UN/CEFACT

BCF and the Zachman Framework (Complete Enterprise Architecture)

David Welsh
Chair UN/CEFACT TMG Business Process Work Group
UN/CEFACT Standards Liaison Rapporteur
dmwelsh@microsoft.com

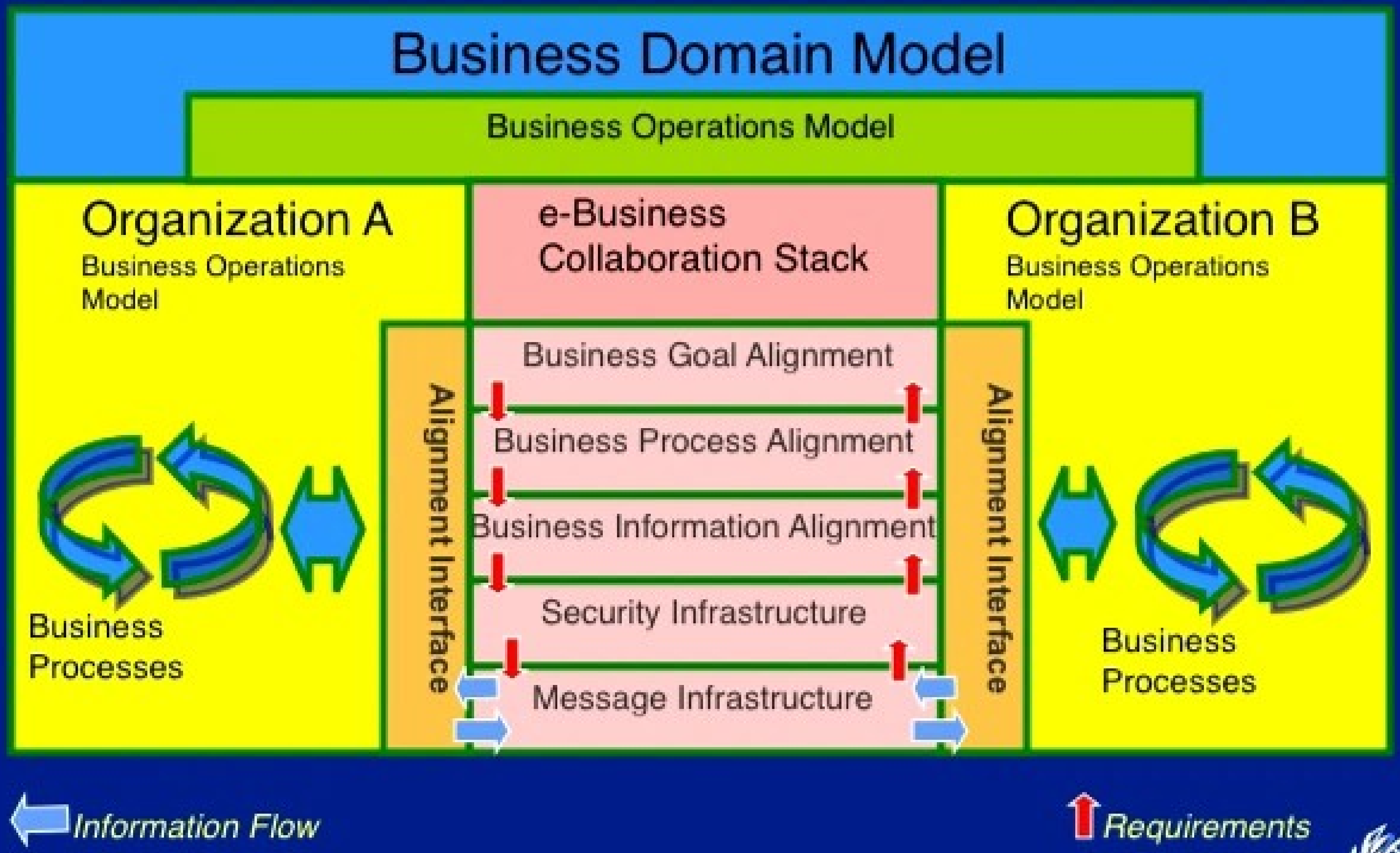
UNITED NATIONS CENTRE FOR TRADE FACILITATION AND ELECTRONIC BUSINESS
Under the auspices of United Nations Economic Commission for Europe

Agenda

- Appreciating the complexity of e-Business Collaborations
- Brief overview of the Zachman Framework for Enterprise Architectures
- Very brief summary of the BCF architectural structure
- The BCF architecture mapped to the Zachman Framework
- Conclusions
  - How the BCF is comprehensive for enterprises
  - The business value of the BCF

UN/CEFACT

Business Alignment in a Collaboration



UN/CEFACT

Organizational views in a collaboration

Stakeholder	Business Focus	Model Activity	Deliverable
Management	Goal alignment	Business agreements & metrics	Business commitment and collaboration specification
Operations	Process alignment	Business operation and interaction processes	Business collaboration protocol specification
Analysts, Developers	Information alignment	Business object state	State management, messaging
Systems Integrator, Network Admin.	Security infrastructure	Partner authentication and authorization	Collaboration role and digital signature
Application Integrator	Messaging infrastructure	Component interaction sequence diagrams	eBusiness implementation framework

Structuring the Collaboration

(Need for Business Process modeling?)

- Clear need for **business knowledge** as the driver for the business value of technology.
  - Triggered by the Internet
  - Modeling is a way to share views of business and technology - capture information for both worlds
  - **Team effort** to realize that the business knowledge comes through to the technology
- Business drivers (supporting the case for modeling)
  - Modeling is a **means of communication** across and between (B2B) organizations
  - Modeling provides a **logical framework** upon which to “hang” an agreed collaborative view and partner responsibilities.
  - Modeling allows one to include the **business objectives** and gives an ability to understand dependencies between management, operations, application systems and integration systems perspectives
- ***But how can you know you are complete for the Enterprise?***

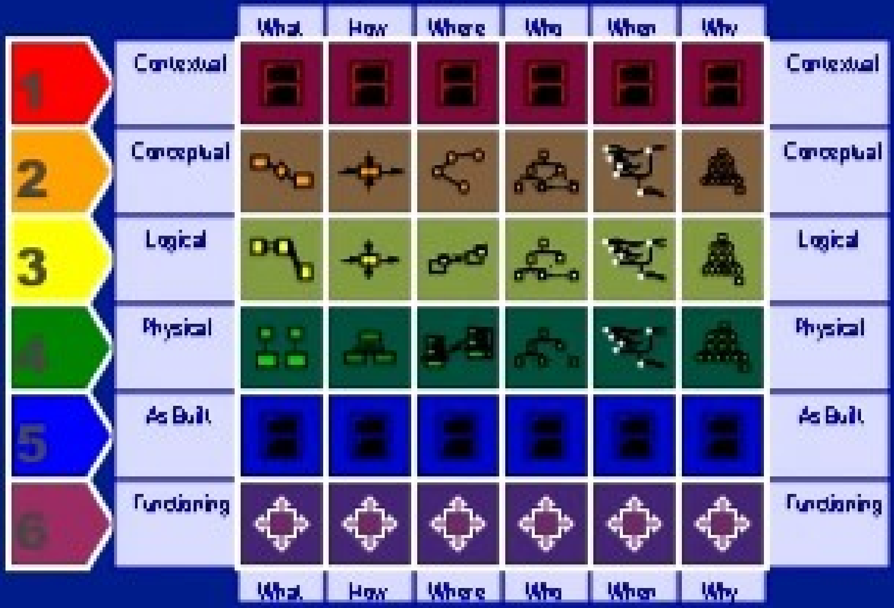
UN/CEFACT

Zachman Framework introduced

- Framework to do architecture on the enterprise level
  - Introduced by John Zachman in 1982
  - a general classification scheme to focuse concentration on selected aspects of an object and still maintain disciplined awareness of the contextual relationships that are significant to preserve the integrity of the object, without losing the holistic perspective
    - In designing and building complex objects there are too many details and relationships to consider simultaneously
    - The **RISK** of isolating single variables in making design decisions **out of context** results in sub-optimization and extra cost
      - Putting suboptimal components into the resultant object for the original purpose which the object was intended makes the resultant object suboptimal
  - Sub optimal infrastructures is what many enterprises find themselves in today after years of building systems “out of context” and not integrated into the Enterprise
    - consuming enormous amounts of resource for maintenance
    - **does legacy really mean paying for the mistakes of the past?**

