Data Visualization and Business Insights
Using SAS Visual Analytics

University of Connecticut

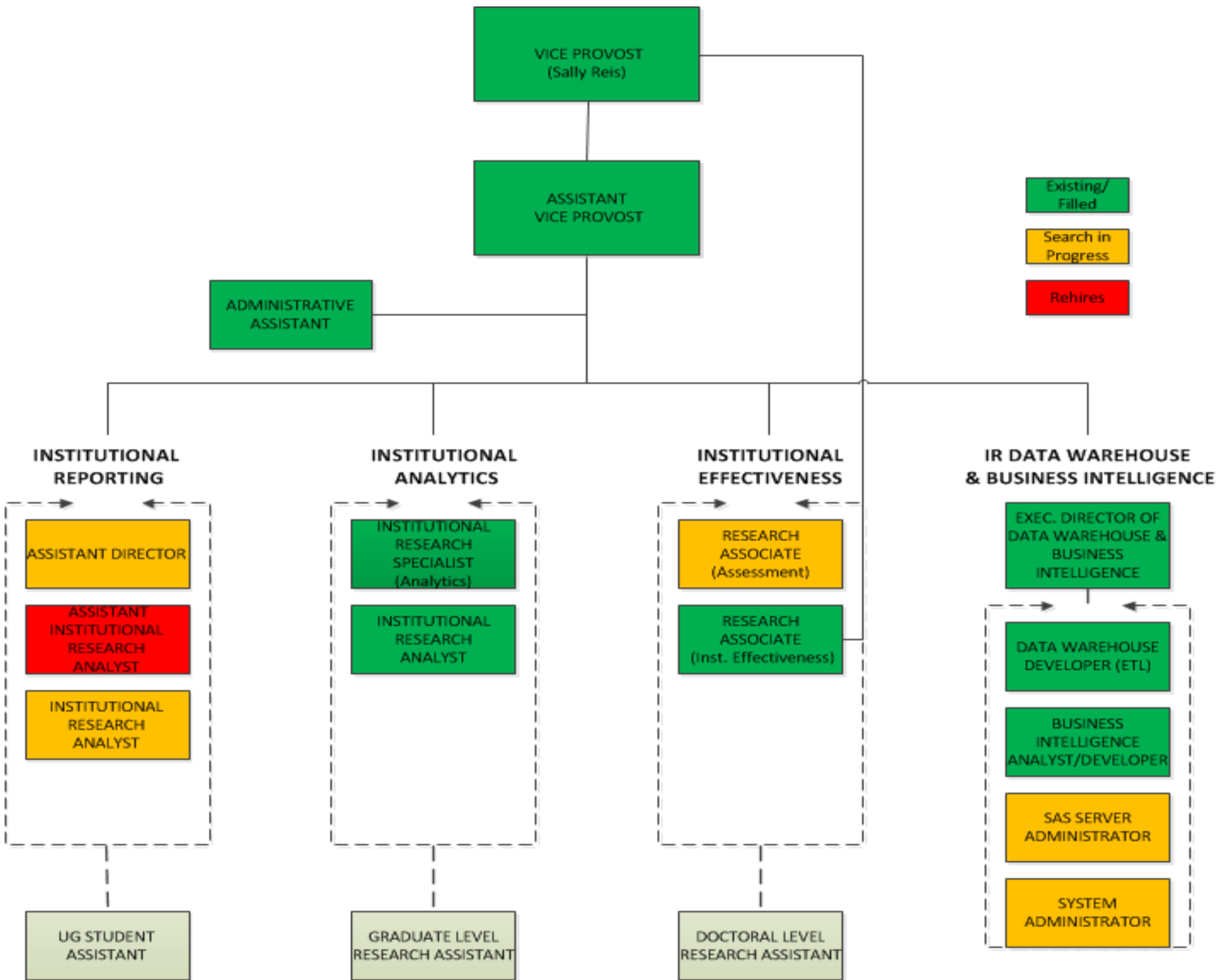**Dan Sokol**
Thulasi Kumar
1/13/2015

UCONN
HUSKIES

New Mission

- The primary mission of the Office of Institutional Research and Effectiveness (OIRE) is to proactively support the UConn's goal of becoming a top flagship university by providing timely official data and analysis for planning, institutional effectiveness and decision making.

