Implementation to Roll-Out: Chronicling the Year of an Analytics Initiative

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AIR Forum 2019 – May 29, 2019
Agenda

• About UMass Amherst and Analytics
• The Partnership
• The Journey
• Lessons Learned and the Future
UMass Amherst Profile

• Flagship of the UMass System
• Only public Carnegie highest research university in MA
• Sponsored research expenditures $210M
• Enrollment: 30,000+ in Fall 2018
• 23,515 undergraduates, 7,078 graduate students
• Entering class of 5,010
• 9 Schools and colleges + Graduate School and Commonwealth Honors College
• Over 50 academic department, over 100 undergraduate majors
UMass Amherst and Analytics
The Beginning

Tool Selection
UMass system-wide collaboration to select tool

Investment
Campus supports investment in a reporting solution

Census
Student and enrollment census implemented

Go Live
Student reporting goes live

2006
2007
2008
2009
2010
2011
2012
...

Admissions and degrees censuses
~70 reports, 300 users
1 IT resource to support
UMass Amherst and Analytics
IR’s Perspective

• Number of requests for data on the rise
• Requests more and more complex
• Office is data rich but information poor
• No good tool to distribute and visualize vast amounts of data

Strategic Plan
Part of IT strategic plan, no details
Looking for leadership buy-in
UMass Amherst and Analytics
IR & IT Partnership

Tableau Desktop
IR gets licenses
How to distribute?

Tableau Server
Purchase for pilot

2016 ... ... ... 2018

Strategic Plan
“Instill a culture of evidence at all levels that applies the best possible information and analysis to decisions.”
## Build or Buy?

<table>
<thead>
<tr>
<th>Build It Ourselves</th>
<th>Buy a Product/Service</th>
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<tbody>
<tr>
<td>Workload for IR is essentially the same (data validation).</td>
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<tr>
<td>Requires IT resources:</td>
<td>Requires more money up front but technology is managed.</td>
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<tr>
<td>- People</td>
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<tr>
<td>- Budget</td>
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<tr>
<td>- Management of technology (contracts, services)</td>
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<td>Data governance needs to be built out completely</td>
<td>Data governance skeleton exists</td>
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<td>Internal politics don’t change</td>
<td>Can facilitate process and improve relationship</td>
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<td>- Needs internal project management</td>
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<tr>
<td>Own everything</td>
<td>It will break if relationship ends</td>
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Why HelioCampus?

Data Platform
Best in class visual analytics deployed rapidly and built on a scalable cloud data infrastructure.

Data Analysis & Data Science
Enabled by experts in analytics and higher education who identify trends to help you inform and act.

Results
Directly impact student success, institutional efficiency and policy.
What Is Included in the HelioCampus Platform?

**CLOUD TECHNOLOGY**
- Virtual private cloud (VPC) setup
- Amazon Web Services (AWS) platform setup and configuration
- Multi-site Tableau Server for publishing content institution-wide or for specific user groups

**DATA INFRASTRUCTURE**
- Data replication of over 150 source system tables
- Transformed data into robust and secure data warehouse optimized for reporting & analysis
- HelioCampus reporting models and data extracts populated with over 1,000 data elements across student lifecycle
- Integration of UMass Amherst Census data

**DATA INTEGRATION**
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**DATA MODELS**
- HelioCampus reporting models and data extracts populated with over 1,000 data elements across student lifecycle
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**DATA VISUALIZATION**
- Configuration and customization of 20 baseline dashboards updated daily, showing trends for key metrics related to enrollment, student success, admissions, & financial aid

**ONGOING SERVICES**
- Ongoing analytics expertise and HelioCampus partnership for knowledge transfer on utilizing platform
- 'Deep Dive' executive presentations
- Data science models
• Contract signed May 2018, promise of delivery of Student Core Analytics platform in 9-12 months
Project Structure

Executive Committee

Steering Committee

Project Leads (IT + IR)

Project Team

Project Manager

Subject Matter Experts

DBA/Network Team

Client Relationship Manager

Data Scientist/Analyst

BI Engineer

Implementation Consultant

Architect/Data Engineer(s)

Cloud Engineer
Project Objectives

• Provide university leadership with an intuitive, interactive analytics solution that centralizes and connects key student data across the institution to provide a homogenized and comprehensive view to facilitate forecasting and enable better decision-making. These data sets include Admissions, Financial Aid, Course Enrollments, Persistence, Retention, Degrees Awarded, and Course Faculty.