UN/CEFACT

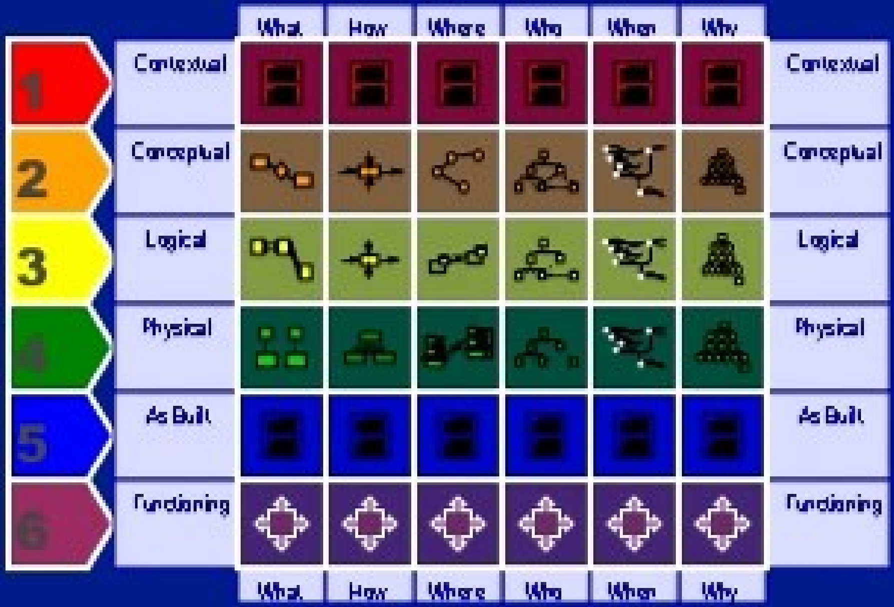
Zachman Framework



UN/CEFACT

Zachman Framework

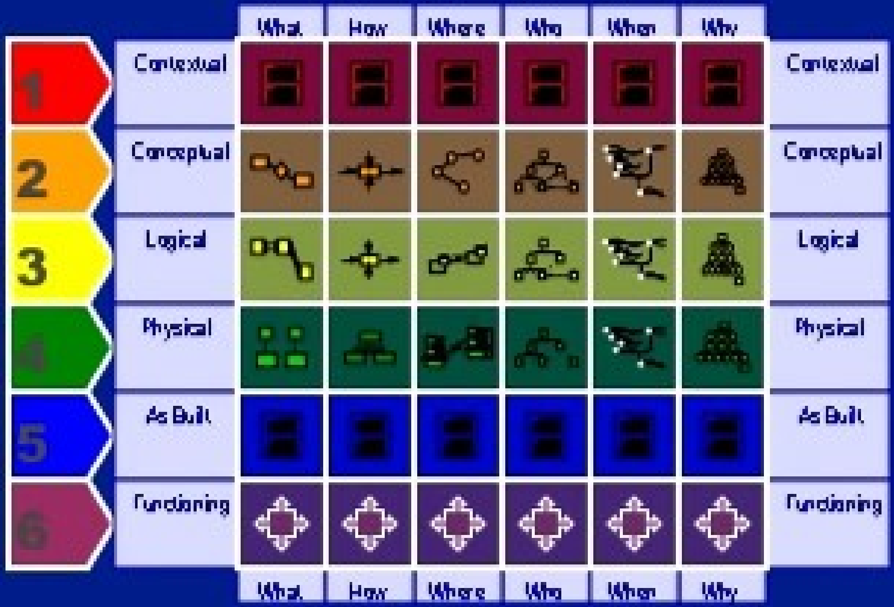
- ***Row 1 – Scope***
  External Requirements and Drivers
  Business Function Modeling



UN/CEFACT

Zachman Framework

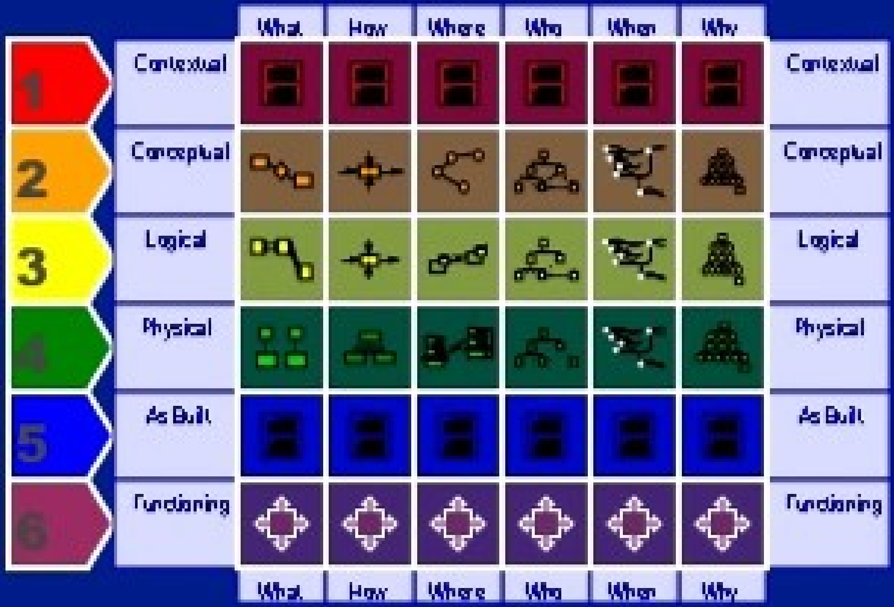
- ***Row 1 – Scope***
  External Requirements and Drivers
  Business Function Modeling
- ***Row 2 – Enterprise Model***
  Business Process Models



