Data Integration Using Universal Data Models and Effective Human Dynamics

Presented by Len Silverston,
Universal Data Models, LLC

Purpose:
Share ways to integrate data

Agenda:
- Universal Data Models and Patterns

- Human dynamics principles

- Carnival Cruise Lines Case Study

What are Universal Data Models and Universal Patterns ?

Universal Data Models:

Common, re-usable, holistic, data model constructs
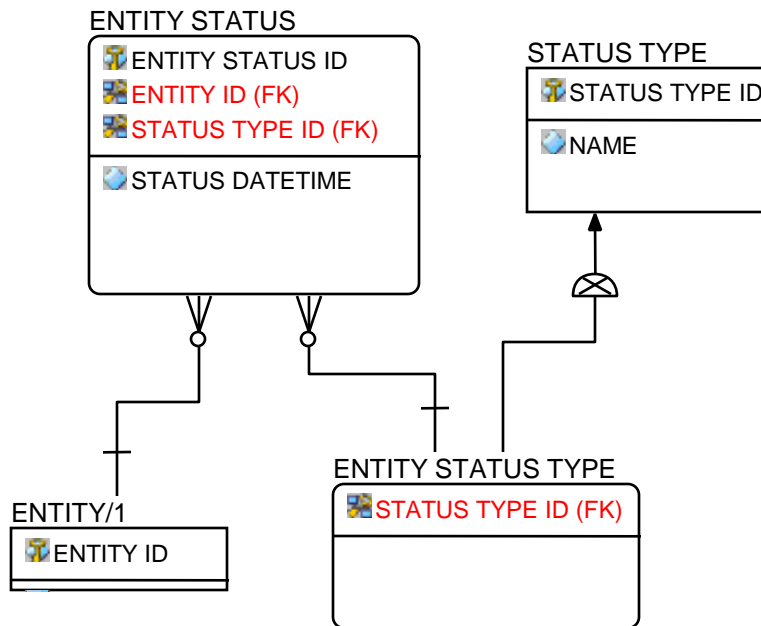
Standard data models

Industry data models

Universal Patterns:

Templates and alternatives for common themes in data modeling

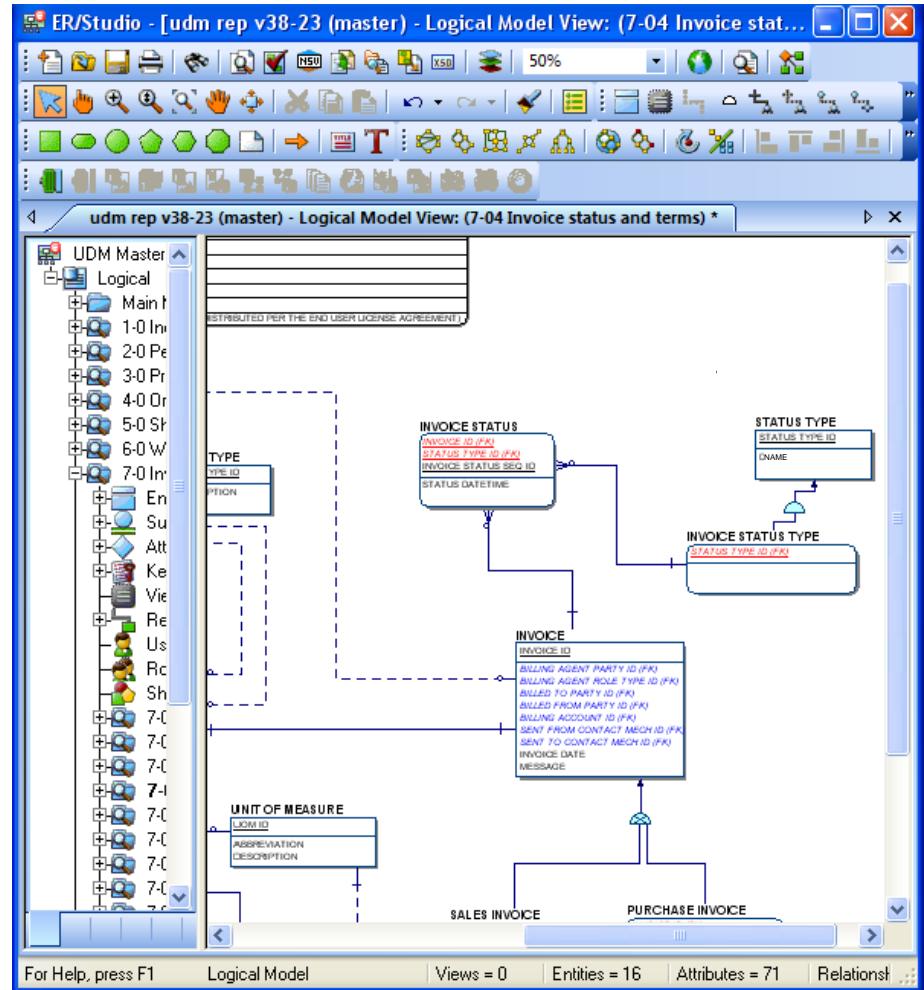# Universal Patterns and Universal Data Models

UNIVERSAL PATTERNS
- Common Themes Across Models

UNIVERSAL DATA MODELS
- Application of patterns plus other common constructs

What are Standard Universal Data Models?

The common data model constructs applicable to most enterprises:

People and organizations

Product
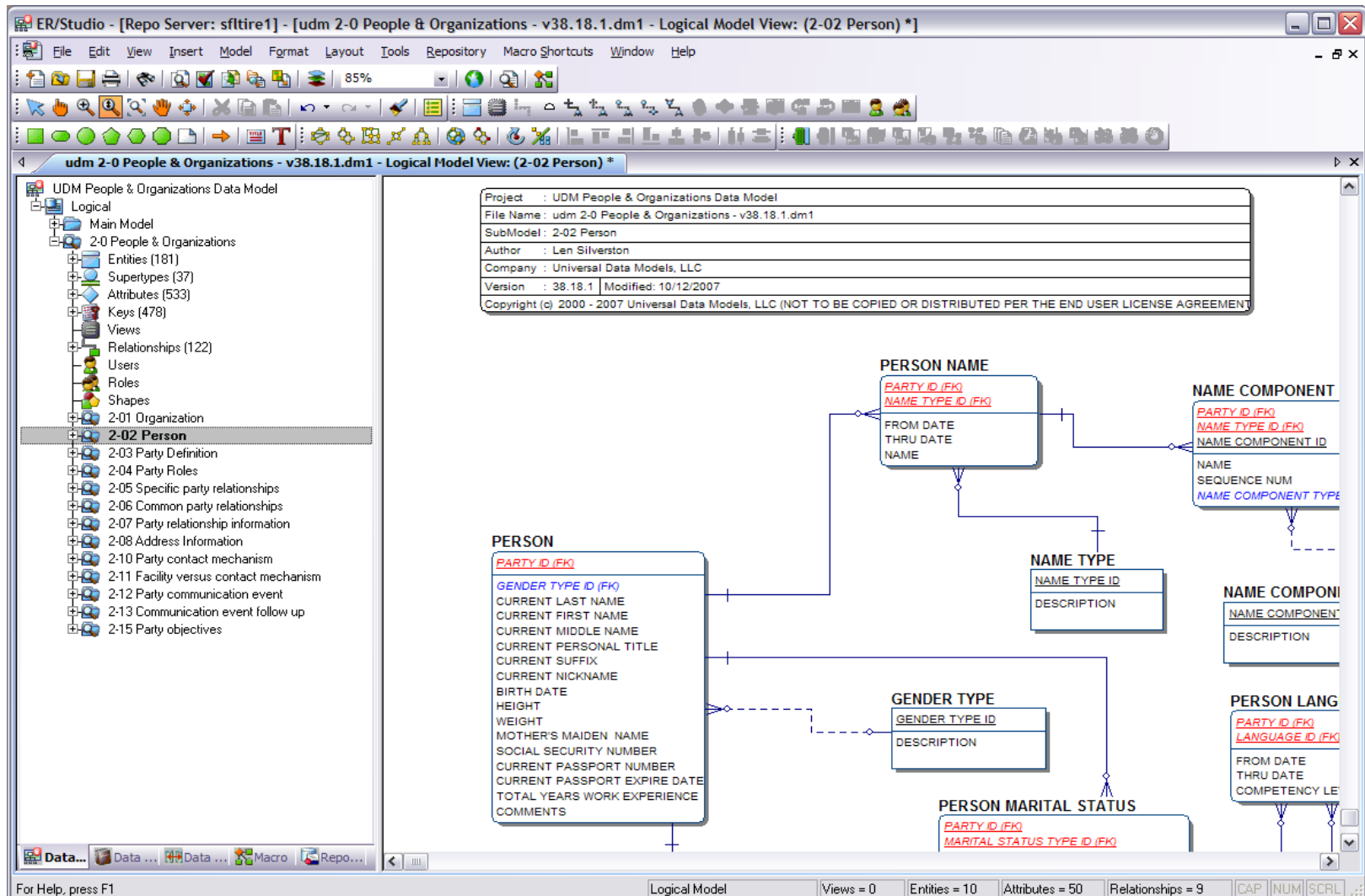
Order

Work Effort

Shipment

Invoicing

Accounting and Budgeting

E-Commerce

What Are Standard Universal Data Models?
Sample –Person

What Are Universal Data Models for Industries?

