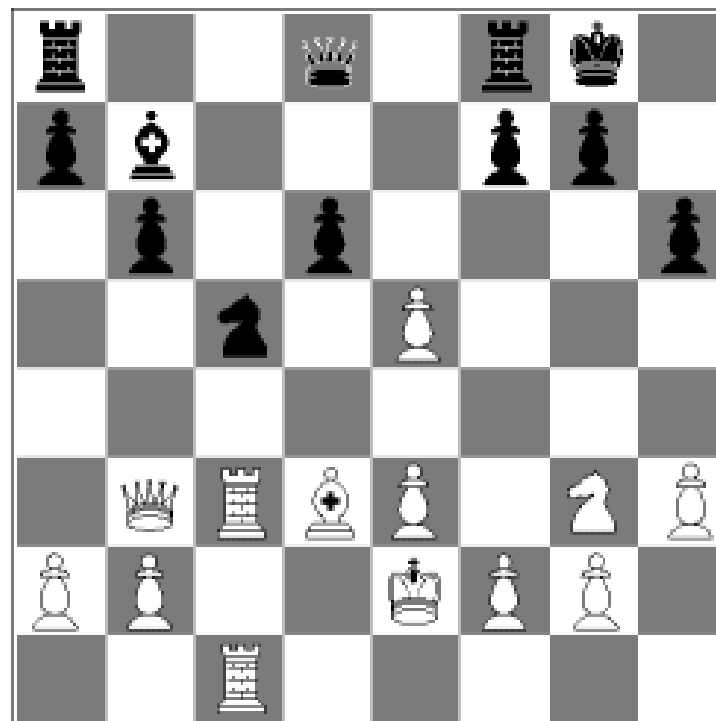


Data Model: Queen of the Zachman Chessboard

George Dobbs

Dynamics Research Corporation

January 2006



*IT Architecture Practitioners Conference
Barcelona*

January 23-25, 2006
Hotel Fira Palace Barcelona
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George Dobbs
Dynamics Research Corporation

Speaker Qualifications

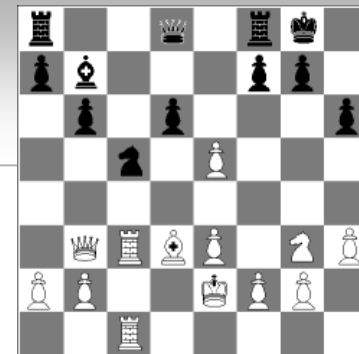
- Senior Enterprise Architect, Subject Matter Expert Consulting to Federal Government and Private Industry
- Data Modeller, System Designer, Programmer for >20 years
- Certified Oracle DBA since 1995
- INCOSE Member and Speaker
- Guest Professor at Post Graduate Seminars
- Pioneer of Client-Server Database Application Development
- Zachman Framework Evangelist
- DoDAF (C4ISR) and Requirements Analysis Expert

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Objectives

1. What is the **Role** of a **Data Model** in **Enterprise Architecture** ?
2. How a Data Model evolves from **Conceptual** to **Logical** To **Physical** ?
3. Why is the power of **Relational Modeling** Still misunderstood ?

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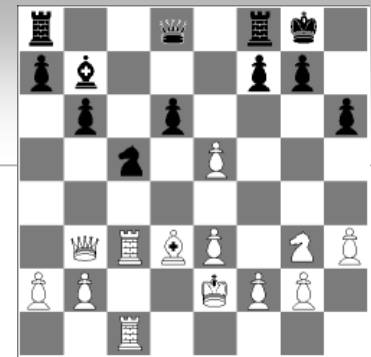


1. What is the Role of a Data Model in Enterprise Architecture?

Zachman Framework

| | What Things | How Functions | Where Location | Who People | When Time | Why Motivation |
|-----------------------------------|----------------|------------------|-------------------|---------------|--------------|-------------------|
| Scope Contextual Planner | | | | | | |
| Business Conceptual Owner | | | | | | |
| System Logical Designer | | | | | | |
| Technology Physical Builder | | | | | | |
| Craft Hand Craftsman | | | | | | |
| Execution Real-time User | | | | | | |

Why is the Data Model Queen of the Zachman Chessboard??



Please Read the Paper !

Data Model: Queen of the Zachman Chessboard

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Objectives

1. What is the **Role** of a **Data Model** in **Enterprise Architecture** ?

- What is **Enterprise Architecture** ?
- What is a **Data Model** ?

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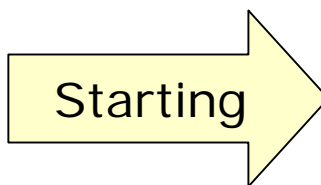
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Objectives

1. What is the **Role** of a **Data Model** in **Enterprise Architecture** ?



Starting

- What is **Enterprise Architecture** ?
- What is a **Data Model** ?

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Objectives

1. What is the **Role** of a **Data Model** in **Enterprise Architecture** ?

Starting

• What is **Enterprise Architecture** ?

• What

Let's first ask:
What is **Architecture**?

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Data Model: Queen of the Zachman Chessboard

1. What is the **Role** of a **Data Model** in **Enterprise Architecture**?
 - What is **Enterprise Architecture** ?

What is “**Architecture**?”

Some Definitions:

Webster:

- An **orderly** arrangement of **parts**
- A style and method of **design** and construction

IEEE STD 1472:

Organization of a system embodied in its **components**, their relationships to each other, to the environment and the principles guiding its **design** and evolution.



Data Model: Queen of the Zachman Chessboard

1. What is the **Role** of a **Data Model** in **Enterprise Architecture**?
 - What is **Enterprise Architecture** ?

What is “**Architecture**?”

One Good Candidate:

A design, prescribing an orderly arrangement of parts, in time and space, to solve a problem.

Dobbs

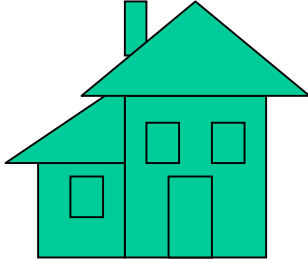
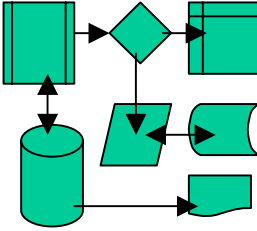
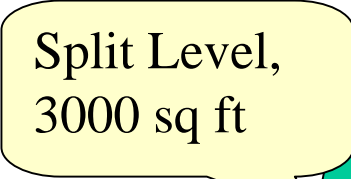
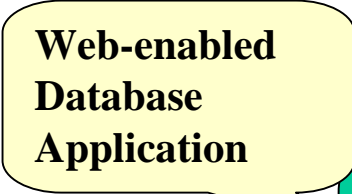
“**Problem**” = gap between “**As-Is**” state vs. “**To-Be**” state

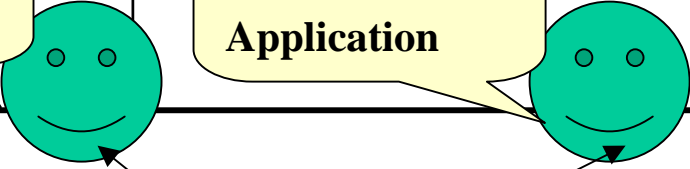


Data Model: Queen of the Zachman Chessboard

1. What is the **Role** of a **Data Model** in **Enterprise Architecture**?
 - What is **Enterprise Architecture** ?

What is “Architecture?”

| | | |
|-------------------------------------|---|---|
| Domain | Human Dwelling  | Commerce  |
| Perceived Problem | “Need suburban shelter for family” | “Need to manage information for Airline” |
| Method used to Solve Problem | House Architecture | Enterprise Architecture |
| One Possible Solution |  Split Level, 3000 sq ft |  Web-enabled Database Application |

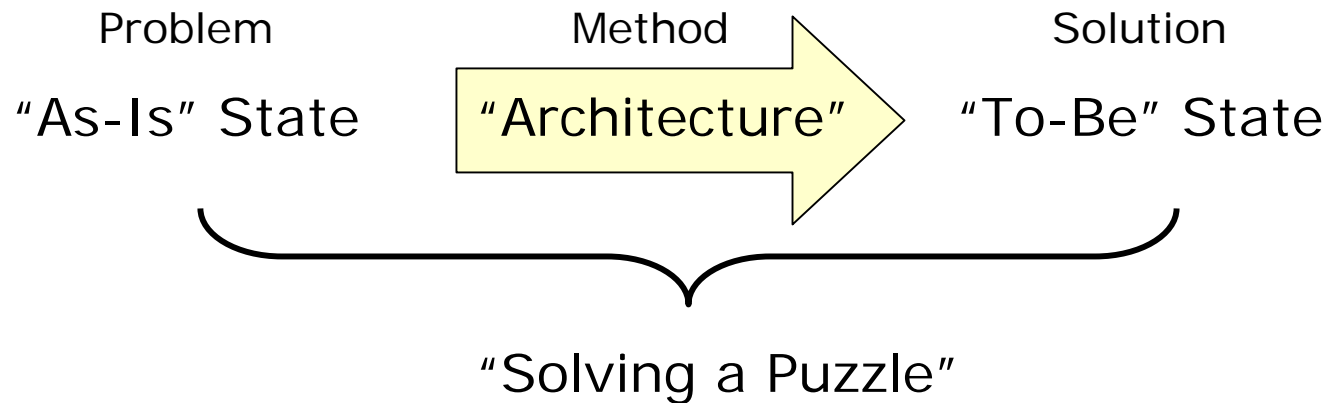

“Architects”



Data Model: Queen of the Zachman Chessboard

1. What is the **Role** of a **Data Model** in **Enterprise Architecture**?
 - What is **Enterprise Architecture** ?

What is “**Architecture**?”



Question:

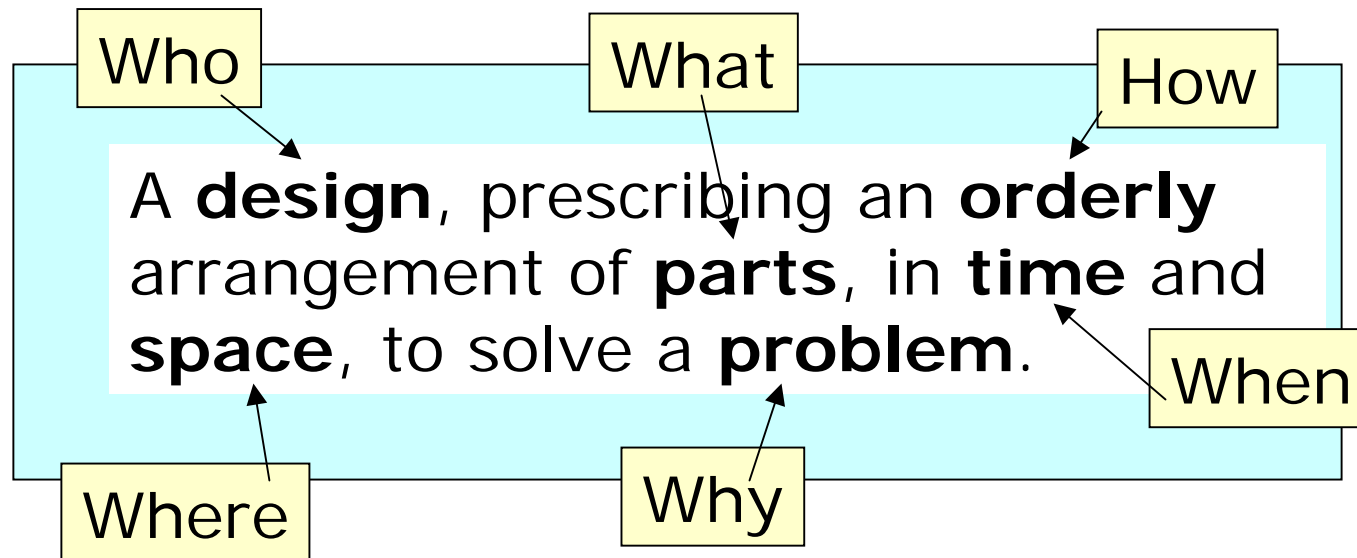
What do we need to *consider* to solve a puzzle?



1. What is the Role of a Data Model in Enterprise Architecture?

- What is Enterprise Architecture ?

What is “**Architecture?**” = Solving a Puzzle



Here are some common-sense questions we want to ask about any problem.

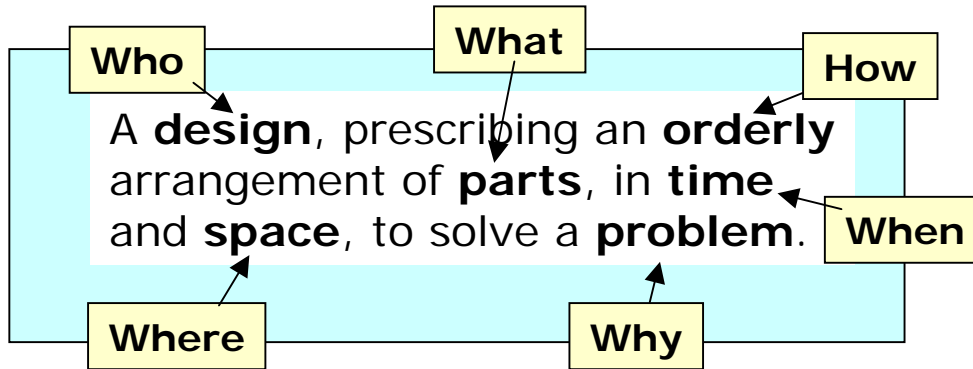
But, what *else* do we need to consider?

If only some smart person gave us a **checklist**....

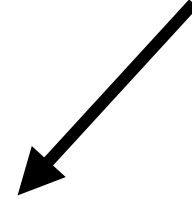


Data Model: Queen of the Zachman Chessboard

1. What is the **Role** of a **Data Model** in **Enterprise Architecture**?
 - What is **Enterprise Architecture** ?



Introducing the "Checklist"



Zachman Framework

| | What Things | How Functions | Where Location | Who People | When Time | Why Motivation |
|---------------|----------------|------------------|-------------------|---------------|--------------|-------------------|
| Scope | | | | | | |
| Business | | | | | | |
| System | | | | | | |
| Technology | | | | | | |
| Subcontractor | | | | | | |
| User | | | | | | |

Data Model: Queen of the Zachman Chessboard



- 1. What is the **Role** of a **Data Model** in **Enterprise Architecture**?
 - What is **Enterprise Architecture** ?

