RICE UNIVERSITY

Data-Informed Decision Making

Higher Education

Think back...

From your perspective, what changes in the past 10 years have impacted our data world?

Outline and Takeaways

- Who?
- What? – The Problem / Challenges
- Where? – The Data
- How? – The Approach
- Lessons Learnt

RICE UNIVERSITY

RICE UNIVERSITY

- 8,800 Students

- 2,750 Degrees Awarded

- < 9% Acceptance Rate

- 6:1 Student-to-Faculty Ratio

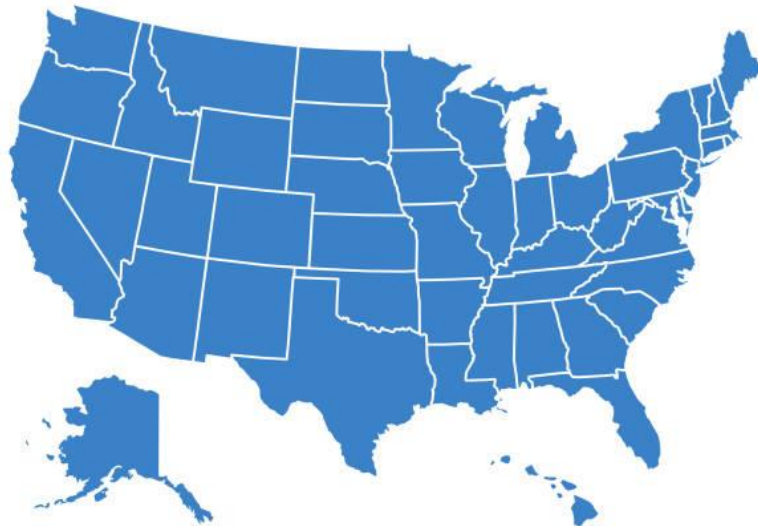- $1.03 Billion Budget

- $216M Research
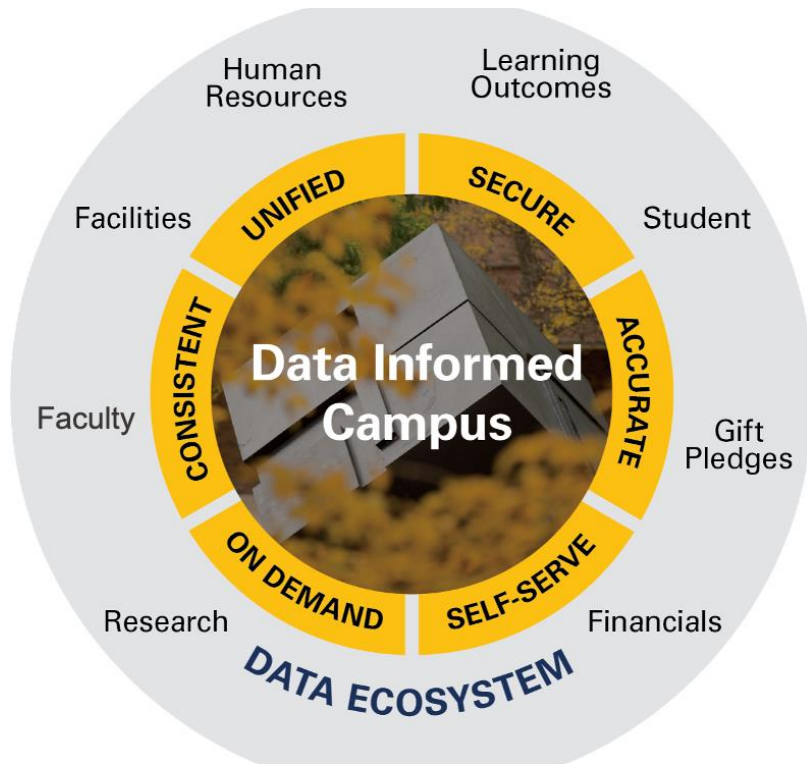
- $8 Billion Endowment

Houston, Texas, USA

Our Data Vision

Empowered community of data consumers who have on-demand, role-based access to enterprise data.

Envision a University Culture Where…

Problems

Data not transparent, needs translation

Data rich, information-poor

RICE UNIVERSITY

Reliable transaction systems; weak intelligence

Programmers required to extract information

Privacy and sensitivity of data enablement

RICE UNIVERSITY

Data exchanges with other systems

Problems - Recap

Data not transparent, needs translation	Data rich, information-starved	Reliable transaction systems; weak intelligence
Programmers required to extract information	Privacy and sensitivity of data enablement	Data exchanges with other systems