Extends the common UDMs to include industry constructs

Manufacturing

Health care

Insurance
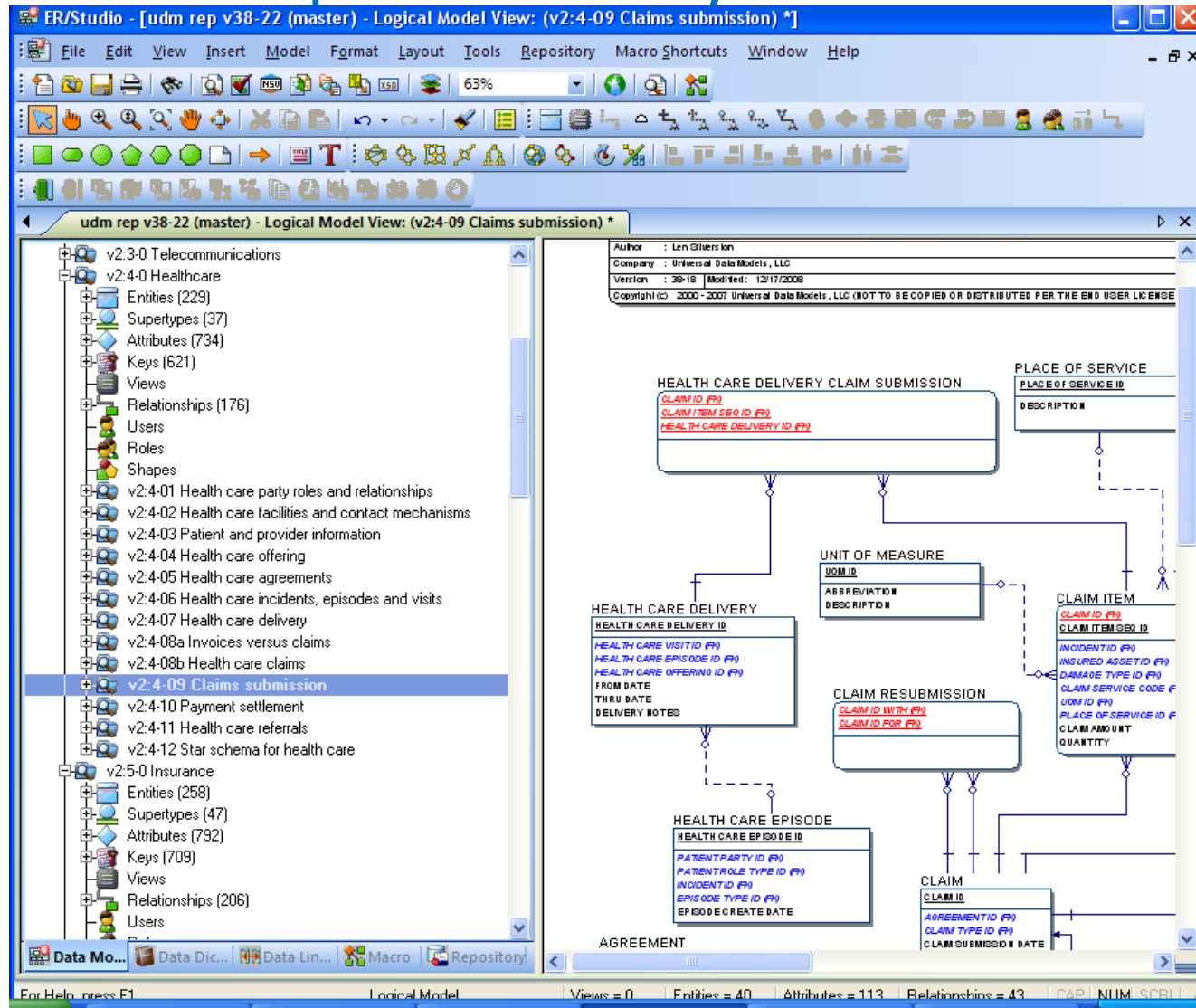
Banking, Financial Services
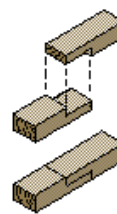
Telecommunications

Professional services

Travel

What Are Universal Data Models?
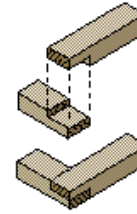# Sample – Industry model – Health Care
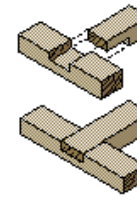
Examples of Universal Patterns

- Roles

- Statuses

- Classifications

- Hierarchies
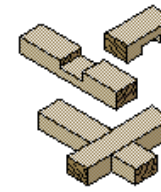
- Business rules

- Contact information

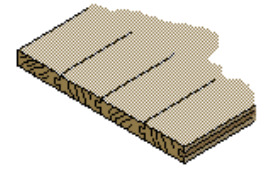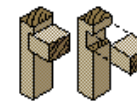Half Lap   End Lap   Middle Lap   Cross Lap   Tongue and Groove

Rabbet   Dado   Dado and Rabbet   Dado Tongue and Rabbet   Mitre   Butt
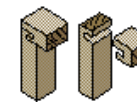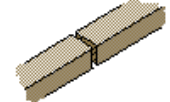
Specific Versus Generalized

More specific ← → More generalized

Level 1 Pattern   Level 2 Pattern   Level 3 Pattern   Level 4 Pattern

More understandable ← → More flexible
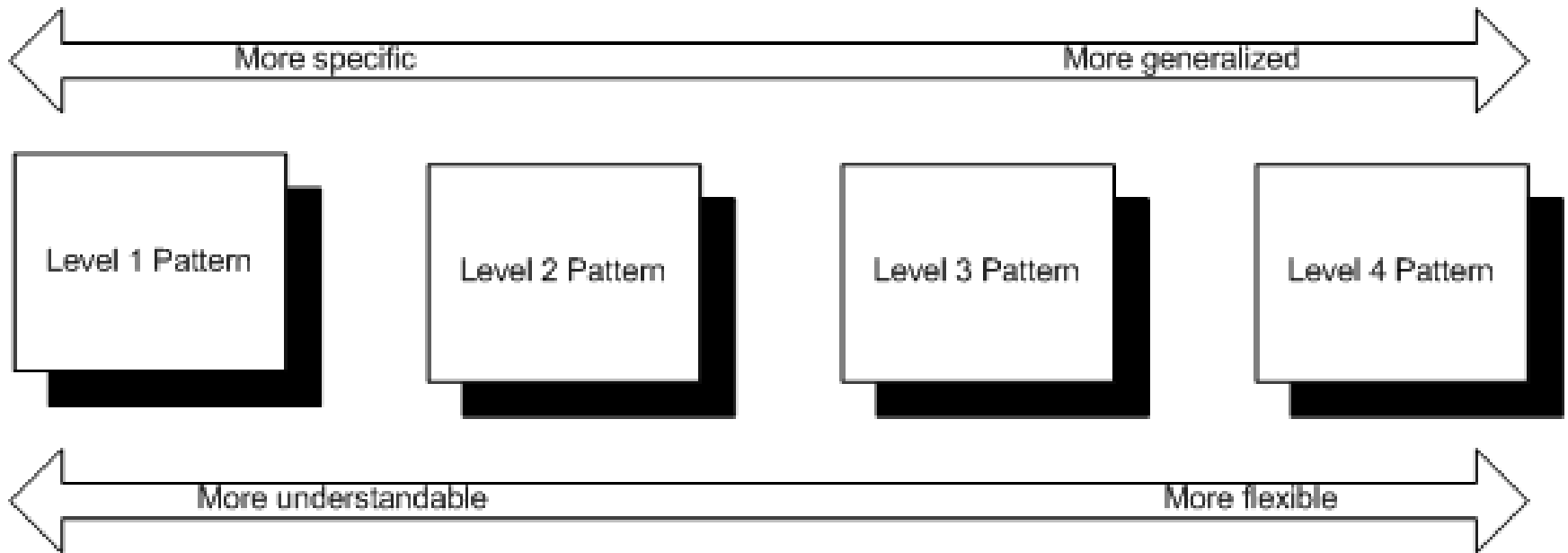
Classification Specific - Pattern

ENTITY/3

⚜ ENTITY ID
🔷 NAME
🔷 DESCRIPTION
🔩 TYPE1 ID (FK)
🔩 TYPE2 ID (FK)
🔩 TYPE3 ID (FK)
🔩 TYPE4 ID (FK)
🔩 TYPE5 ID (FK)