Zachman Framework

| | What Things | How Functions | Where Location | Who People | When Time | Why Motivation |
|--|-----------------------|-------------------------|--------------------------|----------------------|---------------------|--------------------------|
| Scope Contextual Planner | | | | | | |
| Business Conceptual Owner | | | | | | |
| System Logical Designer | | | | | | |
| Technology Physical Builder | | | | | | |
| Craft Hands-On Craftsman | | | | | | |
| Execution Real-time User | | | | | | |



Data Model: Queen of the Zachman Chessboard

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 - What is **Enterprise Architecture** ?

Zachman Framework

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| Technology Physical Builder | | | | | | |
| Craft Hands-On Craftsman | | | | | | |
| Execution Real-time User | | | | | | |

3 ways to *study* the Framework:

1. By **Row**
2. By **Column**
3. By **Cell**



Data Model: Queen of the Zachman Chessboard

- 1. What is the Role of a Data Model in Enterprise Architecture?
 - What is Enterprise Architecture ?

Zachman Framework

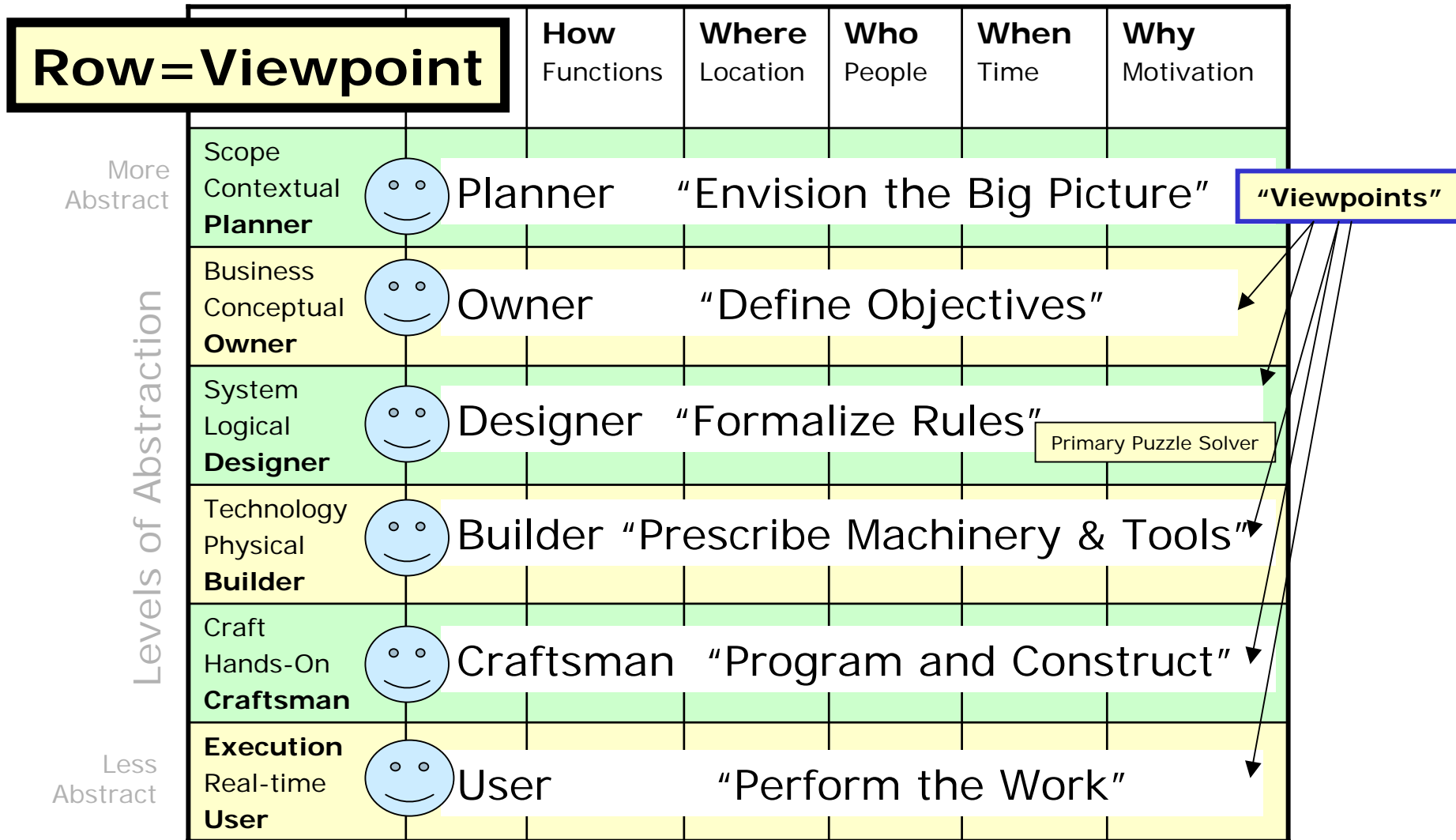
| By Row | | What | How | Where | Who | When | Why |
|---|--|--------|-----------|----------|--------|------|------------|
| | | Things | Functions | Location | People | Time | Motivation |
| Levels of Abstraction ↑ More Abstract | Scope Contextual Planner | ← | → | | | | → |
| | Business Conceptual Owner | ← | → | | | | → |
| | System Logical Designer | ← | → | | | | → |
| | Technology Physical Builder | ← | → | | | | → |
| | Craft Hands-On Craftsman | ← | → | | | | → |
| | Execution Real-time User | ← | → | | | | → |
| Less Abstract | | | | | | | |



Data Model: Queen of the Zachman Chessboard

1. What is the **Role** of a **Data Model** in **Enterprise Architecture**?
 - What is **Enterprise Architecture** ?

Zachman Framework



Zachman Framework

Row=Viewpoint

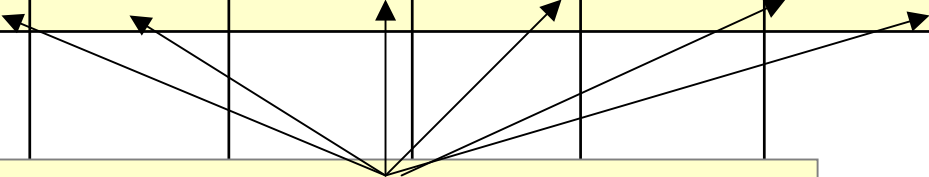
More Abstract

Levels of Abstraction

Less Abstract

| | | How Functions | Where Location | Who People | When Time | Why Motivation |
|--|--------------------------|-----------------------------|-----------------------------|-------------------------|--------------------------|-------------------------|
| Scope Contextual Planner | List of Things | List of Functions | List of Locations | List of Orgs. | List of Cycles | List of Goals |
| Business Conceptual Owner | | | | | | |
| System Logical Designer | | | | | | |
| Technology Physical Builder | | | | | | |
| Craft Hands-On Craftsman | | | | | | |
| Execution Real-time User | | | | | | |

"Prescribed Design Artifacts"
(Row-Wise)
Same level of abstraction, different themes





Data Model: Queen of the Zachman Chessboard

- 1. What is the **Role** of a **Data Model** in **Enterprise Architecture**?
 - What is **Enterprise Architecture** ?

Zachman Framework

| | | By Column | | | | | | |
|-----------------------|--|--|-------------------------|--------------------------|----------------------|---------------------|--------------------------|--|
| | | What Things | How Functions | Where Location | Who People | When Time | Why Motivation | |
| Levels of Abstraction | More Abstract | Scope Contextual Planner | ↑ | ↑ | ↑ | ↑ | ↑ | |
| | Business Conceptual Owner | ↑ | ↑ | ↑ | ↑ | ↑ | | |
| | System Logical Designer | ↑ | ↑ | ↑ | ↑ | ↑ | | |
| | Technology Physical Builder | ↑ | ↑ | ↑ | ↑ | ↑ | | |
| | Craft Hands-On Craftsman | ↓ | ↓ | ↓ | ↓ | ↓ | | |
| | Less Abstract | Execution Real-time User | ↓ | ↓ | ↓ | ↓ | ↓ | |

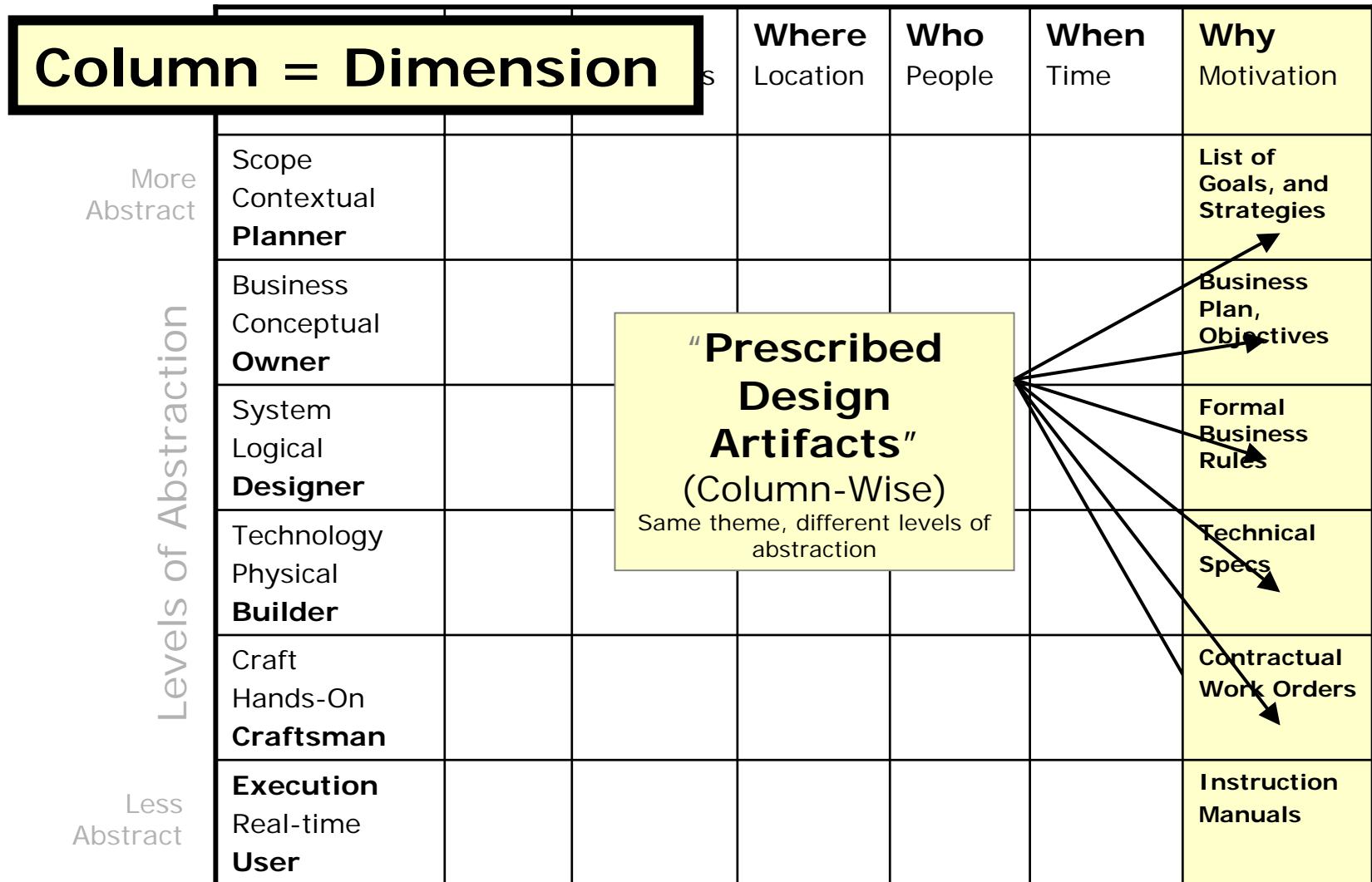


Data Model: Queen of the Zachman Chessboard

1. What is the **Role** of a **Data Model** in **Enterprise Architecture**?

- What is **Enterprise Architecture** ?

