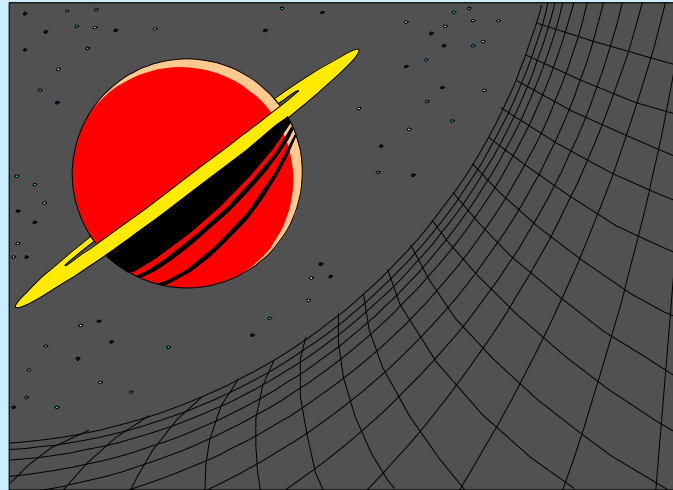# A Universal Approach to Integration Using
UNIVERSAL DATA MODELS

"No (person) is an island, entire of itself; every (person) is a piece of the continent, a part of the main"

John, Donne, English poet (1572-1631)

Agenda

- What are Universal Data Models?
- The need for Universal Data Models
- Examples of Universal Data Models
- How Universal Data Models can be used
- Application of Universal Data models

What are Universal Data Models?

- Best practice, template data models
  - Generally applicable to most enterprises
- Integrated data structures
  - Illustrating broad way to view data relationships
- Common ways to model information for:
  - General constructs
    - E.G. people, organizations, contact info, demographics, products, orders, shipments, invoicing, budgeting, accounting
  - Various industries
    - E.G., manufacturing, telecommunications, financial, travel, e-commerce, insurance, government,

Why Universal Data Models?

- Why re-invent the wheel?
- Why make the same mistakes?
- Need a common language for storing and passing information
- Need proven structures that have been through several iterations
- Need integrated perspective
- Need to produce business value!