• Deploy priority analysis areas and dashboards (Enrollment and Student Success) to campus leadership by Spring 2019.

• Provide ability to conduct ‘deep dive’ analyses based on strategic priorities and create and display Predictive and Statistical Models using HelioCampus data science resources and capabilities.

• Provide OIR and other analysts with a flexible, extensible analytical data platform with the ability to create new data and reporting models to answer business questions that haven't been addressed before or via standard HelioCampus models.
Student Core Analytics

STUDENT LIFECYCLE

1. Course Registrations
2. Persistence, Retention, Completions
3. Financial Aid
4. Class Faculty
5. Admissions

DATA MODELS

DASHBOARD & FOUNDATIONAL PLATFORM

App → Admit → Enroll → Persist → Retain → Graduate
Technical Build

• Network build:
  – Virtual Private Cloud (VPC), Amazon Web Services (AWS)
  – Single Sign-On (SSO)

• Data replication and ETL (Edit-Transform-Load)
  – Nightly copy of Student Information System (SIS)

• Data model build
  – Transform SIS tables into usable data extracts for Tableau
Data and Dashboard Validation

- Two separate pieces (data and dashboard) – cannot do one without the other
- Most time-intensive part of project – took much longer than expected
  - Bulk of time scheduled over IR’s busiest period
Persistence/Retention/Graduation Data Validation

Sept Oct Nov Dec Jan

Mar Feb

Enrollment Data Validation (including Census)

Dedicated working sessions.

- Process starting to bog down / changes taking long to be made
- No real timelines

Set short term goals and deliverables.

Steering Comm demo

Onsite Exec demo

Student Movement
Financial Aid

Student Success

Class Faculty Admissions

Student Success

Financial Aid

Class Faculty Admissions

Set short term goals and deliverables.

Student Movement
Financial Aid

Class Faculty Admissions

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Data and Dashboard Validation

- Relationship building is really important!
- Have someone who knows the data AND can make decisions
- Realistic expectations given timelines
- Having clear idea of what you want, makes things easier, smoother and more productive

In person working session

Enrollment Census Validation
Jan  
Feb  
Mar

- Student Success
- Student Movement Financial Aid
- Class Faculty Admissions
Validation to Roll-Out

• Vision: 
  – Launch all dashboards and content to everyone on campus!

  Must have clear priorities and scope for launch

  Everyone has an opinion

• Key tasks:
  – Final data/dashboard clean-up
  – Final roll-out plan
  – User provisioning
  – Data governance

Discussions on data governance must start earlier!
Roll-out and Launch

- Messaging about expectations
- Decision to launch to ~150 users, with demo/training required
- Meetings scheduled with Chancellor, leadership cabinet, campus planning, steering committee and other campus leaders
- Content was perfect:
  - Dashboards with high familiarity data
  - Something new in high demand
Launch Day(s)

- 8 demo/training sessions given over a week
  - Attended by over 100 people
  - No attendance = no access

- Team-building/reward

- Immediate feedback overwhelmingly positive, people are logging in and using data (~70% have logged in)

- Receiving requests to be added as a user
Dashboard Demo
Lessons Learned

✓ Someone has to own the project and drive it ➔ needs a champion
  ✓ Other areas need to buy-in: executive and functional areas (importance of keeping everyone informed – whether formally or informally)
  ✓ Clear objectives and priorities
  ✓ Timely decision making

✓ Importance of IR/IT partnership, strengths of each area

✓ Clear roll-out strategy: users, content, analysis

✓ Data governance and access strategy
Lessons Learned (2)

- Consistent communication between everyone
- Constant and clear feedback regarding data validation and dashboards
  - Single point of contact vs distributed function
- Solid understanding of data and expected variances
- Requires institutional bandwidth: IR, IT, subject matter experts/operational folks,…
Lessons Learned (3)

... and a committed team!
Next Steps

This was the end of the beginning… but there is so much more:

• Validating remaining data and dashboards
• Deep dive into data!
  – Leveraging the data models for custom analyses and dashboards
  – Using new platform to replace existing platform (OBIEE)
• Data governance
• Leveraging the campus Tableau server for use for other data
Questions?

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