Data Warehouse Overview
(Financial Analysis)

May 02, 2002
Agenda

- Data Warehouse Review
- Rensselaer DW Overview
- Intro. to Financial Analysis
- Homework!
Data Warehouse Review

A data warehouse is a subject-oriented, integrated, time-varying, non-volatile collection of data in support of the management's decision-making process."

--- Bill Inmon
Data Warehouse Review

- General Characteristics
  - Subject Oriented
  - Integrated
  - Time Varying
  - Consistent
  - Non-volatile (usually)
  - Used in management decision making process
Data Warehouse Review

- Key Concepts
  - Data Warehouse vs. Data Mart
    - Data Mart – Single subject area
    - Data Warehouse – Integrated Data Marts
  - Star Schema
    - Dimensions
      - Hierarchies
      - Descriptive Attributes
    - Fact Tables
  - Metadata
Definitions – cont.

- **Star Schema**
  Common method of organizing and relating dimensions and facts to support end user reporting and analytical needs.

- **Dimension**
  Table of related attributes typically organized in a hierarchy used to describe business facts.

- **Fact Table**
  Table of common data elements used to measure a business. Typically numeric values.

- **Metadata**
  Repository of business information describing the data elements, business rules, processes and sources systems of the warehouse.
Data Warehouse/Data Mart

Rensselaer Data Warehouse

Operating Ledger Financial Transactions

Operating Ledger Monthly Snapshot

Data Mart

General Ledger Monthly Snapshot

General Ledger Financial Transactions (Future)

Rensselaer Data Warehouse Metadata

Brio
End User Query and Reporting, Dashboards
Star Schema

Fiscal Period Dim
- Fiscal Period Key
- Fiscal Year
- Fiscal Year Desc.

Organization Dim
- Organization Key
- Chart Code
- Chart Desc
- Portfolio Code
- Portfolio Desc.

Operating Monthly Snapshot
- Fiscal Period Key
- Organization Key
- Fund Key
- Budget Amt
- Expenditure Amt
- Commitment Amt

Fund Dim
- Fund Key
- Chart Code
- Chart Desc
- Fund Group_1
- Fund Code
- Fund Code Desc.
# Star Schema – Reporting

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<tr>
<td><strong>Portfolio Desc</strong></td>
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<td>Finance</td>
</tr>
<tr>
<td>Administration</td>
</tr>
<tr>
<td>School of Science</td>
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<tr>
<td>Student Life</td>
</tr>
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<td><strong>Fund Group Desc</strong></td>
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<tr>
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Rensselaer DW Overview

Source Data
- Banner Finance
- Banner Grants

Potential External Data Sources
- Budgeting Data
- Alumni

Informatica - ETL Process
- Gather data from operational sources
- Data cleansing and integration
- Populate and Q/A Data Warehouse

Oracle Database
- Operating Ledger Transactions
- Operating Ledger Monthly Snapshot
- General Ledger Monthly Snapshot

Metadata

Brio - End User Reporting and Analysis
Rensselaer DW Overview

- Three fiscal years (FY2000 – 2002)
  - Operating Ledger transaction detail
  - Operating Ledger monthly snapshots
  - General Ledger monthly snapshots
- Refreshed daily
- Troy and Hartford information
- Key Data Hierarchies
  - Organization (current & month end)
  - Fund, Program, Account (current & FY end)
- ITD summaries for Research Grants
Intro. to Financial Data Marts

☐ Operating Ledger Financial Transactions
☐ Operating Ledger Monthly Snapshot
☐ General Ledger Monthly Snapshot
Operating Ledger Financial Budget Transactions

Rensselaer Data Warehouse Project
Finance Budget Transaction Facts

- Transaction Date Dim (View)
- Activity Date Dim (View)
- Program Dim
- Activity Dim
- Transaction Type Dim
- Financial Transaction Dim
- Grant Dim
- Audit Dim
- Organization Dim
- Organization History Dim
- Home Organization Dim (View)
- Fund Dim
- Account Dim

Drawn: Each Operating Ledger Budget Transaction for the lowest level FOAPAL
Operating Ledger Financial Commitment Transactions

Rensselaer Data Warehouse Project
Finance Encumbrance Transaction Facts

Transaction Date Dim (View)  Activity Date Dim (View)

Organization Dim
Organization History Dim
Home Organization Dim (View)
Fund Dim
Account Dim

Program Dim
Activity Dim
Transaction Type Dim
Financial Transaction Dim
Grant Dim
Audit Dim

Grain: Each Operating Ledger Encumbrance Transaction for the lowest level POAPAL
Operating Ledger Financial Actual Transactions

Rensselaer Data Warehouse Project
Finance Actual Transaction Facts

- Transaction Date Dim (View)
- Activity Date Dim (View)
- Organization Dim
- Organization History Dim
- Home Organization Dim (View)
- Fund Dim
- Account Dim
- Audit Dim
- Program Dim
- Activity Dim
- Transaction Type Dim
- Financial Transaction Dim
- Grant Dim

Finance Actual Transaction Facts
Grain: Each Operating Ledger Actual Transaction for the lowest level FOAPAL
General Ledger Monthly Snapshot

Rensselaer Data Warehouse Project
General Ledger Monthly Balances

Fiscal Period Dimension

- GL Fund Dimension (View)

- General Ledger Monthly Balance Snapshot

  - Account Dimension

  - Financial Statement Category Dim (Future)

  - Audit Dim
References-  http://www.rpi.edu/datawarehouse/

Rensselaer Data Warehouse Project

Welcome

The fundamental goal of the Rensselaer Data Warehouse Project is to integrate administrative data into a consistent information resource that supports planning, forecasting, and decision-making processes at Rensselaer.

To achieve this goal, the Data Warehouse Group within the Information and Computer Services (ICS) department is serving as the project implementation team, working with implementation groups that are composed of members of the Rensselaer community.

project framework

The project's framework involves a requirements-driven approach to building the Rensselaer data warehouse. Oracle Corp. is contracted with Information and Computer Services (ICS) to conduct an in-depth business/department analysis.

During the analysis, 30 interviews occurred with individuals representing a wide variety of positions across Rensselaer, as well as a series of initial focus groups.

The fundamental goal of this effort was to identify data warehouse requirements, facilitate the prioritization of warehouse development, and determine success criteria for the Rensselaer Data Warehouse Project, thus ensuring that we are properly focused on the requirements and making up any gaps in investments.

Revised to ensure fitness for requirements analysis purposes.
Wrap-up

☐ Questions

☐ Homework
  - Please review data models
  - Provide feedback on table and column descriptions.