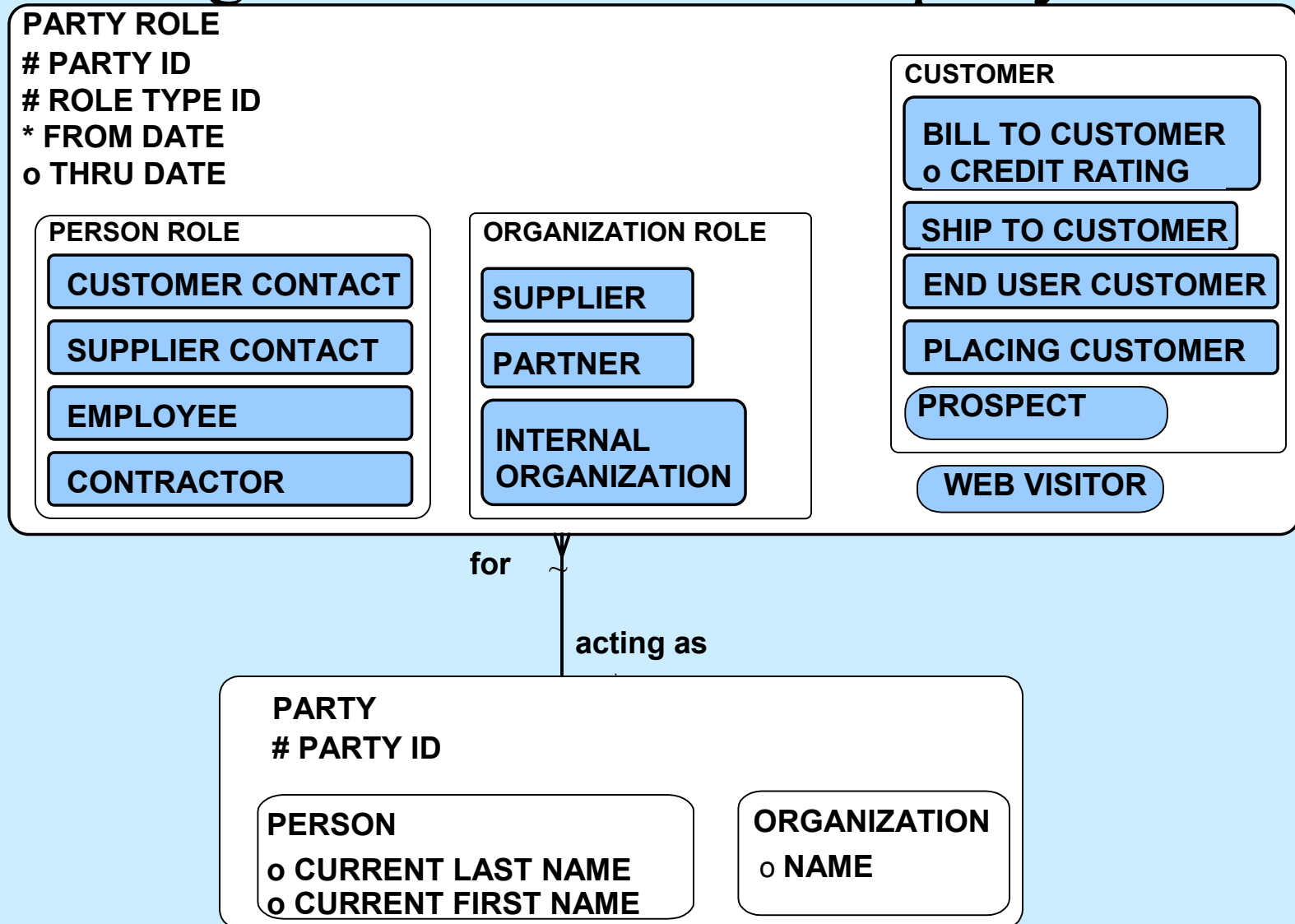# A Practical Solution

- "Universal Data Models"
  - Common, re-usable data structures
  - Facilitates common understanding of data
  - Proven models for production systems
  - 60% of common constructs apply
  - Saves time and increases quality

Examples of Universal Data Models

People, Organizations, Parties and Roles
Storing information about a party once!

PARTY ROLE
 # PARTY ID
 # ROLE TYPE ID
***** **FROM DATE**
o THRU DATE

CUSTOMER

| BILL TO CUSTOMER |
| o CREDIT RATING |

SHIP TO CUSTOMER

END USER CUSTOMER

PLACING CUSTOMER

PROSPECT

WEB VISITOR

PERSON ROLE

CUSTOMER CONTACT

SUPPLIER CONTACT

EMPLOYEE

CONTRACTOR

ORGANIZATION ROLE

SUPPLIER

PARTNER

INTERNAL ORGANIZATION

for

acting as

PARTY
 # PARTY ID

PERSON
o CURRENT LAST NAME
o CURRENT FIRST NAME

ORGANIZATION
o NAME

Integrated party data for government

PARTY ROLE
 # PARTY ID
 # ROLE TYPE ID
FROM DATE
o THRU DATE

PERSON ROLE

(WATCH LIST SUSPECT)

(CRIMINALFELON)

(ORGANIZATION MEMBER)

(IMMIGRANT)

(OTHER PERSON ROLE)

ORGANIZATION ROLE

(TERRORIST ORGANIZATION) (NATION)

(GOVERNMENT AGENCY)

COMMERCIAL ENTERPRISE

TRANSPORTATION ENTERPRISE (AIRLINES) (CARGO)

FINANCIAL ENTERPRISE (BANK) (OTHER FINANCIAL INSTITUTION)

(ASSOCIATION) (REGULATORY AGENCY)

ORGANIZATION UNIT
(DEPARTMENT) (DIVISION) (OTHER ORG UNIT)
(SUBSIDIARY) (PARENT ORG)

(OTHER ORGANIZATION ROLE)

for

acting as

PARTY
  # PARTY ID

PERSON
o CURRENT FIRST NAME
o CURRENT LAST NAME
o SOCIAL SECURITY NUMBER

ORGANIZATION
* NAME
o FEDERAL TAX ID NUMBER

Imagine knowing all communication events for a party together!

