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System Integration Strategies
Coordinating Data between Different Systems

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Scott Campbell, University of Chicago

Tuesday, March 27 1:00 -2:00 p.m.
Session ID 7233

Session Rules of Etiquette

- Please silence your electronic devices.
- Please complete the session evaluation using the AACRAO mobile app or the paper form in your registration packet, drop boxes are available throughout the convention center.
- If you must leave the session early, please do so as discreetly as possible
- Please avoid side conversation during the session

Thank you for your cooperation!



Introduction

- Our panel discussion will touch upon different system integration strategies and best governance practices.
- Topics will include how to set definitions, preferred technologies, security, etc.
- The session will cover interface strategies between internal university systems as well interfaces to vendors.



Learning Outcomes of this session

- Learn about different integration strategies
- Hear about different models for governance of institutional data
- Build proactive methods to distribute otherwise protected data to a wide variety of external receivers
- Expanded process and technological knowledge of university-wide systems

About the University of Chicago

- Private Research I founded in 1890 by John Rockefeller
- **Academic Structure**
  - Undergraduate College
  - 5 Graduate Divisions and Institutes
  - 7 Professional Schools (Business, Law, Medicine, Public Policy, Divinity, Social Services, and Professional Education)
- **Academic Programs**
  - 55 Bachelors, 30 Masters, 65 Doctoral
- **Students**
  - 6,301 Undergraduates
  - 9,384 Graduate and Professional

About Penn State University

Public Land Grant and Research University founded in 1855

Undergraduate, Graduate, Two Law Schools and College of Medicine

12 Colleges at the University Park campus and 4 Commonwealth Campus colleges

Over 160 majors

24 Campuses with approximately 97,500 students



System Integration Strategies
Coordinating Data between Different Systems

Penn State has/will be integrating three different systems:

1. Student	Oracle's Campus Solutions
2. Human Resources	Workday
3. Finance	SAP

People, Process, Technology

Data Governance

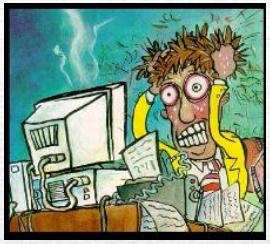
Data Infrastructure

Training and data tools

The Challenge with Institutional Data

- Aging legacy systems
- Silos
- Organic growth data systems
- Changing expectations
- Legacy skills
- Closed platforms
- Complexity
- Legacy thinking

Where we are and where we want to be



TODAY:

- Multiple data sources (UBO, iTwo, PSQuery, LP Interface files, Institutional Research Repository) → none ideal for analysis
- Data not reliable (e.g., findings don't match across data sources)
- Extremely inefficient and error-prone process where individual analysts download, transform, link, and manipulate data on local servers
- Inability to efficiently and reliably join data across systems (student, HR, finance)

Where we are and where we want to be

FUTURE:

- Historic data is transformed and captured for longitudinal institutional analysis
- Current and future operational data undergoes a systematic, automated ETL process
- Data from multiple systems is stored in a single, secure, central repository where it can be efficiently queried by analysts using robust BI and statistical software tools
- Clear and reasonable guidelines for access, including record-level access, established



Taskforce timeline

- July – Taskforce's mission and scope; Data Summit planning; Analytics and BI strategy discussion
- August –Analytics and BI strategy discussion; finalize Data Summit agenda and participants
- September – Update on current BI projects; finalize Analytics and BI strategy draft for broad distribution
- October – Data Summit; revise Analytics and BI strategy based on Summit input
- November – First draft of Analytics and BI strategy White Paper
- December- Finalize Analytics and BI strategy White Paper for broad distribution
- January - Present White Paper to President's Council, ALC, Provost's Staff, F&B leadership (others?)
- February and beyond – Strategy Implementation



Creation of the Task Force

- Senior level people to direct and create strategy
- Research
- Some people represent more than one area (ARSSA)
- Strategy to leaver institutional data
- Standard reports, data fields, data definitions, data flow, various business needs, data government
- Data Summit



