HEDW | 2019

Understanding the Student Journey Through Data

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Arizona State University

Our time together

Introduction:
Arizona State University

Student Success and Institutional Research

The Student Journey Data Engagement

Findings and surprises! and “mini workshop”

The road forward

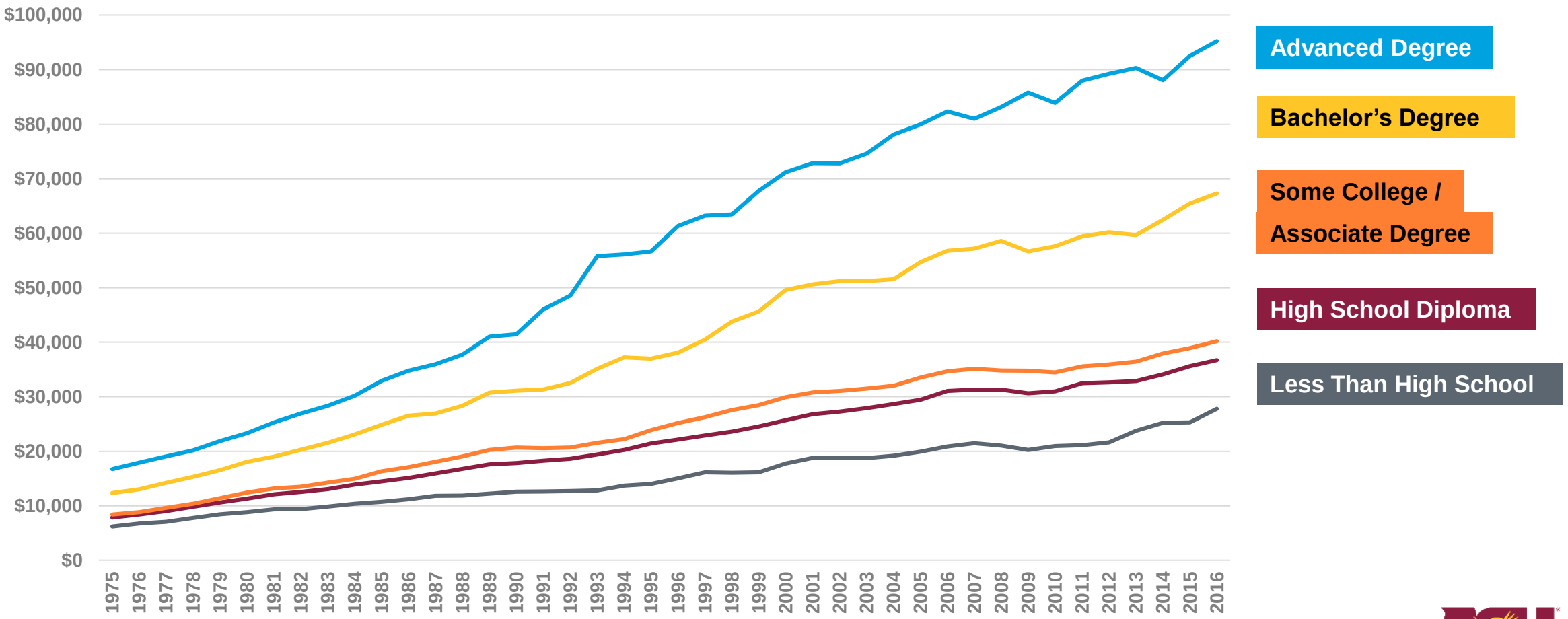
Time for your questions and comments

ASU Charter

ASU is a comprehensive public research university, measured not by whom it excludes, but by whom it includes and how they succeed; advancing research and discovery of public value; and assuming fundamental responsibility for the economic, social, cultural and overall health of the communities it serves.

Adults with college degrees earn more

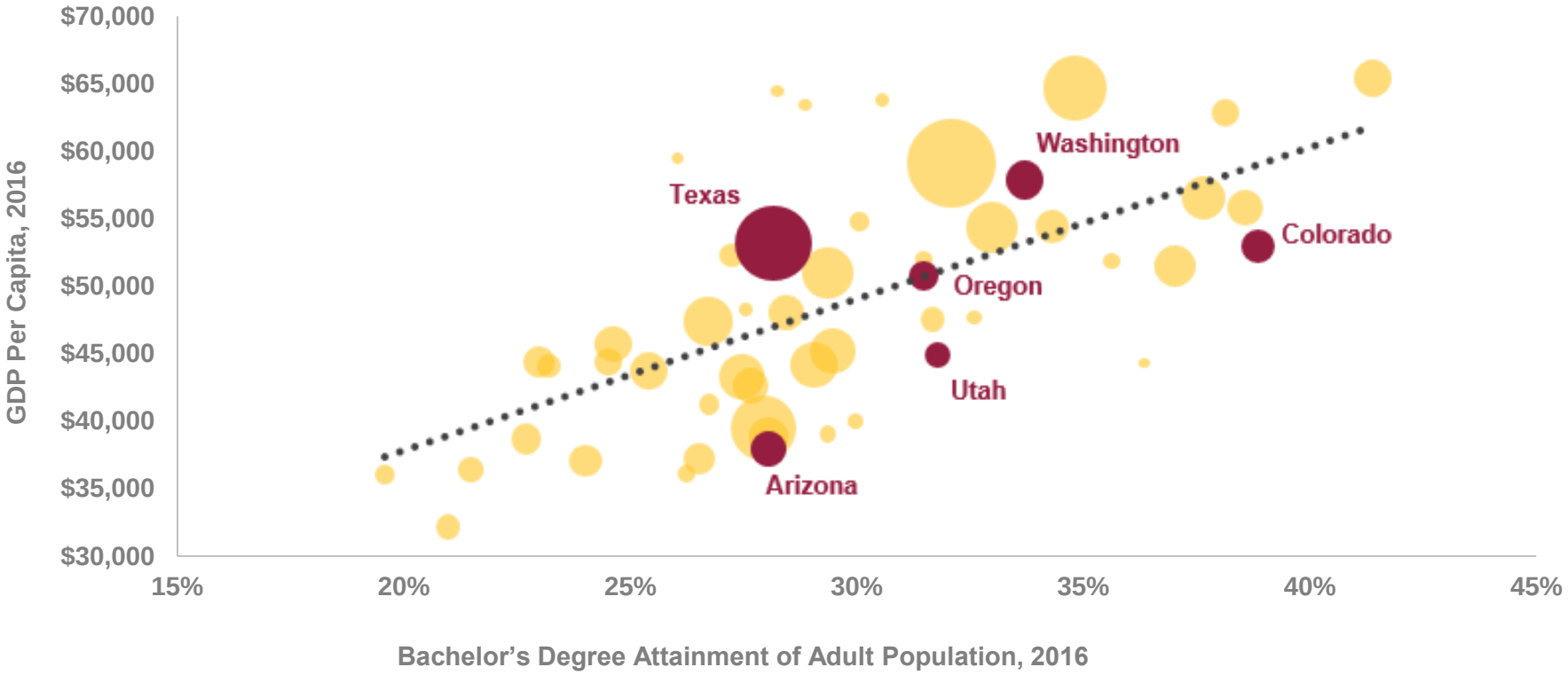
Mean Earnings of Workers 18 Years and Over by Educational Attainment (1975-2016)



Data: US Census Bureau, CPS Historical Time Series Table A-3

States with higher levels of educational attainment demonstrate greater economic growth

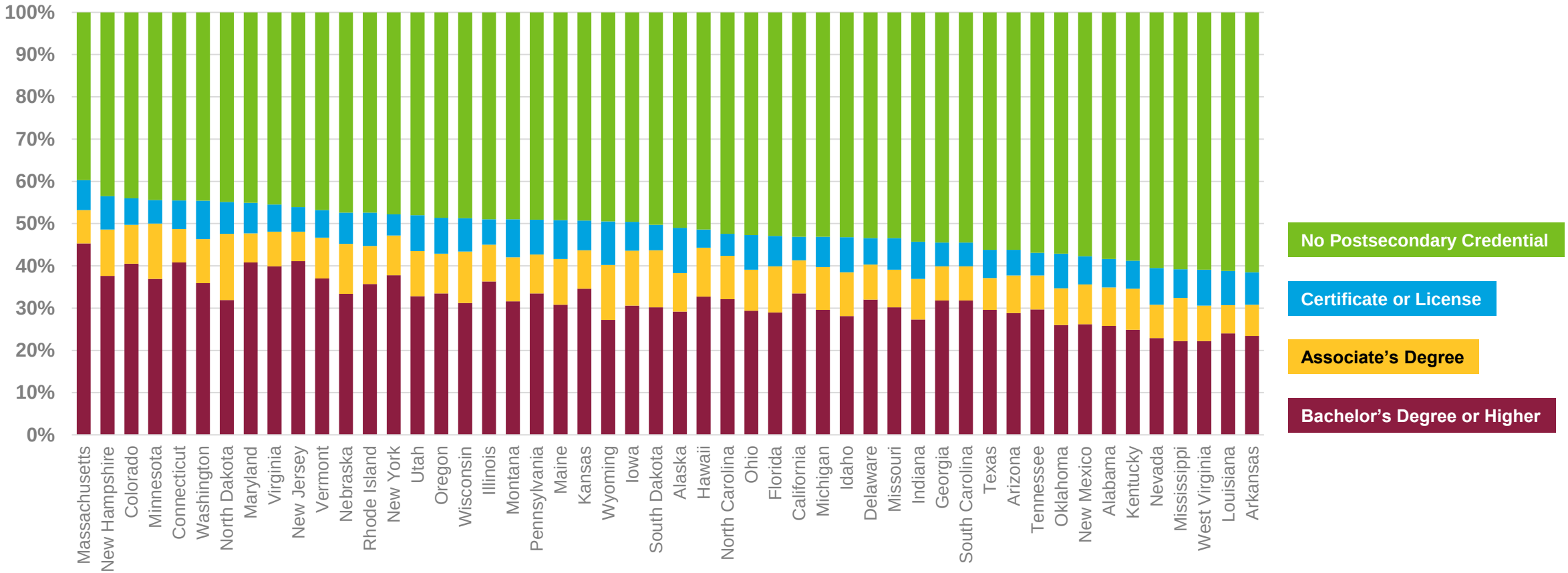
Bachelor's Degree Attainment and Real Per Capita GDP by State (2016)



Data: US Census Bureau, ACS, S1501 and Bureau of Economic Analysis, Regional Economic Accounts

Arizona's educational attainment is lower than most states

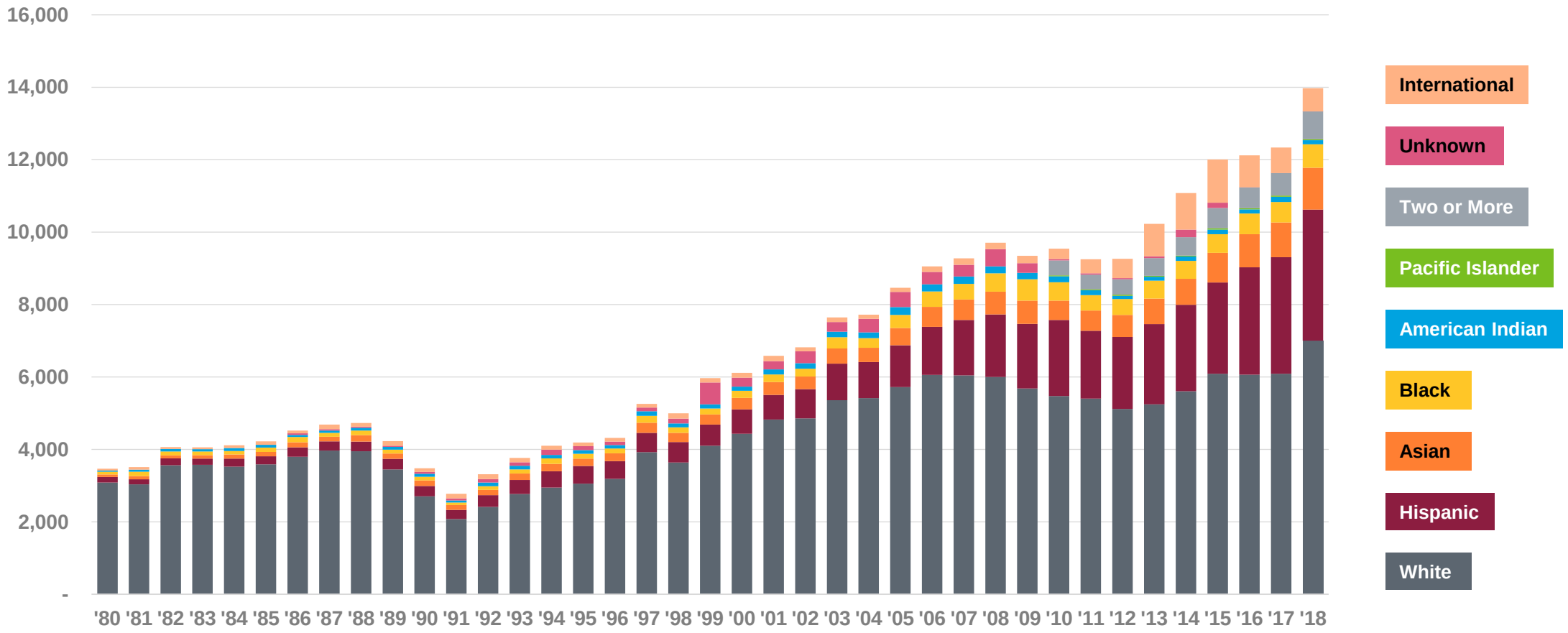
Working-Age Population by Educational Attainment by State