TYPE1

⚜ TYPE1 ID
🔷 NAME

TYPE2

⚜ TYPE2 ID
🔷 NAME

TYPE3

⚜ TYPE3 ID
🔷 NAME

TYPE4

⚜ TYPE4 ID
🔷 NAME

TYPE5

⚜ TYPE5 ID
🔷 NAME
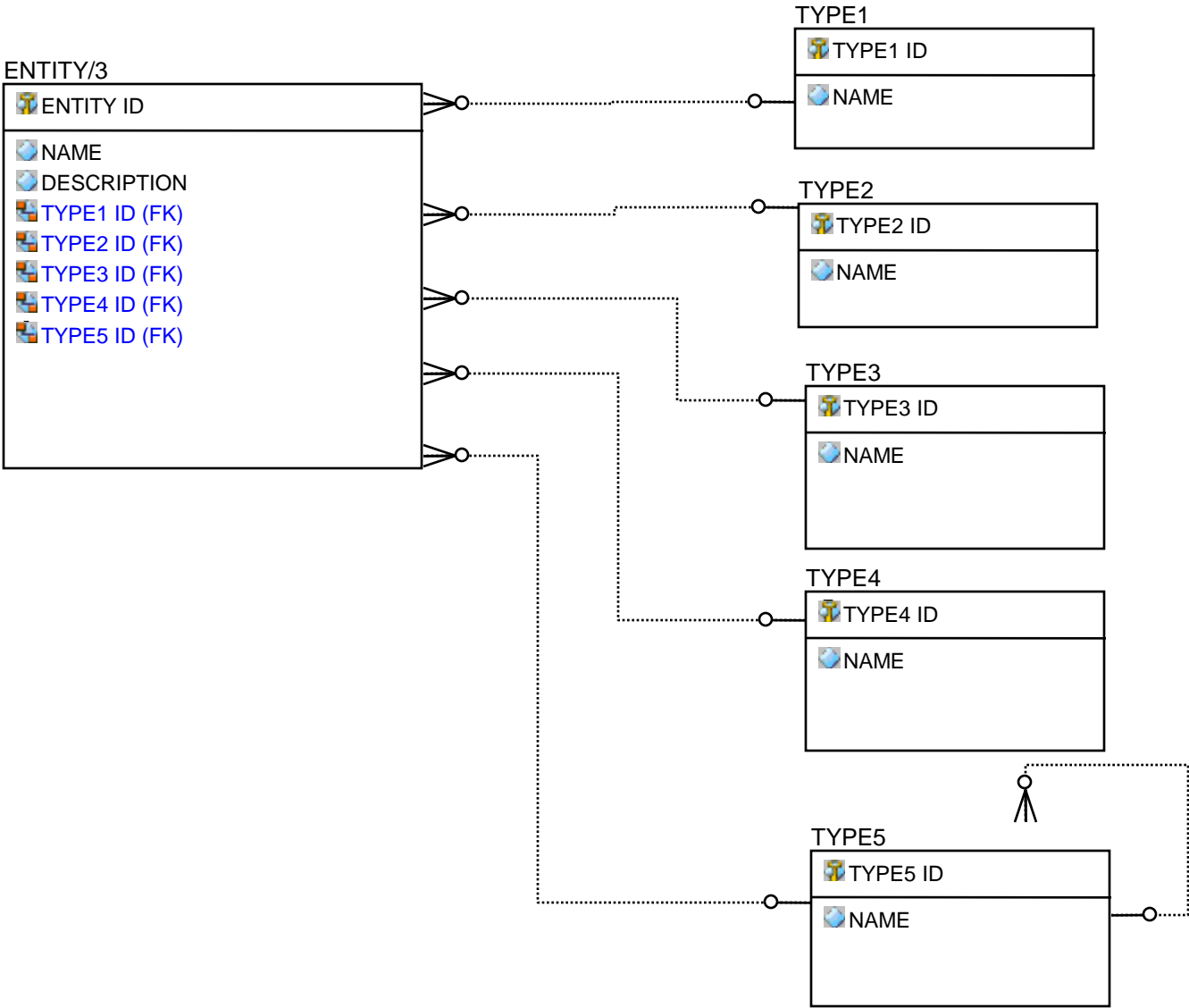
Classification Specific - Example

PRODUCT FAMILY

🔑 PRODUCT FAMILY ID
🔷 NAME

PRODUCT

🔑 PRODUCT ID
🔷 NAME
🔷 COMMENTS
🔷 DESCRIPTION
🔷 PRODUCT FAMILY ID (FK)
🔷 PRODUCT TYPE ID (FK)
🔷 PRODUCT MODEL ID (FK)
🔷 PRODUCT MAKE ID (FK)
🔷 PRODUCT CLASSIFICATION ID (FK)

PRODUCT TYPE

🔑 PRODUCT TYPE ID
🔷 NAME

PRODUCT MODEL

🔑 PRODUCT MODEL ID
🔷 NAME

PRODUCT MAKE

🔑 PRODUCT MAKE ID
🔷 NAME

PRODUCT CLASSIFICATION

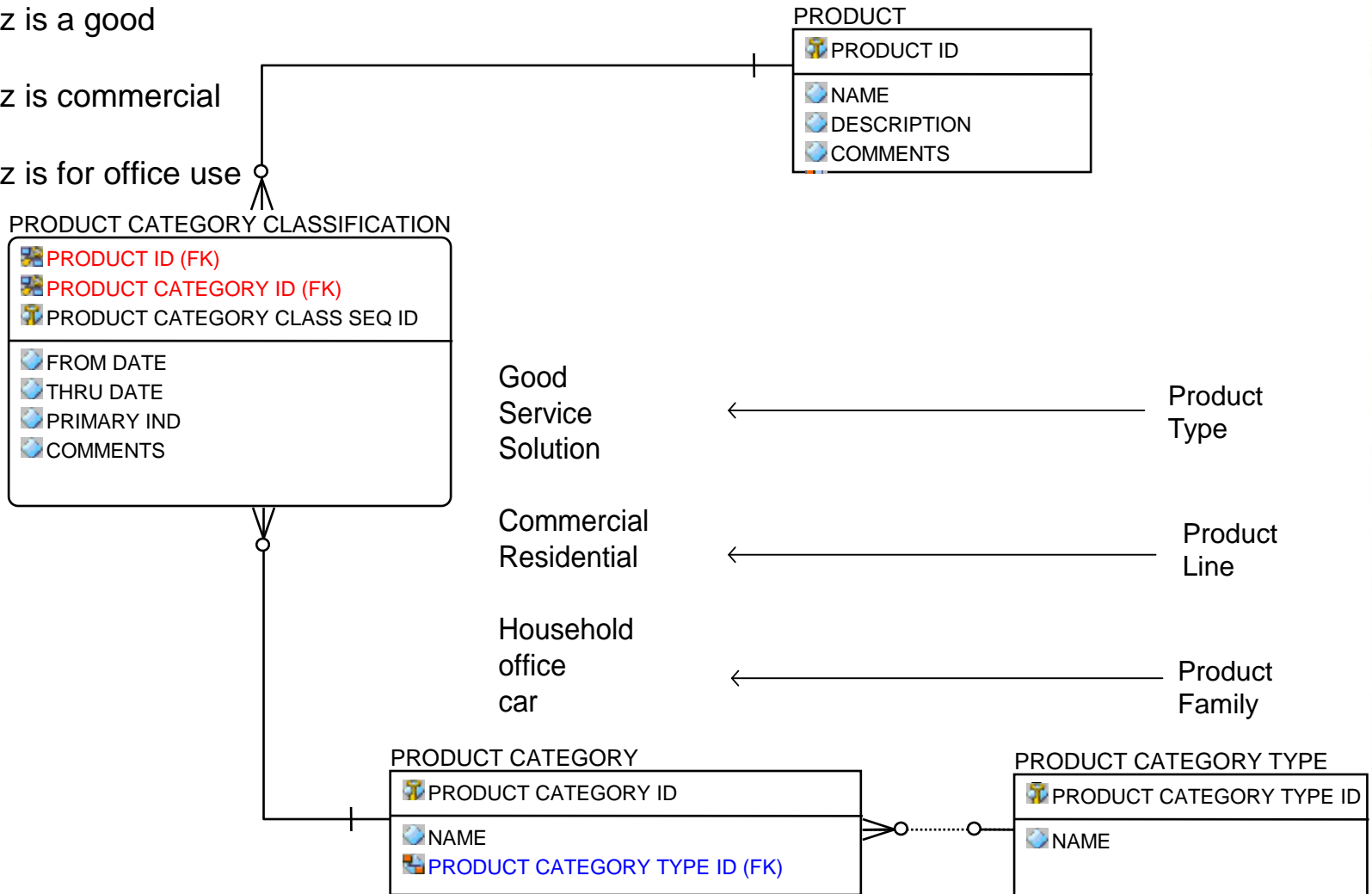| |
|---|
| 🔑 PRODUCT CLASSIFICATION ID |
| 🔷 NAME |
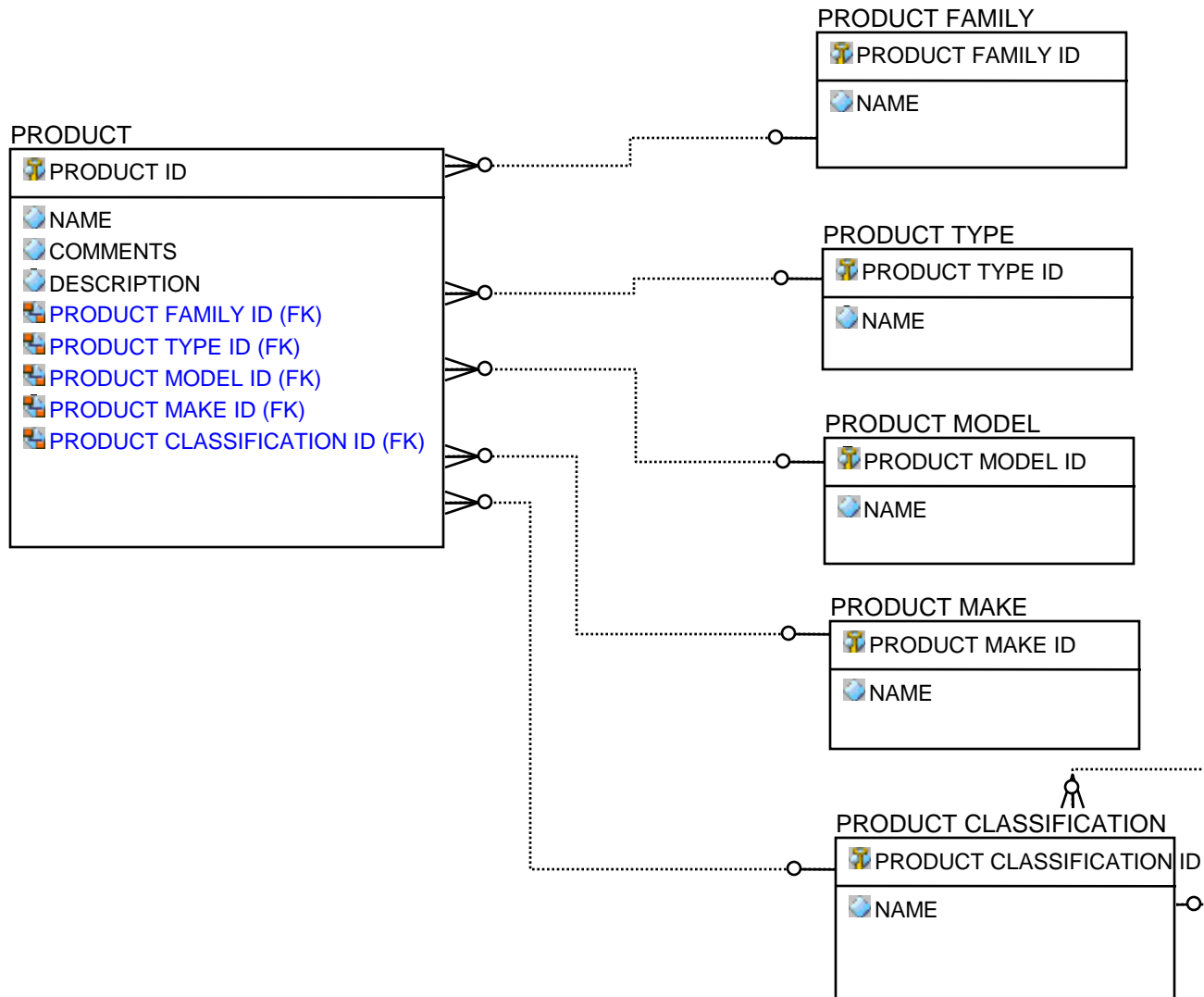
Classification Generalized - Example