UN/CEFACT

Zachman Framework

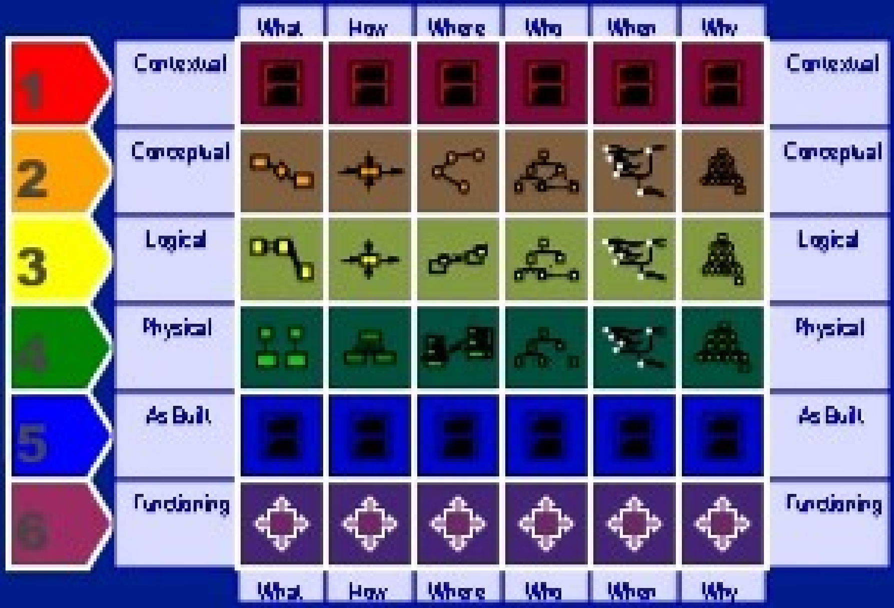
- ***Row 1 – Scope***
  External Requirements and Drivers
  Business Function Modeling
- ***Row 2 – Enterprise Model***
  Business Process Models
- ***Row 3 – System Model***
  Logical Models
  Requirements Definition



UN/CEFACT

Zachman Framework

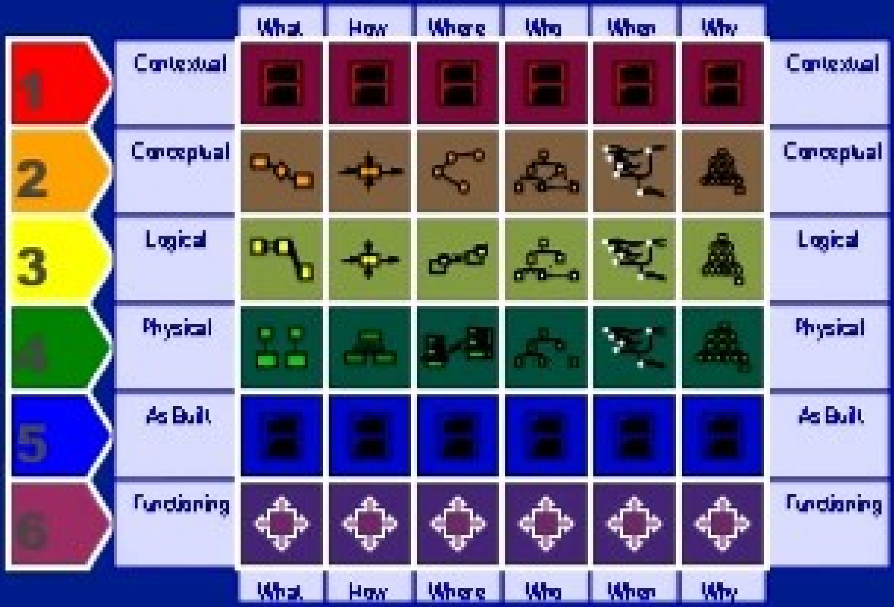
- ***Row 1 – Scope***
  External Requirements and Drivers
  Business Function Modeling
- ***Row 2 – Enterprise Model***
  Business Process Models
- ***Row 3 – System Model***
  Logical Models
  Requirements Definition
- ***Row 4 – Technology Model***
  Physical Models
  Solution Definition and Development



UN/CEFACT

Zachman Framework

- ***Row 1 – Scope***
  External Requirements and Drivers
  Business Function Modeling
- ***Row 2 – Enterprise Model***
  Business Process Models
- ***Row 3 – System Model***
  Logical Models
  Requirements Definition
- ***Row 4 – Technology Model***
  Physical Models
  Solution Definition and Development
- ***Row 5 – As Built***
  As Built
  Deployment

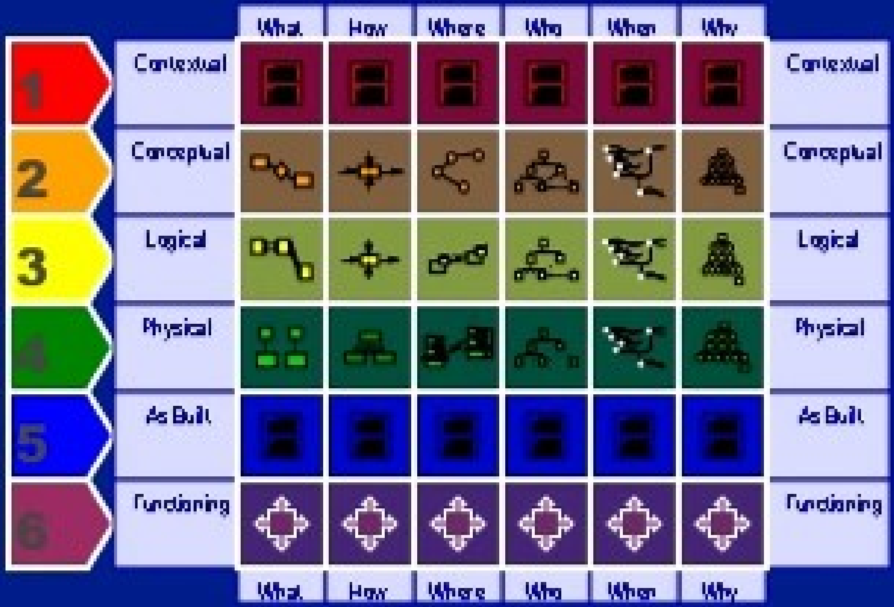


		What	How	Where	Who	When	Why	
1	Contextual							Contextual
2	Conceptual							Conceptual
3	Logical							Logical
4	Physical							Physical
5	As Built							As Built
6	Functioning							Functioning
		What	How	Where	Who	When	Why	