User-Centric Focus
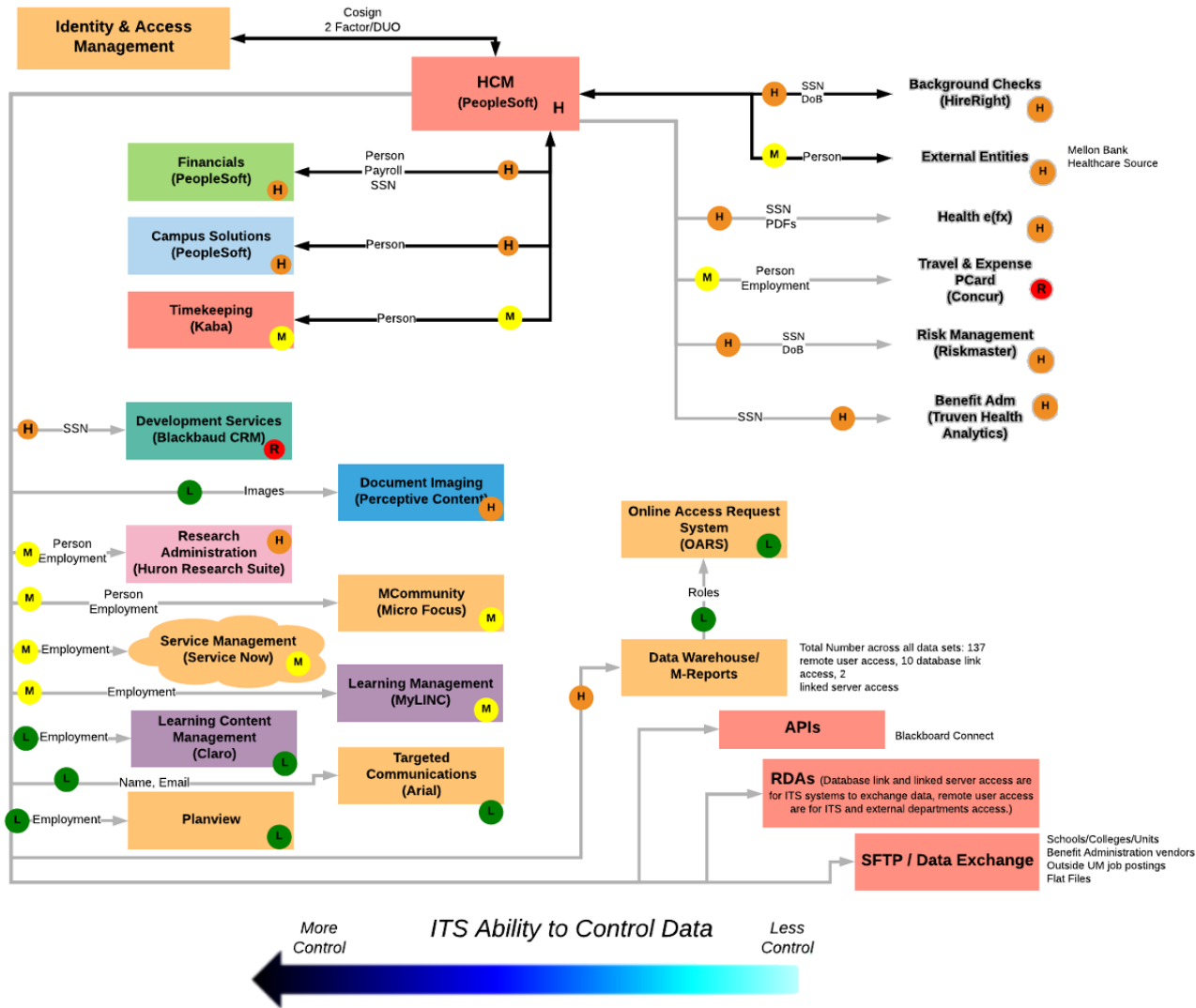
What would be helpful for *you* to answer?

"Where is our Data"

Create and disseminate knowledge:

- where our data is stored,
- how it is used,
- how it is classified, governed and secured, and
- how it can be leveraged

...in order to empower campus use of our data.

RICE UNIVERSITY

Where is our Data? Enterprise Human Capital Management

Draft for Review

Identity & Access Management — Cosign 2 Factor/DUO — **HCM (PeopleSoft)** H

- SSN DoB → **Background Checks (HireRight)** H
- Person → **External Entities** H — Mellon Bank, Healthcare Source
- SSN PDFs → **Health e(fx)** H
- Person Employment → **Travel & Expense PCard (Concur)** R
- SSN DoB → **Risk Management (Riskmaster)** H
- SSN → **Benefit Adm (Truven Health Analytics)** H

- **Financials (PeopleSoft)** H — Person Payroll SSN
- **Campus Solutions (PeopleSoft)** H — Person
- **Timekeeping (Kaba)** M — Person

- **Development Services (Blackbaud CRM)** R — SSN
- **Document Imaging (Perceptive Content)** H — Images
- **Research Administration (Huron Research Suite)** H — Person Employment
- **MCommunity (Micro Focus)** M — Person Employment
- **Service Management (Service Now)** — Employment
- **Learning Management (MyLINC)** M — Employment
- **Learning Content Management (Claro)** L — Employment
- **Targeted Communications (Arial)** L — Name, Email
- **Planview** L — Employment

Online Access Request System (OARS) L — Roles

Data Warehouse/ M-Reports — Total Number across all data sets: 137 remote user access, 10 database link access, 2 linked server access

APIs — Blackboard Connect

RDAs (Database link and linked server access are for ITS systems to exchange data, remote user access are for ITS and external departments access.)

SFTP / Data Exchange — Schools/Colleges/Units, Benefit Administration vendors, Outside UM job postings, Flat Files

ITS Ability to Control Data — More Control / Less Control

Human Capital Management by the numbers
PeopleSoft HCM. Emergency Alerts. My LINC. Kaba. Claro LCMS

My LINC: 109K learning activities
eRecruit: 313K job applications
Payroll pays over $3.6B in pay checks
Hires/Rehires: 41K
Emergency Alerts: over 100K emails sent in < 5 min
W2: 64K employees enrolled in automated W2's
19K open enrollment benefits changes

Most Sensitive Data Stored is High. SSN is stored.