- The emphasis of OIRE is to provide strategic analytical support in shaping the long term institutional policies and programs geared towards resource allocation, new program development, student success, competitive positioning and institutional effectiveness.

- In addition, OIRE serves as the central repository of official data for state, federal, and other external agencies for reporting purposes.

Organizational Chart

VICE PROVOST (Sally Reis)

ASSISTANT VICE PROVOST

ADMINISTRATIVE ASSISTANT

Legend:
- Existing/Filled (green)
- Search in Progress (yellow)
- Rehires (red)

INSTITUTIONAL REPORTING
- ASSISTANT DIRECTOR
- ASSISTANT INSTITUTIONAL RESEARCH ANALYST
- INSTITUTIONAL RESEARCH ANALYST
- UG STUDENT ASSISTANT

INSTITUTIONAL ANALYTICS
- INSTITUTIONAL RESEARCH SPECIALIST (Analytics)
- INSTITUTIONAL RESEARCH ANALYST
- GRADUATE LEVEL RESEARCH ASSISTANT

INSTITUTIONAL EFFECTIVENESS
- RESEARCH ASSOCIATE (Assessment)
- RESEARCH ASSOCIATE (Inst. Effectiveness)
- DOCTORAL LEVEL RESEARCH ASSISTANT

IR DATA WAREHOUSE & BUSINESS INTELLIGENCE
- EXEC. DIRECTOR OF DATA WAREHOUSE & BUSINESS INTELLIGENCE
- DATA WAREHOUSE DEVELOPER (ETL)
- BUSINESS INTELLIGENCE ANALYST/DEVELOPER
- SAS SERVER ADMINISTRATOR
- SYSTEM ADMINISTRATOR

Institutional Analytics and Effectiveness Strategic Priorities

- OIRE Data Warehouse

- Advanced Analytics (Predictive and Segmentation)

- Student Evaluation of Teaching

- Faculty Activity and Productivity
  - Digital Measures (HuskyDM)
  - Academic Analytics

- Resource Allocation, Competitive Positioning and New Program Development in strategic areas

Data Visualization: Who Needs It and Why

- It's not about
  - The data OR
  - Routine reports
- It's about identifying, helping frame, and satisfying information needs
- Understanding what information is needed, why it is needed, and what will be done with it
- Procuring relevant and timely data
- Analyzing data quickly and appropriately
- Packaging information effectively
- Guiding its uses

University Data Warehouse

- A large store of data accumulated from a wide range of sources within a enterprise and used to guide management decisions (Google).

- Snapshots of de-normalized data extracted from transaction systems for developing actionable information