Establish "task force" to initiate Enterprise Analytics for Penn State University

- Michael Kubit - VP for Information Technology/CIO
- Lance Kennedy - Phillips – Vice Provost for Planning and Assessment
- Joe Doncsecz - Associate VP for Finance and Corporate Controller
- Mary Lou Ortiz - University Budget Officer, Director - Budget & Reporting
- Bob Kubat - Assistant VP for Undergraduate Education & University Registrar
- Don Welch - Chief Information Security Officer
- Renata Engle - Vice Provost of Online Education
- Penny Carlson - Executive Director Academic Services & Assistant Vice President
- Greg Stoner – Senior Director for Compensation & Benefits
- *Hold for Dean representative*



Strategy for Business Intelligence and Analytics

- Create a senior leadership position responsible engaging the PSU community in developing and implementing a successful analytics and BI initiative.
- Engage key stakeholders across PSU
- Develop and deploy an Analytics and Business Intelligence institutional readiness assessment
- Articulate "shared vision" for Analytics and Business Intelligence at PSU

Strategy for Business Intelligence and Analytics

- Establish a data policy recognizing data as an asset and identifying data stewards and data managers for key types of data.
- Develop a Technical Architecture for an enterprise data management infrastructure.

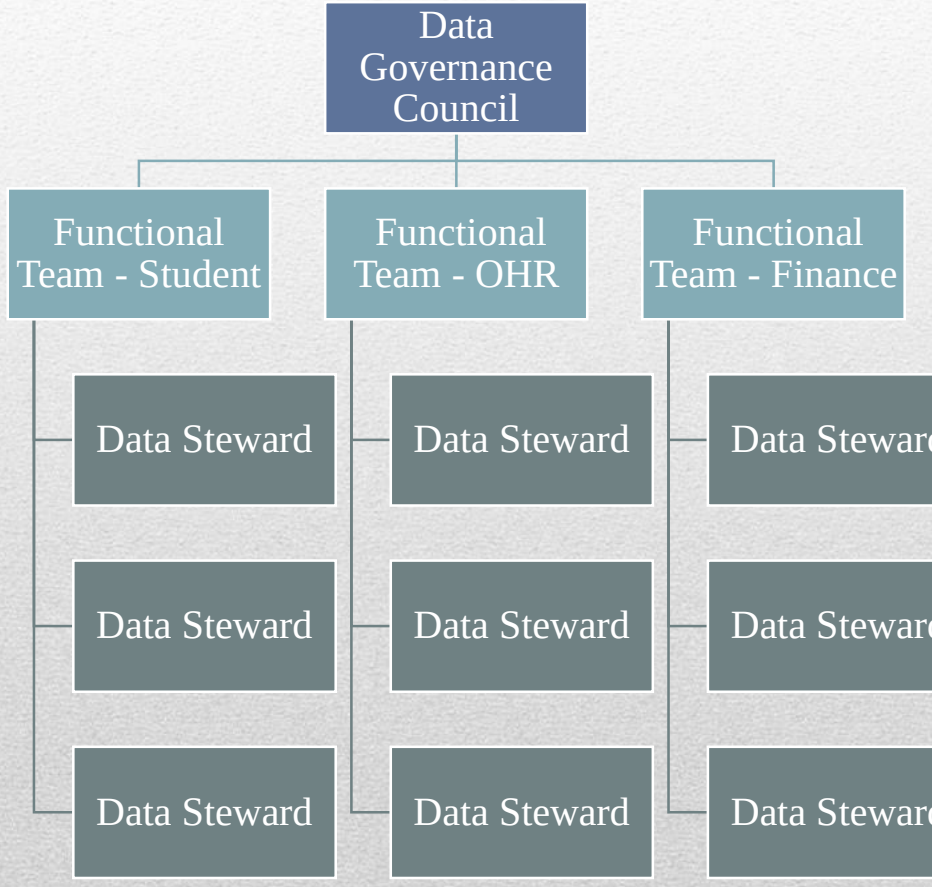
Strategy for Business Intelligence and Analytics