Location of system users & data recipients:
Ann Arbor, Dearborn, Flint, Michigan Medicine

System Users:
- Benefits: 734
- Payroll: 1,023
- Time and Labor: 71,104
- Human Resources: 11,080
- Campus Community: 1812
- HE: 883
- Employee Self-Service: 82,477

Total # of RDAs: 194 - includes DW and HCMProd
Total # of Flat Files Exchanged:
Total # of Interfaces: 59 (A&A SFTP = 70)

LEGEND

ITS Systems
- Finance
- Human Resources & Capital Management
- Student Admin
- Research Admin
- Development
- Learning Management
- IT Management
- Document Management
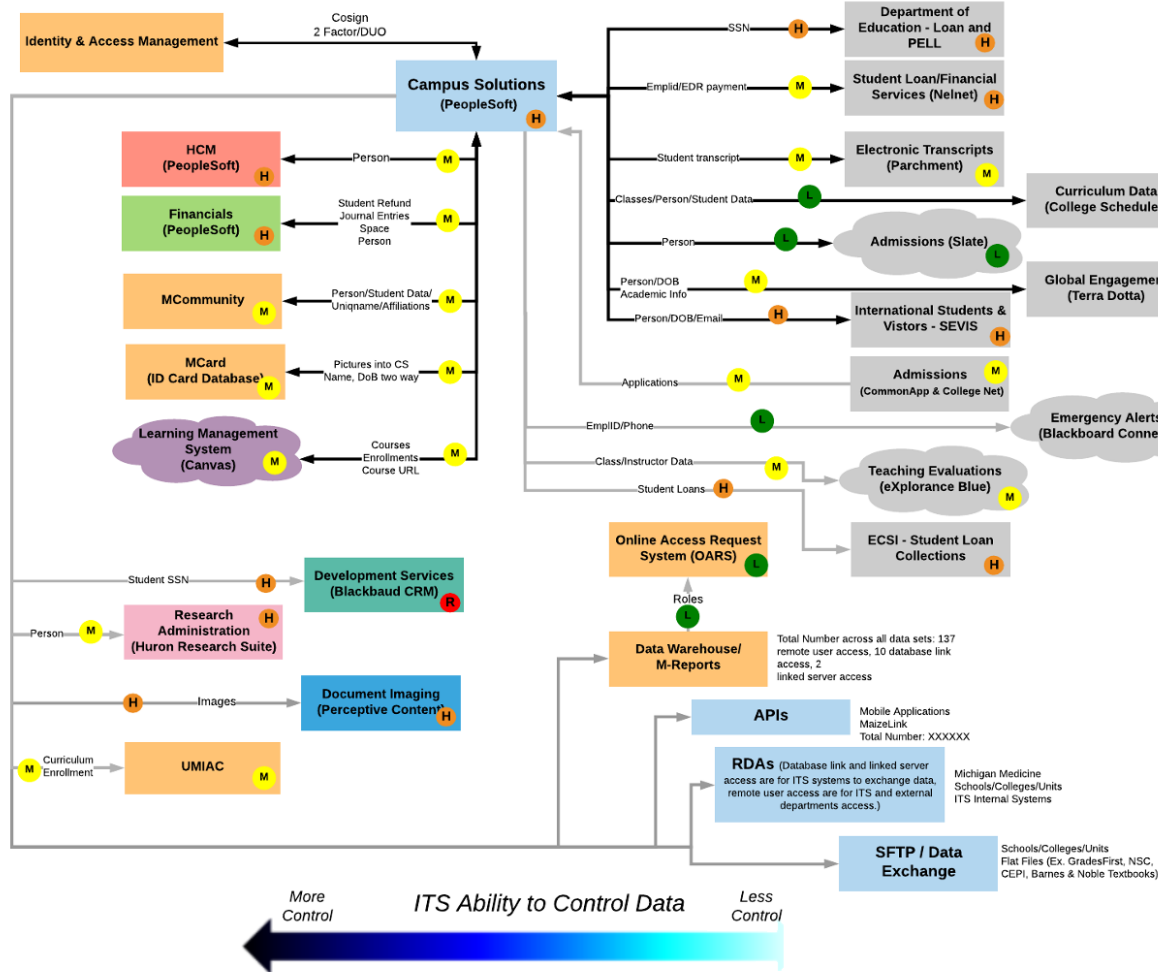- System is External to ITS

Data Flow
- Outbound Only
- Inbound Only
- Inbound & Outbound

Arrow Labels represent key examples of data that is exchanged, but does not capture a complete listing.

Sensitive Data Classification
- R Restricted
- H High
- M Moderate
- L Low

RICE UNIVERSITY

Where is our Data? Enterprise Campus Solutions

Draft for Review

Campus Solutions by the numbers
Recruiting & Admissions. Student Records, Curriculum & Academic Advisement. Financial Aid & Student Financials & Travel Registries.

Support **44,000** operational users
Self-Service access for **46K students** and **292K alumni**
Process **99,000** applications
Bill **$1.5B** in tuition Award **$1B** in financial aid

Most Sensitive Data Stored is High.
SSN is stored.