- Typically University DW contains 10 years worth of snapshots from various business transactions (about financial, students, staff, faculty and infrastructure)
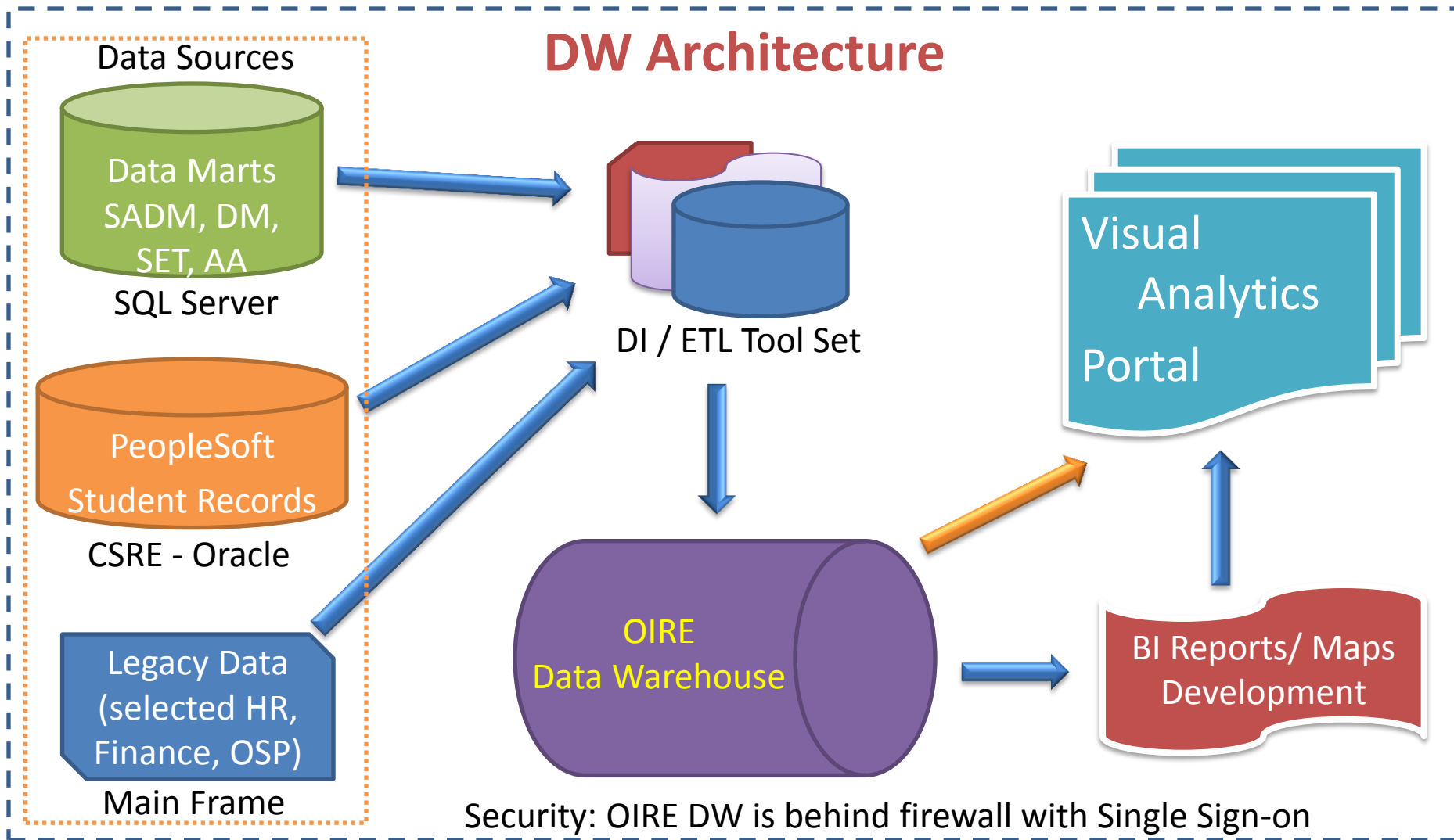
Higher Ed Business Intelligence

- Self-service, dynamic and accurate information
- Availability of trend data
  - Not easy to find without Data Warehouse (DW)
  - Available from multiple sources, time consuming
- Easy access to information
  - Do administrators/business users have ease of access?
  - Do the end users have appropriate security?
- Flexibility of information output
  - Pre-built reports, limited customization
  - Limited graphical displays