Data: Arizona Board of Regents analysis of ACS and CPS data

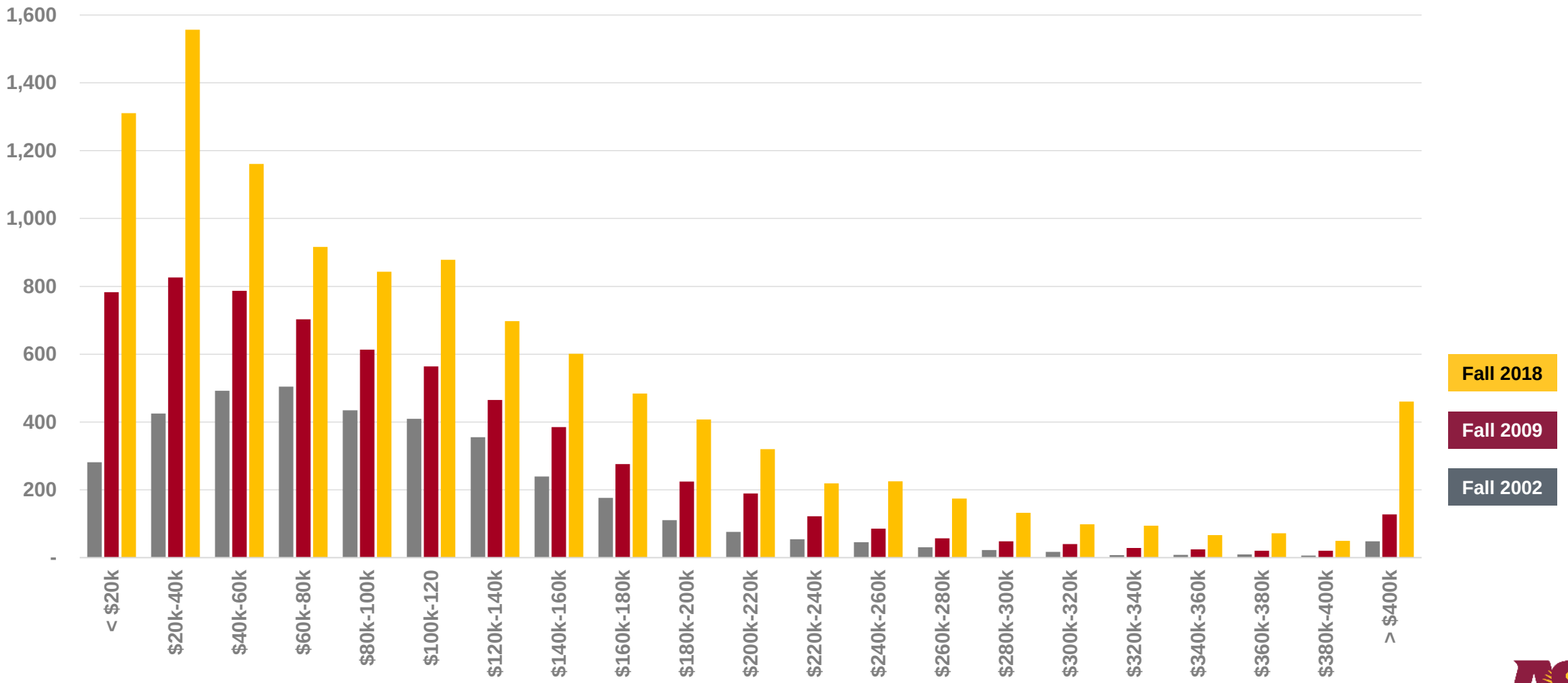
Freshman diversity grew markedly in 15 years

First-Time Freshmen Enrollment by Race (Fall 1980 – Fall 2018)



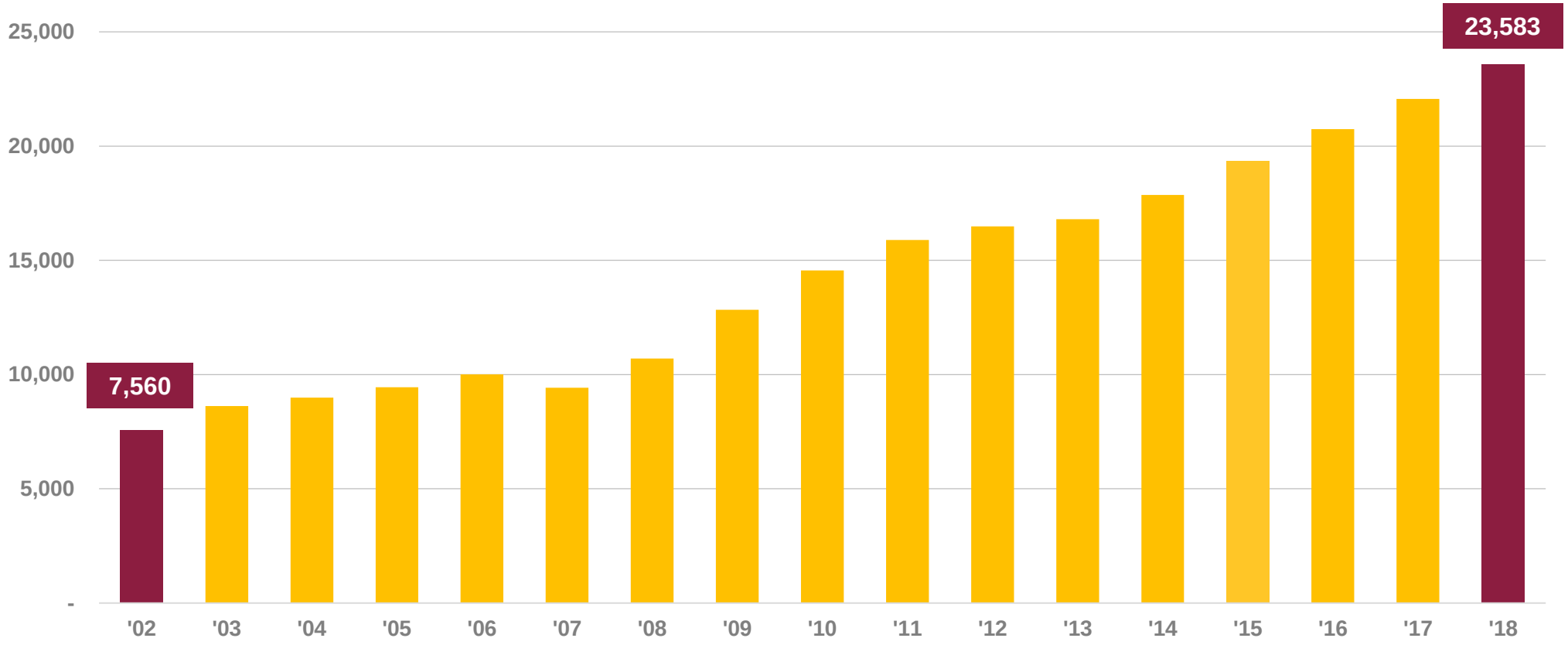
ASU is far more accessible to low-income students

Freshmen Enrollment by Income (2002, 2009, 2018)



Number of ASU first-generation students has more than tripled

First-Generation Students at ASU (2002-2018)



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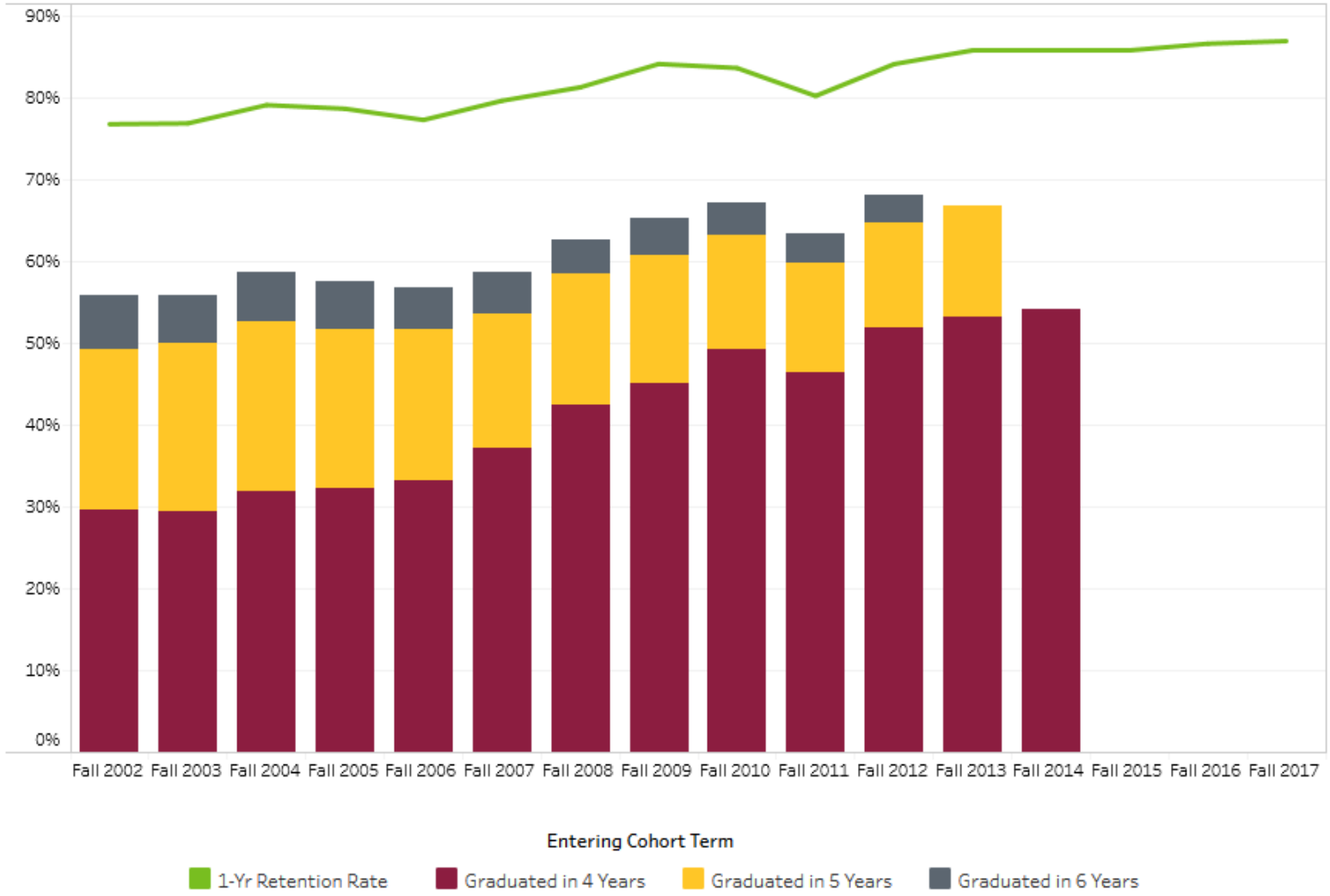
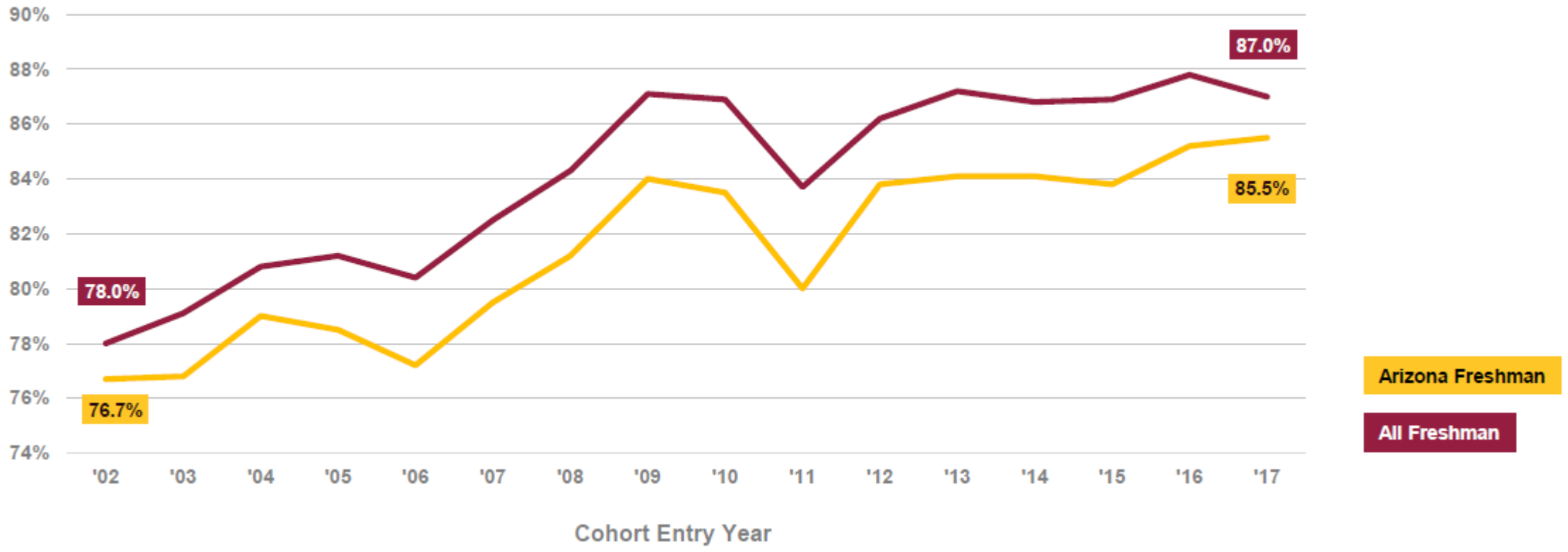
ASU Freshman Success Metrics (2002-2017)