Location of system users & data recipients:
Ann Arbor, Michigan Medicine

Total # of system users: XXXXX
Average # of system user logins/day: XXXX

Total # of APIs: XXXXX
Total # of RDAs: 42 remote user access, 11 database link access, 2 linked server access
Total # of Flat Files Exchanged: 78

LEGEND

ITS Systems
- Finance
- Human Resources & Capital Management
- Student Admin
- Research Admin
- Development
- Learning Management
- IT Management
- Document Management
- System is External to ITS

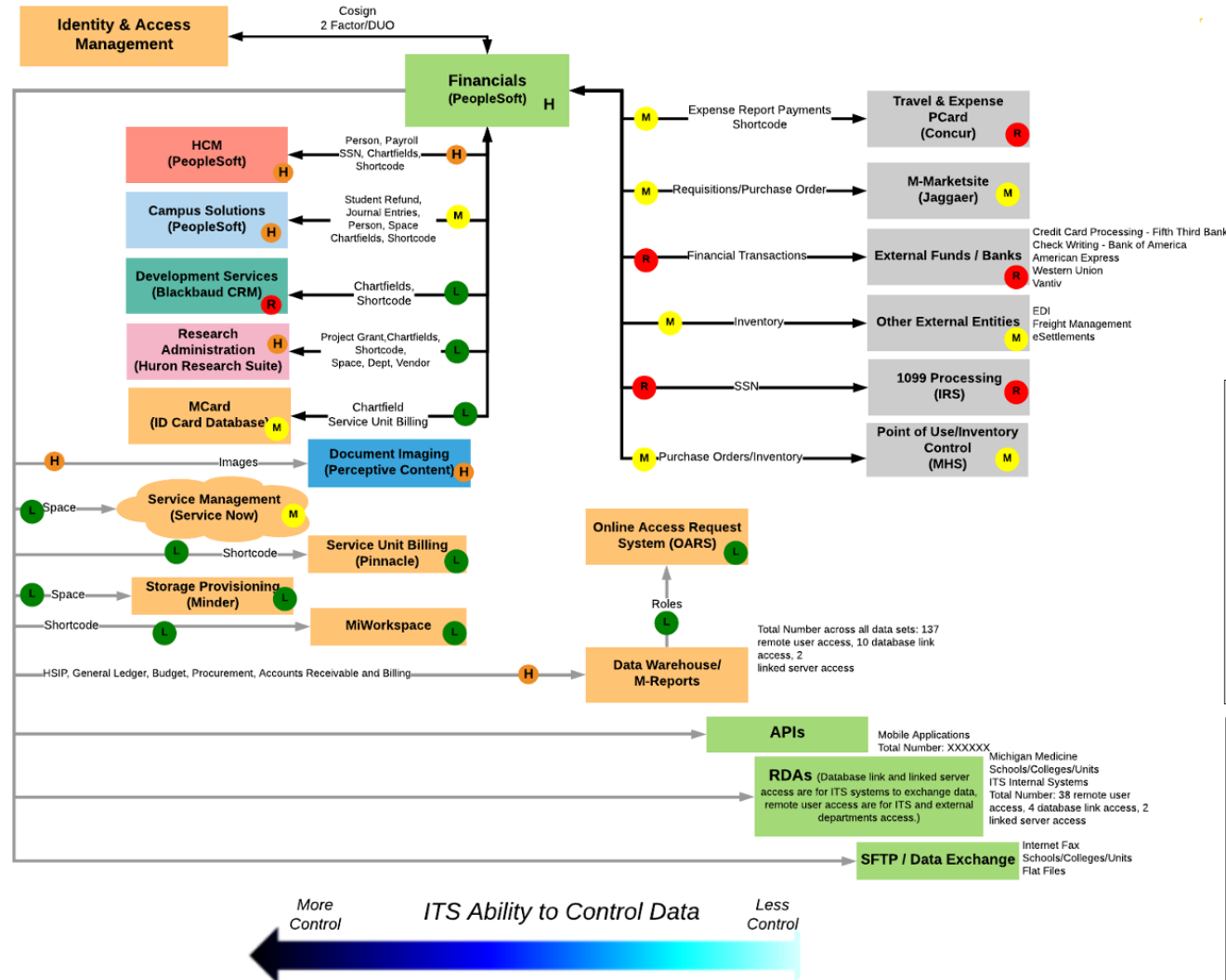**Data Flow**
- Outbound Only
- Inbound Only
- Inbound & Outbound

Arrow Labels represent key examples of data that is exchanged, but does not capture a complete listing.

Sensitive Data Classification
- R Restricted
- H High
- M Moderate
- L Low

Diagram labels

- Identity & Access Management
- Cosign 2 Factor/DUO
- Campus Solutions (PeopleSoft) H
- Department of Education - Loan and PELL H — SSN — H
- Student Loan/Financial Services (Nelnet) H — Emplid/EDR payment — M
- Electronic Transcripts (Parchment) M — Student transcript — M
- Curriculum Data (College Scheduler) L — Classes/Person/Student Data — L
- Admissions (Slate) L — Person — L
- Global Engagement (Terra Dotta) M — Person/DOB Academic Info — M
- International Students & Vistors - SEVIS H — Person/DOB/Email — H
- Admissions (CommonApp & College Net) M — Applications — M
- Emergency Alerts (Blackboard Connect) L — EmplID/Phone — L
- Teaching Evaluations (eXplorance Blue) — Class/Instructor Data — M
- ECSI - Student Loan Collections H — Student Loans — H
- HCM (PeopleSoft) H — Person — M
- Financials (PeopleSoft) H — Student Refund / Journal Entries / Space / Person — M
- MCommunity M — Person/Student Data/Uniqname/Affiliations — M
- MCard (ID Card Database) M — Pictures into CS / Name, DoB two way — M
- Learning Management System (Canvas) M — Courses / Enrollments / Course URL — M
- Development Services (Blackbaud CRM) R — Student SSN — H
- Research Administration (Huron Research Suite) — Person — M
- Document Imaging (Perceptive Content) H — Images — H
- UMIAC M — Curriculum Enrollment — M
- Online Access Request System (OARS) L — Roles — L
- Data Warehouse/ M-Reports — Total Number across all data sets: 137 remote user access, 10 database link access, 2 linked server access
- APIs — Mobile Applications / MaizeLink / Total Number: XXXXXX
- RDAs (Database link and linked server access are for ITS systems to exchange data, remote user access are for ITS and external departments access.) — Michigan Medicine / Schools/Colleges/Units / ITS Internal Systems
- SFTP / Data Exchange — Schools/Colleges/Units / Flat Files (Ex. GradesFirst, NSC, CEPI, Barnes & Noble Textbooks)