Product xyz is a good

Product xyz is commercial

Product xyz is for office use

PRODUCT

PRODUCT ID
NAME
DESCRIPTION
COMMENTS

PRODUCT CATEGORY CLASSIFICATION

PRODUCT ID (FK)
PRODUCT CATEGORY ID (FK)
PRODUCT CATEGORY CLASS SEQ ID
FROM DATE
THRU DATE
PRIMARY IND
COMMENTS

Good
Service
Solution

Product
Type

Commercial
Residential

Product
Line

Household
office
car

Product
Family

PRODUCT CATEGORY

PRODUCT CATEGORY ID
NAME
PRODUCT CATEGORY TYPE ID (FK)

PRODUCT CATEGORY TYPE

| PRODUCT CATEGORY TYPE ID |
| --- |
| NAME |

How to Use Universal Data Models and Universal Patterns

- Jump-start efforts

- Customize

- Quality assurance

- Third party source

UDM Case Studies

- Leading telecommunications manufacturers

- World wide travel organizations

- Wall street leaders

- Software giants

- Global hardware manufacturers

- Major distributors

- Health insurance organizations

- Financial institutions

- Major manufacturers

- Government agencies

- World wide engineering services

- Financial securities companies

What is <u>Really</u> Needed for Data Integration?

Commitment?

Technology?

Resources?

Tools?

Expertise?

Methodologies?
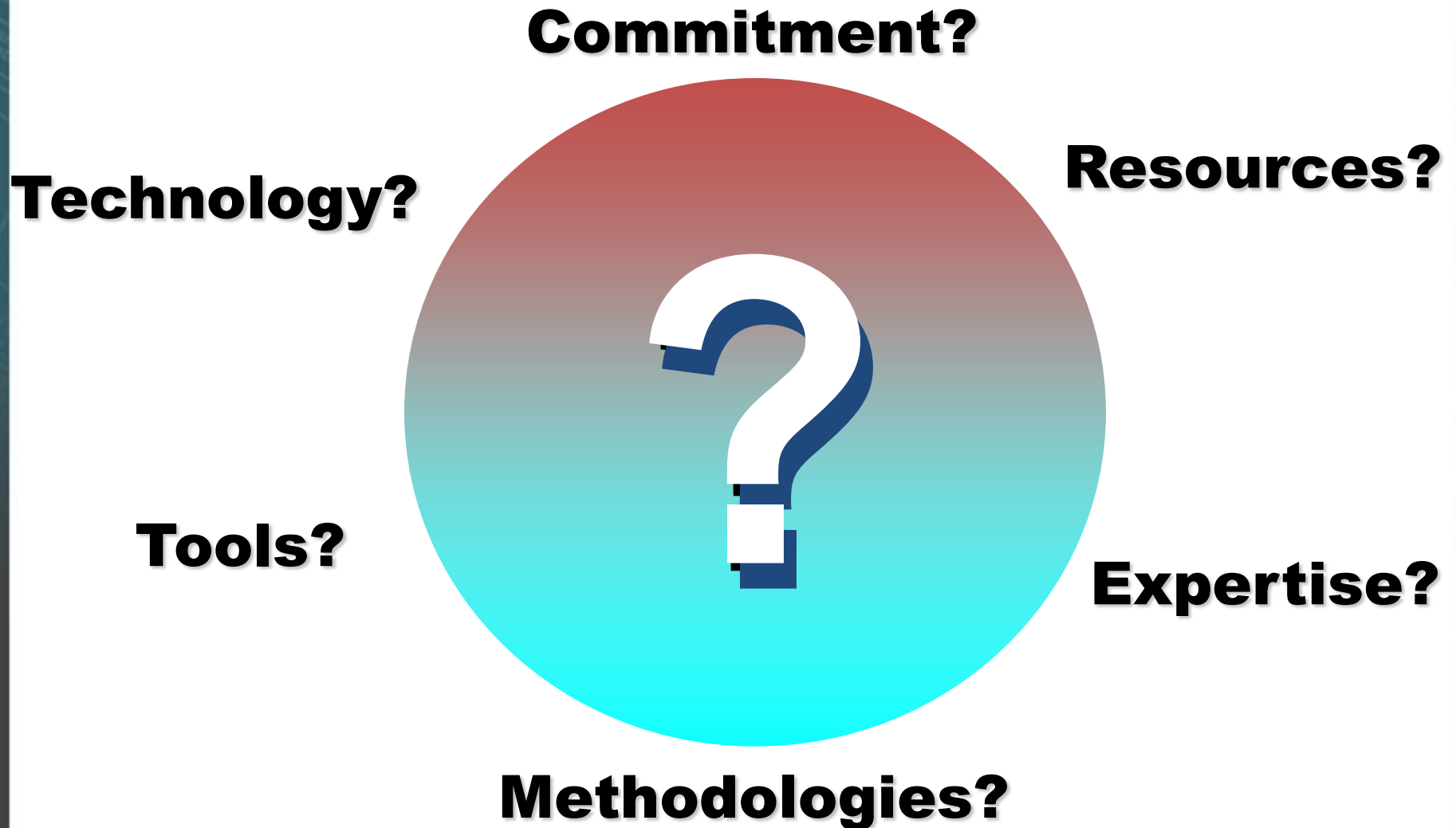
A Big Issue: Data Mining!
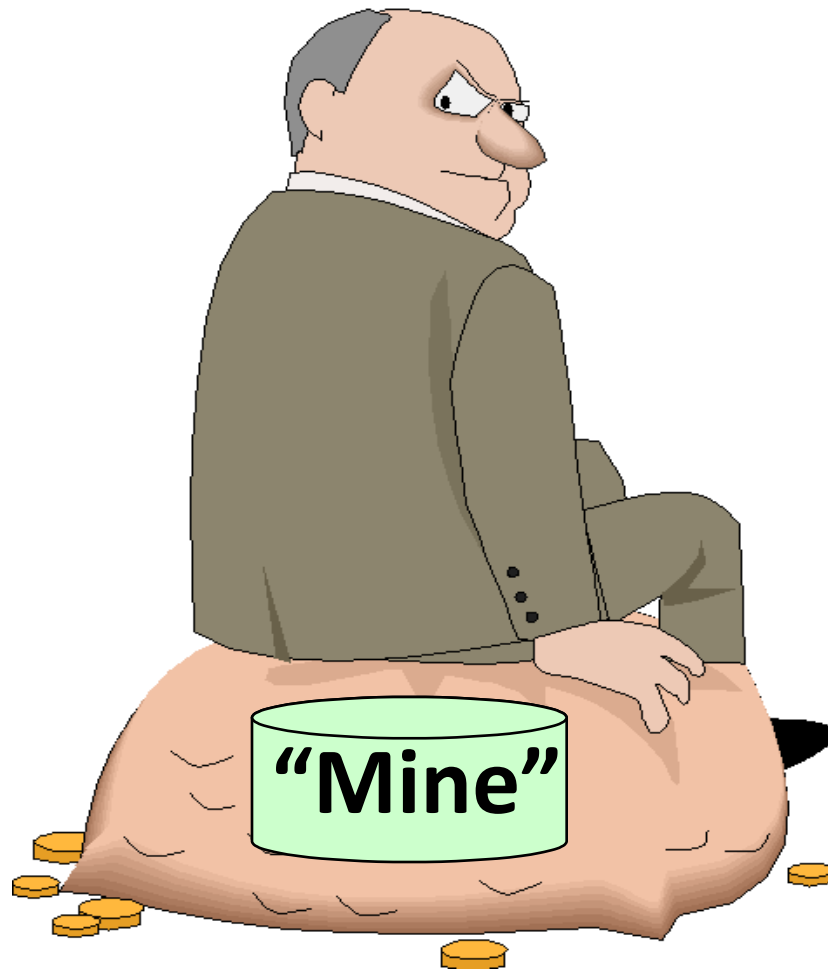
Inevitable Scenarios