EVENT
EVENT ID
o FROM DATETIME
o THRU DATETIME
o NOTE

COMMUNICATION EVENT
- CORRESPONDENCE
- TELE-COMMUNICATION
- INTERNET COMMUNICATION
- IN-PERSON COMMUNICATION
- OTHER COMMUNICATION EVENT

TRANSACTION EVENT
- FINANCIAL TRANSACTION
- TRANSPORTATION TRANSACTION
- CRIMINAL TRANSACTION
- SUSPICIOUS ACTIVITY
- LICENSING TRANSACTION
- OTHER TRANSACTION EVENT

EVENT ROLE
FROM DATE
o THRU DATE

PARTY
PARTY ID

PERSON
o CURRENT FIRST NAME
o CURRENT LAST NAME
o SOCIAL SECURITY NUMBER

ORGANIZATION
* NAME
o FEDERAL TAX ID NUMBER

Getting a Complete Picture!
All Activity for a Party!

PARTY

COMMUNICATION EVENT ROLE — ORDER ROLE — SHIPMENT ROLE — WORK EFFORT ROLE — INVOICE ROLE — PAYMENT ROLE — GENERAL LEDGER TRANSACTION ROLE

COMMUNICATION EVENT — ORDER — SHIPMENT — WORK EFFORT — INVOICE — PAYMENT — GENERAL LEDGER TRANSACTION

ORDER ITEM — SHIPMENT ITEM — INVOICE ITEM — PAYMENT APPLICATION — GL TRANSACTION DETAIL

PRODUCT
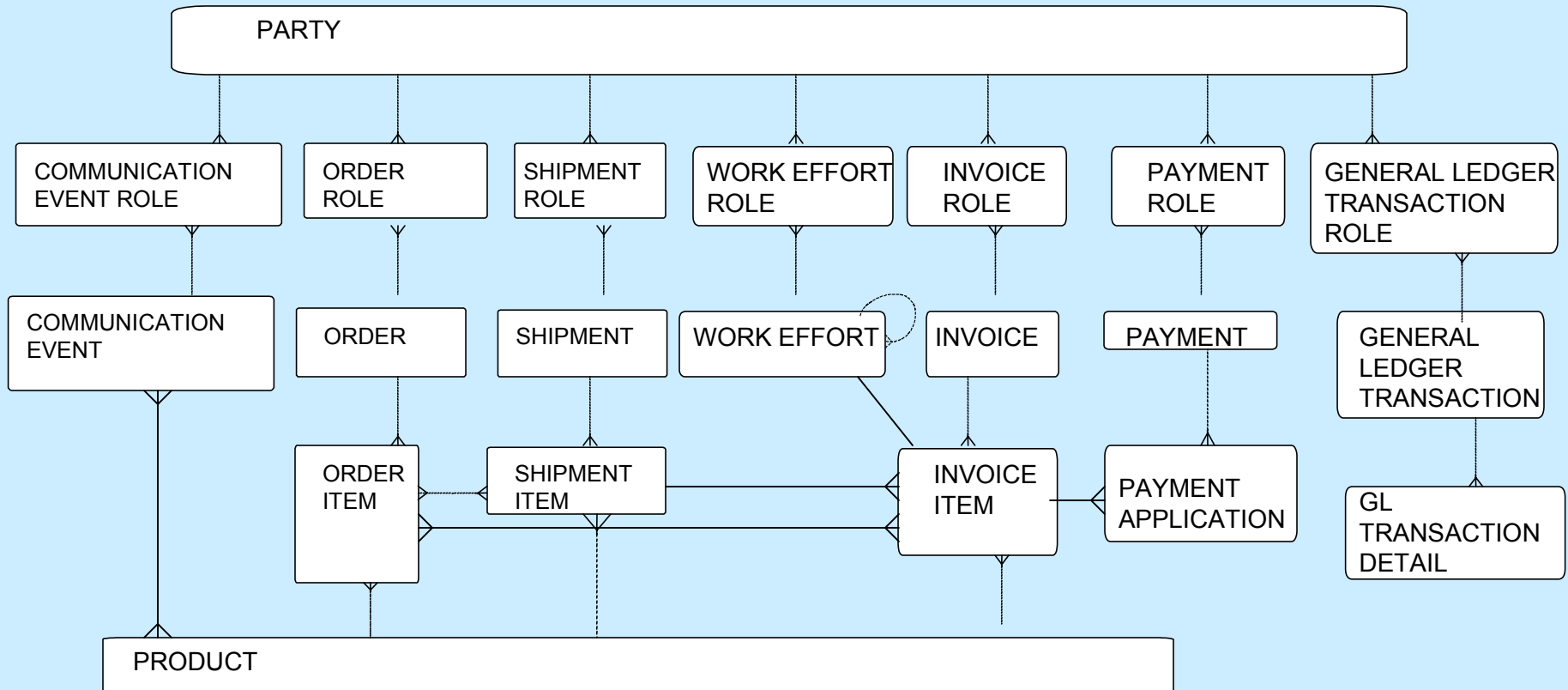
How can these models be used?