ITS Ability to Control Data
More Control ← → Less Control

RICE UNIVERSITY

**Where is our Data?
Enterprise Financials**

Identity & Access Management

Cosign
2 Factor/DUO

Financials (PeopleSoft) H

HCM (PeopleSoft) H

Person, Payroll
SSN, Chartfields,
Shortcode H

Campus Solutions (PeopleSoft)

Student Refund,
Journal Entries,
Person, Space
Chartfields, Shortcode M

Development Services (Blackbaud CRM) R

Chartfields,
Shortcode L

Research Administration (Huron Research Suite) H

Project Grant, Chartfields,
Shortcode,
Space, Dept, Vendor L

MCard (ID Card Database) M

Chartfield
Service Unit Billing L

Document Imaging (Perceptive Content) H

Images H

Service Management (Service Now) M

L Space

Service Unit Billing (Pinnacle) L

Shortcode L

Storage Provisioning (Minder) L

L Space

MiWorkspace L

Shortcode L

HSIP, General Ledger, Budget, Procurement, Accounts Receivable and Billing H

Data Warehouse/ M-Reports

Total Number across all data sets: 137 remote user access, 10 database link access, 2 linked server access

Online Access Request System (OARS) L

Roles L

APIs

Mobile Applications
Total Number: XXXXXX

RDAs (Database link and linked server access are for ITS systems to exchange data, remote user access are for ITS and external departments access.)

Michigan Medicine
Schools/Colleges/Units
ITS Internal Systems
Total Number: 38 remote user access, 4 database link access, 2 linked server access

SFTP / Data Exchange

Internet Fax
Schools/Colleges/Units
Flat Files

M Expense Report Payments Shortcode → **Travel & Expense PCard (Concur)** R

M Requisitions/Purchase Order → **M-Marketsite (Jaggaer)** M

R Financial Transactions → **External Funds / Banks** R

Credit Card Processing - Fifth Third Bank
Check Writing - Bank of America
American Express
Western Union
Vantiv

M Inventory → **Other External Entities** M

EDI
Freight Management
eSettlements

R SSN → **1099 Processing (IRS)** R

M Purchase Orders/Inventory → **Point of Use/Inventory Control (MHS)** M

Financials by the numbers
Scope: Procure to Pay solutions. Inventory Management.
Financials Suite. Space Management

Support for **14,000** Users
Assistance for Financial Reporting
Integrations to all major enterprise applications
118K Vendors; **450K** payments totaling **$3.9B**
124K Assets; **821K** Journal Entries
15K A/R customers **$324M** Billed

Most Sensitive Data Stored is High. SSN is stored.

Location of system users & data recipients: Ann Arbor,
Dearborn, Flint, Michigan Medicine