UN/CEFACT

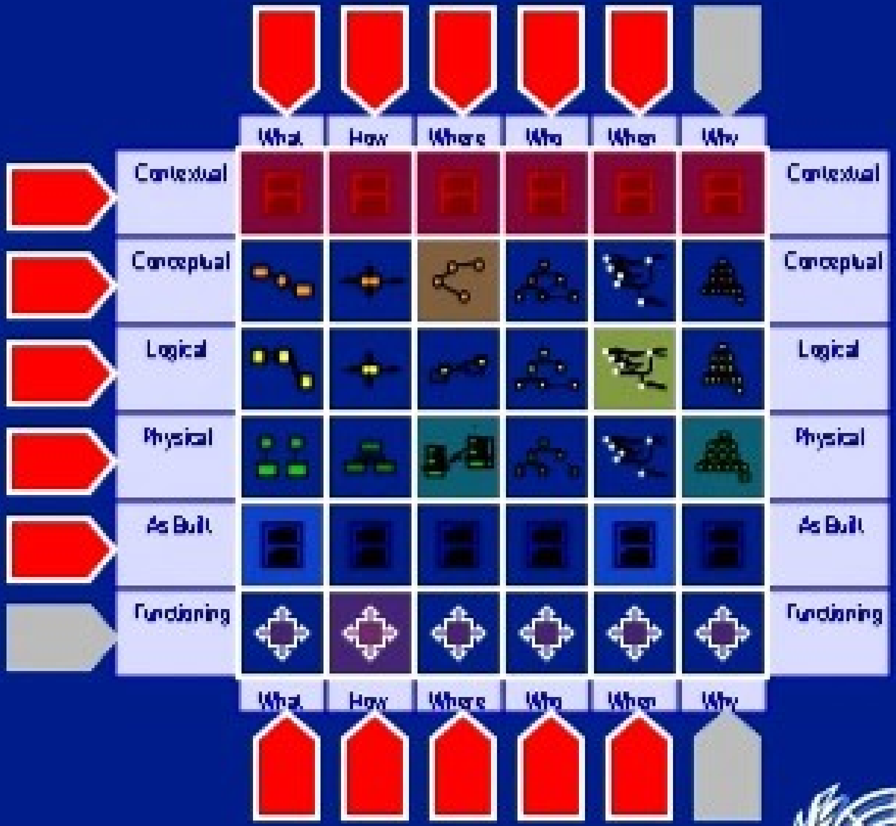
Zachman Framework

- ***Row 1 – Scope***
  External Requirements and Drivers
  Business Function Modeling
- ***Row 2 – Enterprise Model***
  Business Process Models
- ***Row 3 – System Model***
  Logical Models
  Requirements Definition
- ***Row 4 – Technology Model***
  Physical Models
  Solution Definition and Development
- ***Row 5 – As Built***
  As Built
  Deployment
- ***Row 6 – Functioning Enterprise***
  Functioning Enterprise
  Evaluation