- Common language to communicate
  - Within an enterprise
  - Across enterprises
- Common data structures to either store or pass information
- Overall data management – same data structures used across applications
- Jump-start database design efforts
- Jump-start data warehousing efforts

Application vendors beginning to use PARTY model

- Siebel 7.5 logical data model
  - Has PARTY and PARTY RELATIONSHIP construct
- Oracle Financials 11i
  - Uses PARTY and PARTY RELATIONSHIP construct
- Peoplesoft's latest version
  - Uses PARTY and PARTY RELATIONSHIP constructs
- JD Edwards
  - Uses Address Book concept – very similar to PARTY

Application of Universal Data Models

- **Government**
  - Integrated information for counter-terrorism
  - Sharing government information for efficiencies

- **Corporate**
  - CRM - relationship development
  - Managing enterprise data as a corporate resource

Terrorism: A Call for Integration

- Terrorism: feeds on fear and disorganization
- Integrated data is a key
  - For example, an integrated Govt database
- National leaders focused on integration
- Terrorist Research Center
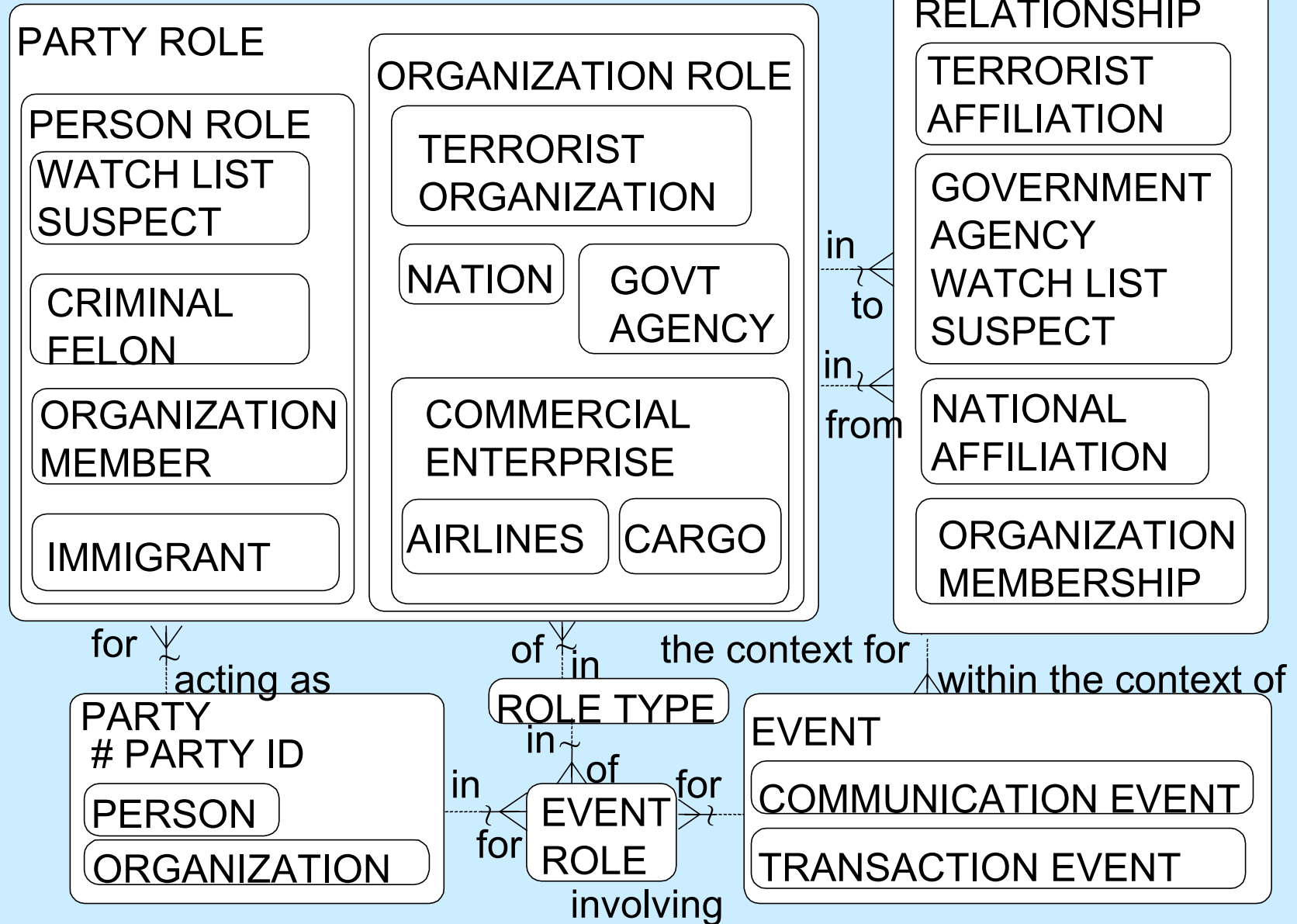 - Most crucial defense is current and accurate information