Zachman Framework

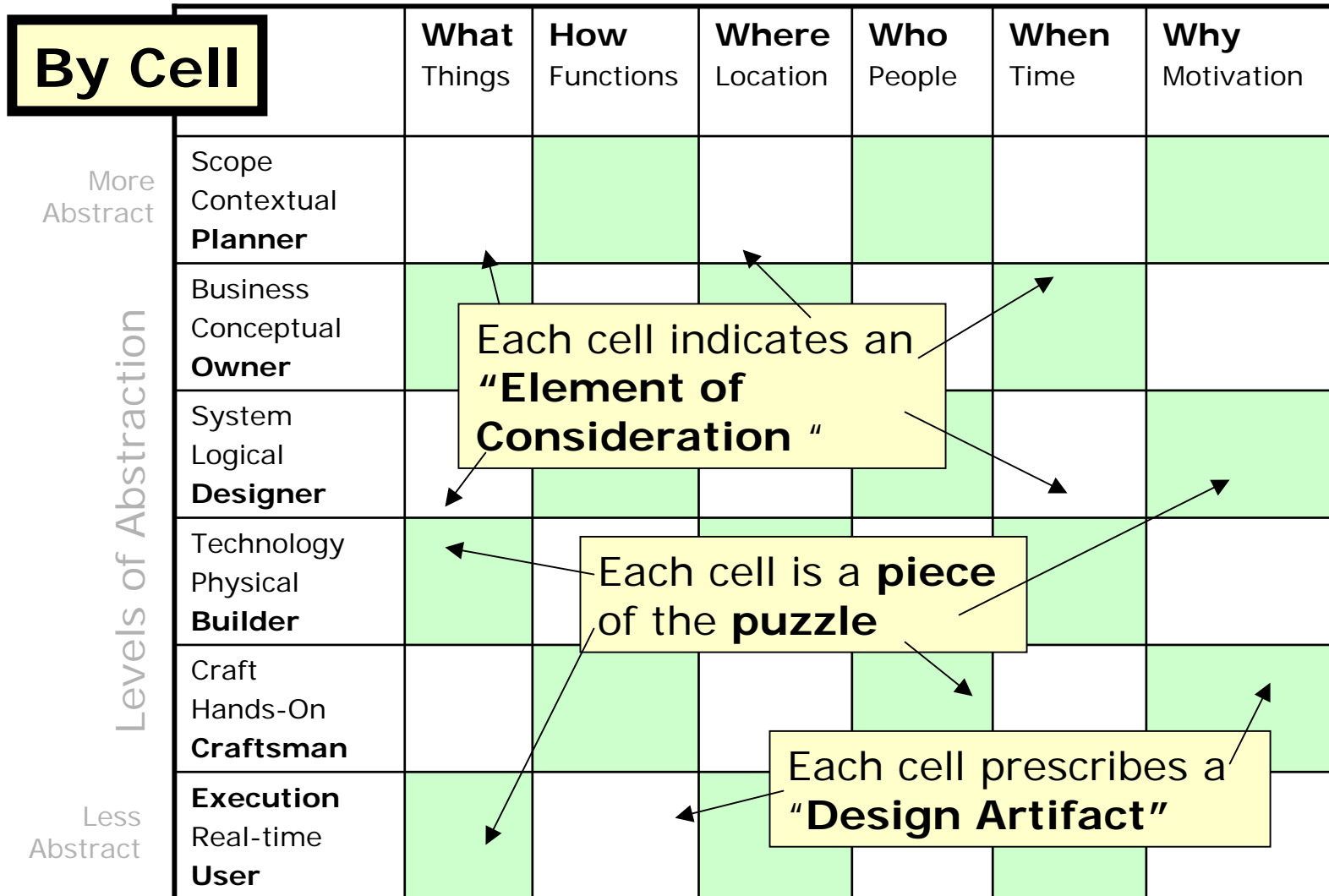




Data Model: Queen of the Zachman Chessboard

1. What is the **Role** of a **Data Model** in **Enterprise Architecture**?
 - What is **Enterprise Architecture** ?

Zachman Framework





Data Model: Queen of the Zachman Chessboard

1. What is the **Role** of a **Data Model** in **Enterprise Architecture**?
 - What is **Enterprise Architecture** ?

Zachman Framework

| | | Cell=Element | | | | | | |
|-----------------------|---------------|--|-------------------------|--------------------------|--------------------------------|---------------------|---------------------------------------|--|
| | | What Things | How Functions | Where Location | Who People | When Time | Why Motivation | |
| Levels of Abstraction | More Abstract | Scope Contextual Planner | | | | | List of Goals & Strategies | |
| | | Business Conceptual Owner | | | | | | |
| | | System Logical Designer | | | | | | |
| | | Technology Physical Builder | | | | | | |
| | | Craft Hands-On Craftsman | | | Network Routing Diagram | | | |
| | Less Abstract | Execution Real-time User | | | | | | |



Objectives

1. What is the **Role** of a **Data Model** in **Enterprise Architecture** ?

Just Completed

- What is **Enterprise Architecture** ?
- What is a **Data Model** ?



Objectives

1. What is the **Role** of a **Data Model** in **Enterprise Architecture** ?

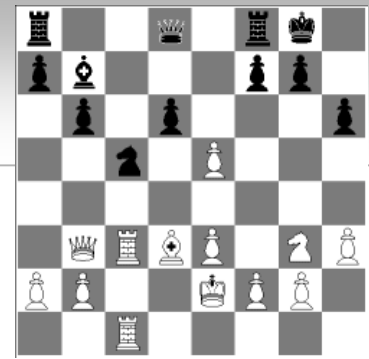
Just Completed

• What is **Enterprise Architecture** ?

Answer

One Good Candidate:

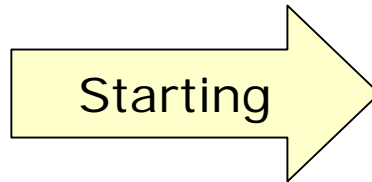
The sum total of all **Pertinent Design Artifacts** produced as a result of the *consideration* of all cells in the **Zachman Framework**.



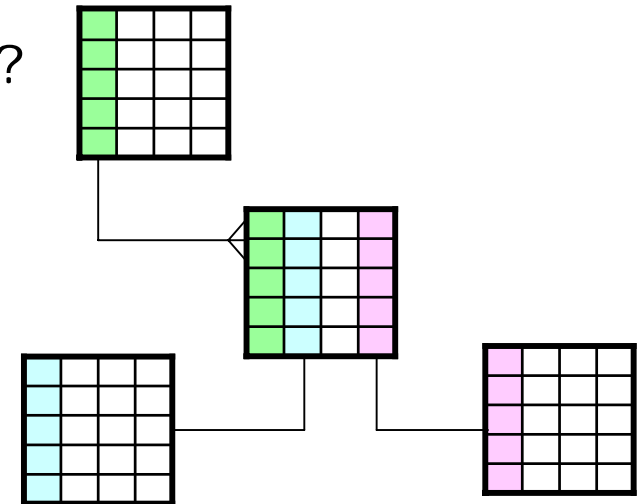
Objectives

1. What is the **Role** of a **Data Model** in **Enterprise Architecture** ?

•What is **Enterprise Architecture** ?



•What is a **Data Model** ?

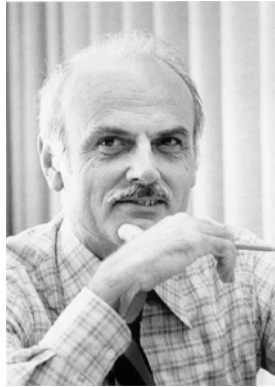




1. What is the Role of a Data Model in Enterprise Architecture?

•What is A Data Model

“Relational Model of Data”



E.F.Codd

August 23, 1923 - April 18, 2003

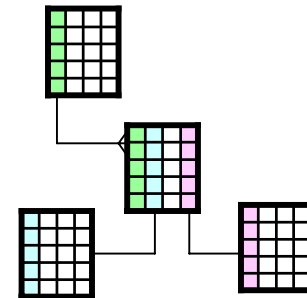
“A Relational Model
of Data for Large
Shared Data Banks”
(Codd, 1970)



His original goal

Data Independence

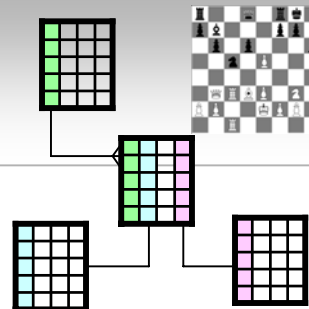
A way to organize information so that it could be accessed without regard to how it was physically stored



Data Model: Queen of the Zachman Chessboard

1. What is the Role of a Data Model in Enterprise Architecture?

•What is A Data Model



Relational Theory = Set Theory

Formal definition

Given a collection of sets (or domains) D_1, D_2, \dots, D_n (not necessarily distinct), R is a relation on those sets if it is a subset of the Cartesian product $D_1 \times D_2 \times \dots \times D_n$.

A Domain (D) is a set of atomic values (frequently suggested by a data type and format; sometimes a precise list or constraints are provided). For example, Month might be described as the set of integers from 1 to 12. First Name might be described as a set of alphabetic strings that are less than 25 characters.

An attribute A_i indicates the role of a domain in a relation. E.G. MonthStarted in an employee relation is an attribute that uses the domain Month. This attribute indicates the month the employee started employment.

$\text{dom}(A_i) = \text{domain of } A_i$

Let R be a relational specification (intension) and $r(R)$ describe the extension (the list of actual rows in the table). If $R(A_1 \dots A_n)$, then $r(R)$ is a proper subset of $(\text{dom}(A_1) \times \text{dom}(A_2) \times \dots \times \text{dom}(A_n))$.

Let t_i (tuple i) be a particular row in R ($v_{i1}, v_{i2}, v_{i3}, \dots, v_{in}$) where v_{ij} stands for the value of A_j for tuple i . Also let $t_i[A_j] = v_{ij}$. A key on a relation is an attribute K such that $t_i[K] \neq t_m[K]$ for any i and m (i and m not equal)

<http://oldweb.uwp.edu/academic/mis/baldwin/relation.htm>

<http://www.firstsql.com/ireldb2.htm>

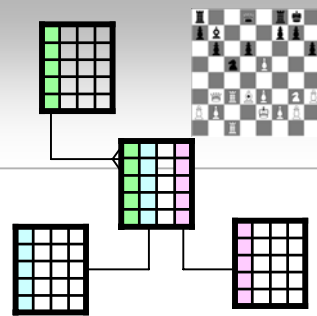
<http://www.acm.org/classics/nov95/toc.html>

http://en.wikipedia.org/wiki/Relational_model

Data Model: Queen of the Zachman Chessboard

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$\text{dom}(A_i)$

A relational specification (intension) and $r(R)$ describe the extension (set of actual rows in the table). If $R(A_1 \dots A_n)$, then $r(R)$ is a proper subset of $\text{dom}(A_1) \times \text{dom}(A_2) \times \dots \times \text{dom}(A_n)$.

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<http://www.acm.org/classics/nov95/toc.html>

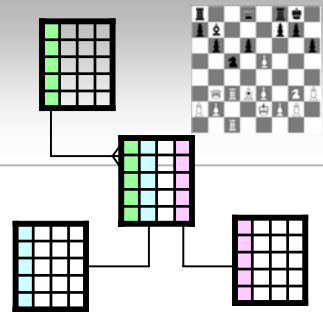
http://en.wikipedia.org/wiki/Relational_model

Let's make it a little simpler

Data Model: Queen of the Zachman Chessboard

1. What is the Role of a Data Model in Enterprise Architecture?

•What is A Data Model



What is a "Relation?"

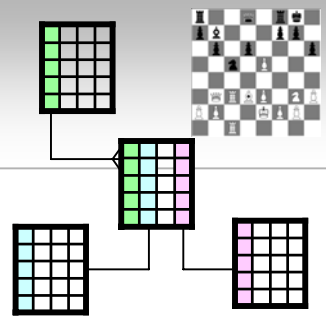
A relation is a two dimensional table in which--

- All entries in table are single valued
- The entries in a column are all of the same kind (i.e., come from the same domain: D)
- Each column has a unique name (attribute name)
- Theoretically the order of the columns don't matter, but in DBMS sometimes we say that they do matter.
- No two rows in a table are identical.
- Order of rows does not matter.

Data Model: Queen of the Zachman Chessboard

1. What is the Role of a Data Model in Enterprise Architecture?

• What is A Data Model



What is a "Relation?"

A relation is a two dimensional table in which--

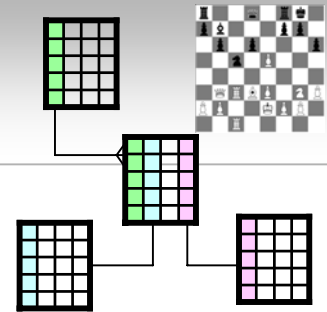
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Let's make it a little simpler

Data Model: Queen of the Zachman Chessboard

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•What is A Data Model



Quick Review

Relation = Table

set of N-Tuples

4 Columns = 4 Degrees = 4 Attributes

Attribute = Column

Primary Key

Tuple = Row

| ID | LNAME | DEPT | SALARY |
|-----|----------|---------|--------|
| 102 | Dobbs | Math | 10000 |
| 104 | Williams | Science | 11000 |
| 107 | Smith | PhysEd | 7000 |
| 108 | Jones | English | 5000 |

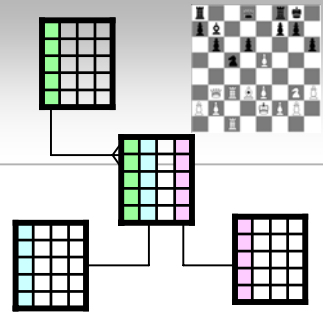
This is a:

- Table with 4 Rows and 4 Columns
- Relation of 4 Tuples of 4 Degrees

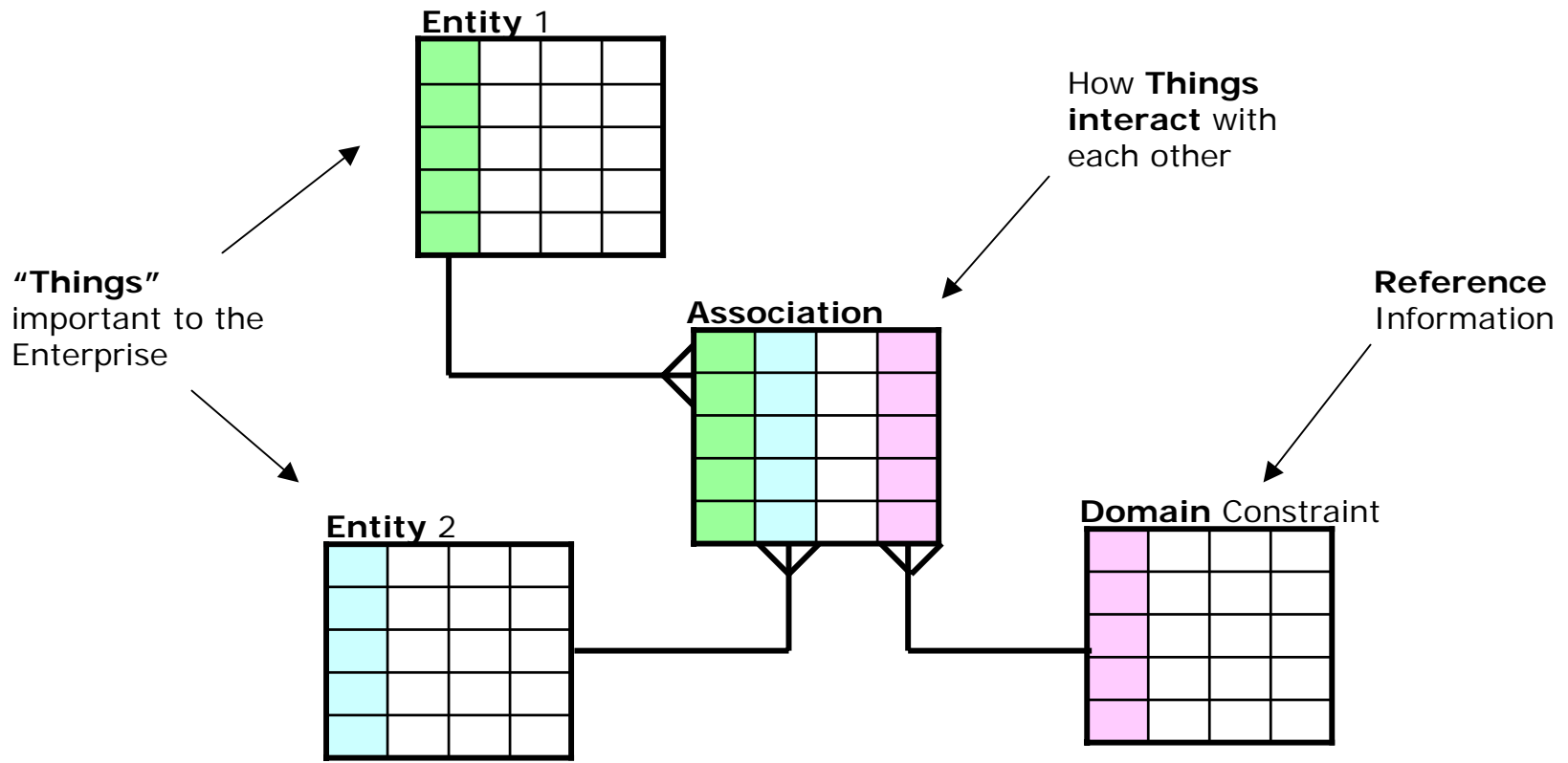
Data Model: Queen of the Zachman Chessboard