UN/CEFACT

Zachman Framework Rules



What How Where Who When Why

Contextual

Conceptual

Logical

Physical

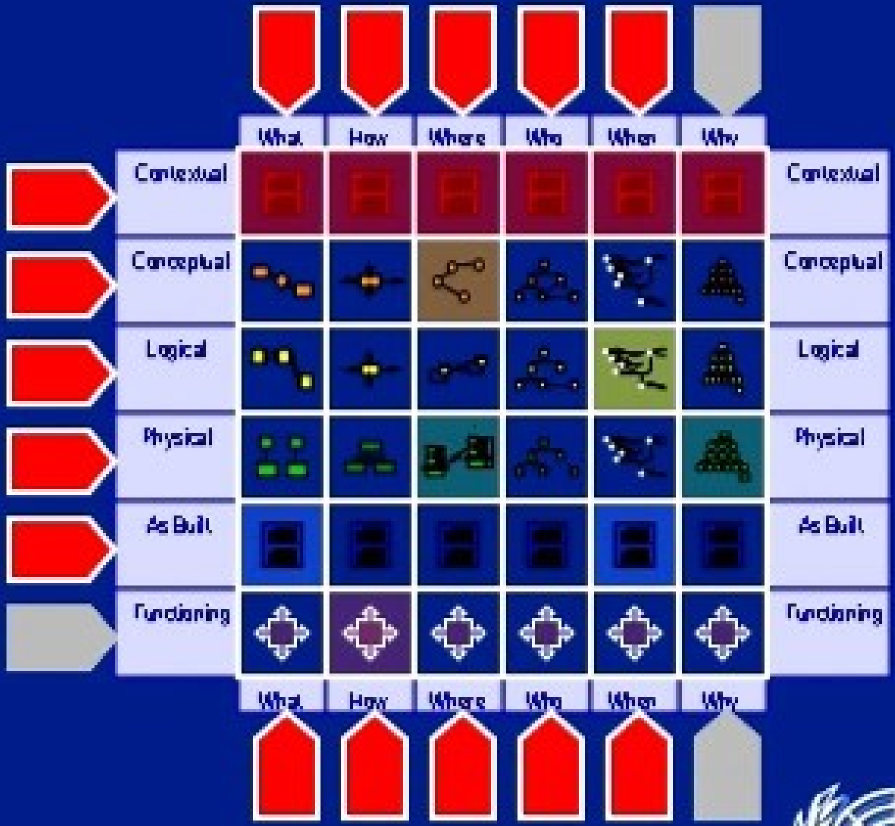
As Built

Functioning

What How Where Who When Why

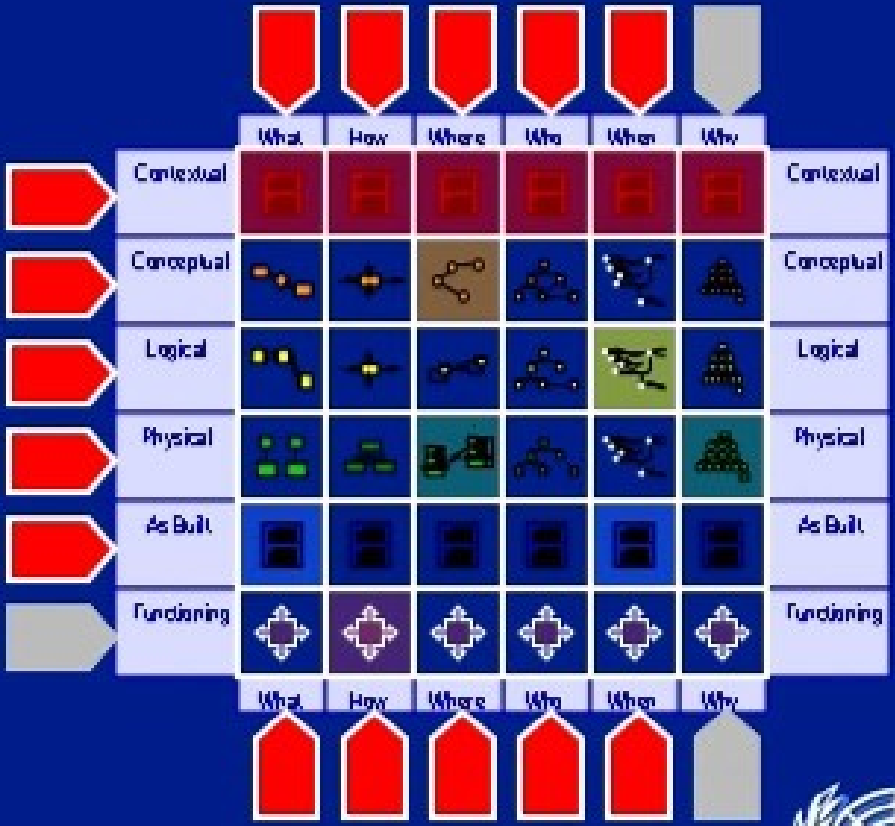
Zachman Framework Rules

- ***Rule 1:***
  Columns have no order



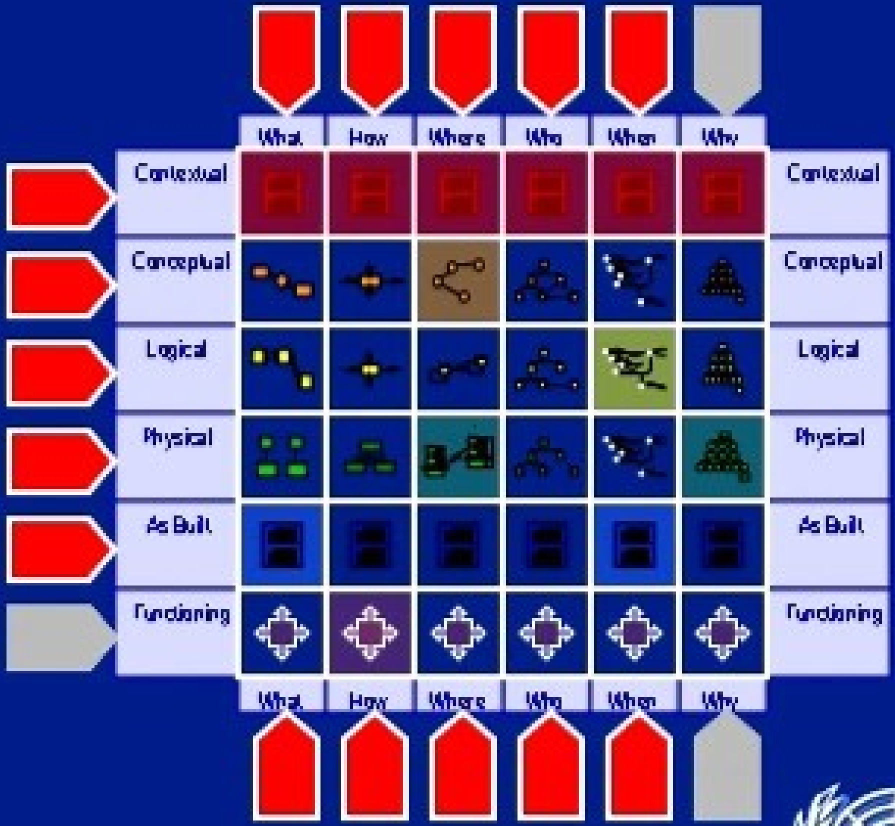
Zachman Framework Rules

- ***Rule 1:***
  Columns have no order
- ***Rule 2:***
  Each column has a simple, basic model



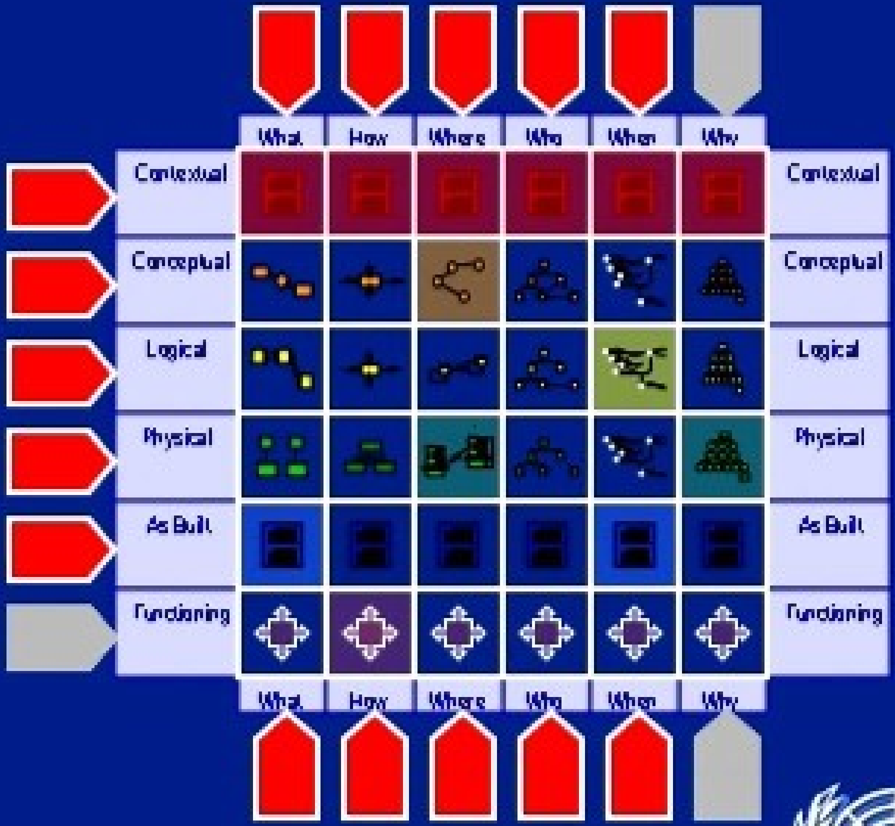
Zachman Framework Rules

- ***Rule 1:***
  Columns have no order
- ***Rule 2:***
  Each column has a simple, basic model
- ***Rule 3:***
  Basic model of each column is unique



Zachman Framework Rules

- ***Rule 1:***
  Columns have no order
- ***Rule 2:***
  Each column has a simple, basic model
- ***Rule 3:***
  Basic model of each column is unique
- ***Rule 4:***
  Each row represents a distinct view