Data Visualization and Analytics

- Determine future events easily and quickly

- Turn Data into true business insight

- Provides a self-service, easy-to-use portals to get information to decision makers
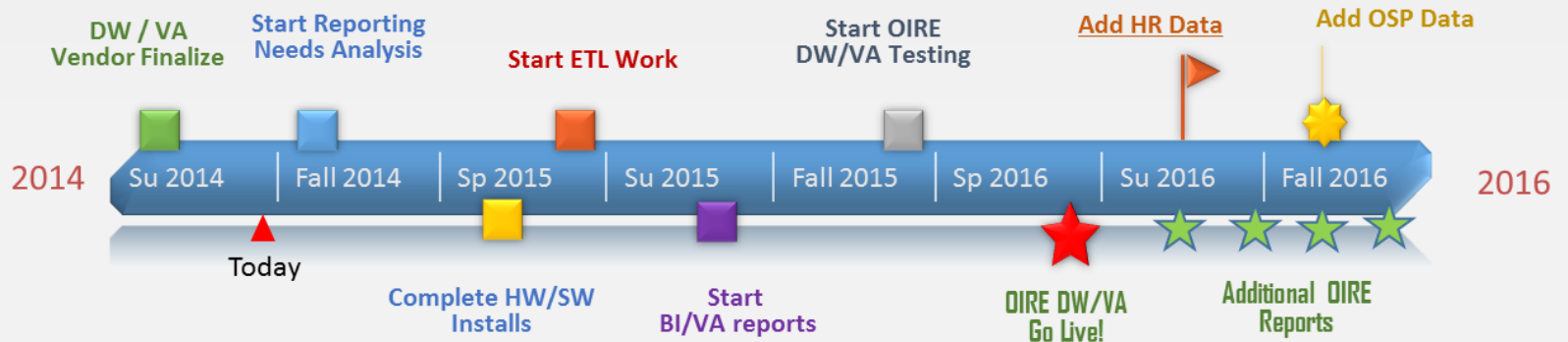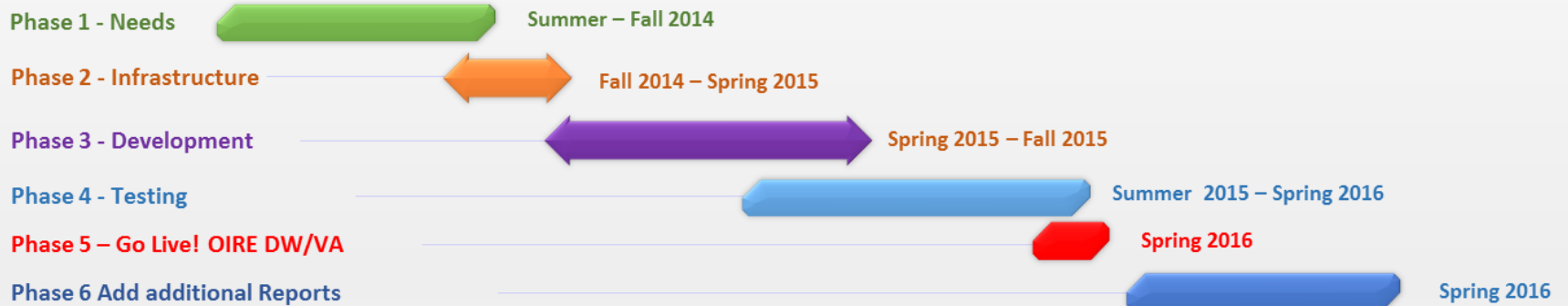
Data Warehouse and Visual Analytics Architecture

DW Architecture

Data Sources

Data Marts
SADM, DM,
SET, AA

SQL Server

PeopleSoft
Student Records

CSRE - Oracle

Legacy Data
(selected HR,
Finance, OSP)