1. What is the Role of a Data Model in Enterprise Architecture?

- What is A Data Model



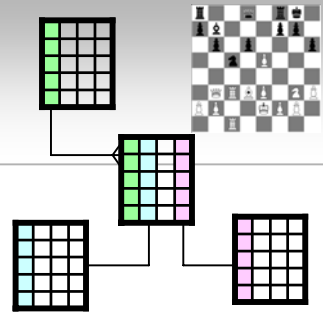
Data Model = Set of Tables



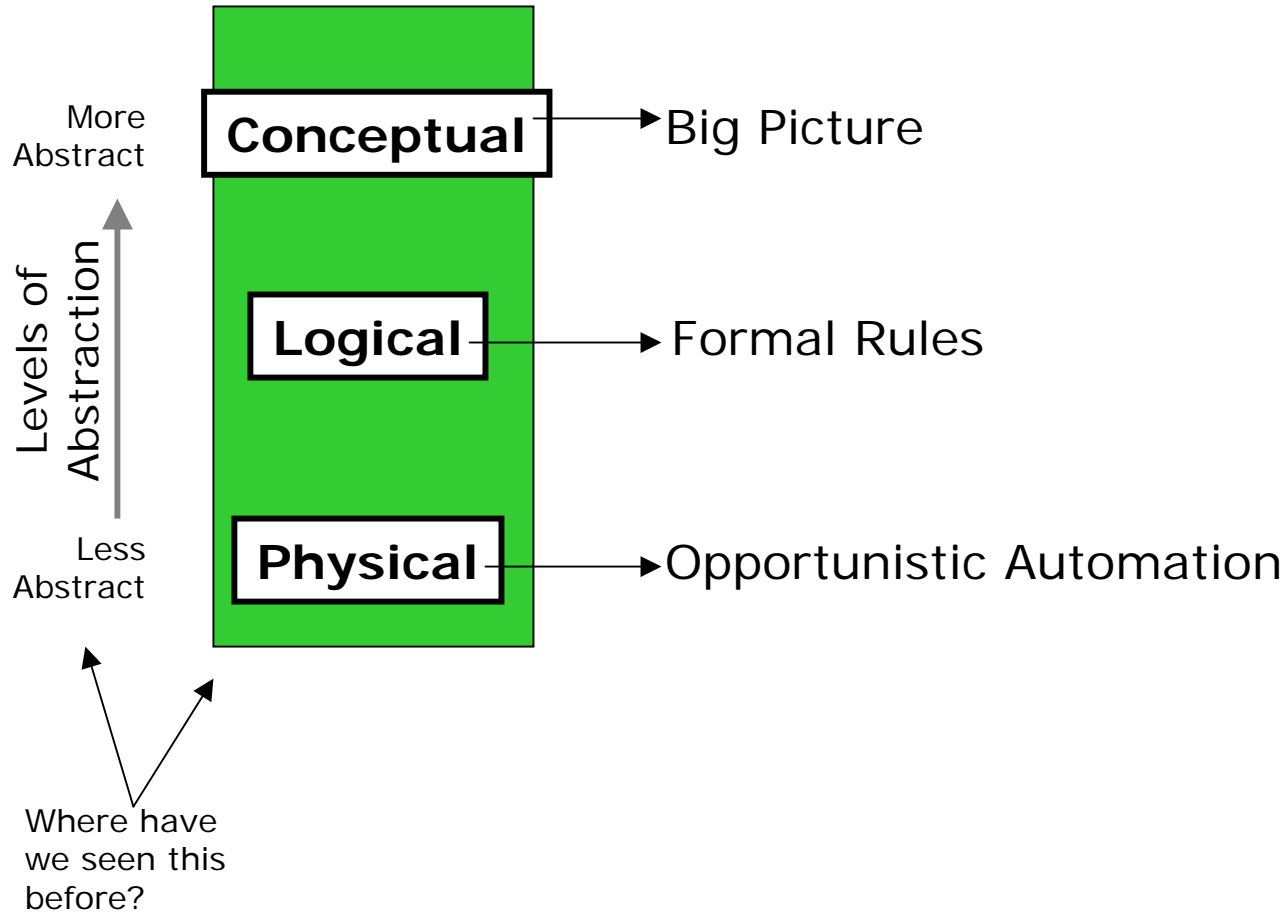
Data Model: Queen of the Zachman Chessboard

1. What is the Role of a Data Model in Enterprise Architecture?

•What is A Data Model



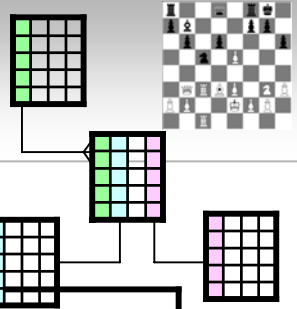
Data Model = 3 Levels of Abstraction



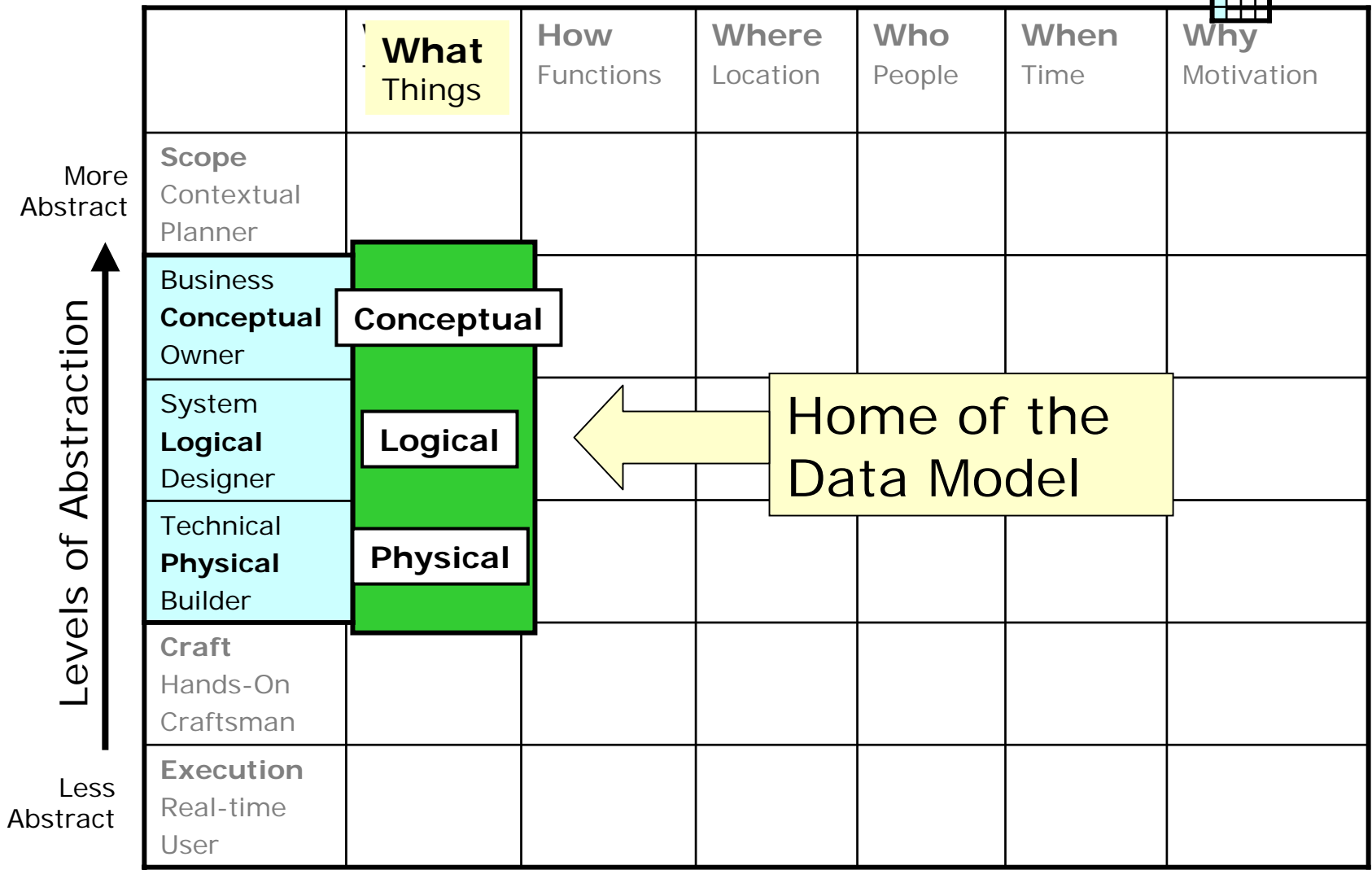
Data Model: Queen of the Zachman Chessboard

1. What is the Role of a Data Model in Enterprise Architecture?

•What is A Data Model



Zachman Framework

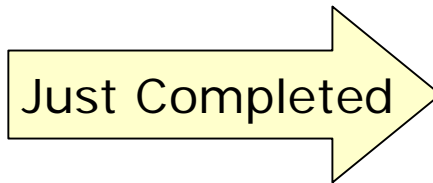




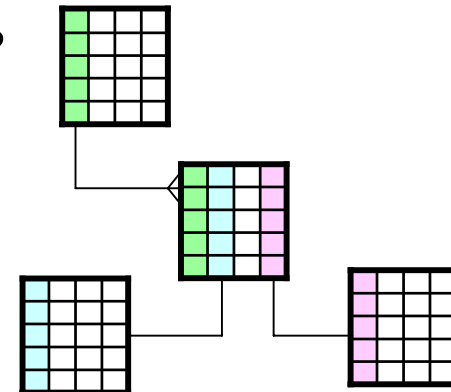
Objectives

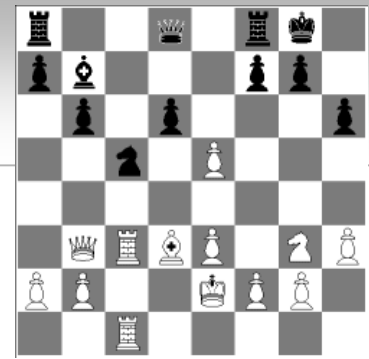
1. What is the **Role** of a **Data Model** in **Enterprise Architecture** ?

•What is **Enterprise Architecture** ?



•What is a **Data Model** ?





Objectives

1. What is the **Role** of a **Data Model** in **Enterprise Architecture** ?

•What is **Enterprise Architecture** ?

Just Completed

•What is a **Data Model** ?



One Good Candidate:

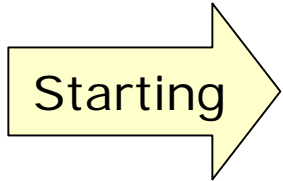
An abstracted **analogy** of an Enterprise in which its **parts** and **functions** are represented by surrogates in the form of **Relations**.

Answer



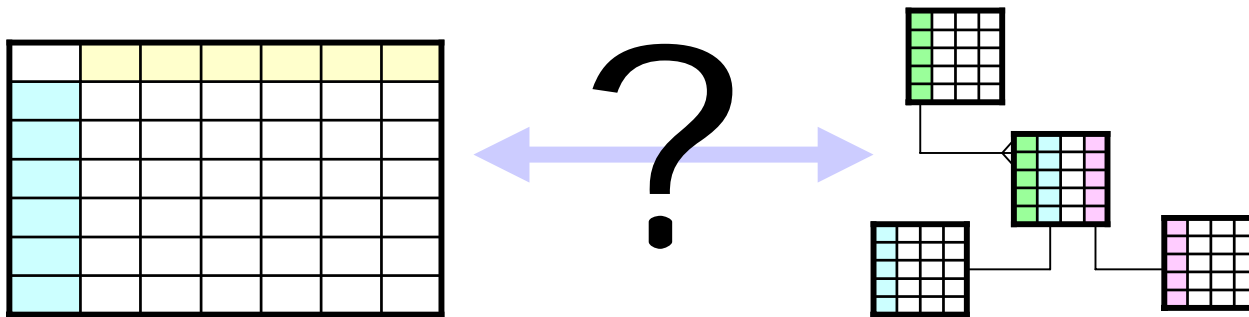


Objectives



What is the **Role** of a **Data Model** in **Enterprise Architecture** ?