What How Where Who When Why

Contextual

Conceptual

Logical

Physical

As Built

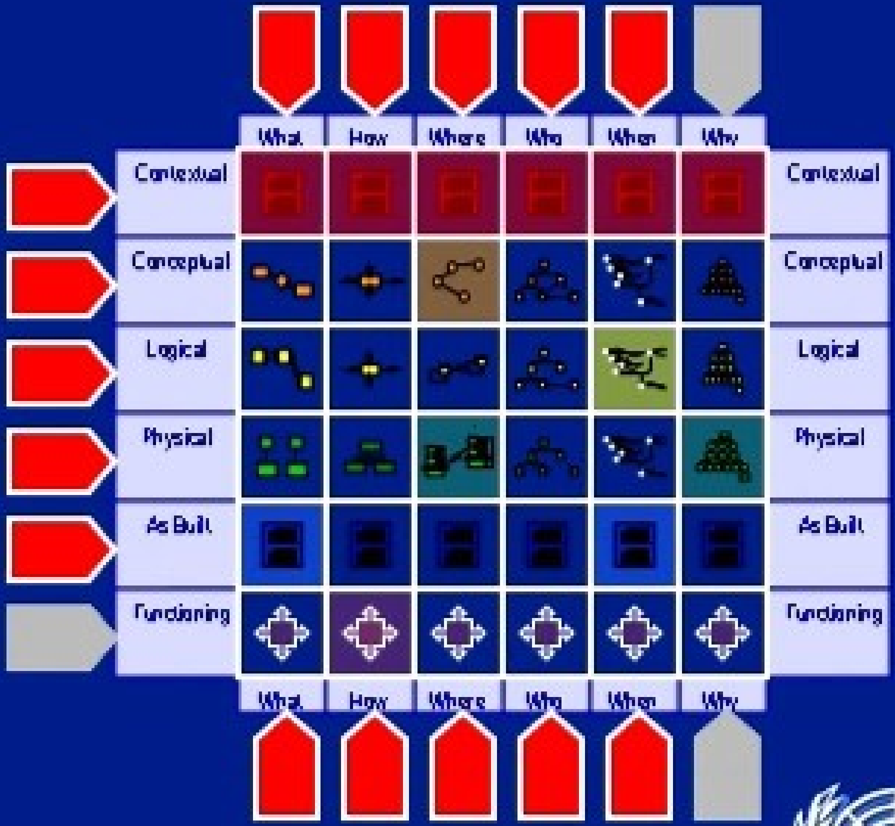
Functioning

What How Where Who When Why

UN/CEFACT

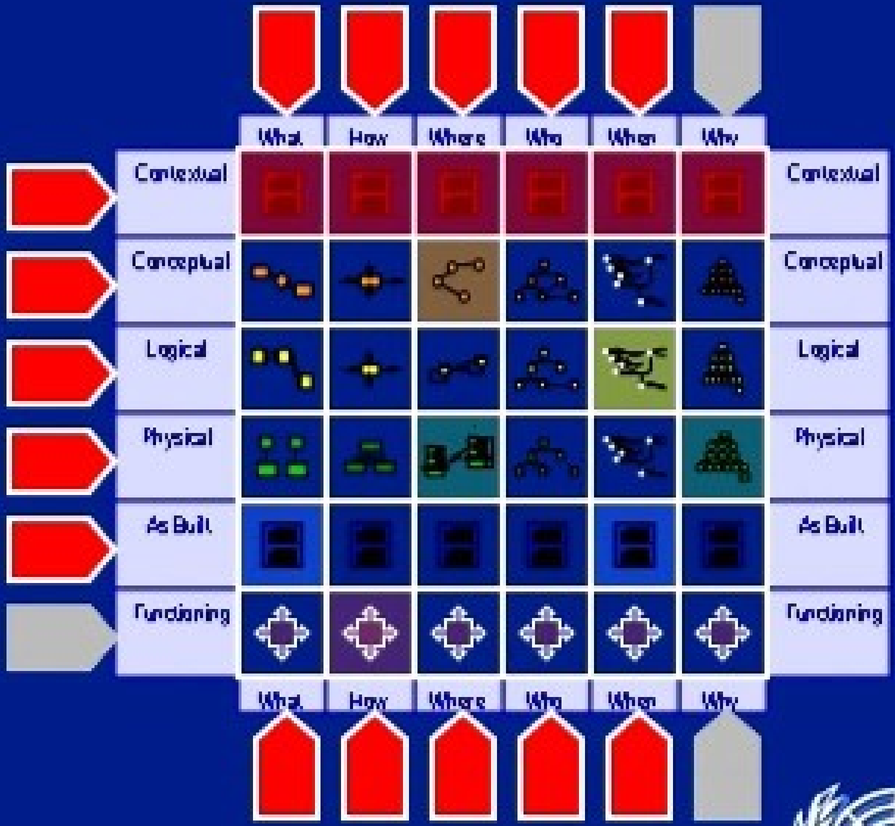
Zachman Framework Rules

- ***Rule 1:***
  Columns have no order
- ***Rule 2:***
  Each column has a simple, basic model
- ***Rule 3:***
  Basic model of each column is unique
- ***Rule 4:***
  Each row represents a distinct view
- ***Rule 5:***
  Each cell is unique

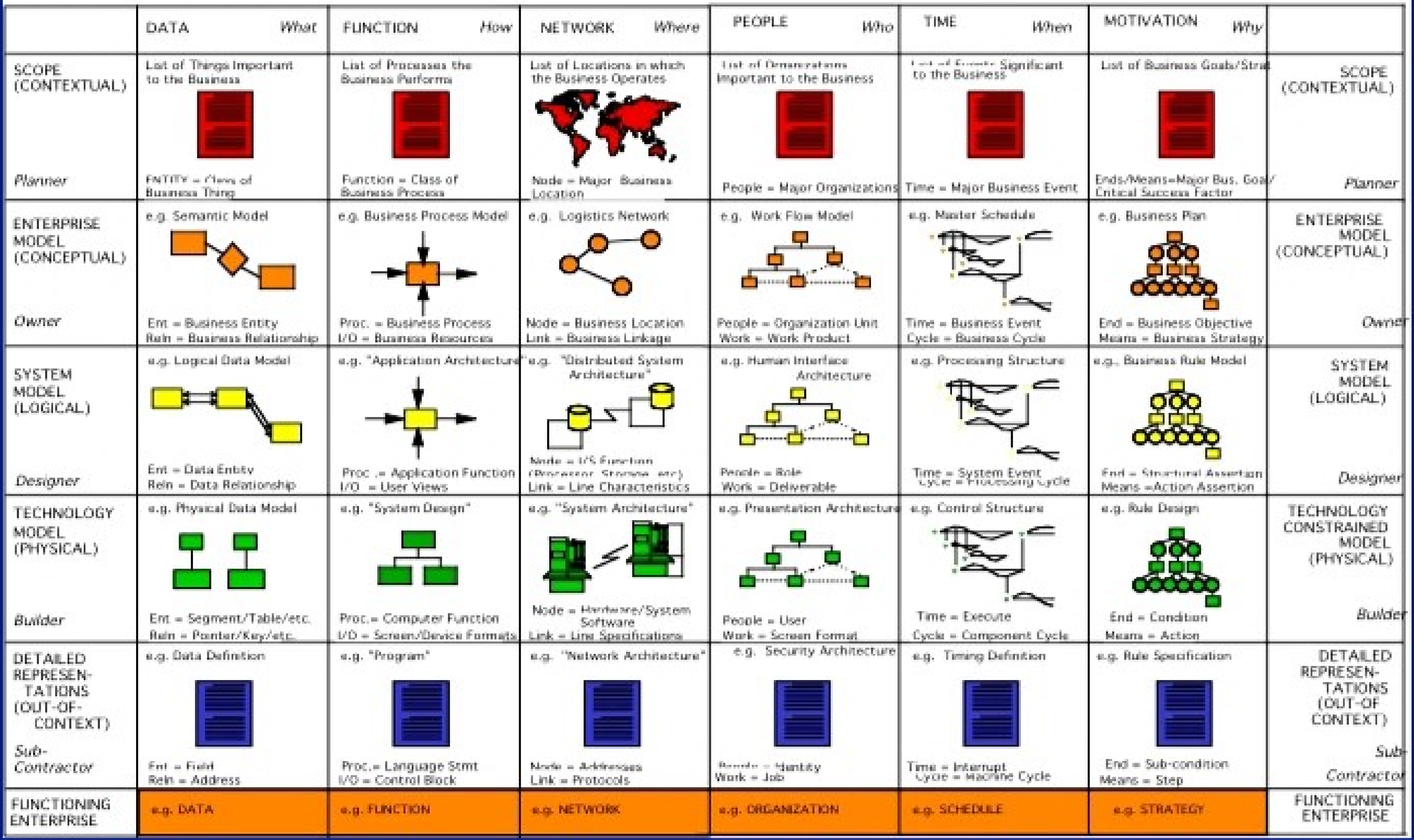


Zachman Framework Rules

- ***Rule 1:***
  Columns have no order
- ***Rule 2:***
  Each column has a simple, basic model
- ***Rule 3:***
  Basic model of each column is unique
- ***Rule 4:***
  Each row represents a distinct view
- ***Rule 5:***
  Each cell is unique
- ***Rule 6:***
  Combining the cells in one row forms a complete description from that view