- Data "Mine"ing
- "I am right"
- Enterprise versus project
- Trouble getting involvement and commitment?
- IT and business out of alignment!
- Politics!
- Resistance to change

Key Human Dynamics Principles

Understand <u>motivations</u>

Have a clear, compelling, common <u>vision</u>

Integration requires <u>trust</u>

Appreciate <u>perspectives</u> versus being right

Understand Motivations
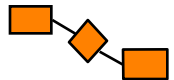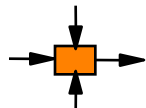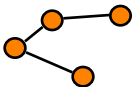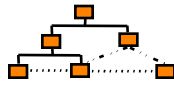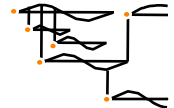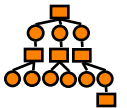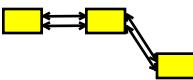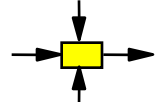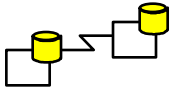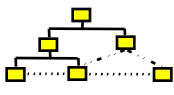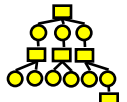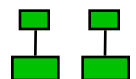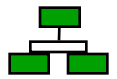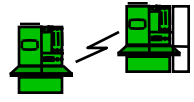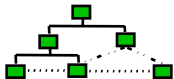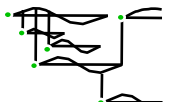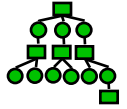
"Unhappiness is in not knowing what we want and killing ourselves to get it."
Don Herold, author

Why not model column 6 in Zachman Framework?

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/Strat 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

Zachman Institute for Framework Advancement

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Motivation Model

Person Name

What does this person want?	
How will your program/project help you?	How is your program/project an obstacle to you?

Motivation Model

NAME AND ROLE OF PERSON

What does this person want? (from what perspective)	
How will your program/project help them?	How is your program/project an obstacle?

NAME AND ROLE OF PERSON

What does this person want? (from what perspective)	
How will your program/project help them?	How is your program/project an obstacle?

YOU

YOUR PROGRAM/PROJECT What do you want? (from what perspective)	
How will your program/project help you?	How is your program/project an obstacle to you?

NAME AND ROLE OF PERSON

What does this person want? (from what perspective)	
How will your program/project help them?	How is your program/project an obstacle?

NAME AND ROLE OF PERSON

What does this person want? (from what perspective)	
How will your program/project help them?	How is your program/project an obstacle?

NAME AND ROLE OF PERSON

What does this person want? (from what perspective)	
How will your program/project help them?	How is your program/project an obstacle?

Have a Clear, Compelling, Common Purpose and Vision

Clear

Vision

Mission

Values

Goals

Benefit

Plan

Compelling

How to create a message that gets through?
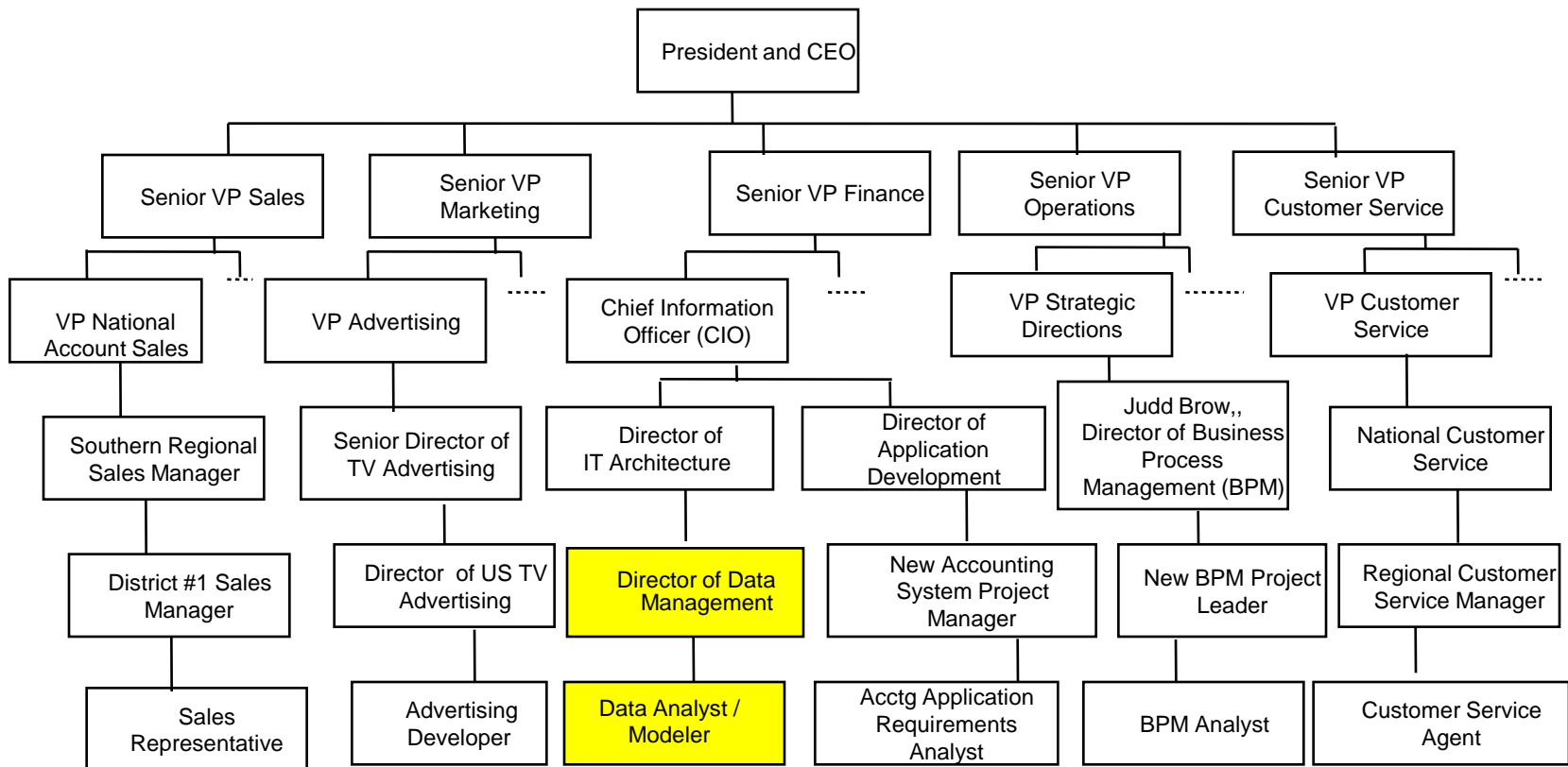
Common

Data Management Mission

Business Mission

Common

Business Mission

Data Management Mission

Integration Requires Trust (IRT)

Cordial hypocrisy versus honest assessment
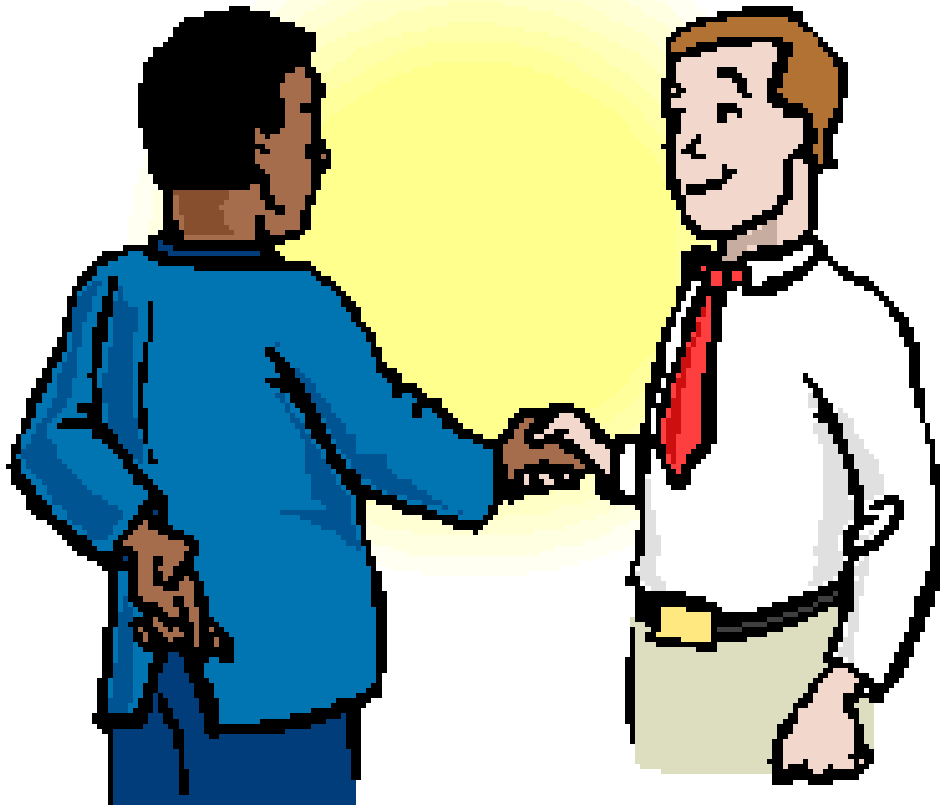
"Integrity" derived from "To Integrate"

Core Elements of Trust

- Character

- Competence

From "The Speed Of Trust" By Stephen M. R. Covey, Free Press, 2006

Keys to Trust

Earning it

Caring about others

Vulnerability/openness

Appreciate Perspectives Versus Being Right

"But MY way is right!"