Is Our Government Sharing Information?

- FBI Watchlist Info not shared
  - 2 hijackers were on this list
- Immigration not available to airlines
  - 2 hijackers had overstayed visas
- Leader have commented that information is in dozens of different databases (or more)
- Data not shared between FBI, CIA, NSA, INS, local enforcement, and more
- Many efforts underway
  - Foreign Terrorist Tracking Task Force established to help
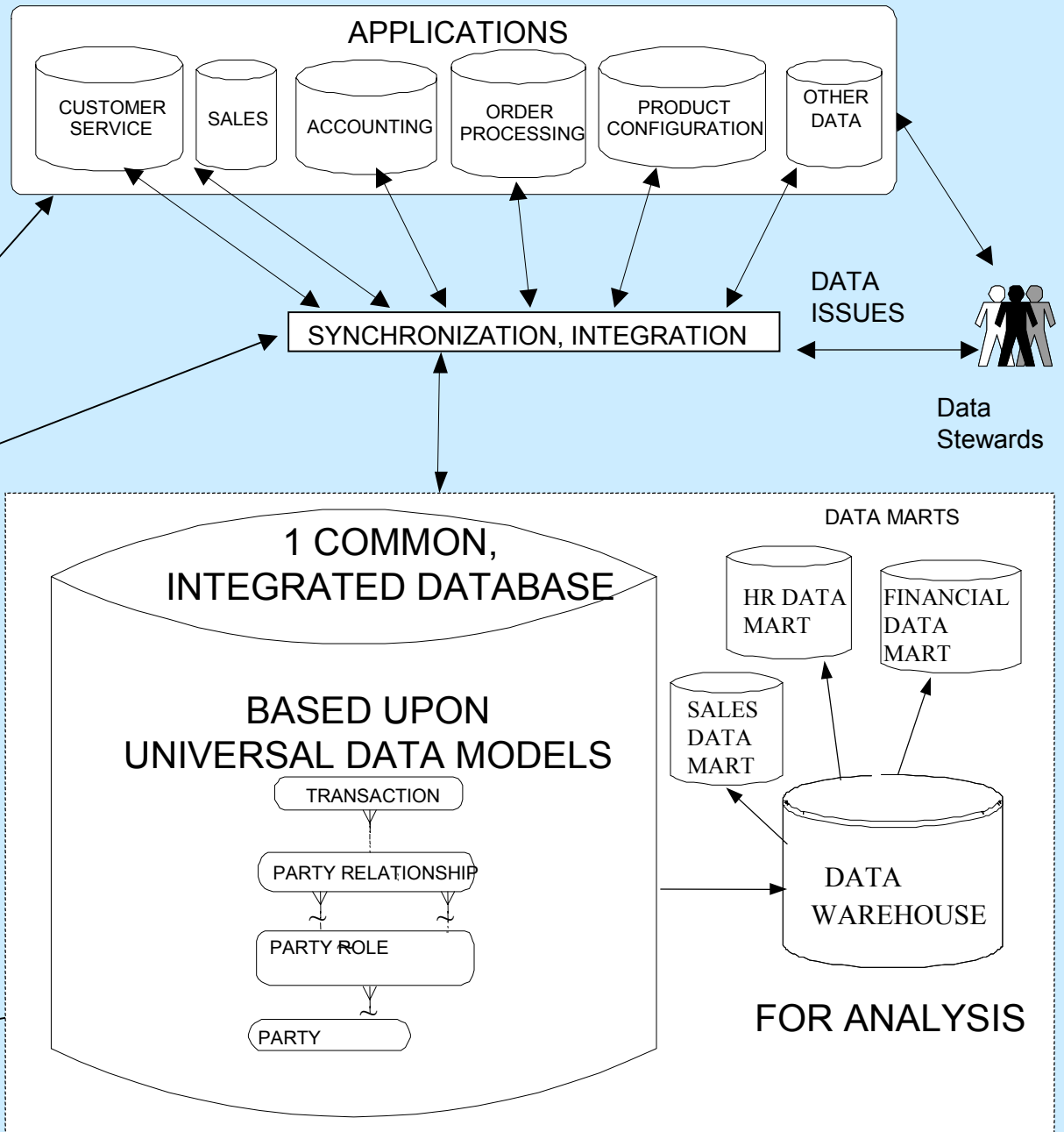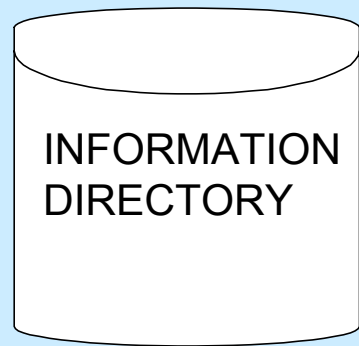
Common National Data Model

