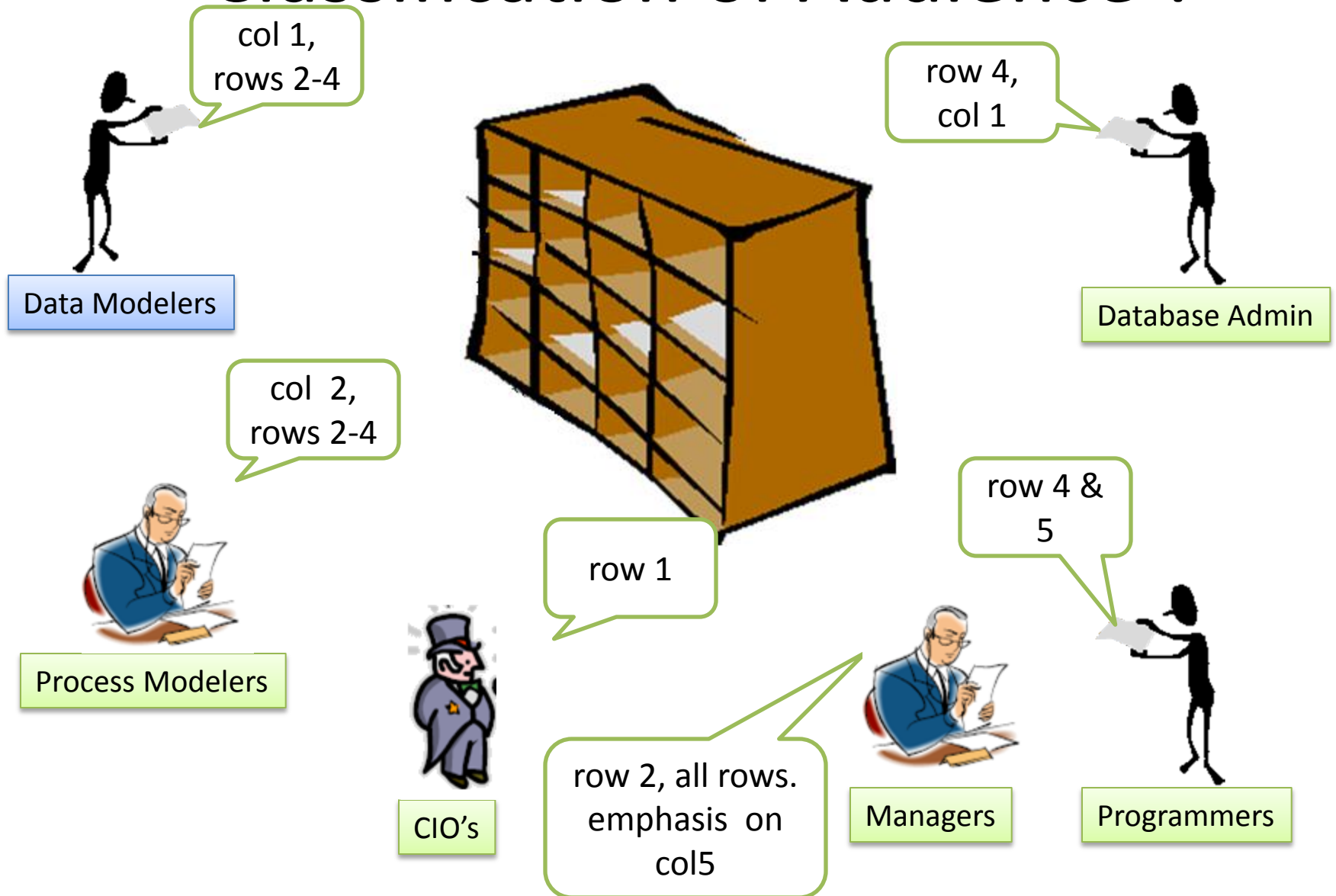
Zachman Framework

Architect's
Perspective build
taking business
perspective into
account



Each perspective must take into account the requirements and constraints of the other perspectives.

Classification of Audience ?



Zachman Framework is Heavy weight

It can lead to a documentation-heavy approach. There are 36 cells.