- What is **Enterprise Architecture** ?
- What is a **Data Model** ?





1. What is the Role of a Data Model in Enterprise Architecture?

Zachman Framework

| | What Things | How Functions | Where Location | Who People | When Time | Why Motivation |
|-----------------------------------|---|------------------|-------------------------------|---------------|--------------|--|
| Scope Contextual Planner | | | | | | List of Goals & Strategies |
| Business Conceptual Owner | | | | | | |
| System Logical Designer | Not all Pieces are Equal | | | | | |
| Technology Physical Builder | | | | | | |
| Craft Hands-On Craftsman | | | Network Routing Diagram | | | |
| Execution Real-time User | | | | | | |

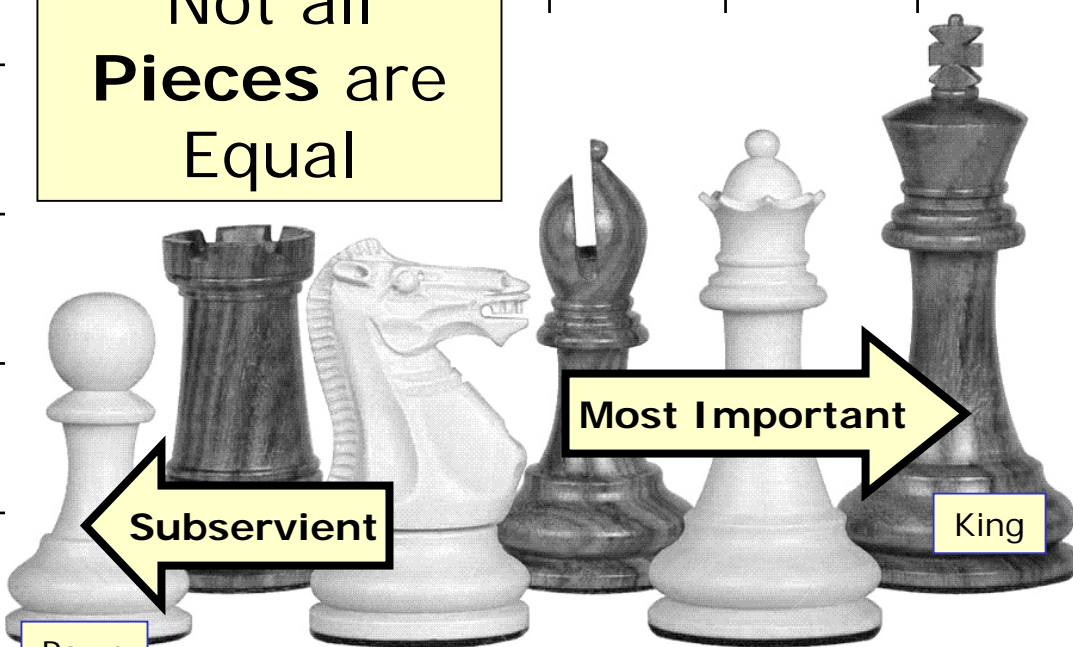
Most Important →

← **Subservient**



1. What is the Role of a Data Model in Enterprise Architecture?

Zachman Framework

| | What Things | How Functions | Where Location | Who People | When Time | Why Motivation |
|-----------------------------|--|---------------|----------------|------------|-----------|----------------|
| Scope Contextual Planner | <div style="border: 1px solid black; padding: 10px; text-align: center;">Not all Pieces are Equal</div> | | | | | |
| Business Conceptual Owner | | | | | | |
| System Logical Designer |  | | | | | |
| Technology Physical Builder | | | | | | |
| Craft Hands-On Craftsman | | | | | | |
| Execution Real-time User | | | | | | |



1. What is the Role of a Data Model in Enterprise Architecture?

Zachman Framework


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|-----------------------------|--|---------------|----------------|------------|-----------|----------------|---|--|--|--|--|--|
| Scope Contextual Planner | <div style="border: 1px solid black; padding: 10px; display: inline-block;"> Not all Pieces are Equal </div> | | | | | | | | | | | |
| Business Conceptual Owner | | | | | | | | | | | | |
| System Logical Designer | | | | | | | | | | | | |
| Technology Physical Builder | | | | | | | | | | | | |
| Craft Hands-On Craftsman | | | | | | | | | | | | |
| Execution Real-time User | | | | | | | <div style="border: 1px solid black; padding: 5px; display: inline-block;"> Each Piece is assigned Points </div> | | | | | |

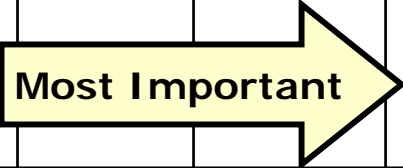
Chess widely thought to have been invented in India in the 6th century, probably has roots to China's Chou Dynasty 1000 b.c.



1. What is the Role of a Data Model in Enterprise Architecture?

Zachman Framework








| | What Things | How Functions | Where Location | Who People | When Time | Why Motivation |
|-----------------------------------|----------------|------------------|-------------------|---------------|--------------|--|
| Scope Contextual Planner | | | | | |  KING Goals and Strategies |
| Business Conceptual Owner | | | | | | |
| System Logical Designer | | | | | | |
| Technology Physical Builder | | | | | | |
| Craft Hands-On Craftsman | | | | | | |
| Execution Real-time User | | | | | | |





1. What is the Role of a Data Model in Enterprise Architecture?


Zachman Framework

| | What Things | How Functions | Where Location | Who People | When Time | Why Motivation |
|-----------------------------------|----------------|--|-------------------|--|--------------|---|
| Scope Contextual Planner | | | | | |  KING Goals and Strategies |
| Business Conceptual Owner | |  Bishop 1 Process | |  Knight 1 Work Flow | |  Rook 1 Objectives |
| System Logical Designer | |  Bishop 2 System | |  Knight 2 Interface | |  Rook 2 Rules |
| Technology Physical Builder | | | | | | |
| Craft Hands-On Craftsman | | | | | | |
| Execution Real-time User | | | | | | |



1. What is the Role of a Data Model in Enterprise Architecture?

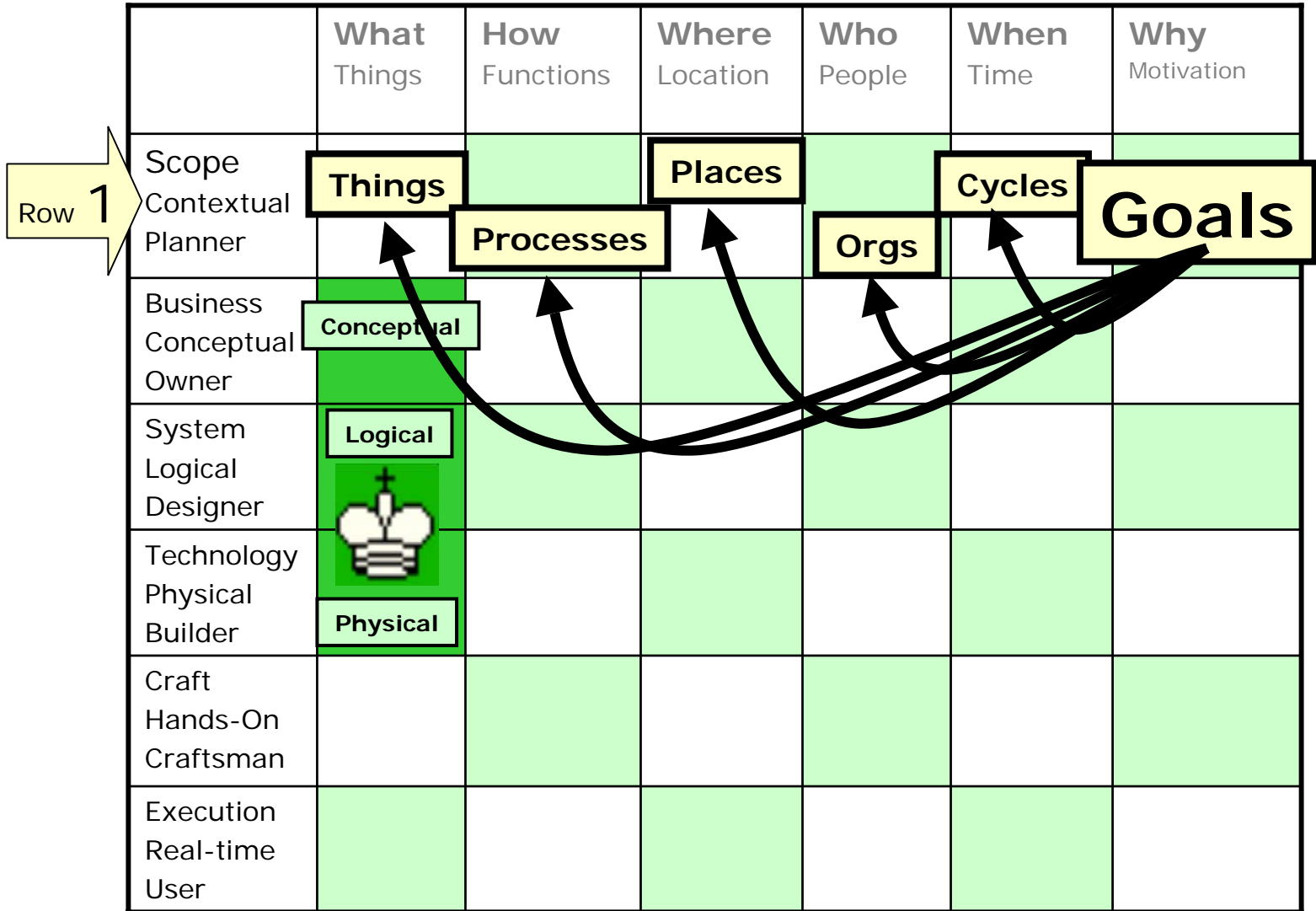
Zachman Framework

| | What Things | How Functions | Where Location | Who People | When Time | Why Motivation |
|---|---|------------------|-------------------|---------------|--------------|-------------------|
| <div style="border: 1px solid black; padding: 5px; display: inline-block;"> Row 1 </div> Scope Contextual Planner | | | | | | Goals |
| Business Conceptual Owner | Conceptual | | | | | |
| System Logical Designer | Logical | | | | | |
| Technology Physical Builder |  Physical | | | | | |
| Craft Hands-On Craftsman | | | | | | |
| Execution Real-time User | | | | | | |