- Data model for common understanding.
- How can agencies share if their data is so different?
- Sharing of people and organization profiles
- Key entities
  - PARTY, PARTY ROLE, PARTY RELATIONSHIP, EVENT

Possible Common National Data Model

PARTY ROLE

PERSON ROLE

- WATCH LIST SUSPECT
- CRIMINAL FELON
- ORGANIZATION MEMBER
- IMMIGRANT

ORGANIZATION ROLE

- TERRORIST ORGANIZATION
- NATION
- GOVT AGENCY
- COMMERCIAL ENTERPRISE
  - AIRLINES
  - CARGO

PARTY RELATIONSHIP

- TERRORIST AFFILIATION
- GOVERNMENT AGENCY WATCH LIST SUSPECT
- NATIONAL AFFILIATION
- ORGANIZATION MEMBERSHIP

in
to
in
from

for
acting as

of in   the context for
within the context of

PARTY
PARTY ID
- PERSON
- ORGANIZATION

ROLE TYPE
in
in   of
in   for
for

EVENT ROLE

involving

EVENT
- COMMUNICATION EVENT
- TRANSACTION EVENT

Universal Data Models Applied for Commercial Enterprises

Data Architecture used at Financial Services Organization

APPLICATIONS
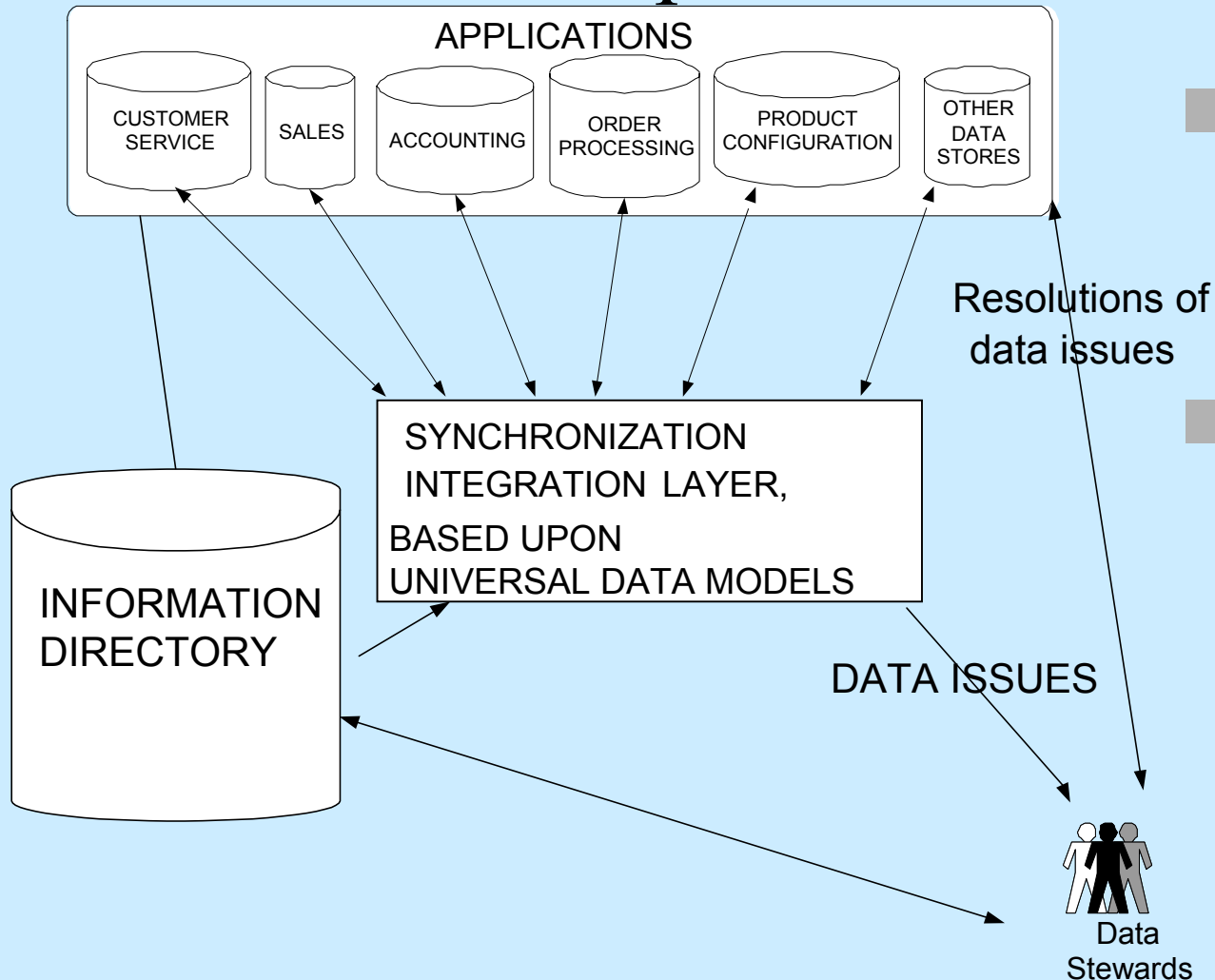
CUSTOMER SERVICE · SALES · ACCOUNTING · ORDER PROCESSING · PRODUCT CONFIGURATION · OTHER DATA

SYNCHRONIZATION, INTEGRATION

DATA ISSUES

Data Stewards

INFORMATION DIRECTORY

1 COMMON, INTEGRATED DATABASE