Retention and Graduation Rates for First-time Full-time Freshmen



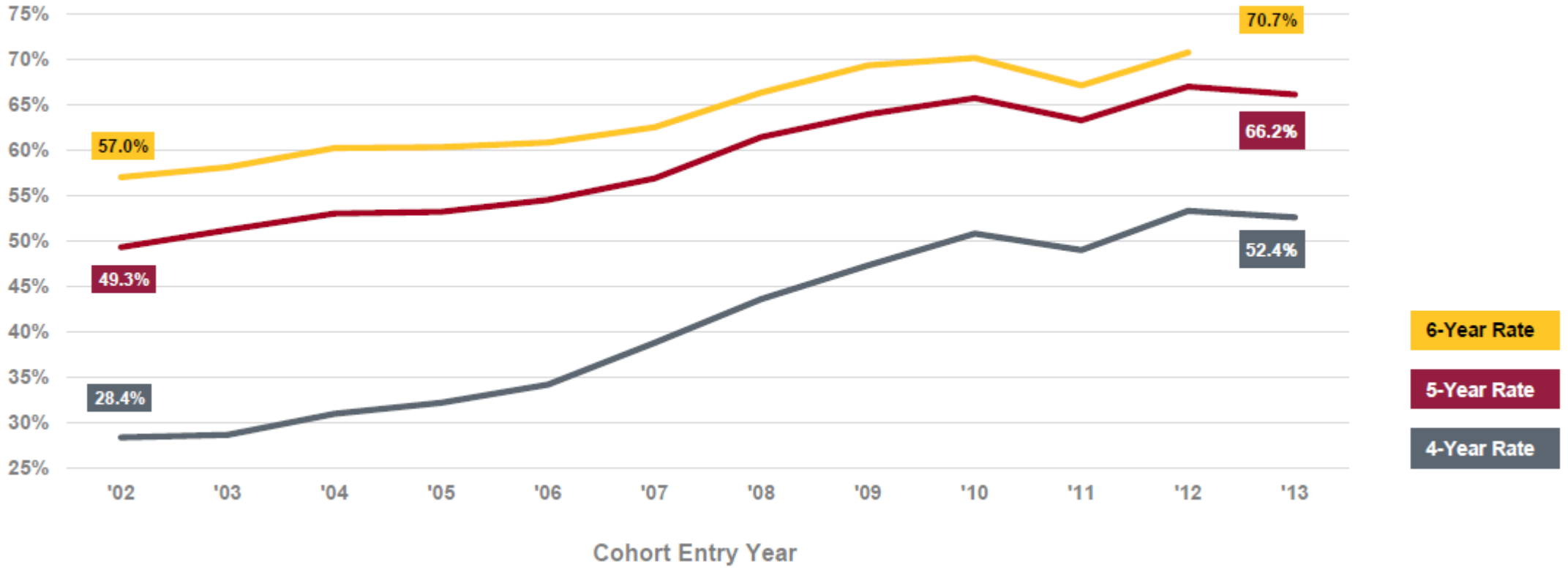
First-year freshman retention is nearing 90% goal

First-Year Freshman Retention Rates (2002-2017)



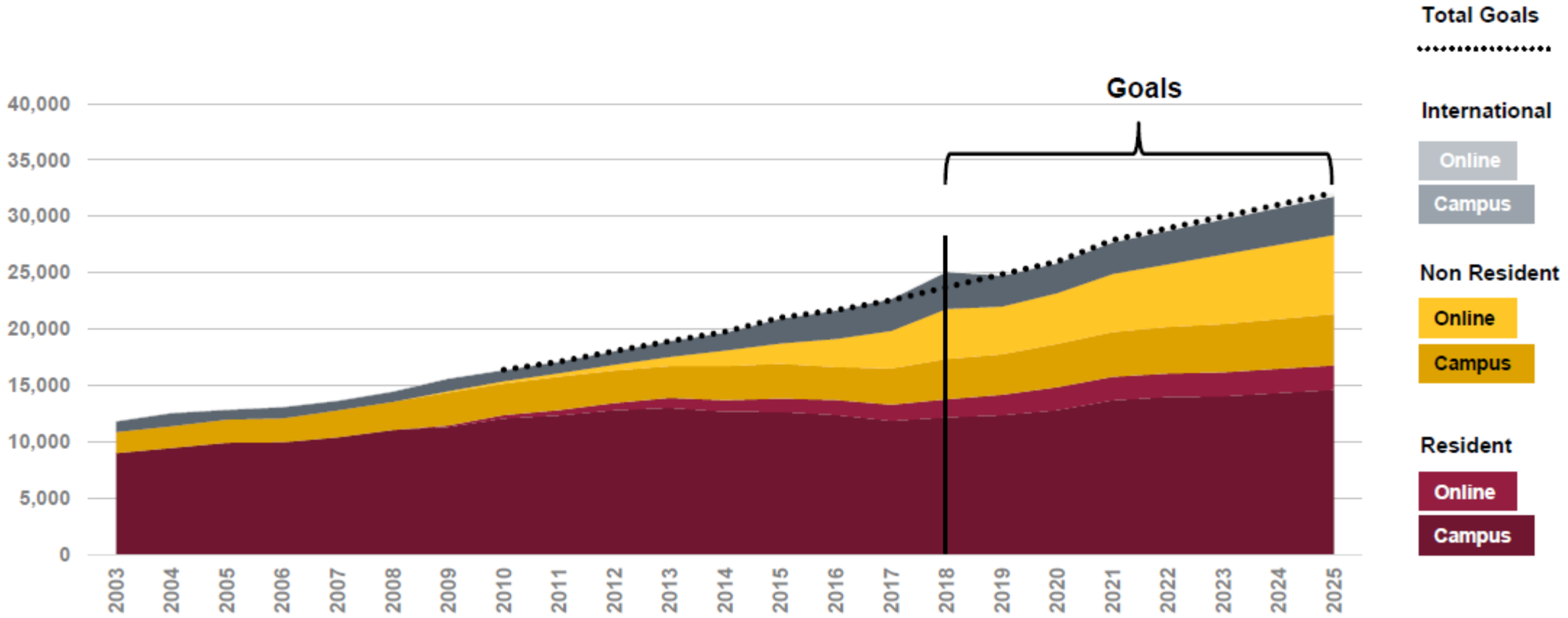
ASU 4-year graduation rate is up 85% since 2002

Resident Freshman Cohort Graduation Rates (2002-2013)



The number of degrees awarded is up 33% since 2013

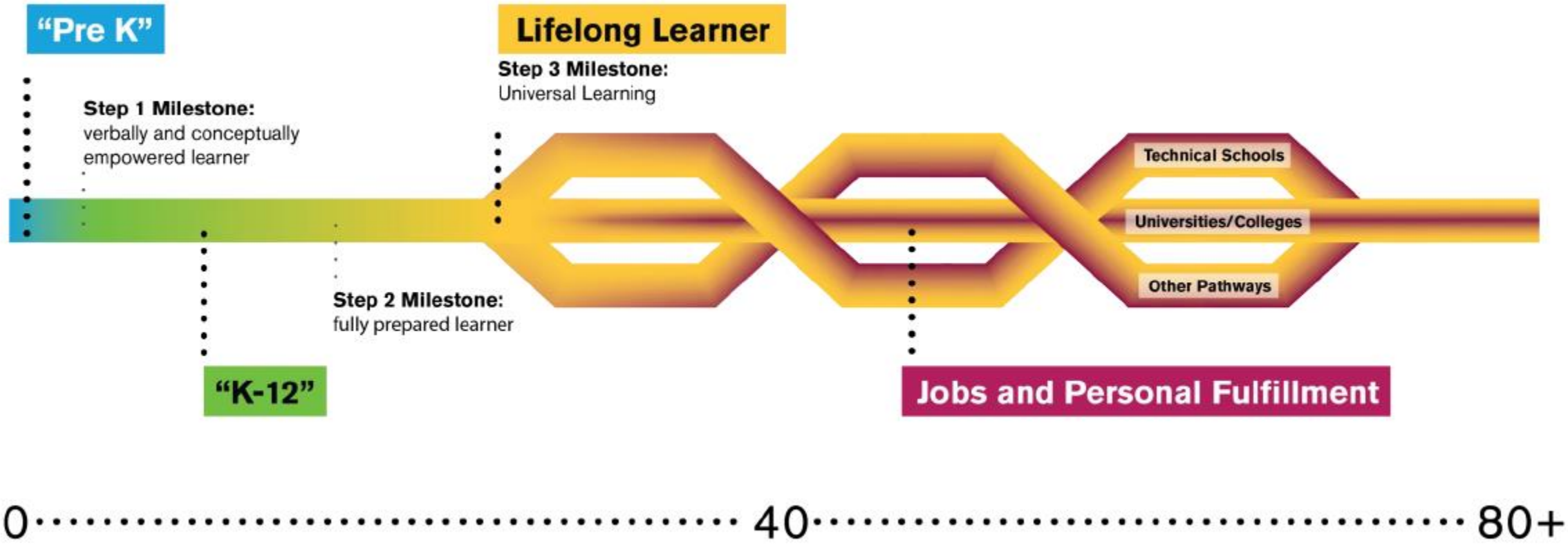
Undergraduate and Graduate Degrees by Year (2003-2025)



65% **Estimated percentage of children who will ultimately perform new types of jobs that do not yet exist.**

ASU Universal Learning™

An Aspirational Design



Future gains will be harder than previous gains.