Main Frame

DI / ETL Tool Set

OIRE
Data Warehouse

Visual
Analytics
Portal

BI Reports/ Maps
Development

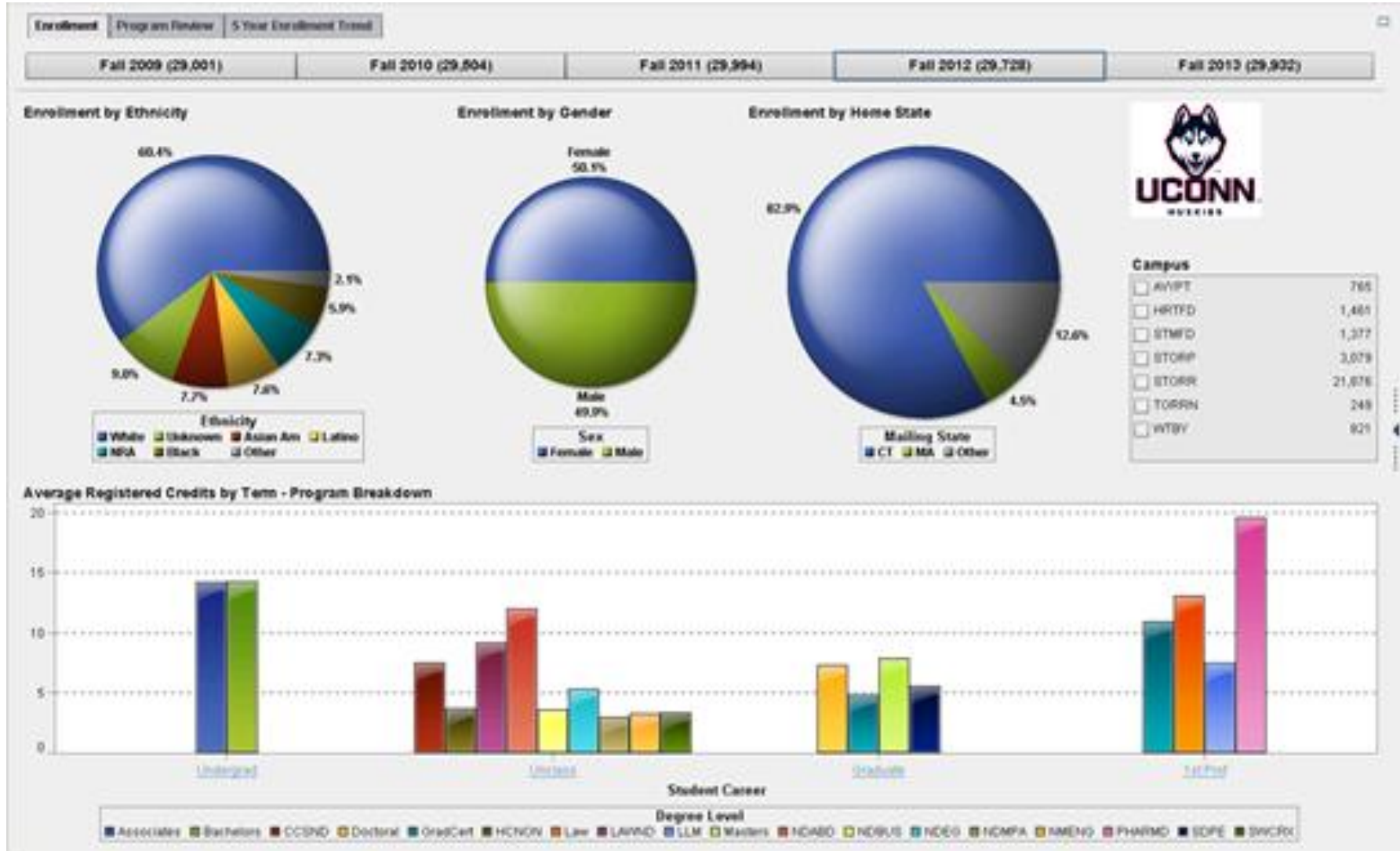Security: OIRE DW is behind firewall with Single Sign-on

WHY SAS?