1. What is the Role of a Data Model in Enterprise Architecture?

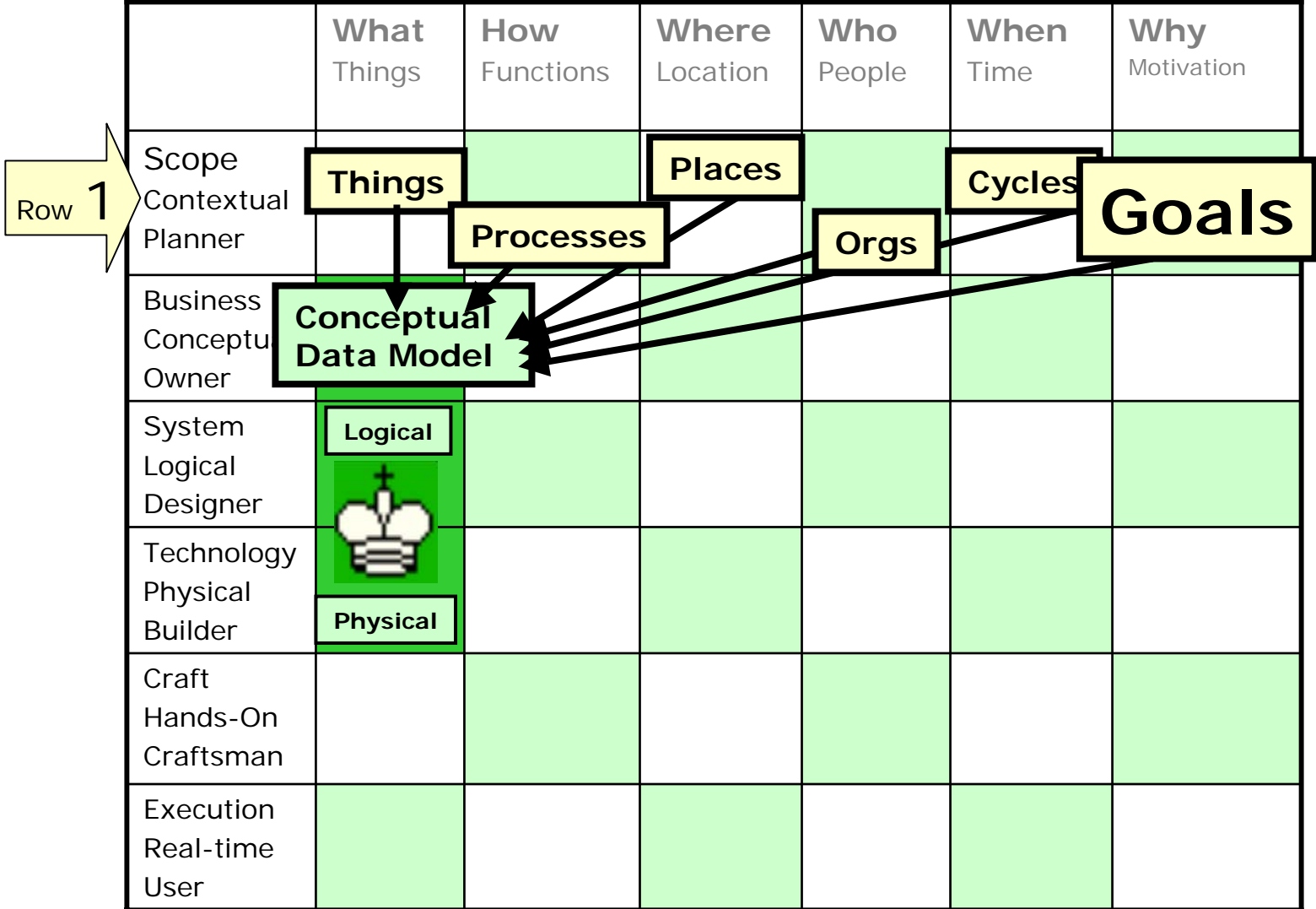
Zachman Framework





1. What is the Role of a Data Model in Enterprise Architecture?

Zachman Framework

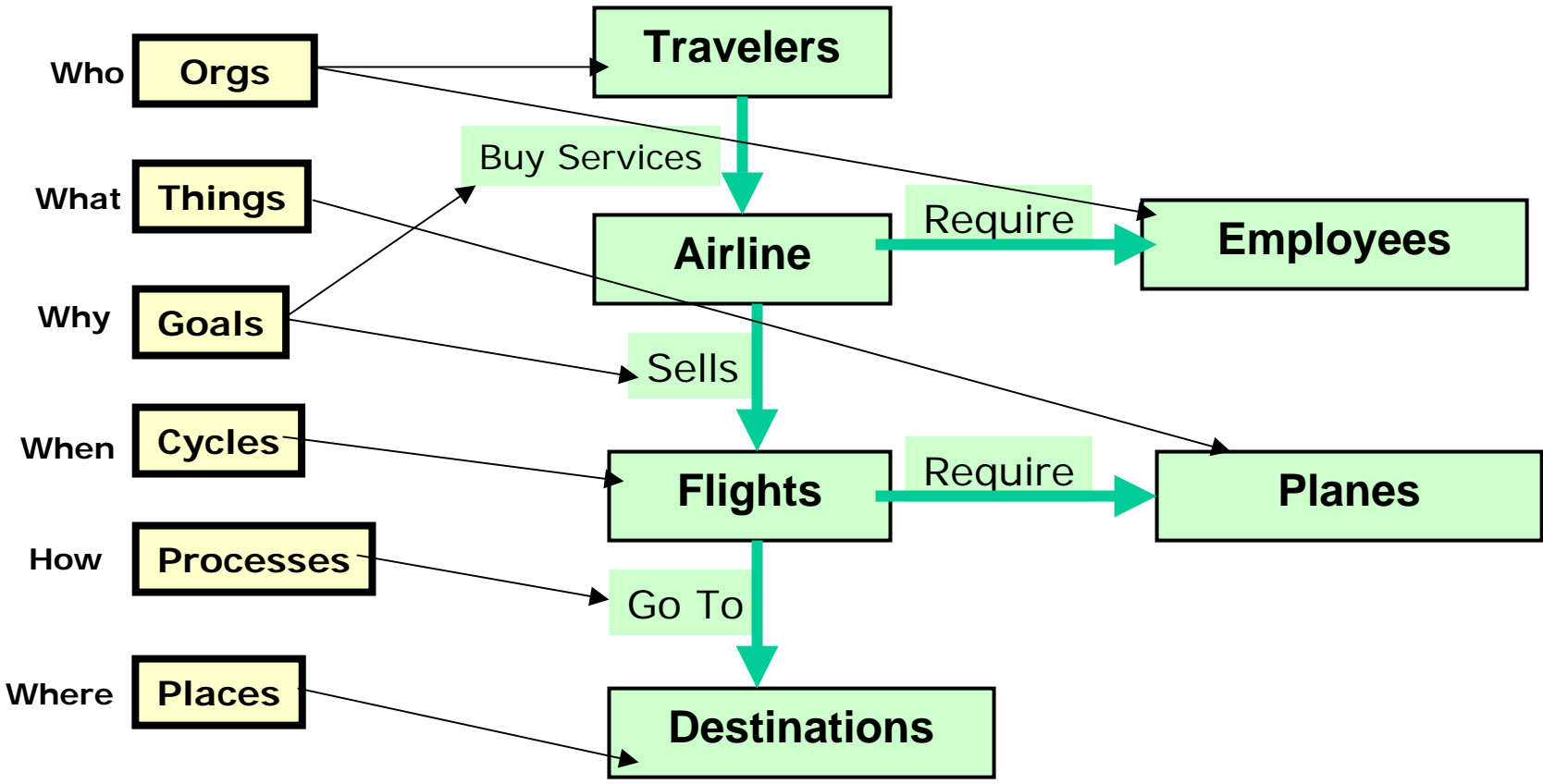




1. What is the Role of a Data Model in Enterprise Architecture?

Zachman Considerations


Information System for Airline Conceptual Data Model





1. What is the Role of a Data Model in Enterprise Architecture?

Zachman Framework

| | What Things | How Functions | Where Location | Who People | When Time | Why Motivation |
|-----------------------------------|---|------------------|-------------------|---------------|--------------|--------------------------------|
| Scope Contextual Planner | Things | Processes | Places | Orgs | Cycles | Goals |
| Business Conceptual Owner | Conceptual Data Model | | | | | Business Objectives |
| System Logical Designer | Logical  | | | | | |
| Technology Physical Builder | Physical | | | | | |
| Craft Hands-On Craftsman | | | | | | |
| Execution Real-time User | | | | | | |

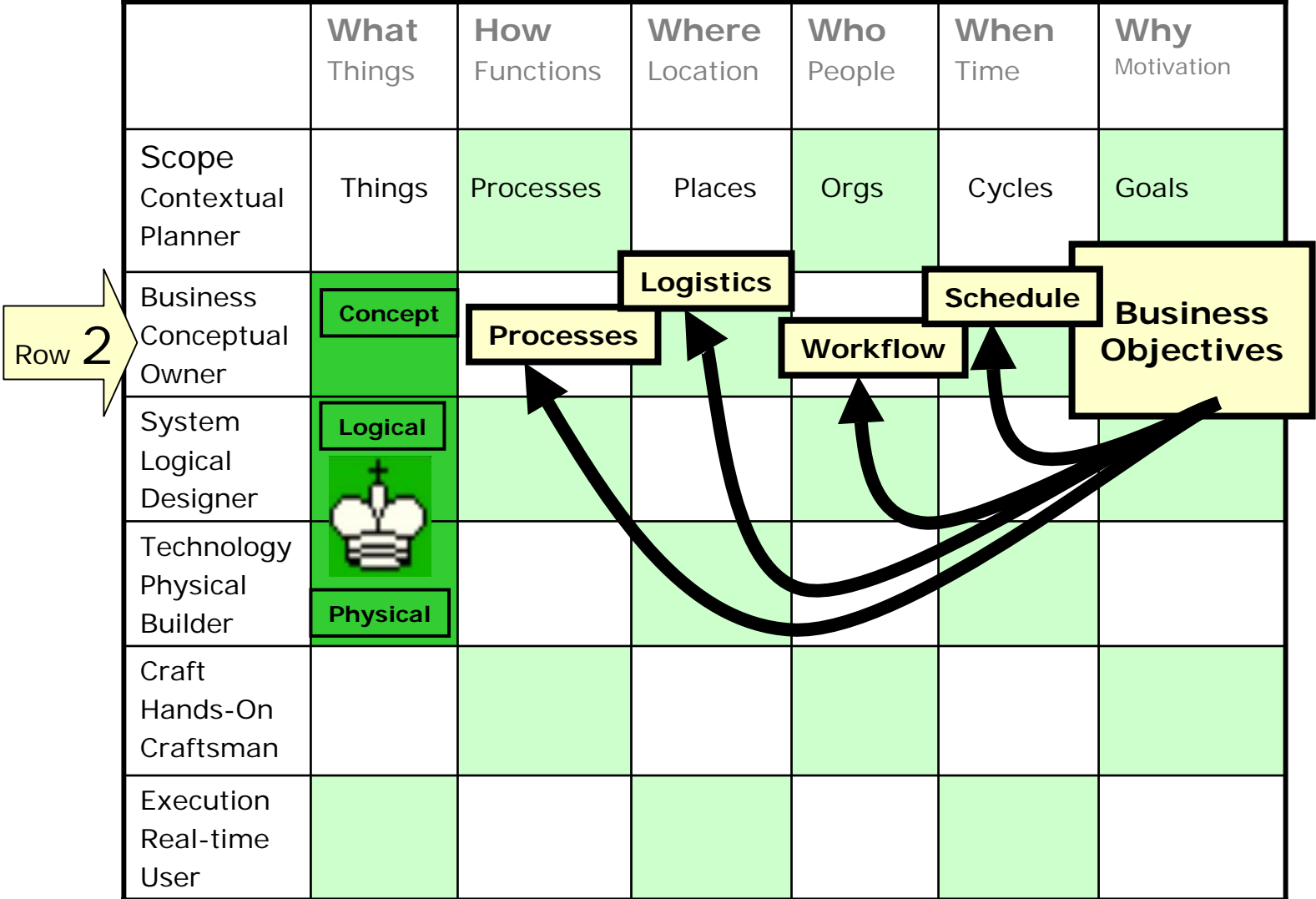
Row 2

Provides Terminology For



1. What is the Role of a Data Model in Enterprise Architecture?

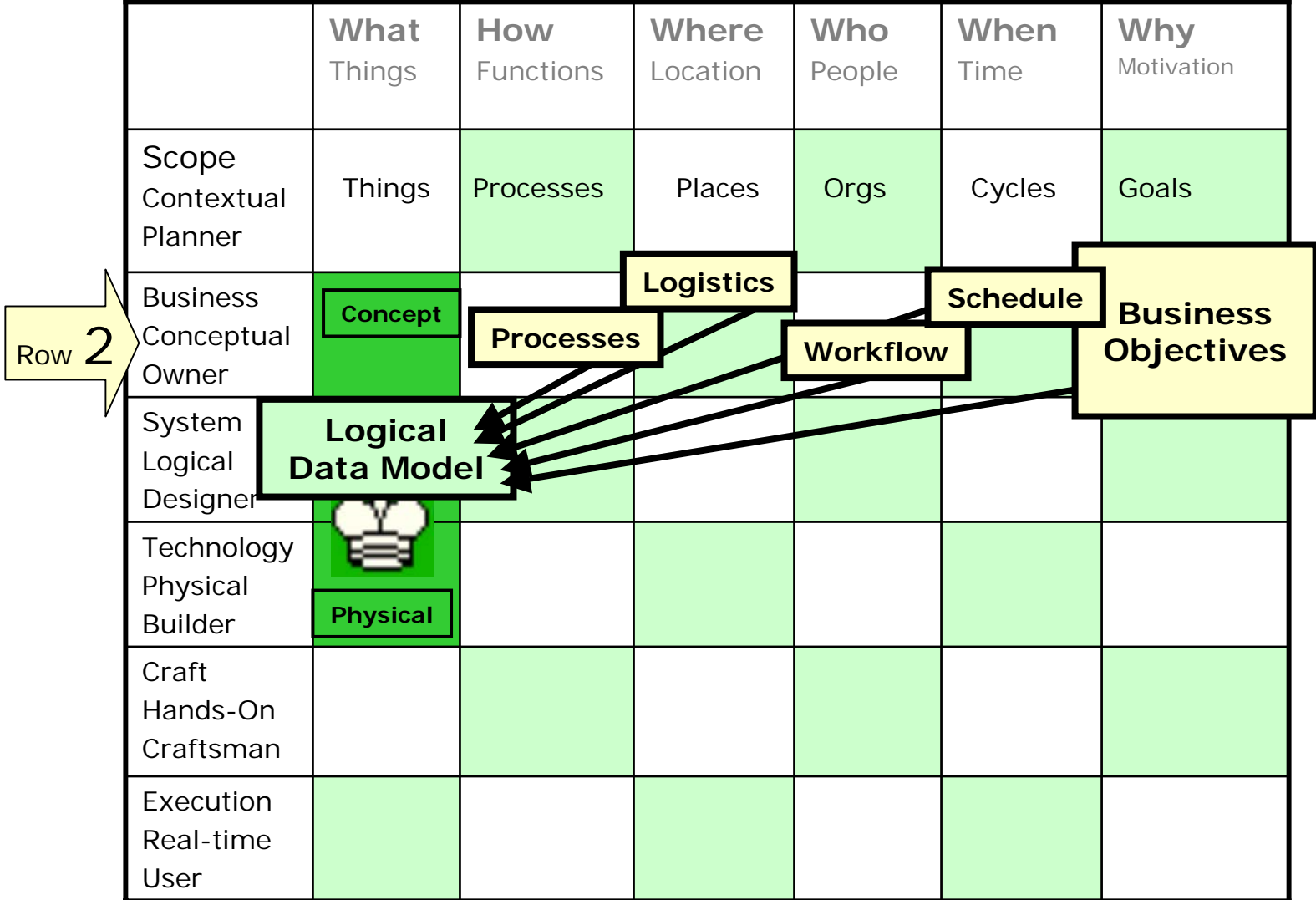
Zachman Framework





1. What is the Role of a Data Model in Enterprise Architecture?

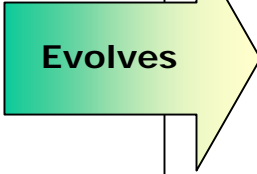
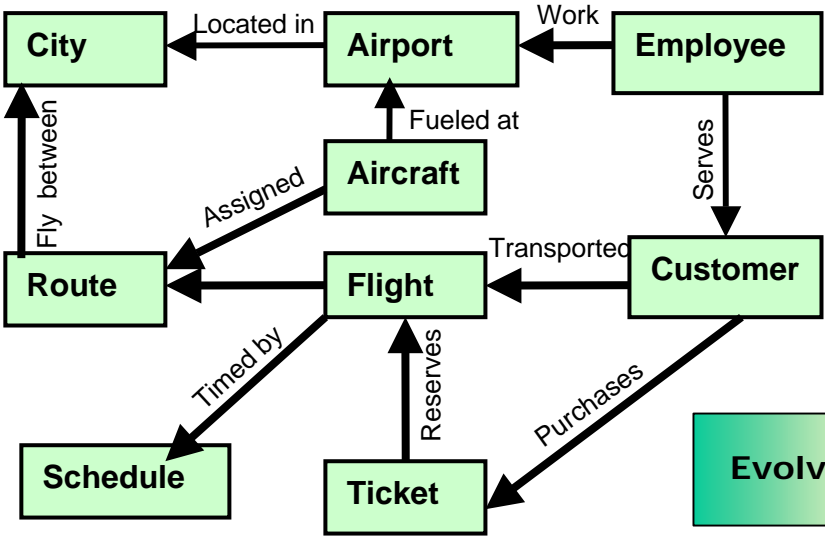
Zachman Framework