A Fictitious Scenario

Director of Enterprise Data Management:

"We are excited to work together with you on this project helping you to improve data integration.

Sales Analysis Project Manager:

We completely support enterprise wide data integration. However, we have very tight deadlines and budgets so well work together as long as you don't impact our deadline dates, tasks, resources, or budgets in any way."

WHERE WOULD YOU TAKE THIS CONVERSATION?

Whose Model is Right?
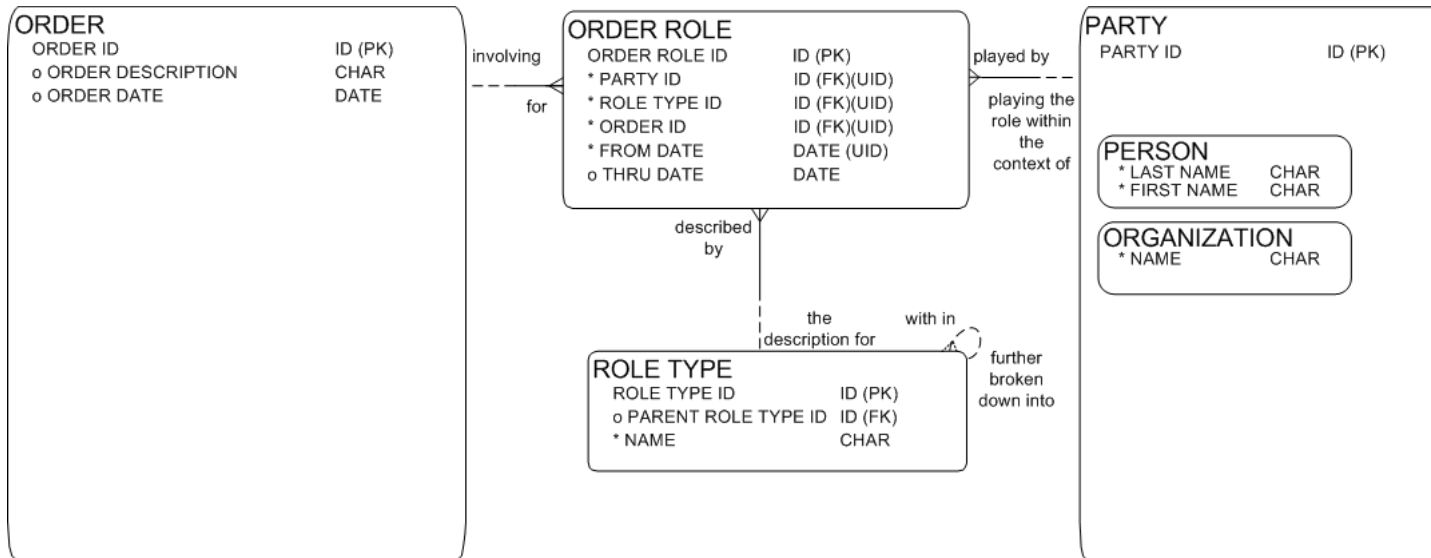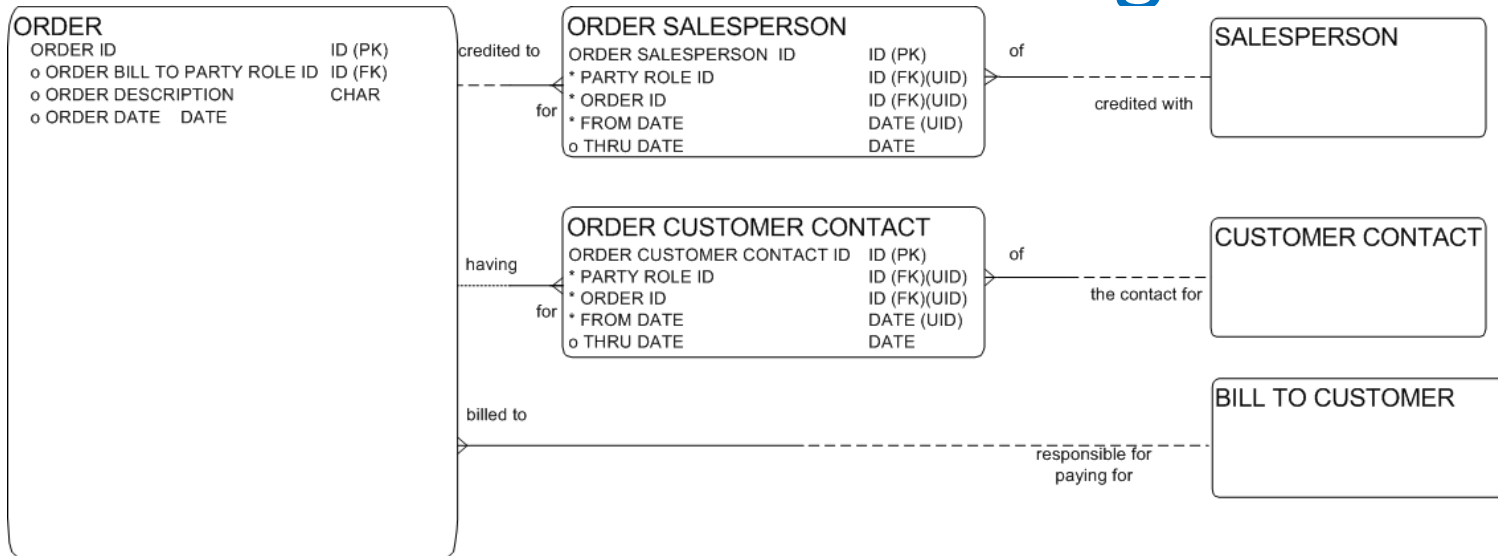
Who's Methodology Is "Right"?