We face increasing complexities

We will keep raising the bar.


#1 in the U.S.
for innovation
ASU ahead of Stanford and MIT
– U.S. News & World Report 2016, 2017, 2018 and 2019
BEST COLLEGES
U.S.News & WORLD REPORT
MOST INNOVATIVE
2019
Ahead of Carnegie Mellon, Northeastern, Harvard, Duke,
Georgia Tech, Purdue, Cornell, USC, UT-Austin and Yale

How do we take student success data to the next level?

Student success

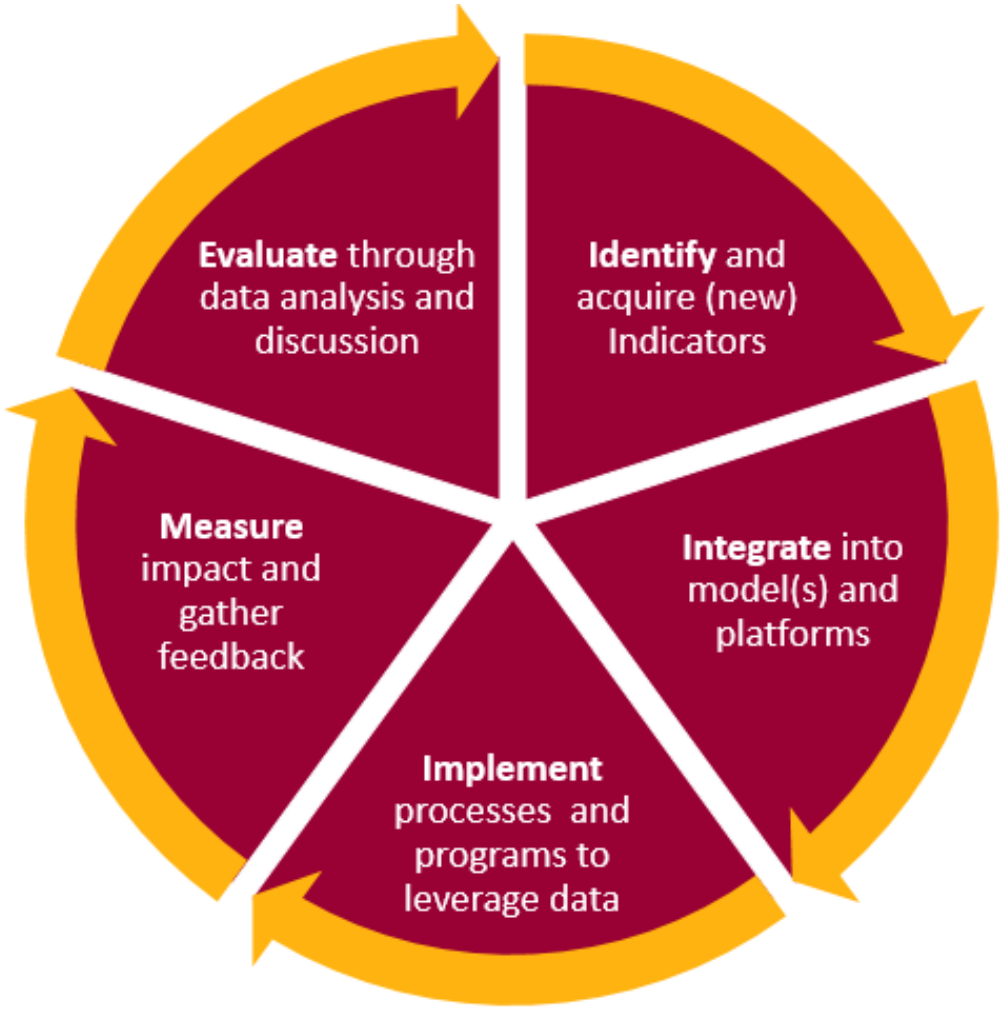
Student centered

Agility

Responsiveness

Integrity of purpose

Cycle of Analysis and Improvement

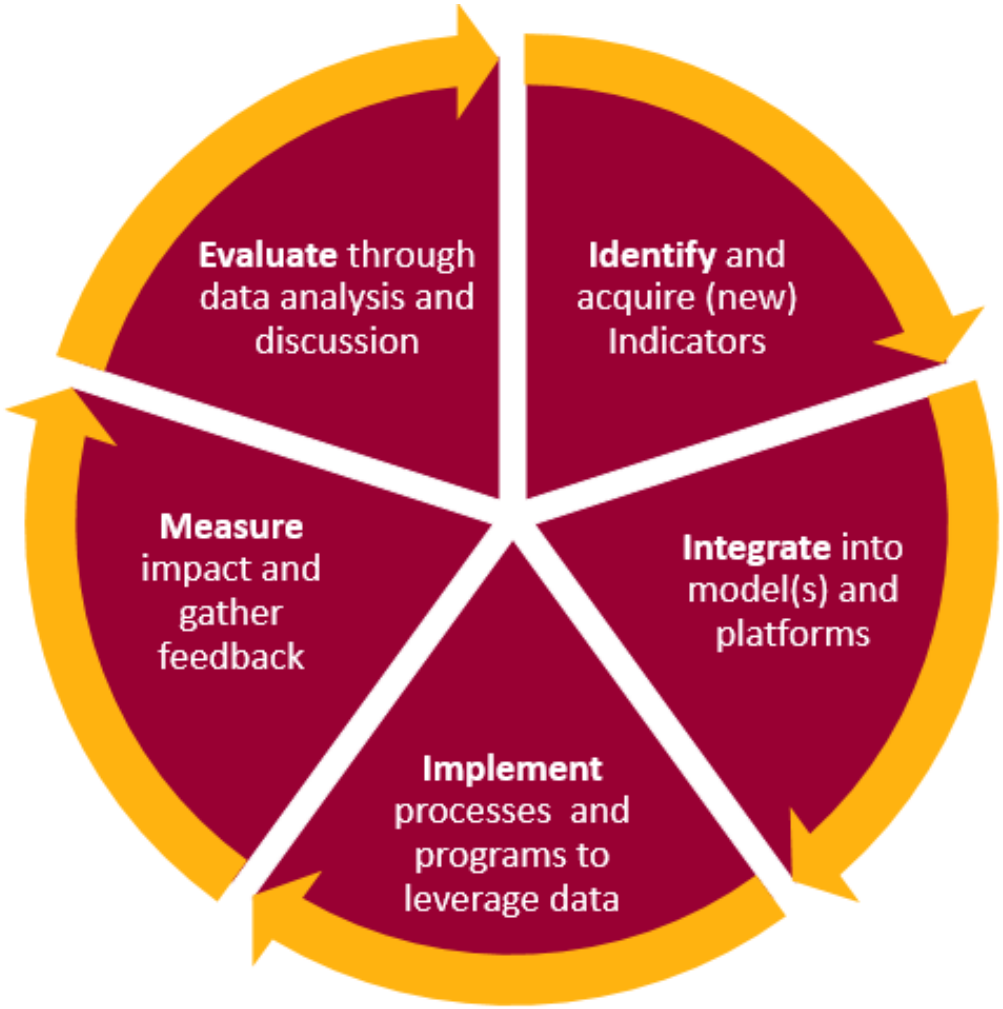


Data usage in the 21st century is and will continue to evolve based on increases in volume (“big data”), advances in technology, and cultural understanding of the ways data can and should inform daily life.

Advancement of algorithms and simplification of the programs that invoke them will allow more users to interact with data, identify patterns and make predictions.

Along with this evolution comes an increased expectation that data best practices are employed at every institution, including those of higher education.

Cycle of Analysis and Improvement



Mature data (long in use)
Student Information System (Peoplesoft) data
Retention indicators (e.g. MyASU, eAdvisor)

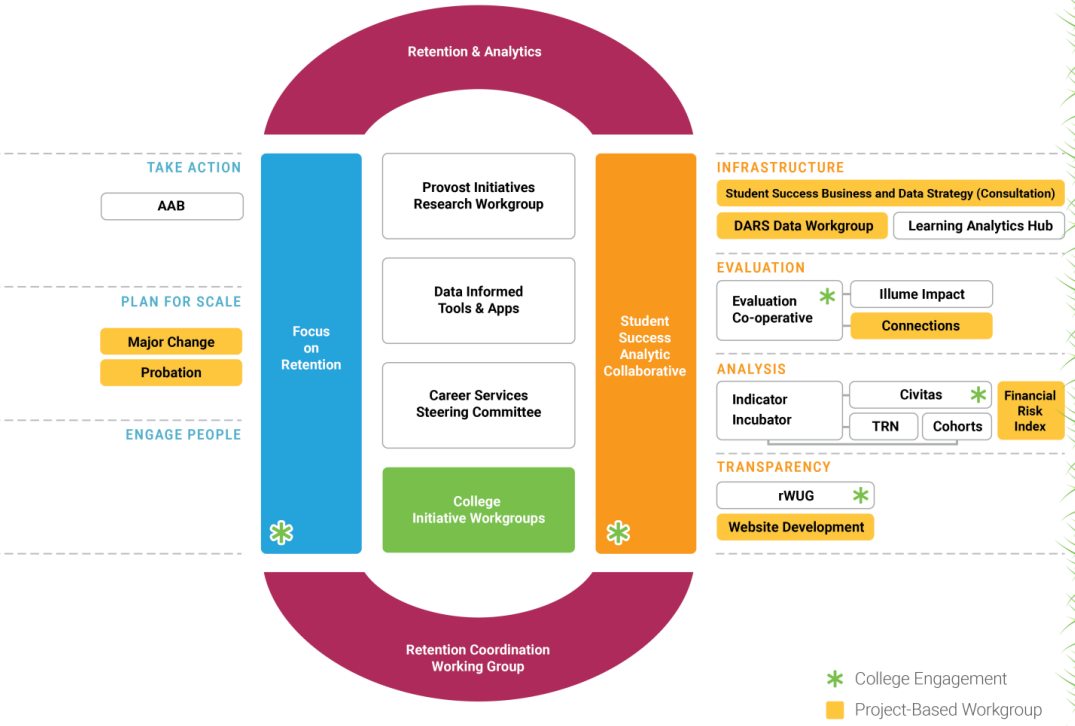
Newly integrated data
Predictive retention model (3rd party)

Identify and Integrate
Course engagement model
Learning Management System data -- *timely!*
Financial risk indicator
Success Suite Engagement Data - *new!*

Implement and Measure
Salesforce advisor and service case data

Evaluate
Financial literacy module engagement
First Year Success Coach interactions
Tutoring centers