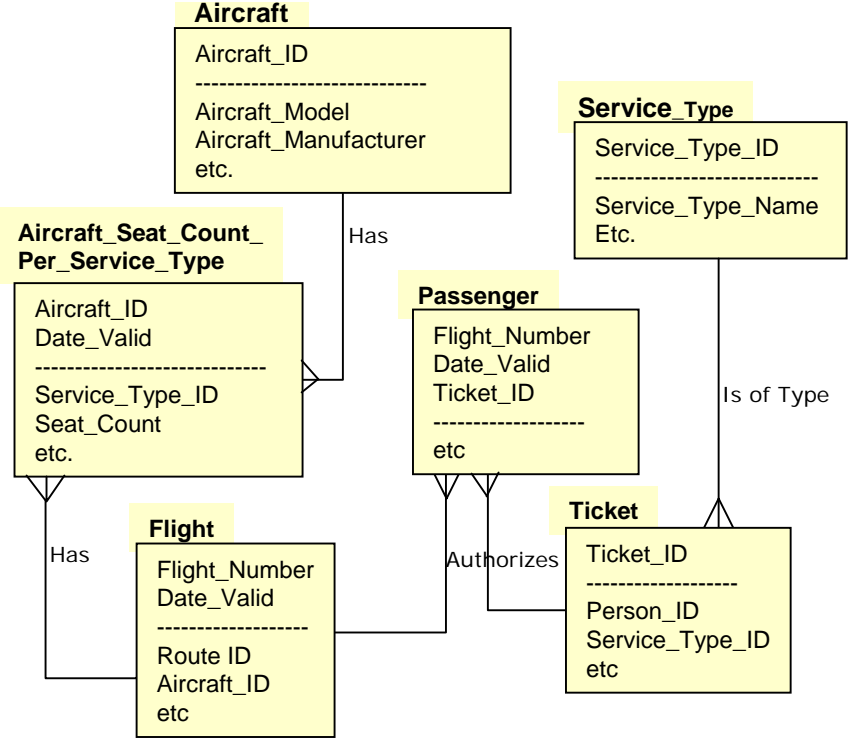


1. What is the Role of a Data Model in Enterprise Architecture?

Conceptual Data Model



Logical Data Model



- Entities
- Attributes
- Primary Keys
- Foreign Keys
- Cardinality
- Domain Constraints



1. What is the Role of a Data Model in Enterprise Architecture?

Zachman Framework

| | What Things | How Functions | Where Location | Who People | When Time | Why Motivation |
|-----------------------------------|-----------------------|------------------|-------------------|---------------|--------------|-------------------|
| Scope Contextual Planner | Things | Processes | Places | Orgs | Cycles | Goals |
| Business Conceptual Owner | Concept | Processes | Logistics | Workflow | Schedule | |
| System Logical Designer | Logical Data Model | | | | | |
| Technology Physical Builder | Physical | | | | | |
| Craft Hands-On Craftsman | | | | | | |
| Execution Real-time User | | | | | | |

Row 3

Logical Data Model

Provides Terms and Constructs For

Business Rules

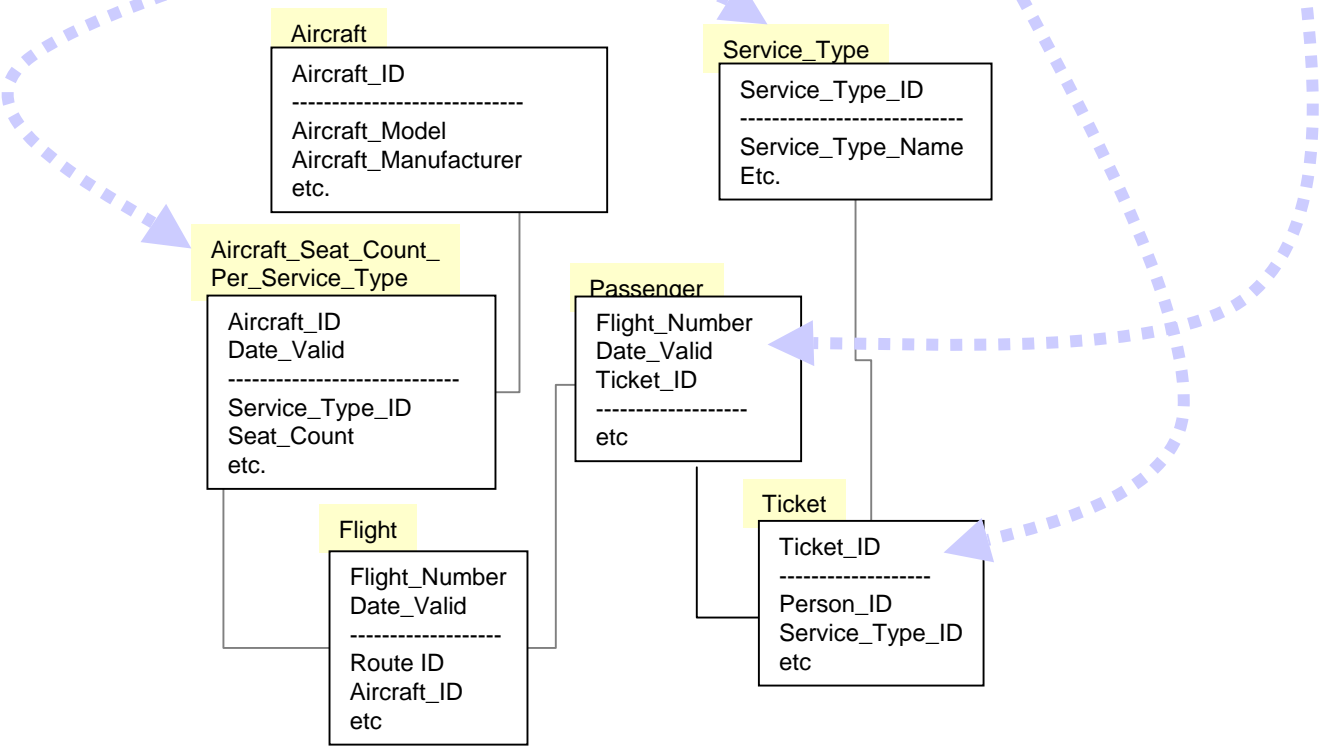




1. What is the Role of a Data Model in Enterprise Architecture?

Business Rule:

“The Business must be able to determine **SEAT COUNT** availability per **SERVICE TYPE** prior to the assignment of **TICKET** to **PASSENGER**”

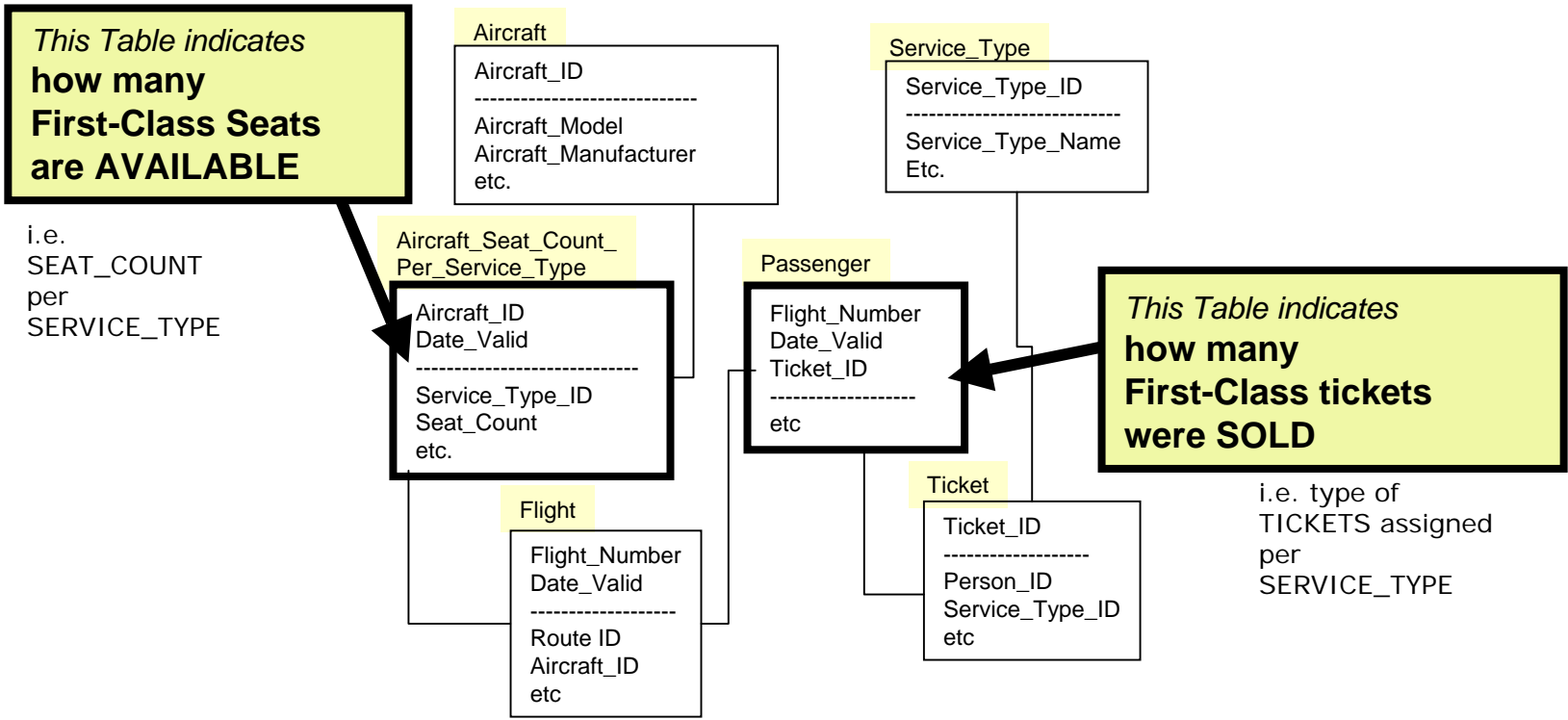




1. What is the Role of a Data Model in Enterprise Architecture?

Business Rule:

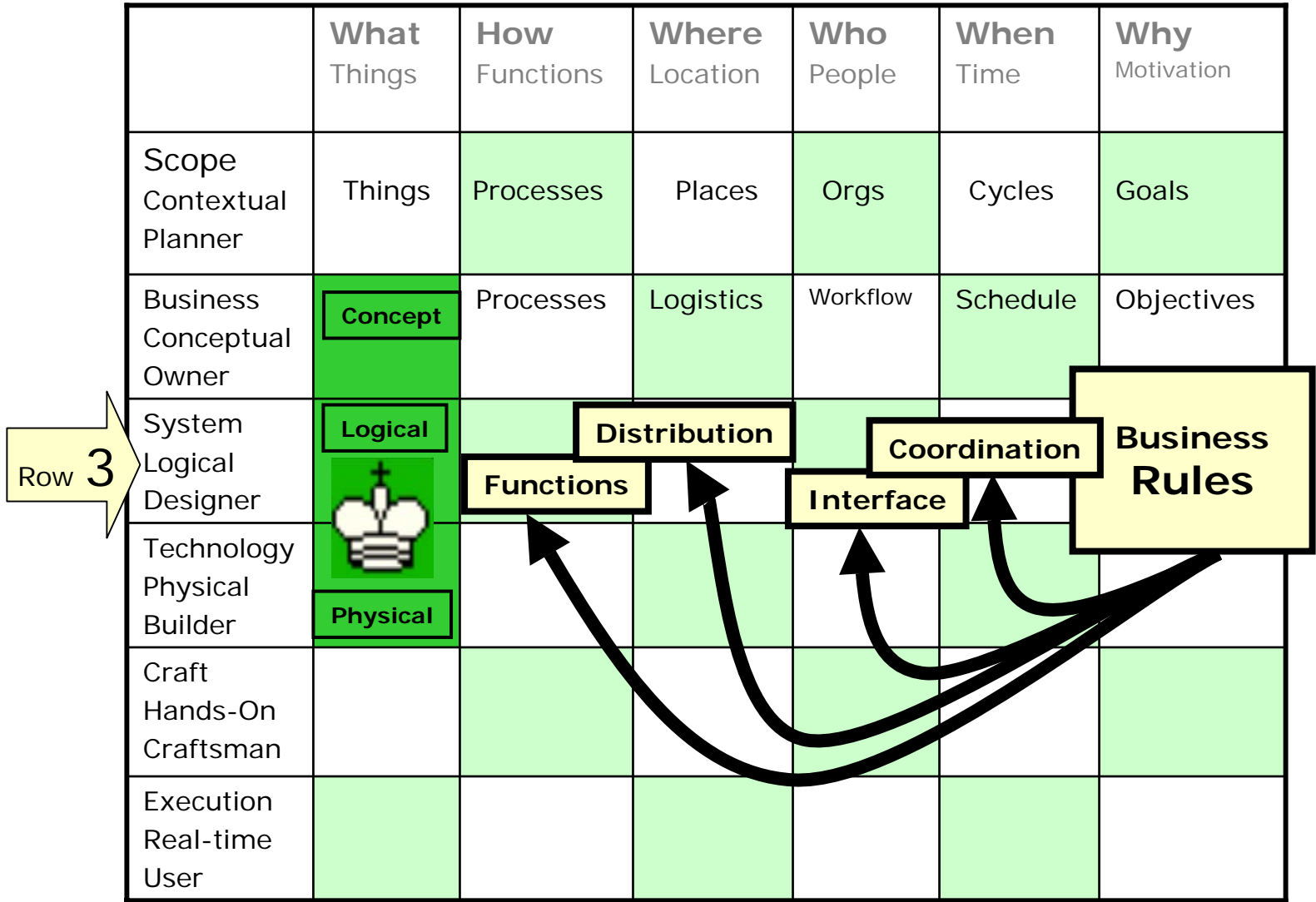
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1. What is the Role of a Data Model in Enterprise Architecture?