Integrated Star Schema - Kimball
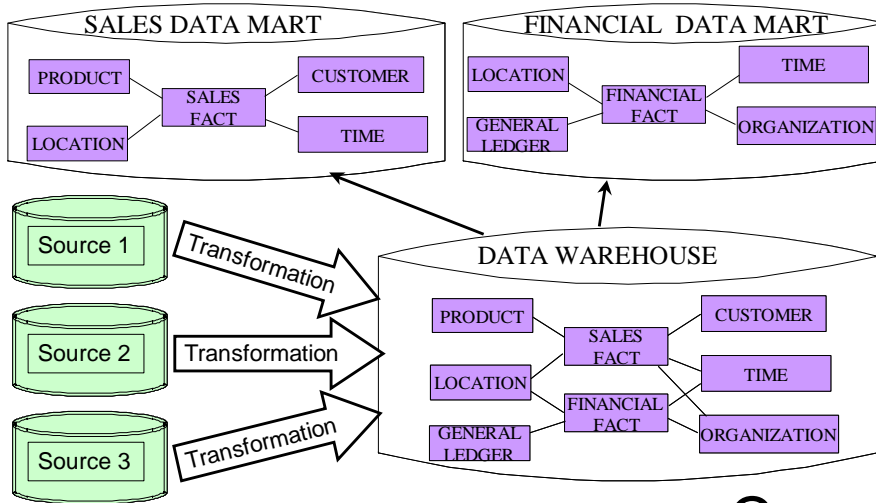
Corporate Information Factory - Inmon
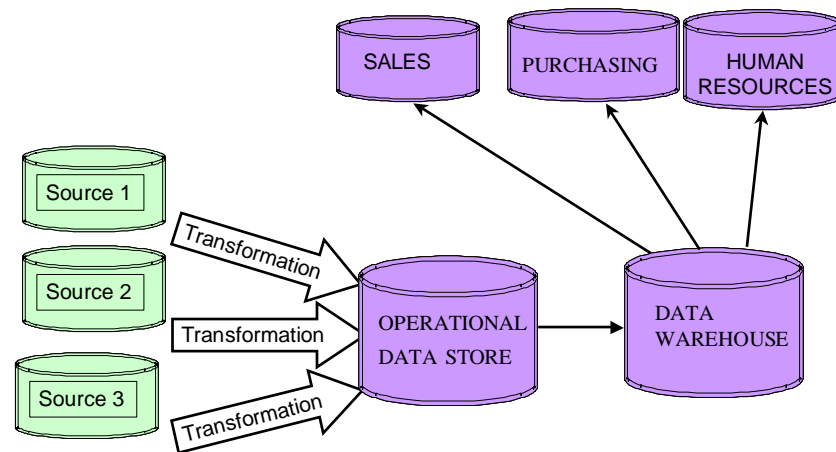
Who's Data Is "Right"?
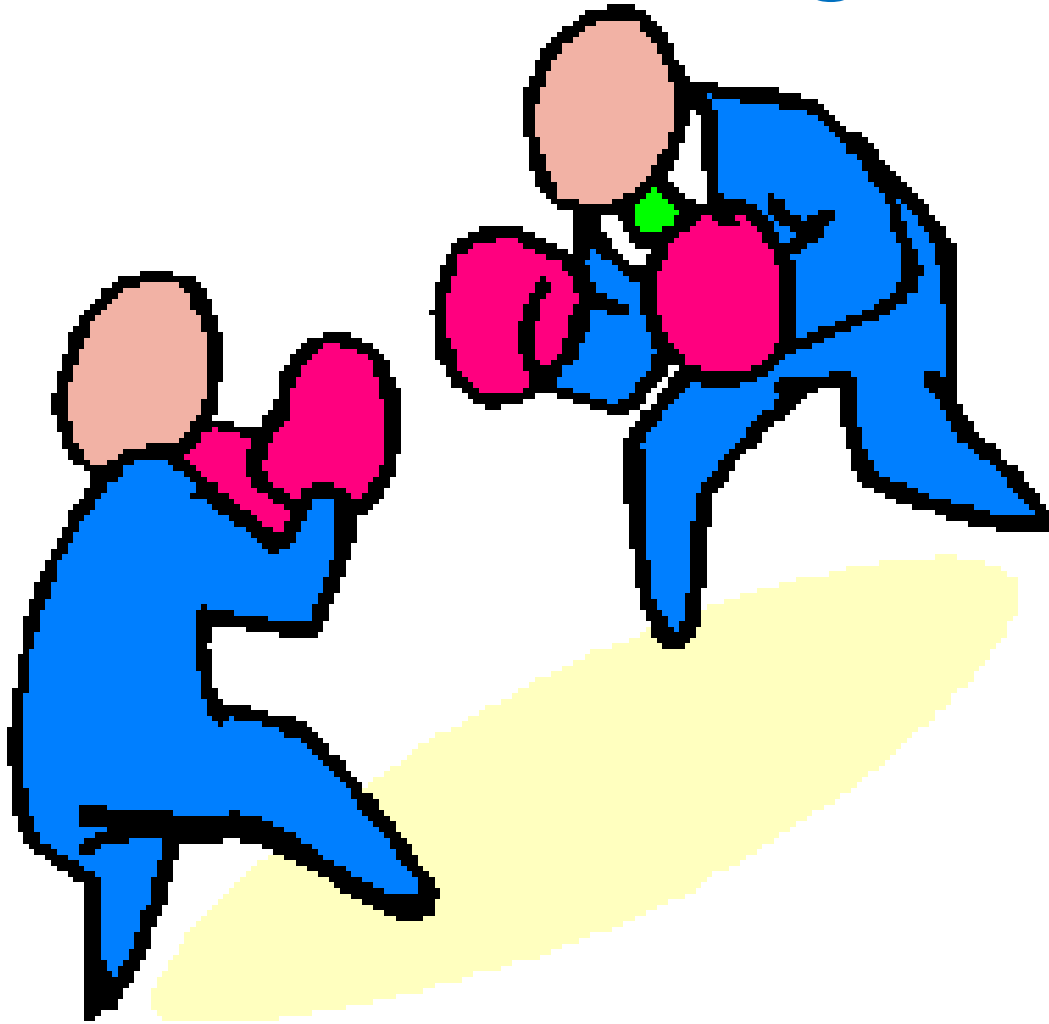
Have an Agreed Upon Framework

FOR EXAMPLE,

Step 1. Don't' react
  Stay objective

Step 2. Disarm
  Step to their side

Step 3. Change the game
  Don't reject ....Reframe (holistic) (common goal)

Step 4. Make it easy to say yes
  Build a golden bridge (truly win-win)

Step 5. Bring them to their senses, not their knees
  (using power, not force)

From "Getting Past No: Negotiating with Difficult People" By William Ury

Position Versus Interest
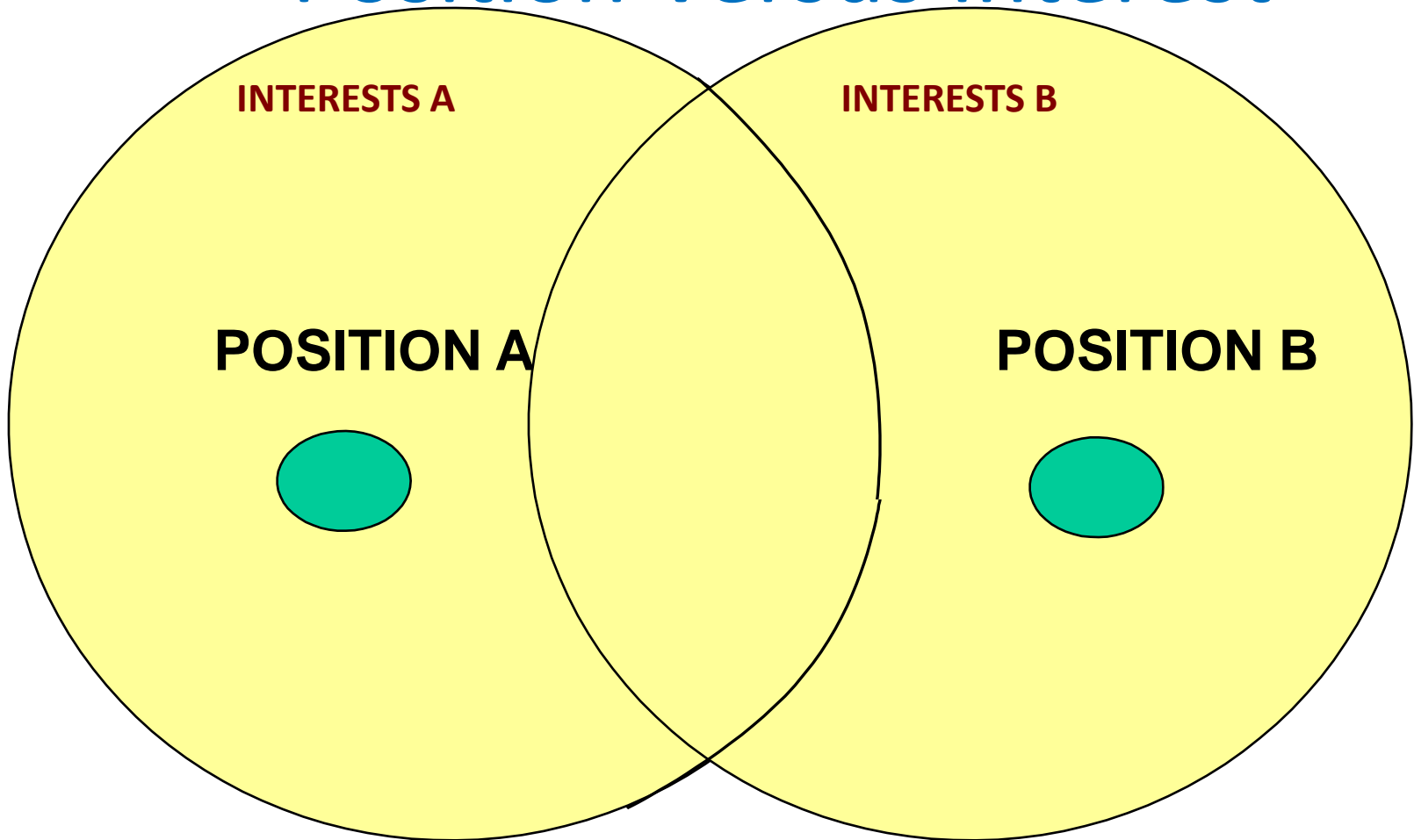
INTERESTS A

INTERESTS B

POSITION A

POSITION B

A Fictitious Scenario

Director of Enterprise Data Management:

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Sales Analysis Project Manager:

We completely support enterprise wide data integration. However, we have very tight deadlines and budgets so well work together as long as you don't impact our deadline dates, tasks, resources, or budgets in any way."

WHERE WOULD YOU TAKE THIS CONVERSATION?