Structuring Collaboration



Infrastructure

Evaluation

Analysis

Transparency

Holistic data strategy

Student centered

Not application centered

Not organizationally centered

Data rich

People-real

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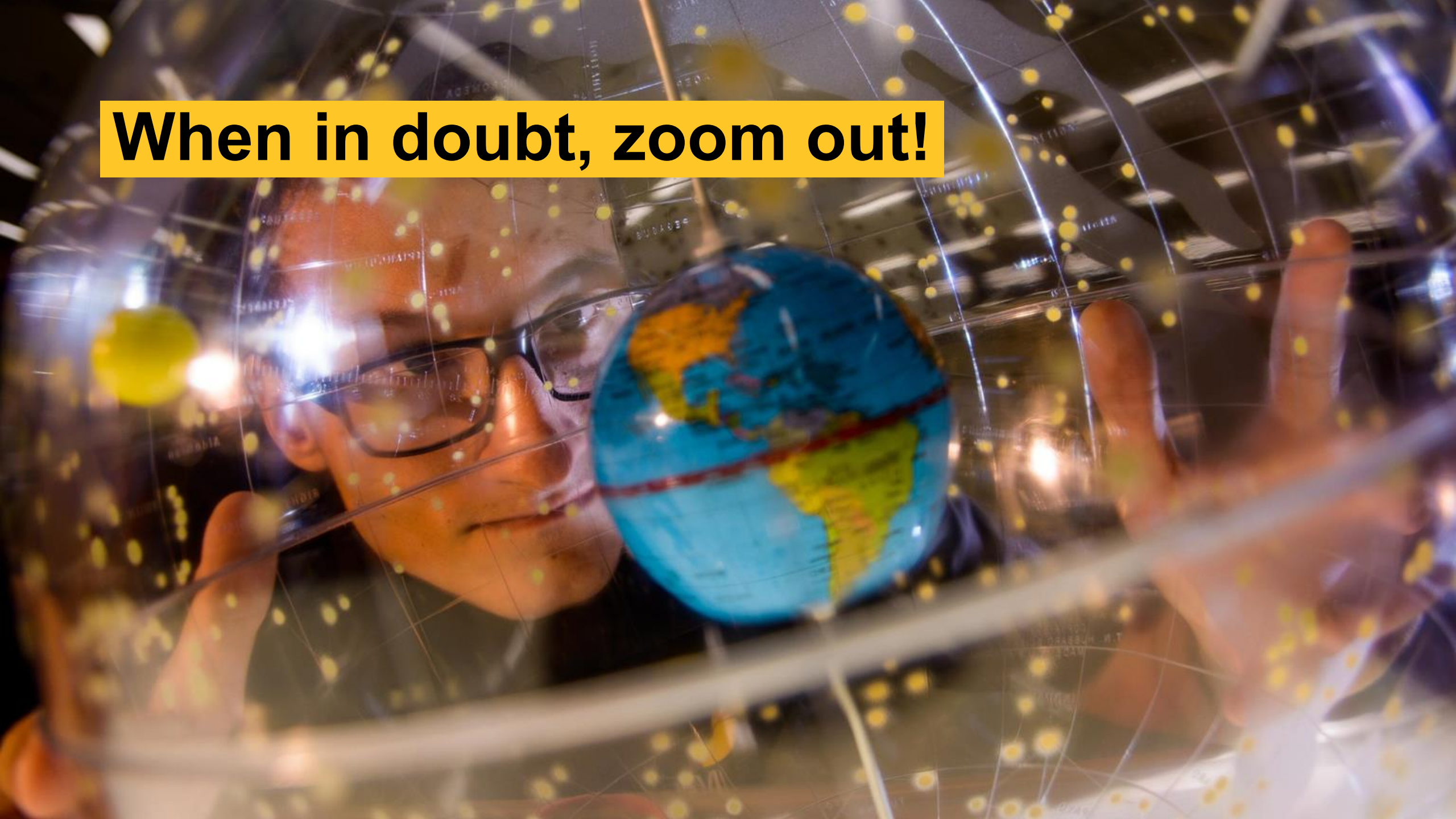
With so much to tackle, where do we start?


When in doubt, zoom out!

Student success data

Student centered

What matters?

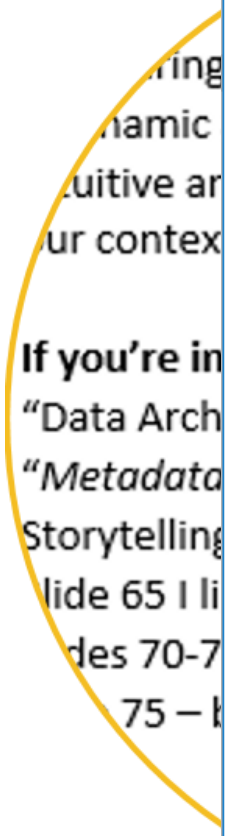
What do we need?

Where do we want to end up?

What do we have?

What can we build?

Add a touch of serendipity…



Jennifer Wilken | Jonathan Barber

10/6/

FW: this DAMA presentation Tuesday was excellent.

Dear colleagues,

I'm sharing because this was a fabulous presentation (at DAMA-Phoenix on Tuesday) that really pulled together a wide range of modeling layers (and connected those tangibly to enterprise capability building.) She was a dynamic and engaging speaker (Kristin, her contact info is on slide 85 if you're still looking for keynotes for November). Of course that dynamism is a little lost in the presentation by itself, but she seemed particularly intuitive and experienced in connecting the technical to the business layers, which I appreciated. I think I'll try to sign up for the Dataversity session on Agile and Data Modeling (slide 5) … seems particularly relevant to our context.

If you're interested in perusing but don't want to wade through it all, here are some highlights that got the mental, "Amen!" from me:
"Data Architecture is part of a Wider Data Strategy" (slide 9 … several gems on that page alone) … amen! … I'll stop including that part henceforth
"*Metadata* is used and created by a wide range of roles across the organization." (slide 26 … emphasis mine)
Storytelling and data modeling … Yes, yes and yes! (slide 46)
Slide 65 I liked because we just did this on a Digication document not even knowing it was an "expert best practice"
Slides 70-73 were a new concept to me: The Motivation Model. I want to learn more about this.
Slide 75 – business capability model … Sheila, I may want to try this use of a simple color key (see the nice dots) for our white-boarded picture. ☺

By the way, of all these levels of modeling (and setting aside the motivation model which was new to me) the *conceptual* model layer is the one I think we skip over to our peril. Then we focus, when we get around to it and when data finally lands in the warehouse, on documenting our technical artifacts. A few strong conceptual models could really help us accelerate our common understanding of our own enterprise, I suspect.

Who wants to try a conceptual modeling session with me for Salesforce? ☺ I'll bring the sticky notes! I learned that if you don't want to do a full enterprise diagram, you can tackle just a "neighborhood." How cute is that?!

And finally, even if you're not interested in anything else, please see **Slide 55**. Apparently this is a common bumper sticker in Boulder, CO, and I may have to get one for myself.

Thanks for being in this enterprise (real or model) with me!

Best,
Jennifer

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Jennifer Wilken
Director, Enrollment Analysis

Add a touch of serendipity…

About Global Data Strategy, Ltd

Data-Driven Business Transformation

- Global Data Strategy is an international information management consulting company that specializes in the alignment of business drivers with data-centric technology.
- Our passion is data, and helping organizations enrich their business opportunities through data and information.
- Our core values center around providing solutions that are:
  - **Business-Driven:** We put the needs of your business first, before we look at any technology solution.
  - **Clear & Relevant:** We provide clear explanations using real-world examples.
  - **Customized & Right-Sized:** Our implementations are based on the unique needs of your organization's size, corporate culture, and geography.
  - **High Quality & Technically Precise:** We pride ourselves in excellence of execution, with years of technical expertise in the industry.

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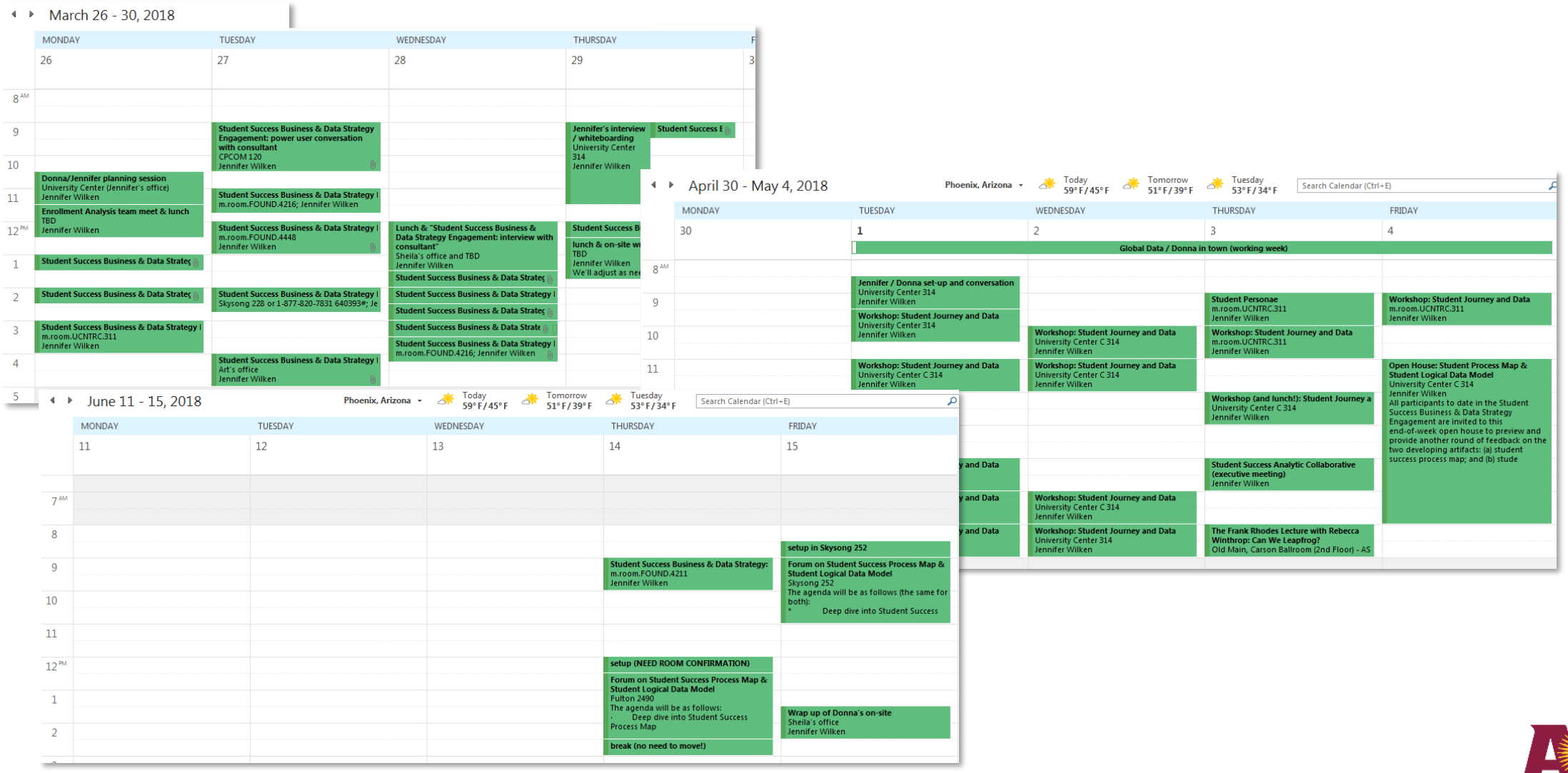
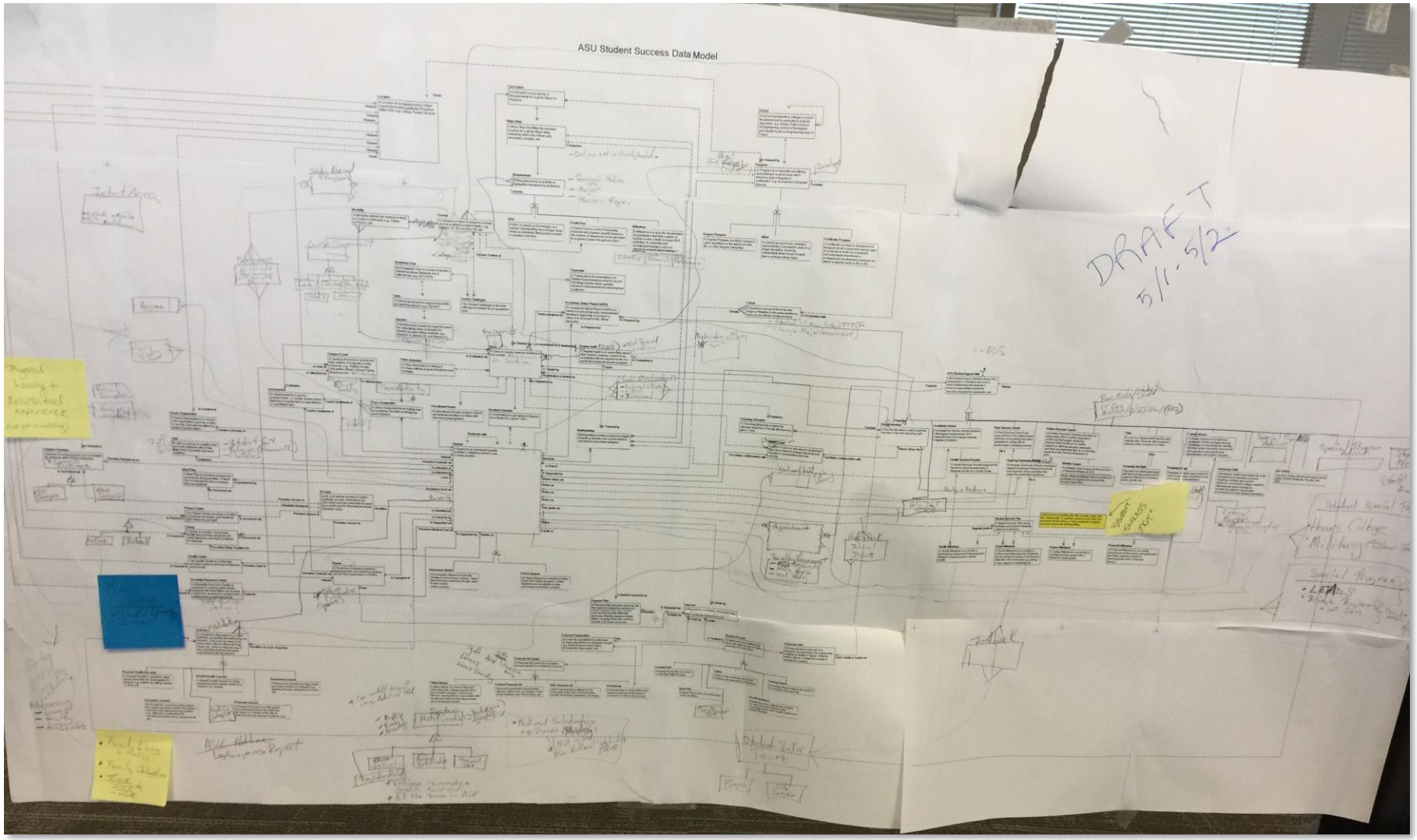
What actually happened?