Total # of system users: XXXXX
Average # of system user logins/day: XXXX

Total # of APIs: XXXXX
Total # of RDAs: 38
Total # of Flat Files Exchanged: 62

LEGEND

ITS Systems
- Finance
- Human Resources & Capital Management
- Student Admin
- Research Admin
- Development
- Learning Management
- IT Management
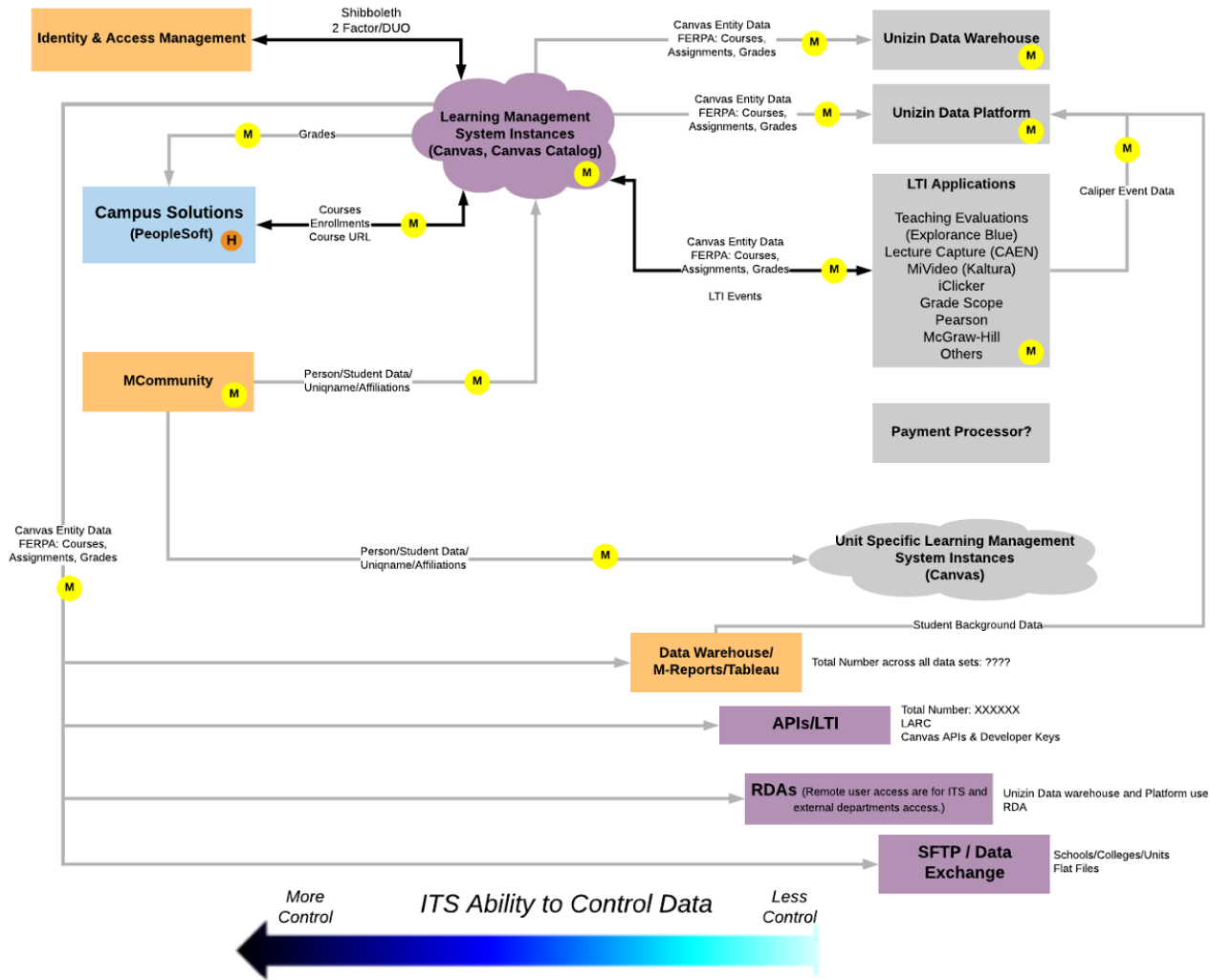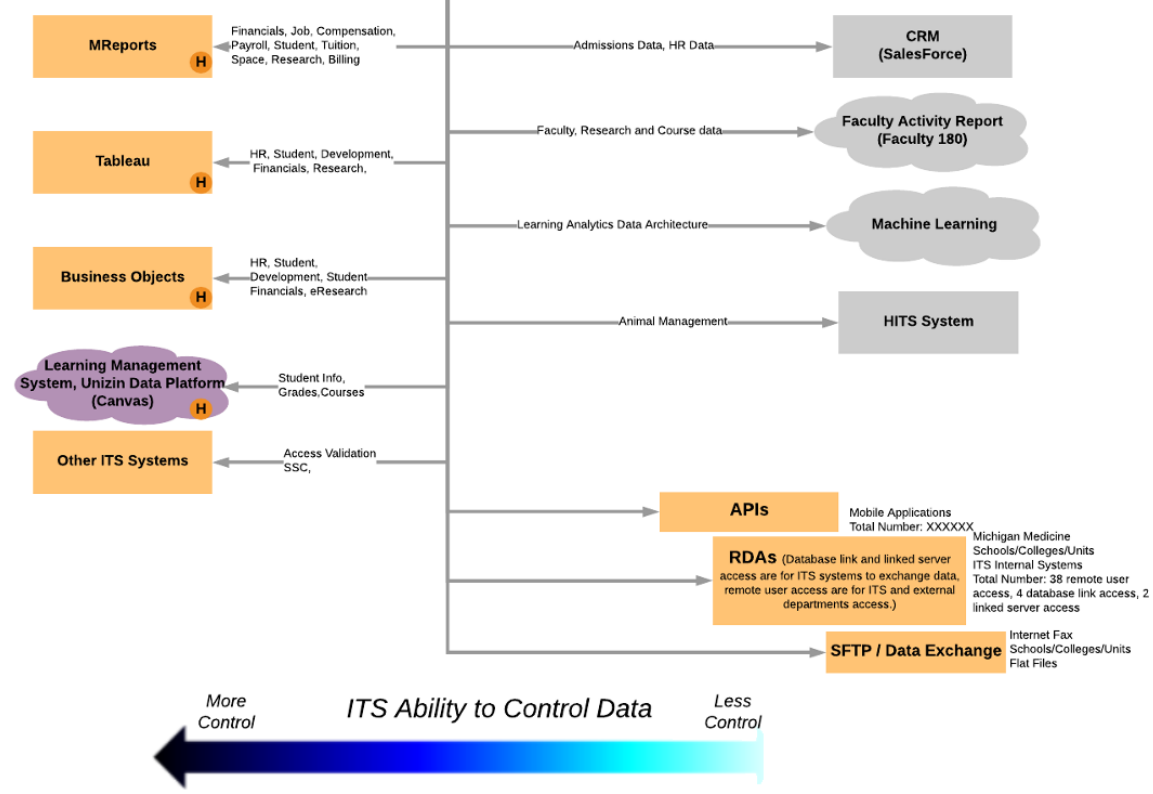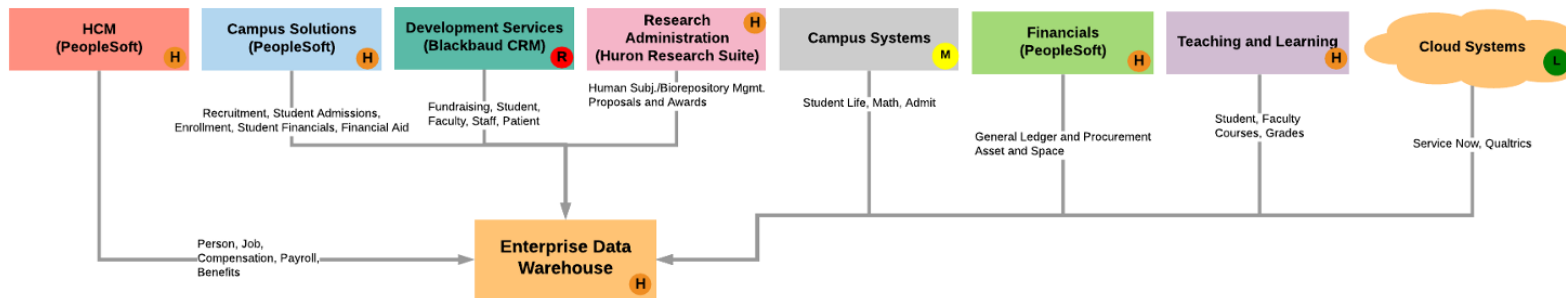- Document Management
- System is External to ITS