- Acquiring New Operational Systems
- Building Skills Across the University



Roles and Responsibilities Matrix

	Data Governance Council	Functional Data Governance Committee	Data Stewards
Standards and Policies	Define, Establish, Monitors, Audit, Verify, Develop, Revise	Cross functional implementation, coordination	Functional implementation
Data Quality	Identify, adopt enterprise-wide data quality tool, Big picture monitoring, To what extant is Data Quality improving? Where?	Prioritize Data Quality levels by table/area, Monitor Data Quality- identify areas for improvement, Monitor improvement	Review audit reports, Coordinate remediation/clean-up, initial prioritization for Data Quality
Metadata	Establish standards for metadata format- enterprise-wide	Ensure cross-functional alignment among metadata	Implement standards to ensure all meta-data are collected/accurate
Metrics	Reviewing metrics, Identify metrics for monitoring	Monitoring, Identify priority areas based on metrics	Monitoring, take action based on metrics (clean up)


Data Governance Council
Functional Team - Student
Functional Team - OHR
Functional Team - Finance
Data Steward
Data Steward
Data Steward
Data Steward
Data Steward
Data Steward
Data Steward
Data Steward
Data Steward



DATA GOVERNANCE COUNCIL (DGC)

- Controller's Office
- Council of Academic Deans
- Faculty Senate
- Graduate School
- LionPATH Executive Committee
- Office of Human Resources
- Office of the University Registrar
- Office of the Vice President for Commonwealth Campuses
- Outreach and Online Education
- SIMBA Executive Committee
- Undergraduate Education
- University Budget Office
- WorkLion Executive Committee
- The DGC may invite any individuals to serve as resource members (non-voting) for defined periods of time.



Functional Data Governance Committee

- Made up of members from various Functional Teams from across the university
- Primary roles is to oversee the management of data assets in the functional areas
- Responsible for coordinating Data Stewards, responding to inquiries about access to and use of data
- Elevating issues to the DGC
- Promoting and monitoring data quality and ensuring that standards are followed



Data Stewards

- The Data Steward's role is to be the caretaker for specific groups of data (admissions, student aid, compensation)
- They are responsible for keeping an inventory of data assets, data quality assurance and metadata management
- Maintaining the relevant data dictionaries and conferring data access
- They must have significant technical expertise in the relevant data areas



Short-term solution: Facilitate use of operational LionPATH data for BI Needs

- Continue to support iTwo development though data validation and testing
- Facilitate conversation between operational groups involved in data capture and users
- Determine how LionPATH can support both operations and supply data needed for analytics
- Identify data anomalies and data entry practices that reduce the usefulness of the data
- Provide training and documentation on LionPATH data