- Gathered over 65 data and student process artifacts.
- Over the course of six months (six weeks of consulting time) we engaged over 40 people from 12 departments, held 17 small group interviews, 13 process and modeling workshops, 3 open-house and 2 web-based debriefing sessions.
- The project resulted in:
  - Business motivation diagram (and web readout for stakeholders)
  - Process diagram
  - Logical data model
  - Final recommendations (and web readout for stakeholders)

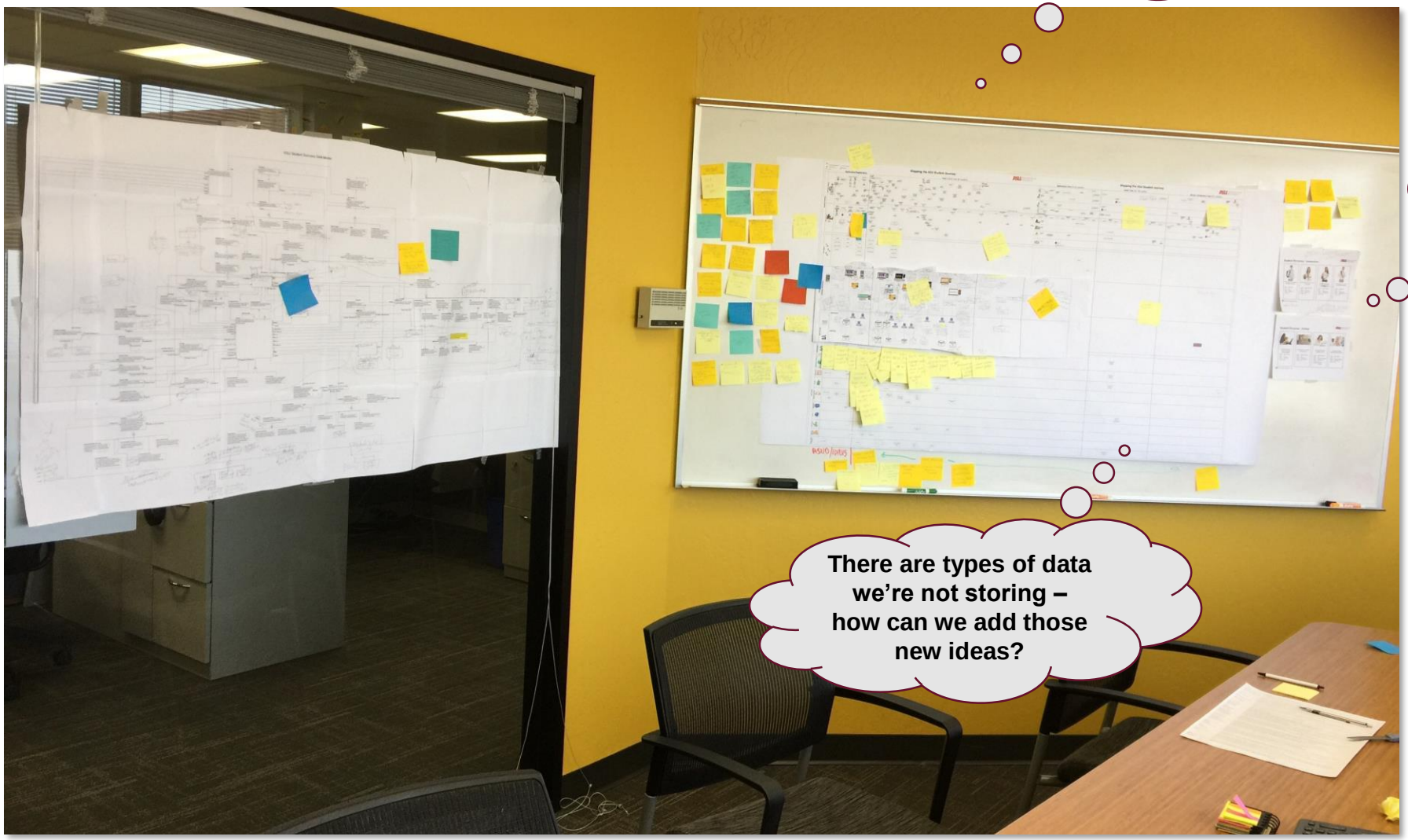
What does it look like? Something like this …



And this …



And this …



This map shows what it felt like as a student.

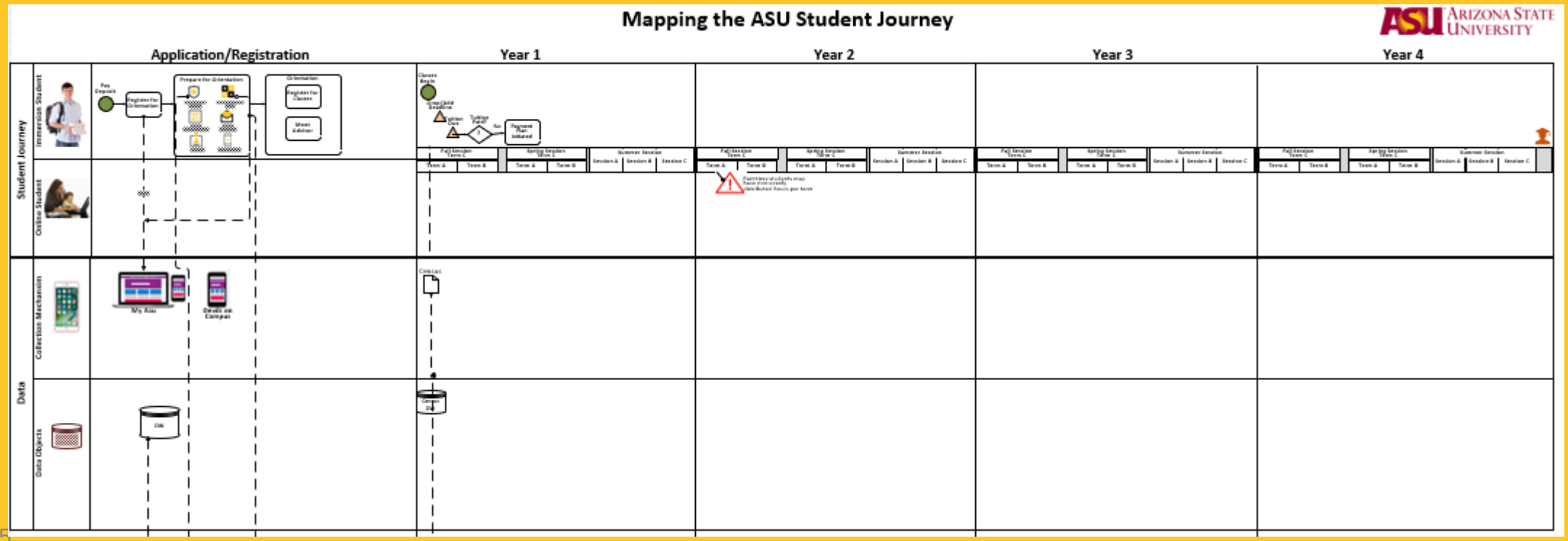
I've never seen out systems laid out from the Student's Perspective like this

Wow – we have a lot of systems!

There are types of data we're not storing – how can we add those new ideas?

Mapping the (many) Student Journey(s)

- Multiple types of students
- Many touch-points with staff and data
- While linear and time-series in nature, there is not the same common, direct path for all.



Student Personas - Immersion

First Time Full Time 1st Year
On-campus Resident

Name: John Smith
GPA: 2.8
Major: History
Home: Scottsdale, AZ
1st Gen: No
Persona: Socially Involved

First Time Full Time 1st Year
Commuter

Name: Maria Gonzales
GPA: 3.2
Major: Economics
Home: Tempe, AZ
1st Gen: Yes
Persona: Self Actualizer

Transfer – 1st Year
On-campus Resident

Name: Rachel Riviera
GPA: 3.1
Major: Engineering
Home: San Diego, CA
1st Gen: No
Persona: Job Seeker

International – 1st Year
On-campus Resident

Name: Stephen Ho
GPA: 2.7
Major: Engineering
Home: Shanghai, China
1st Gen: Yes
Persona: Job Seeker

Student Personas - Online

Returning/Transfer, Part-time Student Working Mother

Name: Walinda Jones
GPA: 3.8
Major: Marketing
Home: Tuscon, AZ
1st Gen: Yes
Persona: Job Seeker

Transfer Full Time Online Active Military

Name: Marissa Smiley
GPA: 3.0
Major: Retail Mgt
Home: Fort Rucker, AL
1st Gen: Yes
Persona: Job Seeker

Homeschool Student Disability Student

Name: Wendy Waxman
GPA: 3.9
Major: Applied Leadership
Home: Tortolita, AZ
1st Gen: No
Disability: Hearing
Persona: Lifelong Learner

Non-Degree Online Professional Development

Name: Mark Patton
GPA: 3.1
Interest: Business Analytics
Home: Scottsale, AZ
1st Gen: No
Persona: Lifelong Learner