Zachman Framework for Enterprise Architecture



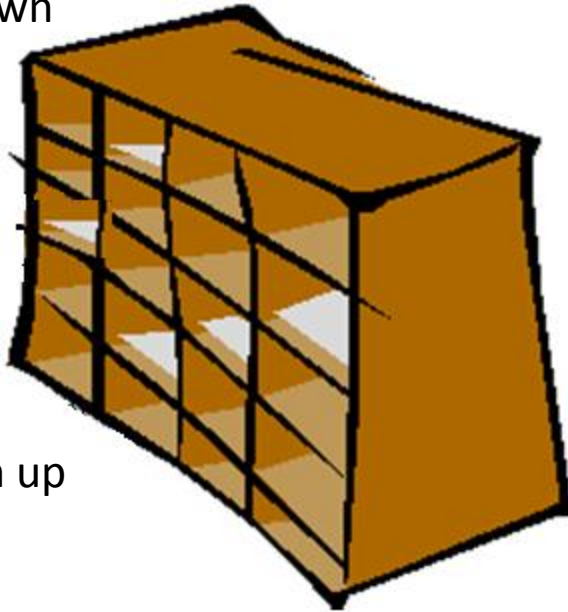
John A. Zachman



Zachman.flv

Top Down v/s Bottom up Approach

Top Down



Bottom up



How do you eat me?



Zachman Framework



The ZF isn't well accepted within the development community and few developers even seem to have even heard about it.

Example : Health Care

	Why (Motivation)	When (Time)	Who (People)	What (Content)	How (Function)	Where (Network)
	Vision (Guidelines)					
Scope (Contextual)	1. Personal and public health impact, and care delivery business case.	2. Identification of significant health care and care delivery events.	3. Essential health service organizations and their functions.	4. Description of important health service and care delivery information.	5. Important health care and care delivery services.	6. Identification and description of organization and individual locations.
	Design (Standards)					
Enterprise and Environment (Conceptual)	7. Personal health benefit and care delivery business objectives.	8. Sequence and timelines of health care services.	9. Healthcare information system workflow.	10. Semantic description of health care processes.	11. Conceptual activity model of health care delivery.	12. Structure and interrelationship of health care facilities.
Health Information System (Logical Design)	13. System functional requirements.	14. Health care event phases and process components.	15. Health care information system human-system interface architecture.	16. Logical data model for health care information.	17. Application architecture with function and user views.	18. Connectivity and distributed system architecture.
	Implementation (Standards)					
Health Information Technology (Physical Design)	19. System operational requirements.	20. Health care information system control structures.	21. Health care information system human-system interface description.	22. Physical data model for health care information.	23. System design, language specification, and structure charts.	24. Health system information network detailed architecture.
Health Information Components (Modules and subsystems)	25. Technical requirements.	26. Health care information system component timing descriptions.	27. System security architecture and operations.	28. Health care information metadata, and DBMS scripts.	29. Code statements, control blocks, DBMS stored procedures, etc.	30. Physical data network components, addresses and communication protocols.
	Operation (Standards)					
Functioning Health Information System	31. Technology operational requirements.	32. Health care information system operation schedules.	33. IS participant description.	34. Functioning database, knowledgebase.	35. User procedural and system documentation.	36. Operating health system communication network.

"You may think this is too much work...
Or it takes too long and it costs too much
Or is too theoretical
Or too high risk
Or too *whatever*.

However, if that's your assessment...

You can't complain that
the systems aren't "aligned" with the enterprise, or
are inflexible, or cost too much,
or that vital information is not available,
or that the data you get isn't any good, or too late,
or you can't change anything,
or that I/S is slow and unresponsive...

and, I am here to tell you

Outsourcing isn't going to fix the problem.

Packages (in themselves) won't fix the problem.

Decentralization won't fix the problem.

And, the Internet isn't going to fix the problem.

No amount of money, Or

technology is going to fix the problem!

It is NOT a technical problem,

it is an ENTERPRISE problem.

Only ACTUAL WORK is going to fix the problem, and

"Someday, you are going to wish you had all those models, Enterprise wide,
horizontally and vertically integrated, at excruciating level of detail."

You might as well start working on them TODAY!!!

Zachman reflections on EA Planning

- John Zachman

I R	What	How	Where	Who	When	Why
	Entity - Relation	I/O - Process	Node - Link	People - Work	Time- Cycle	Ends - Means
Context	Important things	Processes performed	Operating locations	People and groups	Events and cycles	Goals and strategies
Owner	Semantic model	B-process model	Logistics network	Work flow model	Master schedule	Business plan
Designer	Logical data model	Application model	Distributed system	Human interface	Processing structure	Business rule model
Builder	Physical data model	System design	System arch.	Presentation arch.	Control structure	Rule design
Out of context	Data definition	Program code	Network arch.	Security arch	Timing definition	Rule specification