Data Warehouse
# Mission Statement

- *To provide high quality, integrated, meaningful information which empowers the enterprise to meet tactical needs while achieving strategic goals.*

Composed by the Data Warehouse Team 2005

Data Warehouse Strategy
How it all began

- **Mar 2004** - *Original RFP to 3 DW Consultant Firms*

- **Apr 2004** – *Executive Mgmt declined Big Bang Proposal and suggested developing an in-house DW Program.*

- **Oct 2004** – *In-house DW Strategy developed (Architecture, Data Quality, Metadata, Presentation, Stability, Data Governance)*

- **Jan 2005** – *Strategy reviewed and approved by industry expert Claudia Imhoff.*

Data Warehouse Strategy How it all began

- **Mar 2005** – *CIO & VP over Data Warehouse champion DW Strategy and sell approach to CEO. Implemented as a DW Program with each component having ROI, meeting a tactical business need and being approved by the steering committee.*

- **Apr 2005** – *Revenue Analytics Business Case for Onboard Spend approved by Steering Committee. First tactical case approved for strategic DW Program.*

- **Jun 2005** – *Purchased and conducted training on UDM for integrated area. Participants included DW Architects, DW Developers, Business Analysts and Revenue Management Decision Support Analysts*

UDM Based Implemented Projects

Pyramid showing implemented projects by year:
- 2010 — CDH & Siebel
- 2009 — Sail & Sign – OB Invoices & Credits
- 2008 — CRM – Past Guest Details
- 2007 — RMS – Reservations
- 2006 — Revenue Analytics – Onboard Spend
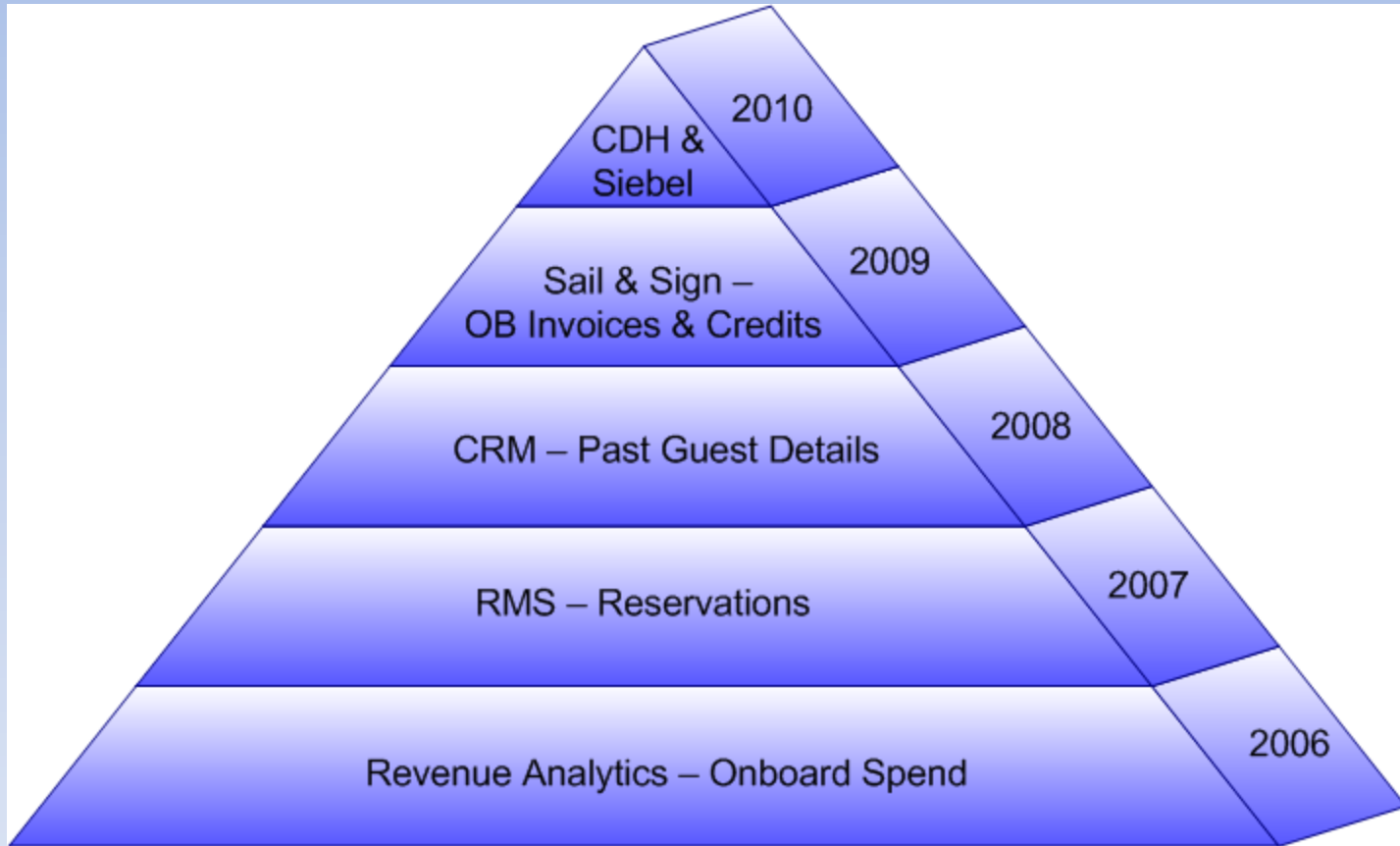
Obtaining a 360% View of our Customers

Example Questions that can easily be answered….

- Who is our customer?

- What are their preferences?

- What do they like to do?

- What is the best way to contact them?

- When were they contacted and how?

- How and when did they book a cruise?

- When did they cruise?

- What, where, when and how much did they spend?

- What onboard credits did they receive?

Implemented UDM Subject Areas
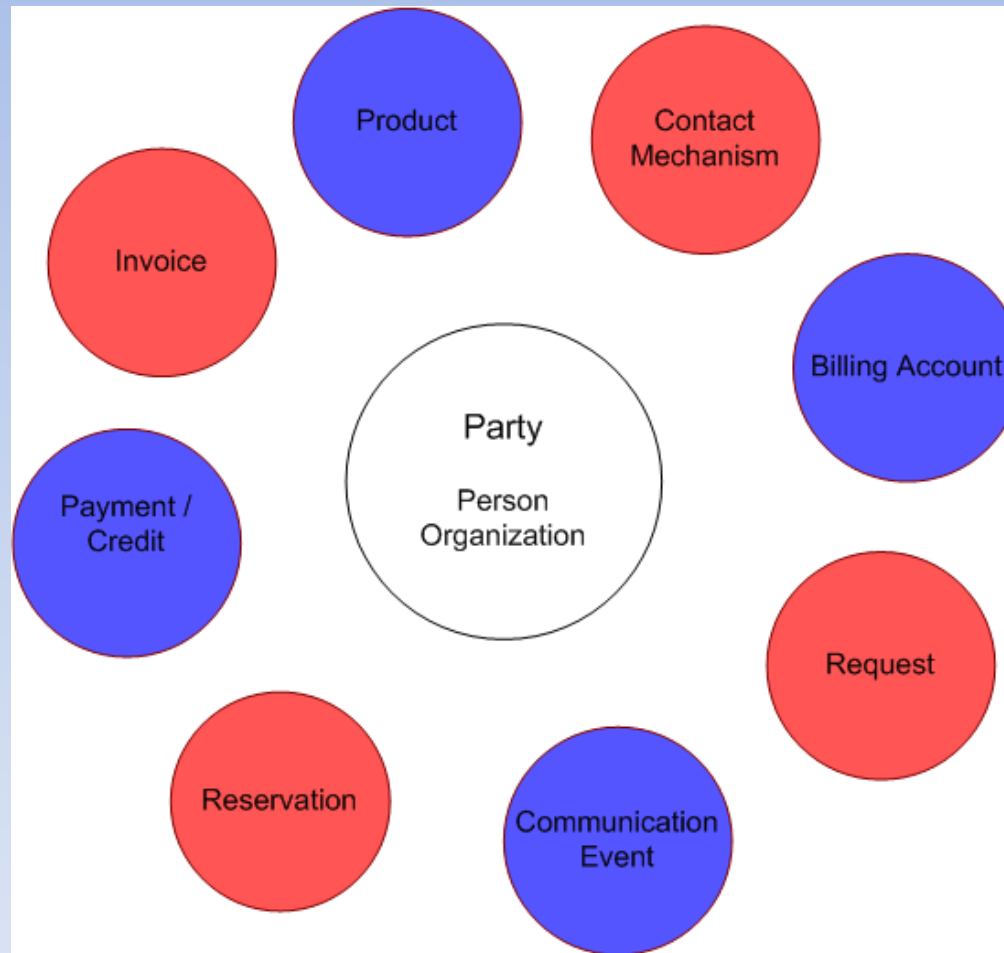
Integration Projects / UDM Subject Area Timeline

ID	Integration Project / Type of Data	UDM Subject Area Utilized	Start	Finish	Duration	2005				2006				2007				2008				2009				
						Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
1	**Revenue Analytics** - **Onboard Guest Spend**	**Invoice** **Products** **Party / Organization**	6/1/2005	9/15/2006	67.6w		████	████	████	████																
2	**CRM** - **Past Guest Details**	**Party / Person** **Party Contact Mechanisms** **Geo Boundary**	6/1/2007	2/28/2008	39w										████	████										
3	**RMS** - **Reservations**	**Invoice** **Reservation**	3/1/2007	9/14/2007	28.4w										████										
4	**Sail & Sign** - **Recreate Onboard Guest Invoices**	**Payment / Credits** **Billing Accounts** **Invoice** **Party**	1/5/2009	10/30/2009	43w																		████	████		
5	**Customer Data Hub & Siebel Integration** - **Customer Prospects** - **Person Preferences** - **Employees** - **Phone Events** - **Email Events** - **Direct Mail Events** - **Campaigns**	**Communication Event Requests / Products** **Party (Person / Employee)** **Party Contact Mechanism** **Geo Boundary**	10/1/2008	3/1/2010	73.8w																		████	████	████	████

Summary

- Re-use

- Human dynamics – data oursing

Questions and More Info?

- Len Silverston lsilverston@univdata.com
  303 688 1412

- New Volume 3 book, publisher Jan 09
  The Data Model Resource Book, Volume 3: Universal Patterns in Data Modeling

- More about Universal Data Models offerings
  - Our webs site www.universaldatamodels.com
  - Embarcadero distributes UDMs
    http://www.embarcadero.com/products/universal_data_models/
  - Wiley publishing offerings www.silverston.wiley.com