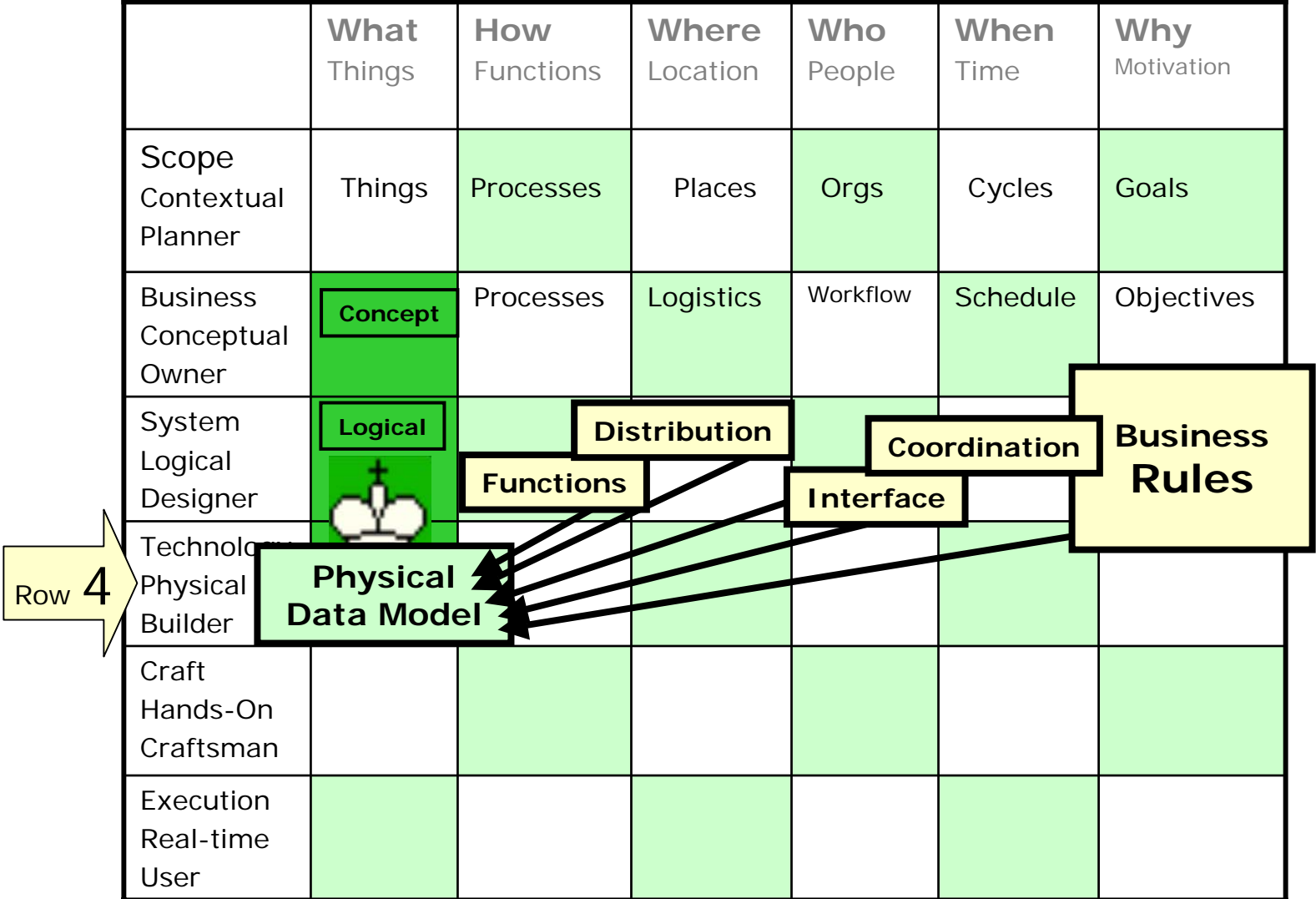
Zachman Framework





1. What is the Role of a Data Model in Enterprise Architecture?


Zachman Framework





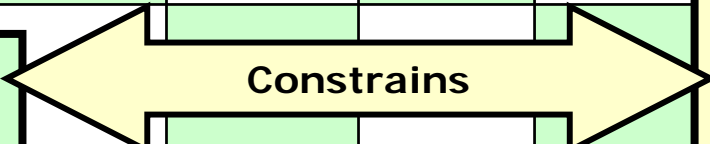
1. What is the Role of a Data Model in Enterprise Architecture?

Zachman Framework

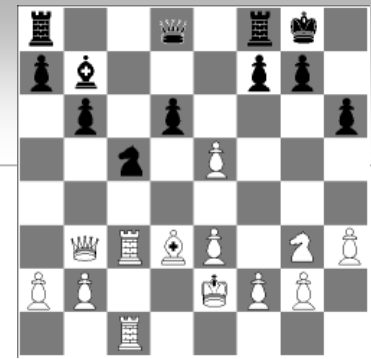
| | What Things | How Functions | Where Location | Who People | When Time | Why Motivation |
|-----------------------------------|---|------------------|-------------------|---------------|--------------|-------------------|
| Scope Contextual Planner | Things | Processes | Places | Orgs | Cycles | Goals |
| Business Conceptual Owner | Concept | Processes | Logistics | Workflow | Schedule | Objectives |
| System Logical Designer | Logical  | Functions | Distribution | Interfaces | Coordination | Objectives |
| Technology Physical Builder | Physical Data Model | | | | | |
| Craft Hands-On Craftsman | | | | | | |
| Execution Real-time User | | | | | | |

Row 4

**Physical
Data Model**



**System
Requirements**



Objectives

1. What is the **Role** of a **Data Model** in **Enterprise Architecture** ?

Covered

How a Data Model evolves from **Conceptual** to **Logical** To **Physical** ?

3. Why is the power of **Relational Modeling** Still misunderstood ?



Objectives

1. What is the **Role** of a **Data Model** in **Enterprise Architecture** ?

Covered

How a Data Model evolves from **Conceptual** to **Logical** To **Physical** ?

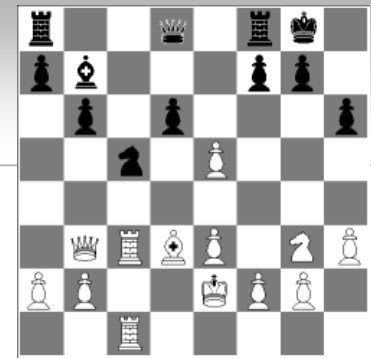
3. Wh
sti

Answer

As the Zachman Cells are considered, from the Scope Level down, **Business Knowledge is accumulated** and formed into the very structure of the Conceptual Data Model.

As the Business Knowledge accrues, the **Conceptual Model** acquires attributes, completeness and accuracy, until it **evolves** into the **Logical Model**.

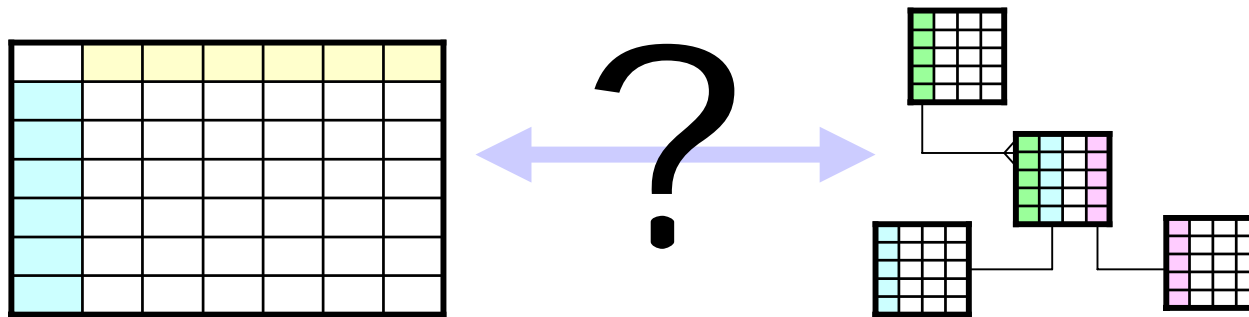
The **Physical Database design**, although opportunistic, must be **traceable to** the business knowledge inherent in the **Logical Model**.

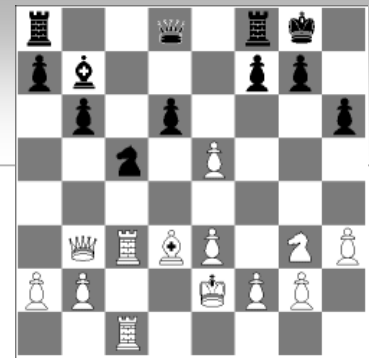


Objectives

Completed → What is the **Role** of a **Data Model** in **Enterprise Architecture** ?

- What is **Enterprise Architecture** ?
- What is a **Data Model** ?





Objectives

Completed

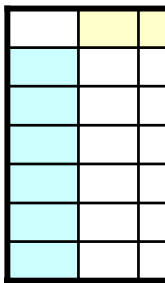
What is the **Role** of a **Data Model** in **Enterprise Architecture** ?

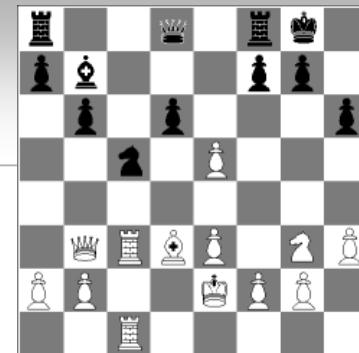
Answer

One Good Candidate:

The Data Model Provides

1. Common Terminology
2. Constructs for Business Rules
3. Storage of Accumulated Business Knowledge
4. Communication to Stakeholders
5. Provable Foundation for Physical Database implementation



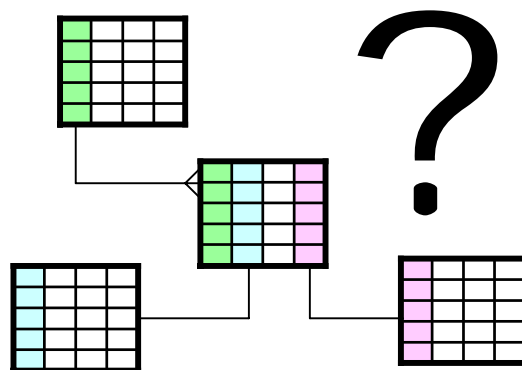


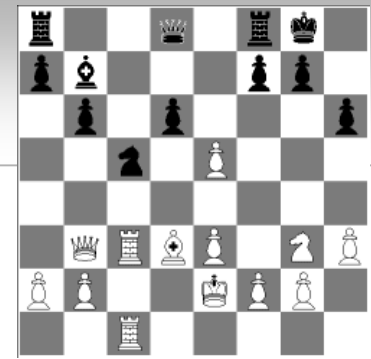
Objectives

1. What is the **Role** of a **Data Model** in **Enterprise Architecture** ?
2. How a Data Model evolves from **Conceptual** to **Logical** To **Physical** ?

Finally

Why is the *power* of **Relational Modeling** Still misunderstood ?





Objectives

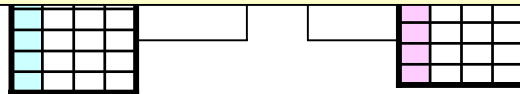
1. What is the **Role** of a **Data Model** in **Enterprise Architecture** ?
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Finally

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Answer

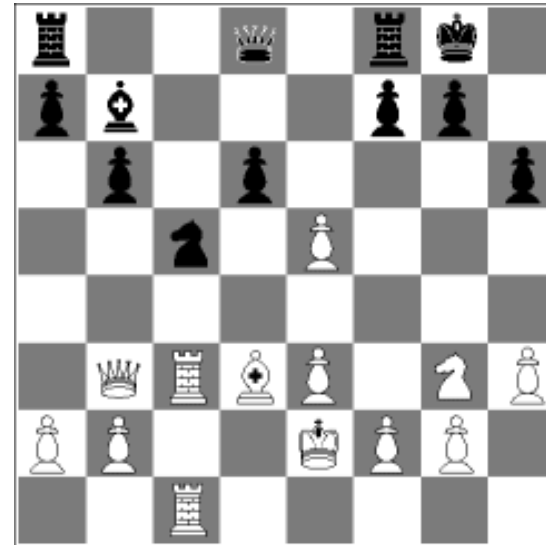
It has the *wrong name*.
Instead it should be called
Relational *Business* Modeling.





Data Model: Queen of the Zachman Chessboard

George Dobbs
Dynamics Research Corporation
January 2006



Questions?

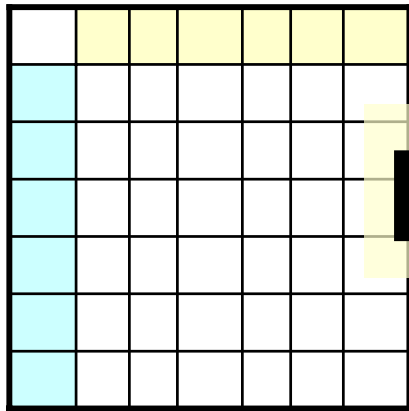
*IT Architecture Practitioners Conference
Barcelona*

January 23-25, 2006
Hotel Fira Palace Barcelona
Barcelona, Spain

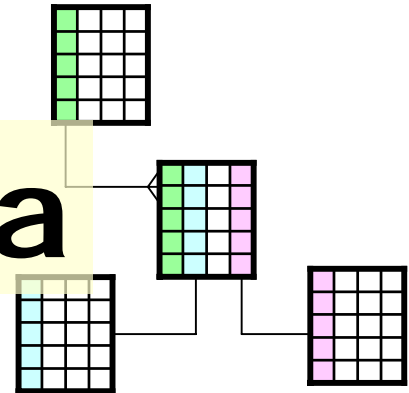
In parallel with The Open Group Member Meetings, January 23-27

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Hasta la vista



*IT Architecture Practitioners Conference
Barcelona*

January 23-25, 2006
Hotel Fira Palace Barcelona
Barcelona, Spain

In parallel with The Open Group Member Meetings, January 23-27