ENTERPRISE ARCHITECTURE - A FRAMEWORK ™

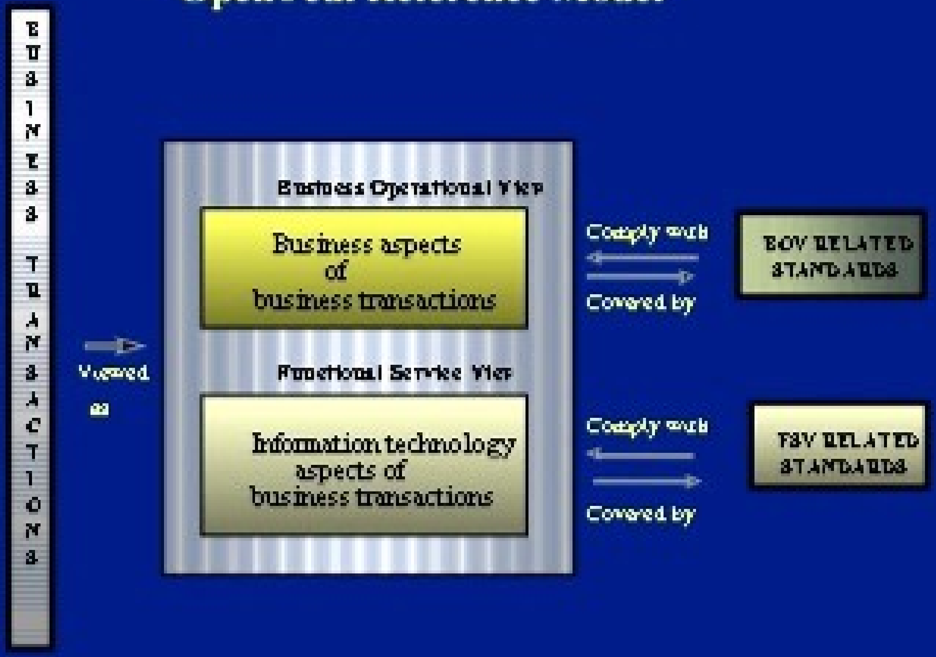


	DATA *What*	FUNCTION *How*	NETWORK *Where*	PEOPLE *Who*	TIME *When*	MOTIVATION *Why*	
SCOPE (CONTEXTUAL) *Planner*	List of Things Important to the Business ENTITY = Class of Business Thing	List of Processes the Business Performs Function = Class of Business Process	List of Locations in which the Business Operates Node = Major Business Location	List of Organizations Important to the Business People = Major Organizations	List of Events Significant to the Business Time = Major Business Event	List of Business Goals/Stra Ends/Means=Major Bus. Goal/ Critical Success Factor	SCOPE (CONTEXTUAL) *Planner*
ENTERPRISE MODEL (CONCEPTUAL) *Owner*	e.g. Semantic Model Ent = Business Entity Reln = Business Relationship	e.g. Business Process Model Proc. = 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	e.g. Business Plan End = Business Objective Means = Business Strategy	ENTERPRISE MODEL (CONCEPTUAL) *Owner*
SYSTEM MODEL (LOGICAL) *Designer*	e.g. Logical Data Model Ent = Data Entity Reln = Data Relationship	e.g. "Application Architecture" Proc .= Application Function I/O = User Views	e.g. "Distributed System Architecture" Node = I/S Function (Processor, Storage, etc) Link = Line Characteristics	e.g. Human Interface Architecture 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	SYSTEM MODEL (LOGICAL) *Designer*
TECHNOLOGY MODEL (PHYSICAL) *Builder*	e.g. Physical Data Model Ent = Segment/Table/etc. Reln = Pointer/Key/etc.	e.g. "System Design" Proc.= Computer Function I/O = Screen/Device Formats	e.g. "System Architecture" Node = Hardware/System Software Link = Line Specifications	e.g. Presentation Architecture People = User Work = Screen Format	e.g. Control Structure Time = Execute Cycle = Component Cycle	e.g. Rule Design End = Condition Means = Action	TECHNOLOGY CONSTRAINED MODEL (PHYSICAL) *Builder*
DETAILED REPRESEN-TATIONS (OUT-OF-CONTEXT) *Sub-Contractor*	e.g. Data Definition Ent = Field Reln = Address	e.g. "Program" Proc.= Language Stmt 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	e.g. Rule Specification End = Sub-condition Means = Step	DETAILED REPRESEN-TATIONS (OUT-OF CONTEXT) *Sub-Contractor*
FUNCTIONING ENTERPRISE	e.g. DATA	e.g. FUNCTION	e.g. NETWORK	e.g. ORGANIZATION	e.g. SCHEDULE	e.g. STRATEGY	FUNCTIONING ENTERPRISE

UN/CEFACT BCF highlighted

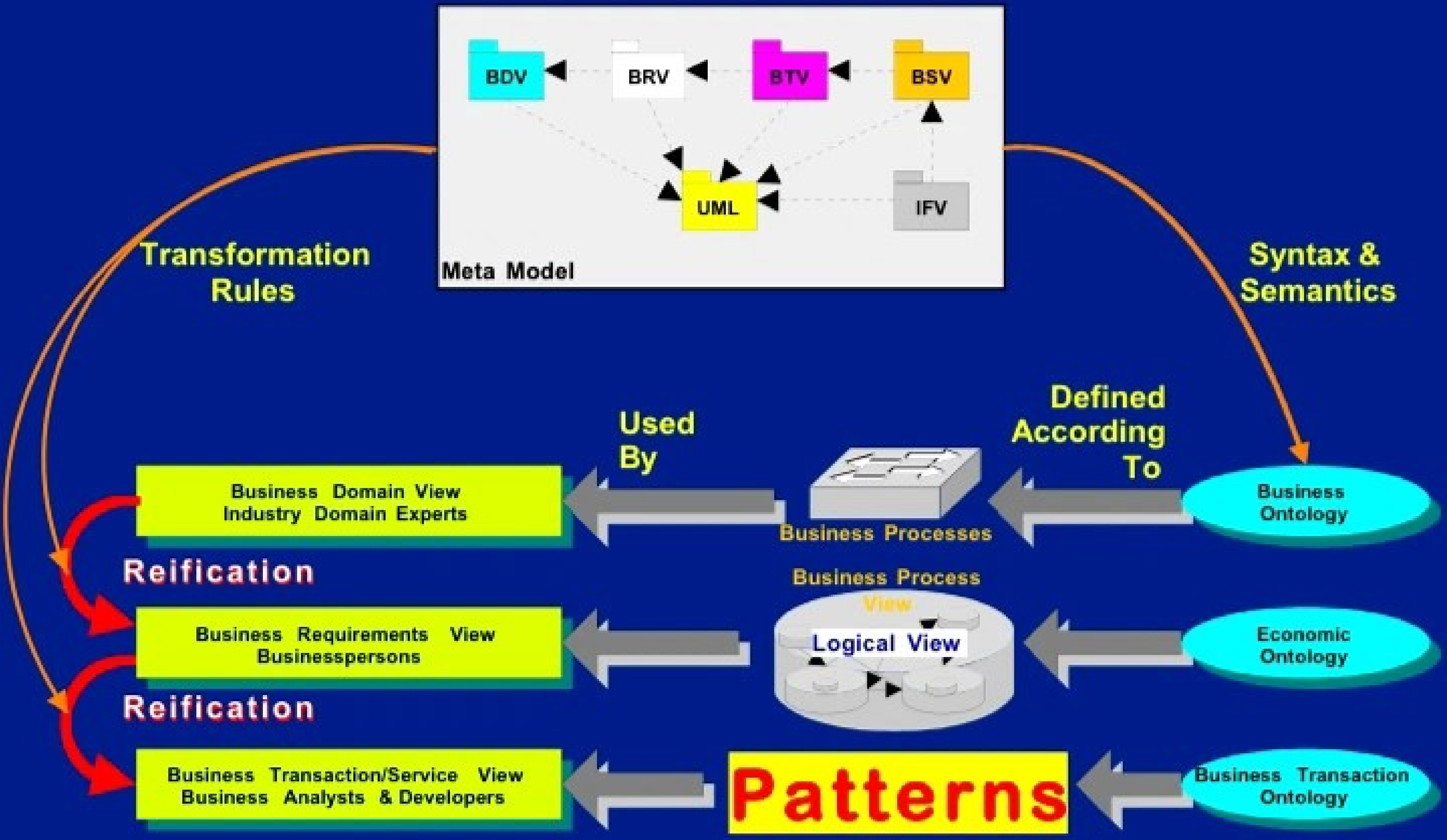
- BCF covers the business aspects of Business Transactions (BOV)
- Business centric and technology neutral
  - To achieve this the BCF uses a set of architectures, patterns and business semantics
  - BCF remains precise enough to enable legally binding business transactions
- BCF is a framework that allows for the transformation of business processes into information definitions; without the loss of business semantics (meaning) or computational integrity.