- Stable Company
- Data Agnostic
- Strong Data Quality Capabilities
- Predictive analytics beyond reporting
- Software created organically, not acquired
- Affordable (Education pricing)
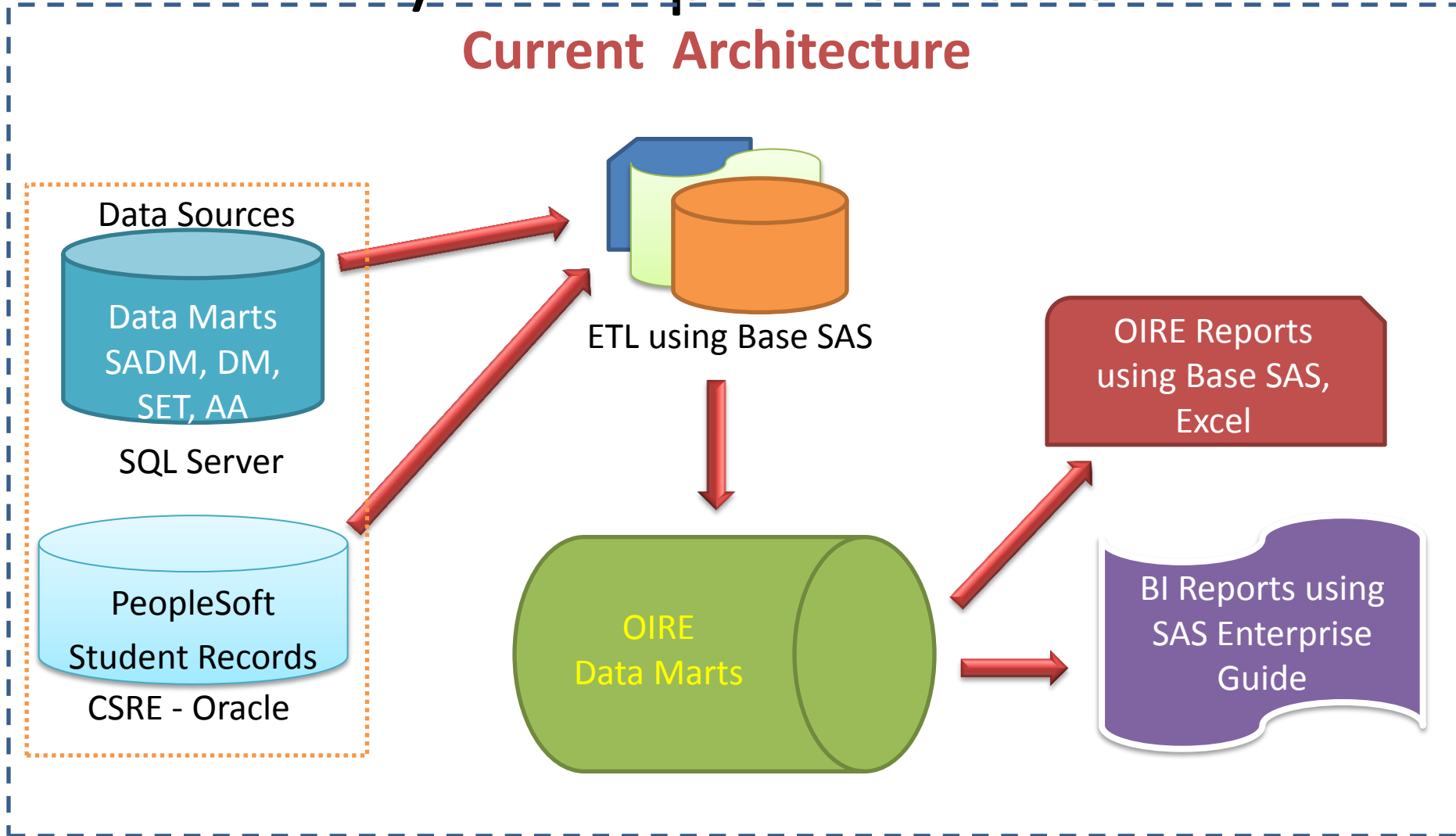- Scalable Solution
- Relationships