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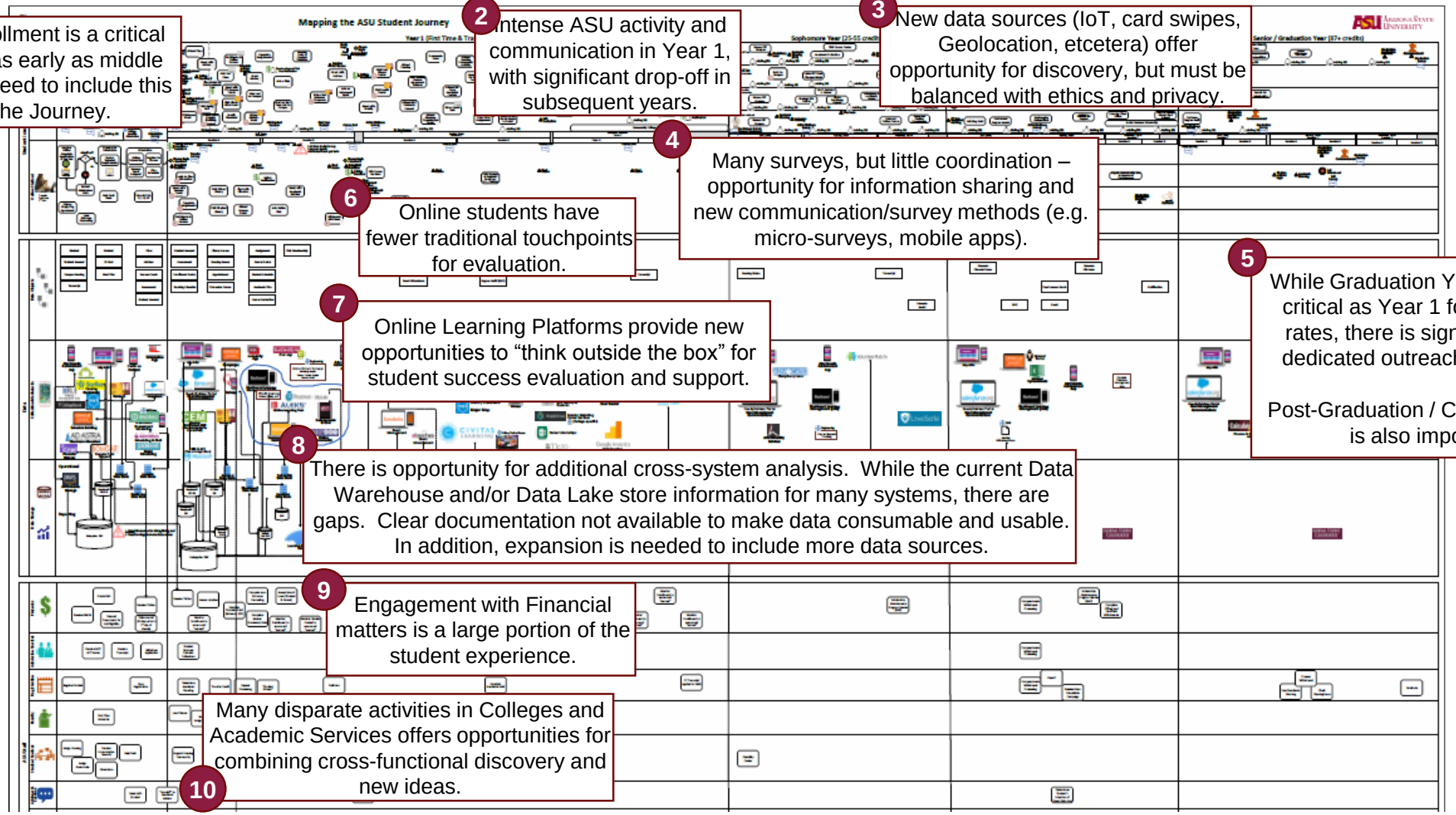
What did the project produce? What did we learn?

Our Project Goals from Initial Assessment

Business Goals and Drivers	Gaps and Challenges	Data-Centric Goals
Leadership in Academic Success and Accessibility	Integrated, Consumable Core Data Set	Collaboration and Organizational Governance
National Standing in Academic Quality and Impact	Collaborative Governance and Prioritization	Data Architecture and Technical Governance
Leading Global Center for Interdisciplinary Research and Discovery	Comprehensive Understanding of Student Journey	Data Exploration and Research Lab
Enhance Local Impact and Social Embeddedness	Opportunity for Exploration and Innovation	Enable the "People Factor" with Data
Fiscal Responsibility and Efficiency	Right Action at the Right Time	Technical Innovation

Student Journey Map – Key Observations



1. Pre-Enrollment is a critical period, as early as middle school. Need to include this in the Journey.
2. Intense ASU activity and communication in Year 1, with significant drop-off in subsequent years.
3. New data sources (IoT, card swipes, Geolocation, etcetera) offer opportunity for discovery, but must be balanced with ethics and privacy.
4. Many surveys, but little coordination – opportunity for information sharing and new communication/survey methods (e.g. micro-surveys, mobile apps).
5. While Graduation Year may be as critical as Year 1 for graduation rates, there is significantly less dedicated outreach in this year.

   Post-Graduation / Career Success is also important.
6. Online students have fewer traditional touchpoints for evaluation.
7. Online Learning Platforms provide new opportunities to "think outside the box" for student success evaluation and support.
8. There is opportunity for additional cross-system analysis. While the current Data Warehouse and/or Data Lake store information for many systems, there are gaps. Clear documentation not available to make data consumable and usable. In addition, expansion is needed to include more data sources.
9. Engagement with Financial matters is a large portion of the student experience.
10. Many disparate activities in Colleges and Academic Services offers opportunities for combining cross-functional discovery and new ideas.

Student Journey Map – Zoom in to Personas

First Time Full Time 1st Year On-campus Resident

Name: John Smith
GPA: 2.8
Major: History
Home: Scottsdale, AZ
1st Gen: No
Persona: Socially Involved

Returning/Transfer, Part-time Student Working Mother

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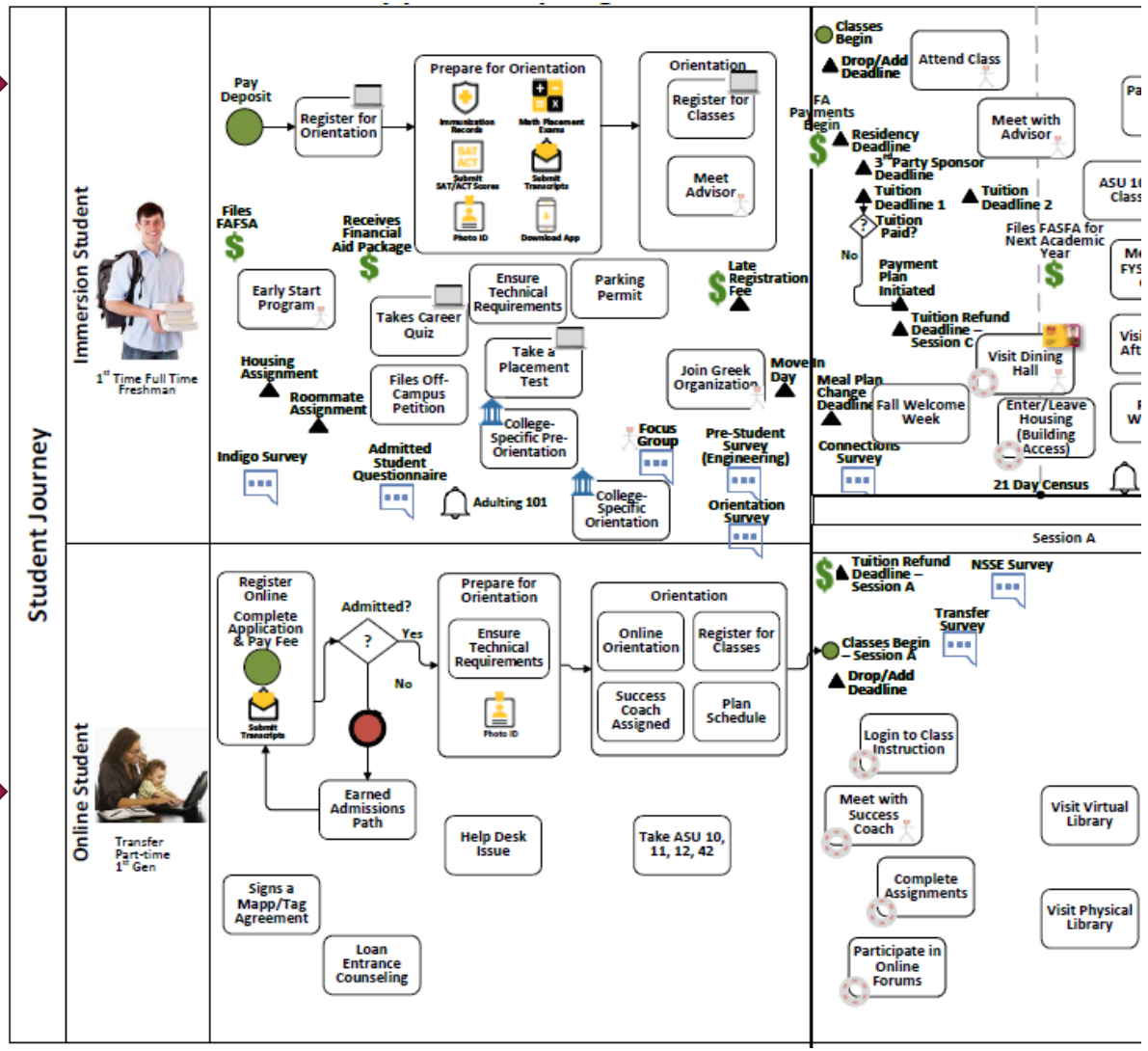
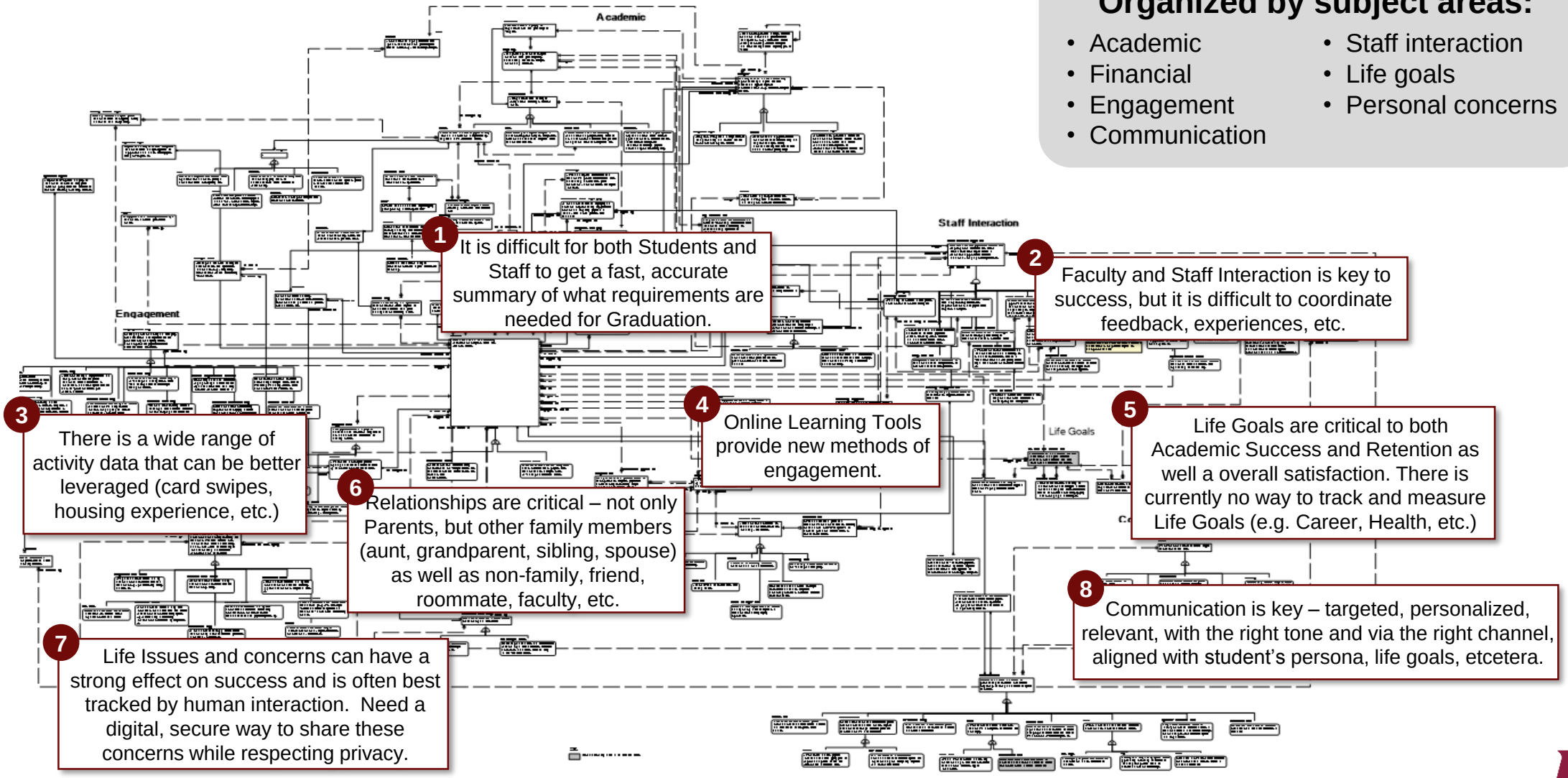