Mid-term solution – LionPATH focus

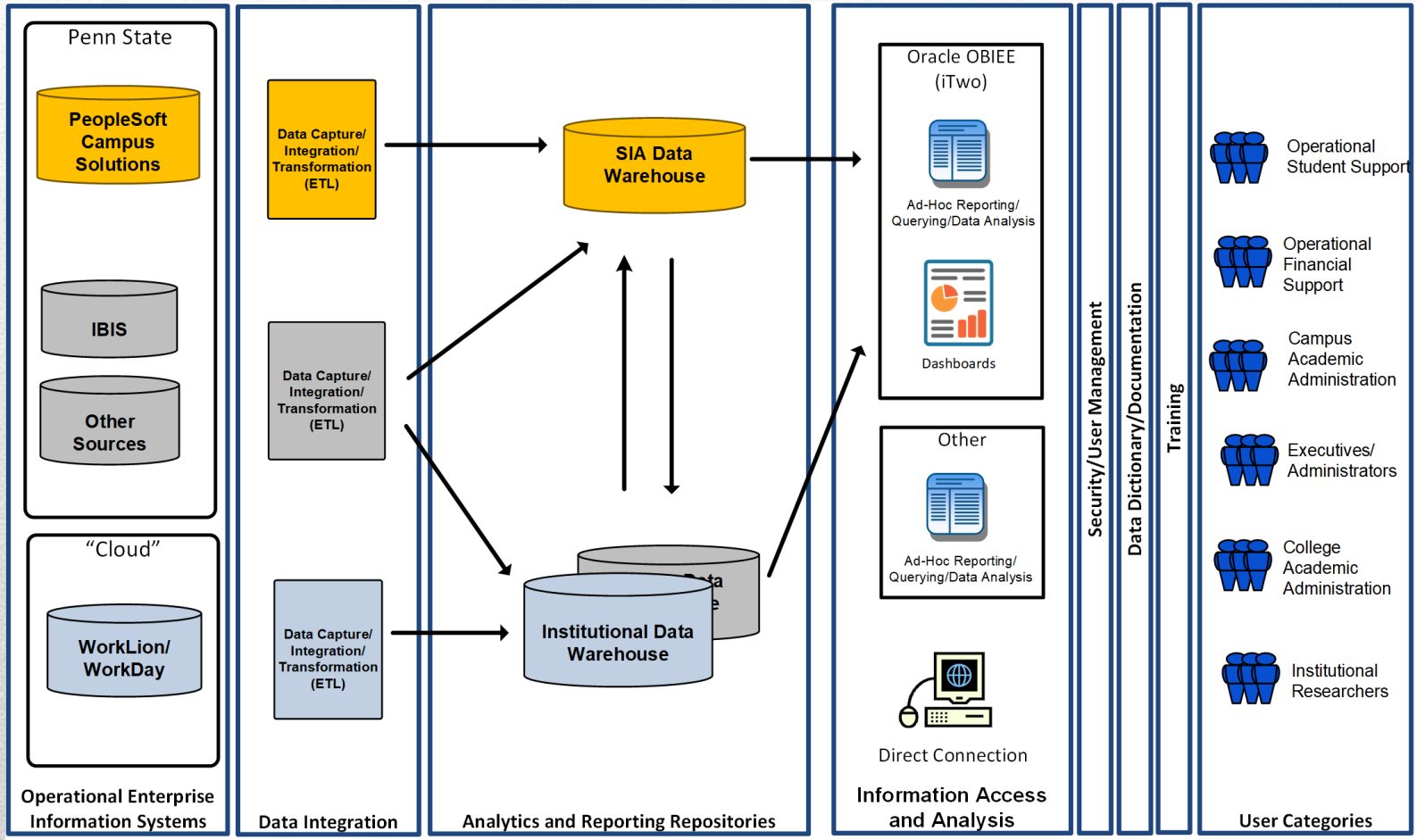
- Provide additional iTwo dashboards to address targeted business questions
- Focus on web service delivery that transfers smaller data chunks and reduces number of interfaces populating data warehouses



Long-term solution – LionPATH focus

Business Intelligence and Analytics strategy will have many faces:

- Operational needs
- Strategic needs
- Prioritize business objectives, initiatives and outcomes
- Prepare the university for the change, including a maturity assessment


Penn State
PeopleSoft Campus Solutions
IBIS
Other Sources
"Cloud"
WorkLion/ WorkDay
Operational Enterprise Information Systems
Data Capture/ Integration/ Transformation (ETL)
Data Capture/ Integration/ Transformation (ETL)
Data Capture/ Integration/ Transformation (ETL)
Data Integration
SIA Data Warehouse
Institutional Data Warehouse
Analytics and Reporting Repositories
Oracle OBIEE (iTwo)
Ad-Hoc Reporting/ Querying/Data Analysis
Dashboards
Other
Ad-Hoc Reporting/ Querying/Data Analysis
Direct Connection
Information Access and Analysis
Security/User Management
Data Dictionary/Documentation
Training
Operational Student Support
Operational Financial Support
Campus Academic Administration
Executives/ Administrators
College Academic Administration
Institutional Researchers
User Categories



Summary

Different integration strategies

Different models for governance of institutional data

Proactive methods to distribute otherwise protected data to a wide variety of external receivers

Technological knowledge of university-wide systems

Thank You!

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