§sas

THE POWER TO KNOW

OIRE DW/VA Timeline

SAS Visual Analytics Demo

Slide courtesy: SAS®

DW/VA Implementation

Current Architecture

Data Sources

Data Marts
SADM, DM,
SET, AA

SQL Server

PeopleSoft

Student Records

CSRE - Oracle

ETL using Base SAS

OIRE
Data Marts

OIRE Reports
using Base SAS,
Excel

BI Reports using
SAS Enterprise
Guide

DW/VA Implementation
Jan 2015

Data Sources

Data Marts
SADM, DM,
SET, AA
SQL Server

PeopleSoft
Student Records
CSRE - Oracle

Legacy Data
(selected HR,
Finance, OSP)
Main Frame

SAS DMS / ETL Studio

OIRE
Data Warehouse

Visual
Analytics
Portal

BI Reports / Stored
Processes using SAS
EG

Security: OIRE DW is behind firewall with Single Sign-on
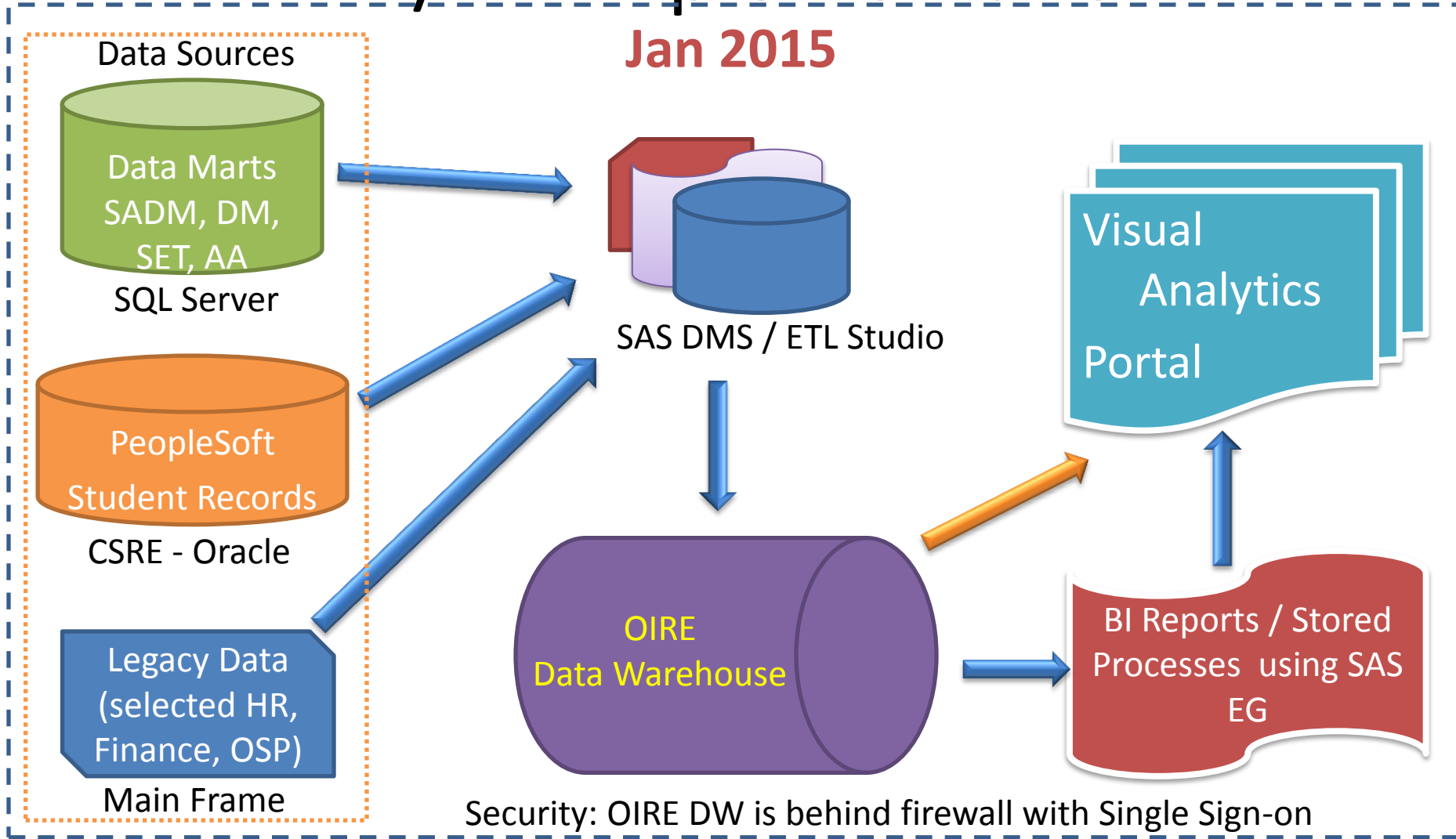
Key to Success

- Sustained Executive Sponsorship
- Developing clear vision of outcome
- Validation of Academic Plan Metrics
- Commitments from functional users and UITS
- Feedback loops and implementation strategies
- SAS!

> The OIRE Data Warehouse and the Visual Analytics reports will be official the source of Student Data at UCONN!!!

Questions?

Presentation can be downloaded from:

http://www.oire.uconn.edu/presentations/neair_oire.pptx