Data Flow
- → Outbound Only
- ← Inbound Only
- ↔ Inbound & Outbound

Arrow Labels represent key examples of data that is exchanged, but does not capture a complete listing.

Sensitive Data Classification
- R Restricted
- H High
- M Moderate
- L Low

More Control — *ITS Ability to Control Data* — *Less Control*

Where is our Data? Canvas

Canvas by the numbers
There are multiple instances of Canvas used across the Ann Arbor Campus

Say somethign about CTools and UMIAC here?

Most Sensitive Data Stored is Moderate.

Location of system users & data recipients:
Ann Arbor, Michigan Medicine

Total # of system users: XXXXX
# of Active Course Sites Average per Term:
# of Instances:
Average # of system user logins/day: XXXX

Total # of APIs: XXXXX
Total # of RDAs: XXXXX
Total # of Flat Files Exchanged: XXXXX

LEGEND

ITS Systems
- Finance
- Human Resources & Capital Management
- Student Admin
- Research Admin
- Development
- Learning Management
- IT Management
- Document Management
- System is External to ITS

Data Flow
- Outbound Only
- Inbound Only
- Inbound & Outbound

Arrow Labels represent key examples of data that is exchanged, but does not capture a complete listing.

Sensitive Data Classification
- **R** Restricted
- **H** High
- **M** Moderate
- **L** Low

Where is our Data?
Enterprise Data Warehouse

HCM (PeopleSoft) H

Campus Solutions (PeopleSoft) H

Development Services (Blackbaud CRM) R

Research Administration (Huron Research Suite) H

Campus Systems M

Financials (PeopleSoft) H

Teaching and Learning H

Cloud Systems L

Recruitment, Student Admissions, Enrollment, Student Financials, Financial Aid

Fundraising, Student, Faculty, Staff, Patient

Human Subj./Biorepository Mgmt. Proposals and Awards

Student Life, Math, Admit

General Ledger and Procurement Asset and Space

Student, Faculty Courses, Grades

Service Now, Qualtrics

Enterprise Data Warehouse H

Person, Job, Compensation, Payroll, Benefits

MReports H

Financials, Job, Compensation, Payroll, Student, Tuition, Space, Research, Billing

Admissions Data, HR Data

CRM (SalesForce)

Tableau H

HR, Student, Development, Financials, Research,

Faculty, Research and Course data

Faculty Activity Report (Faculty 180)

Learning Analytics Data Architecture

Machine Learning

Business Objects

HR, Student, Development, Student Financials, eResearch

Animal Management

HITS System

Learning Management System, Unizin Data Platform (Canvas) H

Student Info, Grades, Courses

Other ITS Systems

Access Validation SSC,

APIs

Mobile Applications
Total Number: XXXXXX

RDAs (Database link and linked server access are for ITS systems to exchange data, remote user access are for ITS and external departments access.)

Michigan Medicine
Schools/Colleges/Units
ITS Internal Systems
Total Number: 38 remote user access, 4 database link access, 2 linked server access

SFTP / Data Exchange

Internet Fax
Schools/Colleges/Units
Flat Files

More Control ← **ITS Ability to Control Data** → *Less Control*

Data Warehouse by the numbers
Scope: Human Capital Management, Campus Solutions, Financial, Development, and eResearch

Active Users (get numbers from logs)
Assistance for all reporting
Integrations to all major enterprise applications

Most Sensitive Data Stored is High. SSN is stored.

Location of system users & data recipients: Ann Arbor, Dearborn, Flint, Michigan Medicine

Total # of system users: XXXXX
Average # of system user logins/day: XXXX

Total # of APIs: XXXXX
Total # of RDAs: 38
Total # of Flat Files Exchanged: XX

LEGEND

ITS Systems
- Finance
- Human Resources & Capital Management
- Student Admin
- Research Admin
- Development
- Learning Management
- IT Management
- Document Management
- System is External to ITS

Data Flow
- Outbound Only
- Inbound Only
- Inbound & Outbound

Arrow Labels represent key examples of data that is exchanged, but does not capture a complete listing.

