Microsoft

INDIANA UNIVERSITY
Enterprise Business Intelligence

Implementing a Distributed Enterprise Architecture to Deliver BI

Presented by Indiana University

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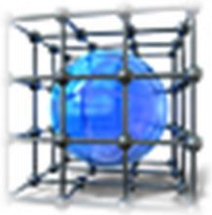
Today's Agenda



New Report Types for Schools, Departments, Divisions.

Providing Developers Enhanced Tools

Improve Data Stewardship

Improve Metadata

Data Quality, Usability, and Support

Distributed Architecture: Enterprise/Self-Service Reports

Oracle data sources

SharePoint/CBI Reports Portal

SQL DB / SSAS

Existing Reports Environment

Demo: CBI Reports Portal, BI Centers, and SSAS DB's

Replace Existing Environment

- Improve Decision Making
  - Improving upon data modeling process
    - Source of truth, why do all the same reports give different values?!?
  - Turn data into information
    - Improved capabilities for data represented as KPI's and visual metrics.
- Enhance Reports Environment Capabilities
  - Implement new reporting tools.
  - Provide the ability to merge data in reports.
  - Modernize
- Improve Data Stewardship and Metadata
  - Implement university approval workflow.
  - Require metadata for each report type to be published.

Data Quality, Usability, and Support

- Source of Truth
  - Which report can we trust as source?
- Usability
  - Provide clientless installation and make tools easily accessible.
  - Provide single place to develop reports through lifecycle.
- Enterprise Support
  - One set of SharePoint sites that the support group can access.
    - Limited site access makes it difficult to support reports from an enterprise approach.
    - Ad-hoc (Excel with Pivot or Power View) reports are more easily supported in a decentralized site hierarchy.

Distributed Architecture

- Enterprise Reports
  - SQL Reporting Services SharePoint Integrated
  - PerformancePoint Services
- Ad-Hoc Reports
  - Excel Services
  - PowerPivot for SharePoint Services
  - Power View Services
- Department, School, Division Reports
  - Uses Any of the Above Services

Distributed Architecture

- Created an Agile Enterprise Offering
  - Approach Provides Centralized Services Using an Agile Approach to Provide, Reports Tools Using SQL Reporting Services, PerformancePoint Services, and Other Services.
  - Organizations Have The Ability To Create Database Objects in SSAS, Add Their Data Sources, and Build Reports Which Include Enterprise Data Warehouse and Non-Enterprise Data.

IU Infrastructure

Architectural Components

CBI Portal
Reports delivery, publishing, data stewardship, and reports metadata.

SharePoint
Provides "BI Centers" to developers to create reports and stores all Microsoft BI reports.

SQL SSAS
Multidimensional data from Oracle and to merge data from schools, departments, and divisions.

Oracle Warehouse
Contains all enterprise data from transactional systems.

The architectural components consist of four major services that combined services to provide a single consumer reports portal.

- Key services include Oracle where all University data reside, SSAS which surfaces the data to the tools, SharePoint which provides the BI reports platform, and the CBI portal where users consume reports, developers publish reports, data managers approve reports security and metadata.

Consolidated Business Intelligence

The Consolidated Business Intelligence (CBI) is a custom reports portal which provides us a way to centralize “all” reports for the enterprise and for “all” the university schools, departments, and divisions from the organization.

Enterprise Reports
Reports are vetted by data experts, all metadata required is collected, and data sources are modeled appropriately.

Most data originates from Oracle using SQL SSAS.

All data sources are form the enterprise warehouse

Personal Reports
Reports can be added to the CBI from any data source.

Permits the consolidation of reports.

Data sources are not managed.

Merged Reports
Reports combine enterprise data with departmental, school, or divisional data.

Allows interim process to centralize data if appropriate.

Data sources come from combined locations.

SharePoint Services

The Indiana University SharePoint Services provides the means to the tools for reports development and repository for all Microsoft BI reports which are delivered through the CBI reporting portal.

BI Centers
Includes site for any organization participating in the Enterprise Business Intelligence services.

SharePoint centralized sites provide BI services provisioning for and support model for help desk.

Sites access is highly controlled by central BI services using AD security provisioning and data approval process's. Site instances consist of a sandbox, development, and test instance.

Reports Security
Published reports security is managed by Active Directory security group memberships.

CBI syncs SharePoint security to data stewardship approval.

The CBI provides the data security workflow approval process.

Report Libraries
Each SharePoint library is for specific content type.

A method which permits enhanced support (i.e. by content type and creation method).

Libraries have been created to help organize reports types.

Analysis Services

The Indiana University SQL Analysis Services Multidimensional and Tabular environment consists of a number of organizational and enterprise instances that deliver data from Oracle to the Microsoft BI tools.

Enterprise Instances
Includes the university shared cubes that have been highly vetted by data experts and oversight committees.

These cubes contain data specific to application systems areas of interest.

All dimensional data delivered as cubes from shared dimensions originating in Oracle.

Tabular
Provide flexible process to create data source.

Permits the use of Power View.

Great for quickly modeling data, high risk for quality of data in our environment. Still investigating…

Organization Instances
Reports combine enterprise data with departmental, school, or divisional data.

Allows process to merge data into combined report using multiple data sources.

Data sources come from combined locations.

Oracle Data Warehouse Services

The Indiana University Enterprise Oracle Warehouse contains data from all enterprise transactional systems. From within Oracle, 200+ shared dimensions have been created which are used by developers to further leverage the ability to use vetted sets of data for SQL SSAS.

Oracle Views
The Enterprise BI permits the ability to connect directly to an Oracle view using shared data sources.

These cubes contain data specific to application systems areas of interest.

Similar to SQL Joins, Views are a representation of a SQL statement stored in memory.

Tables
Direct Connections to Tables.

Allows access to flat data.

Practical for specific business use with little need for a formatted report delivery.

Oracle Dimensions
Reports combine enterprise data with departmental, school, or divisional data.

Allows interim process to centralize data if appropriate.

The Oracle shared dimensions includes measures, etc.

Demo Time!

CBI Portal

SharePoint BI Centers in SharePoint

SQL SSAS DB Structure

The rest is not for the light-headed

Resources

Business Intelligence @ IU

- https://bi.iu.edu

IU SharePoint Users' Group

- https://iuspug.iu.edu

Future Presentations

- Adoption
- Security

real impact…