BASED UPON UNIVERSAL DATA MODELS

TRANSACTION

PARTY RELATIONSHIP

PARTY ROLE

PARTY

DATA MARTS

HR DATA MART · FINANCIAL DATA MART · SALES DATA MART

DATA WAREHOUSE

FOR ANALYSIS

WEB INTRANET

Manufacturing enterprise
Used Virtual Enterprise Data Architecture

- Synchronized customer and product info
- Universal method for passing info

Questions????

- Universal Data Models
  - **www.universaldatamodels.com**
  - **info@univdata.com**
- Books **www.wiley.com/compbooks** or **silverston.wiley.com**
  - The Data Model Resource Book Revised Edition **Volume 1**:A Library of Universal Data Models For **All Enterprises**, Wiley, 2001
  - The Data Model Resource Book Revised Edition **Volume 2**:A Library of Universal Data Models For **Industry Types**, Wiley, 2001
  - Electronic products for generic models and for each industry
- 2002 DM Review article series on Universal Data Models
- Microsoft SQL Server Enterprise Edition now includes universal models - **msdn.microsoft.com/library/psdk/sql/samp_schema_9mlv.htm**
- Seminars - public course "Universal Data Models"
- Software- Universal Data Models repositories for Erwin
- Consulting- 10 day jump-starts – an enterprise data model in 10 days