Sensitive Data Classification
- R Restricted
- H High
- M Moderate
- L Low

RICE UNIVERSITY

The Secret Sauce
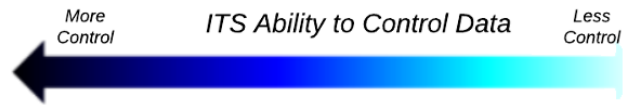
RICE UNIVERSITY

Approach

- Crawl, Walk, and Run.

- Start small; grow in manageable increments.

- Measure results before investing more.

- Leverage existing systems by adding analysis and viz tools.

- Under-promise; Over-deliver.

RICE UNIVERSITY

Pulse Check

- Great tools
- Great project
- Outstanding deliverables
- Is anyone using them?
- Can you show ROI?

RICE UNIVERSITY

Criteria for Success?

- Business users actually use the product

- Analysis and reports solve analysis and information needs

- Decision makers save resources

- Analysis produces cost-savings or other efficiencies

RICE UNIVERSITY

Lessons Learned

- BI / Analytics Success - more than technology

- Right tools for the right processes - storyboarding

- A structured process optimizes results

- Timeliness and PoC is the key

- ROI is worth the effort

- Business / campus and **<u>not</u>** IT driver
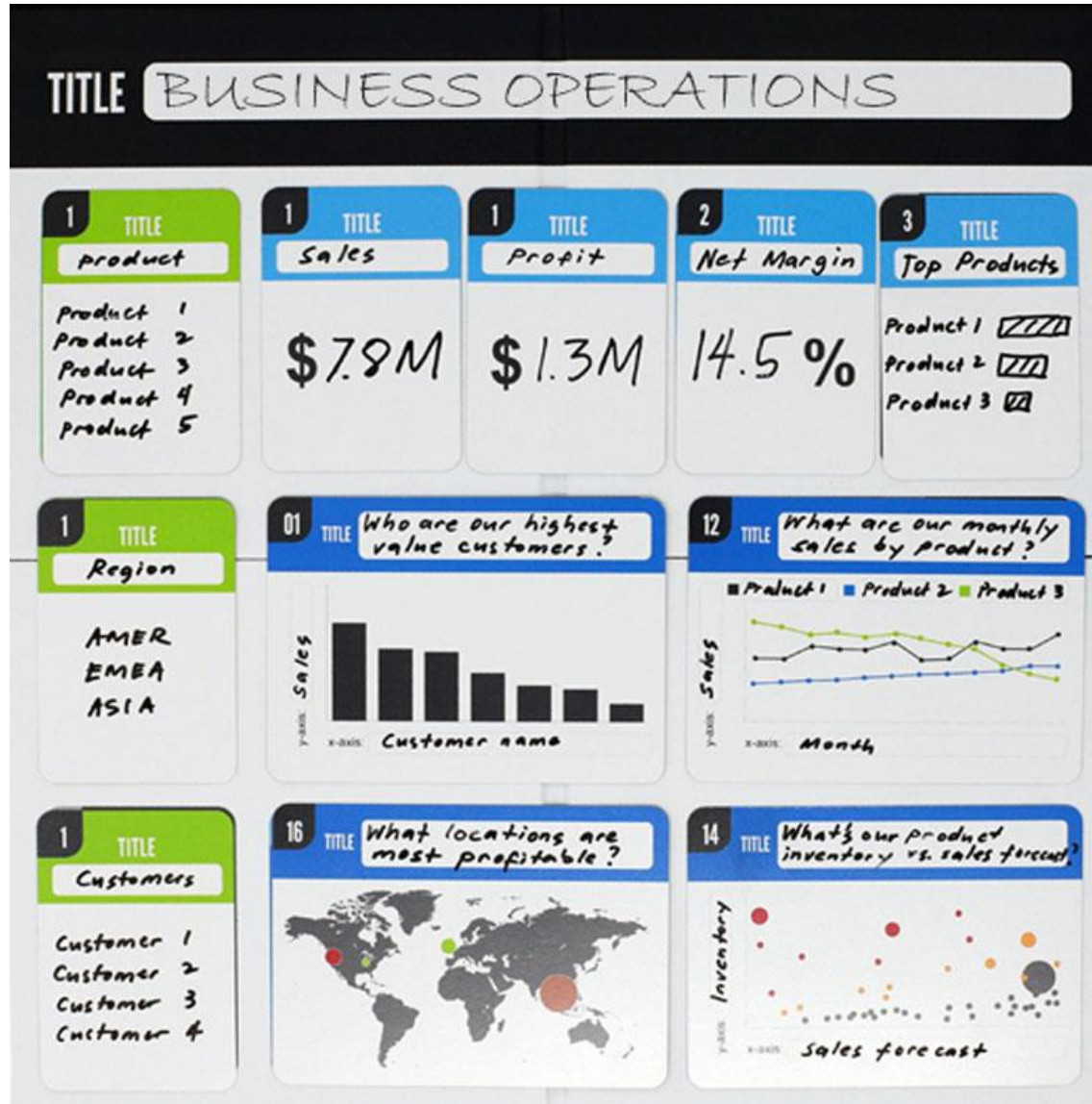
RICE UNIVERSITY

Storyboarding Example

RICE UNIVERSITY

Welcome to the **Rice University** Analytics Dashboard

Explore insights, track progress, and empower decision-making with our intuitive interface tailored for the RICE community

Total Enrollment	Schools	Majors	Sponsored Research	Faculty, Staff & Research
8,471	8	109	$ 187.3M	3,961

I humbly
THANK YOU

Vijay Thiruvengadam

tvijay@rice.edu
www.linkedin.com/in/tvijay

RICE UNIVERSITY