Open - edi Reference Model



UN/CEFACT

UN/CEFACT BCF Architectural Structure



BDV

BRV

BTV

BSV

UML

IFV

Meta Model

Transformation Rules

Syntax & Semantics

Used By

Defined According To

Business Domain View
Industry Domain Experts

Business Processes

Business Ontology

Reification

Business Process View

Business Requirements View
Businesspersons

Logical View

Economic Ontology

Reification

Business Transaction/Service View
Business Analysts & Developers

Patterns

Business Transaction Ontology

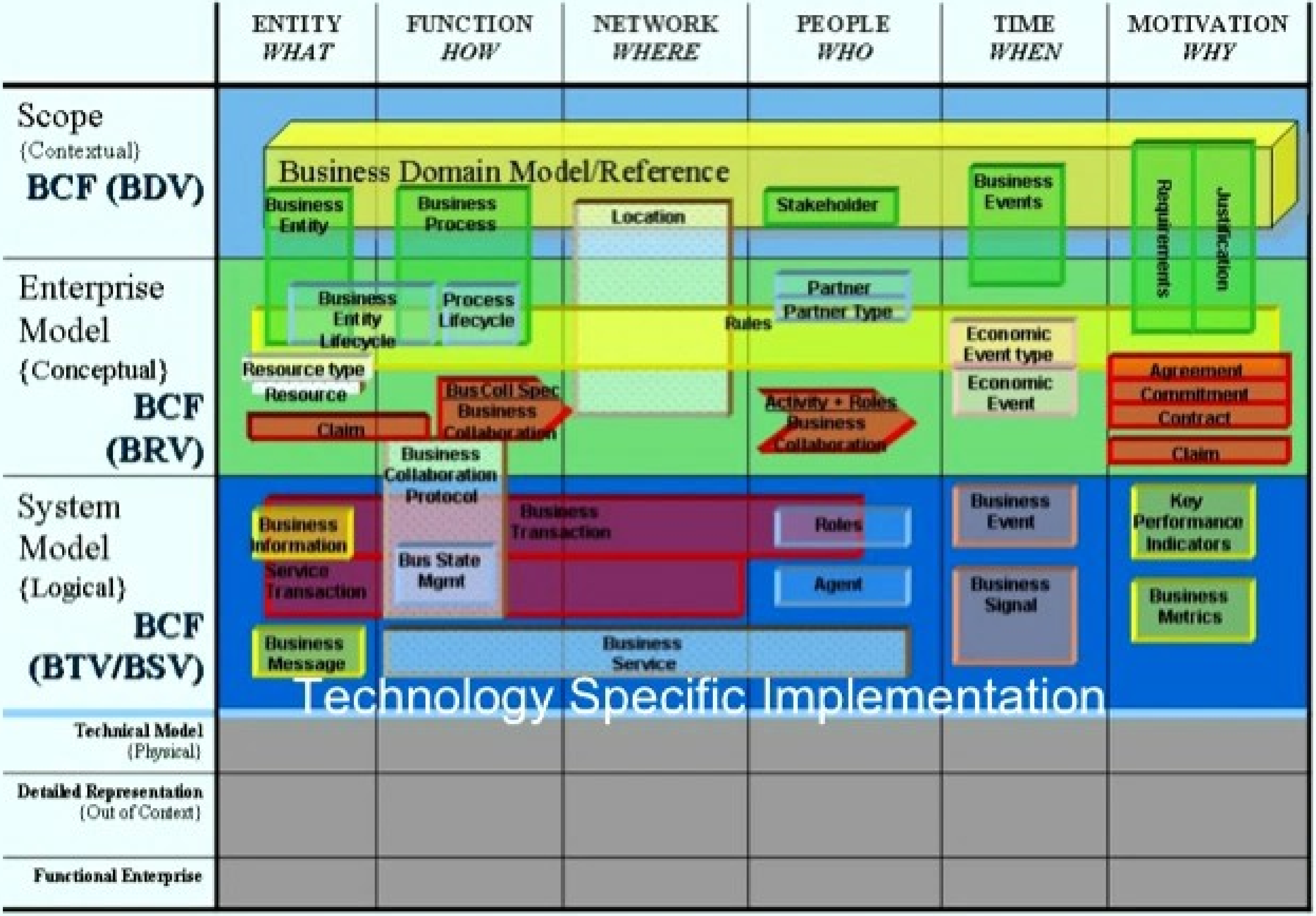
Framework to Framework mapping
(BCF to Zachman)

- As an exercise, to see the completeness of the BCF, we used the Zachman Framework to check the BCF meta model.
  - The results can be used to identify which BCF components are used in an enterprise architecture, to those not familiar with the BCF.
  - We mapped the structural components of the BCF meta model onto the Zachman Framework, as the BCF would be used when building a new business collaboration.

- The BCF primarily covers the upper 3 rows of the Zachman Framework.
  - The BCF's Business Domain View (BDV) aligns with Row 1 (Context View) of the Zachman Framework
  - BCF's Business Requirements View (BRV) aligns with Row 2 (Concept View) of the Zachman Framework
  - BCF's Business Transaction View (BTV) and the BCF Business Service View (BSV) both align to Row 3 (Logical View) of the Zachman Framework
  - The BCF's Implementation Framework View (IFV) defines a set of elements needed to specify a target technology, and is aligned to the lower rows of Zachman Framework (Physical layer)

UN/CEFACT

BCF to Zachman Mapping



ENTITY *WHAT*

FUNCTION *HOW*

NETWORK *WHERE*

PEOPLE *WHO*

TIME *WHEN*

MOTIVATION *WHY*

Scope {Contextual} **BCF (BDV)**

Business Domain Model/Reference

Business Entity

Business Process

Location

Stakeholder

Business Events

Requirements

Justification

Enterprise Model {Conceptual} **BCF (BRV)**

Business Entity Lifecycle

Process Lifecycle

Rules

Partner

Partner Type

Economic Event type

Economic Event

Resource type

Resource

Claim

BusColl Spec Business Collaboration

Activity + Roles Business Collaboration

Agreement

Commitment

Contract

Claim

System Model {Logical} **BCF (BTV/BSV)**

Business Collaboration Protocol

Business Information

Business Transaction

Roles

Business Event

Key Performance Indicators

Service Transaction

Bus State Mgmt

Agent

Business Signal

Business Metrics

Business Message

Business Service

Technology Specific Implementation

Technical Model (Physical)

Detailed Representation (Out of Context)

Functional Enterprise

Conclusions

(Adopting of Enterprise Architectures)

- Growing adopting of Enterprise Architectures
  - Justify budgets
  - Promote common processes, interoperability and information sharing
    - In the United States, the Clinger-Cohn Act of 1996 mandates Federal Agencies develop and maintain an Enterprise IT architecture
    - In Canada, the Treasury Board of Canada uses the BCF and Zachman in developing the Canadian Government Services Reference Model (GSRM)
    - Other countries adopting Enterprise Architectures
- To protect investments, as technology continues to evolve, industry and government need to adopt a technology neutral business enterprise architecture.
- The Business Collaboration Framework (BCF)
  - When compared to the Zachman Framework, the BCF is a complete architecture
  - Builds on more than 12 years of continuing evolution with input from
    - UN/CEFACT, ISO, ITU, the Legal and Accounting professions and more

UN/CEFACT

UN/CEFACT

SIMPLE, TRANSPARENT AND EFFECTIVE PROCESSES
FOR GLOBAL BUSINESS