Data Model – key observations

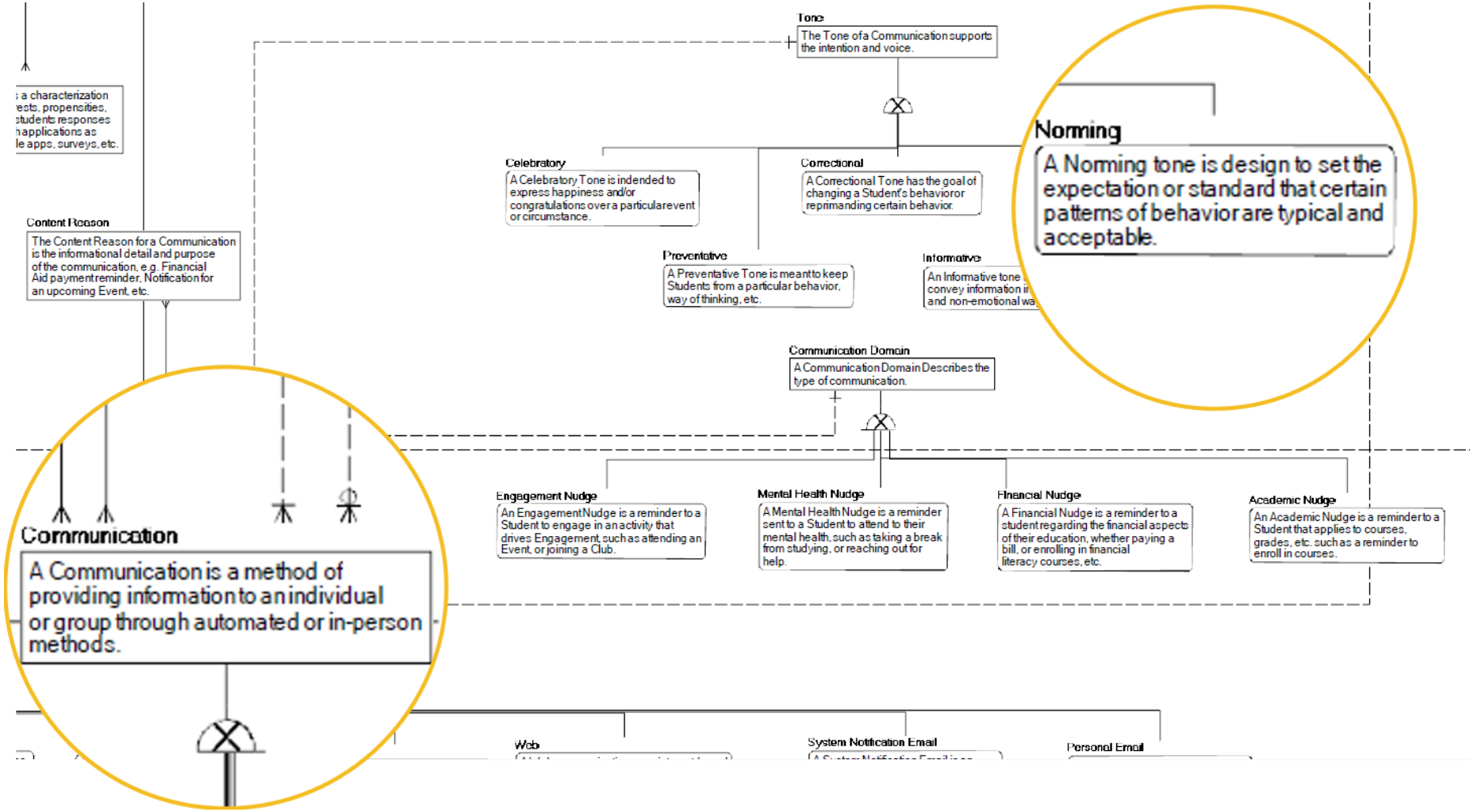


Organized by subject areas:

- Academic
- Financial
- Engagement
- Communication
- Staff interaction
- Life goals
- Personal concerns

1. It is difficult for both Students and Staff to get a fast, accurate summary of what requirements are needed for Graduation.
2. Faculty and Staff Interaction is key to success, but it is difficult to coordinate feedback, experiences, etc.
3. There is a wide range of activity data that can be better leveraged (card swipes, housing experience, etc.)
4. Online Learning Tools provide new methods of engagement.
5. Life Goals are critical to both Academic Success and Retention as well a overall satisfaction. There is currently no way to track and measure Life Goals (e.g. Career, Health, etc.)
6. Relationships are critical – not only Parents, but other family members (aunt, grandparent, sibling, spouse) as well as non-family, friend, roommate, faculty, etc.
7. Life Issues and concerns can have a strong effect on success and is often best tracked by human interaction. Need a digital, secure way to share these concerns while respecting privacy.
8. Communication is key – targeted, personalized, relevant, with the right tone and via the right channel, aligned with student's persona, life goals, etcetera.

Data Model – Zoom in to Communication



How do you model *your* student student journey? What might you discover?

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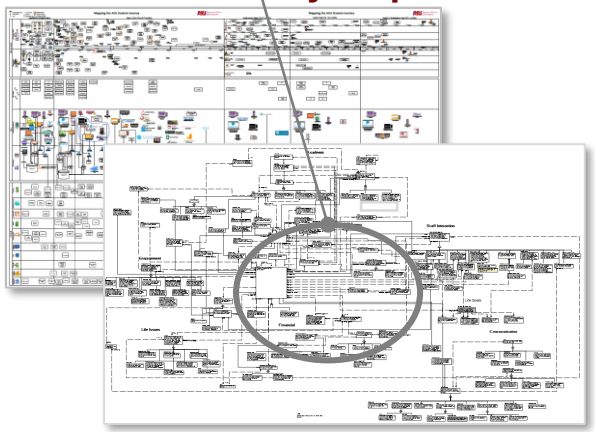
Project Roadmap and Recommendations

1 Use Student Journey documentation to prioritize new architecture efforts in a phased approach.

Subject Area -focused initiatives (e.g. Academic, Finance, etc.)

Student Journey Map



Student Data Model

2 Prioritize Subject Areas with Student Success Collaborative & Wider Enterprise Governance, e.g.

- Academic
- Financial
- Engagement
- Communication
- Staff interaction
- Life goals
- Personal concerns

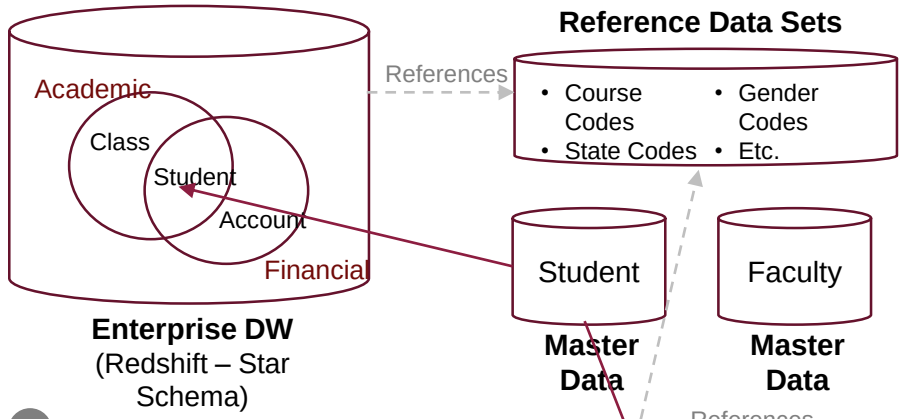
Assign appropriate Data Ownership and Stewardship (Business and Technical) to move efforts forward.

3 Create and publish Key Data Architecture Artifacts for each Subject Area

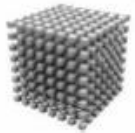
- System Architecture Diagram
- Data Flow Diagram
- Logical and Physical Data Models
- Data Dictionary
- Business Glossary
- Data Quality KPIs for critical data elements (e.g. student demographics)
- Student Success Metrics and Research Goals

4

A Develop trusted data sets and documentation aligned with defined data architecture and standards for subject area (e.g. Academic)



B Provide space for User Tables and integrate Enterprise and Local datasets



Denormalized Data for Analysis

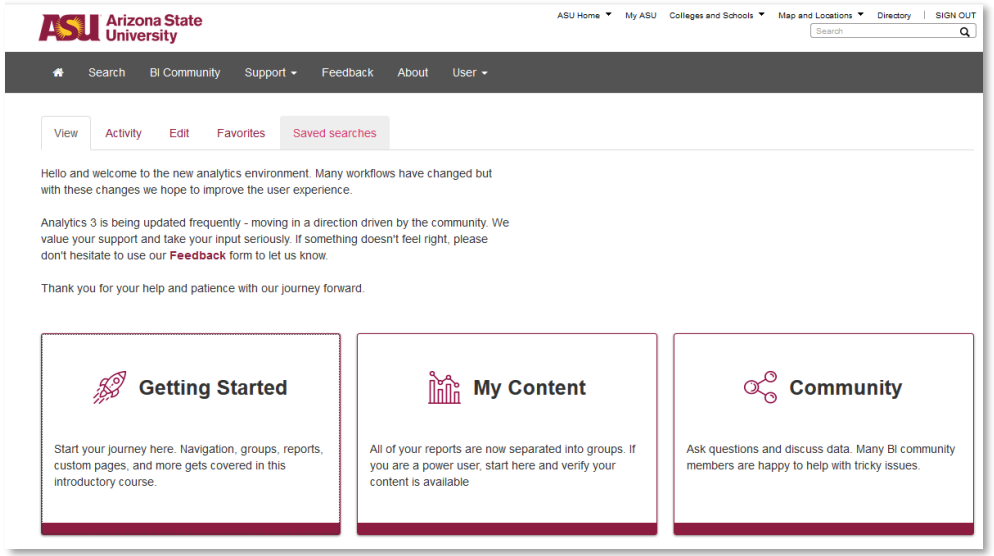
Time Sequenced Data Set

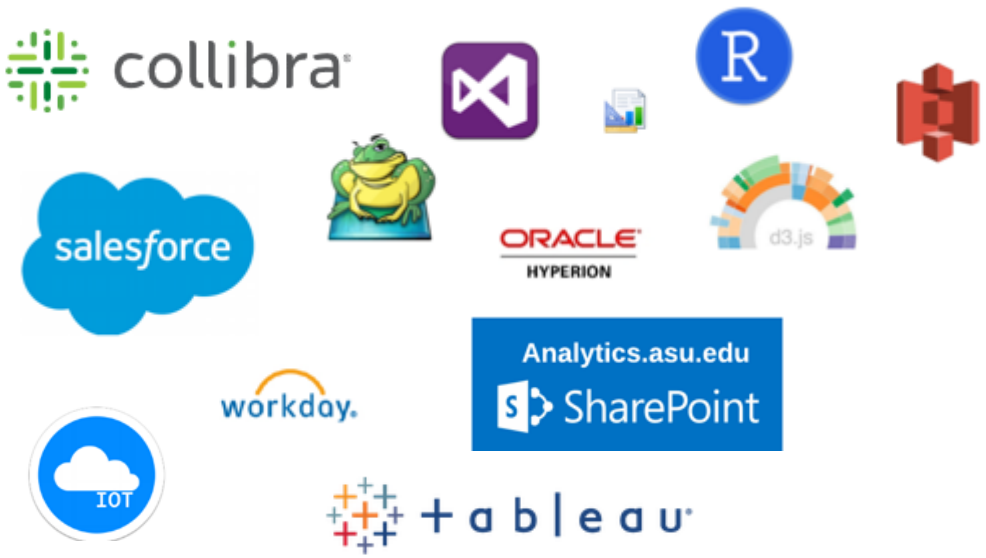
C Align Application Development with Canonical Data Standards

D  Define critical data elements and data quality remediation.


Map is not territory.

Meanwhile …





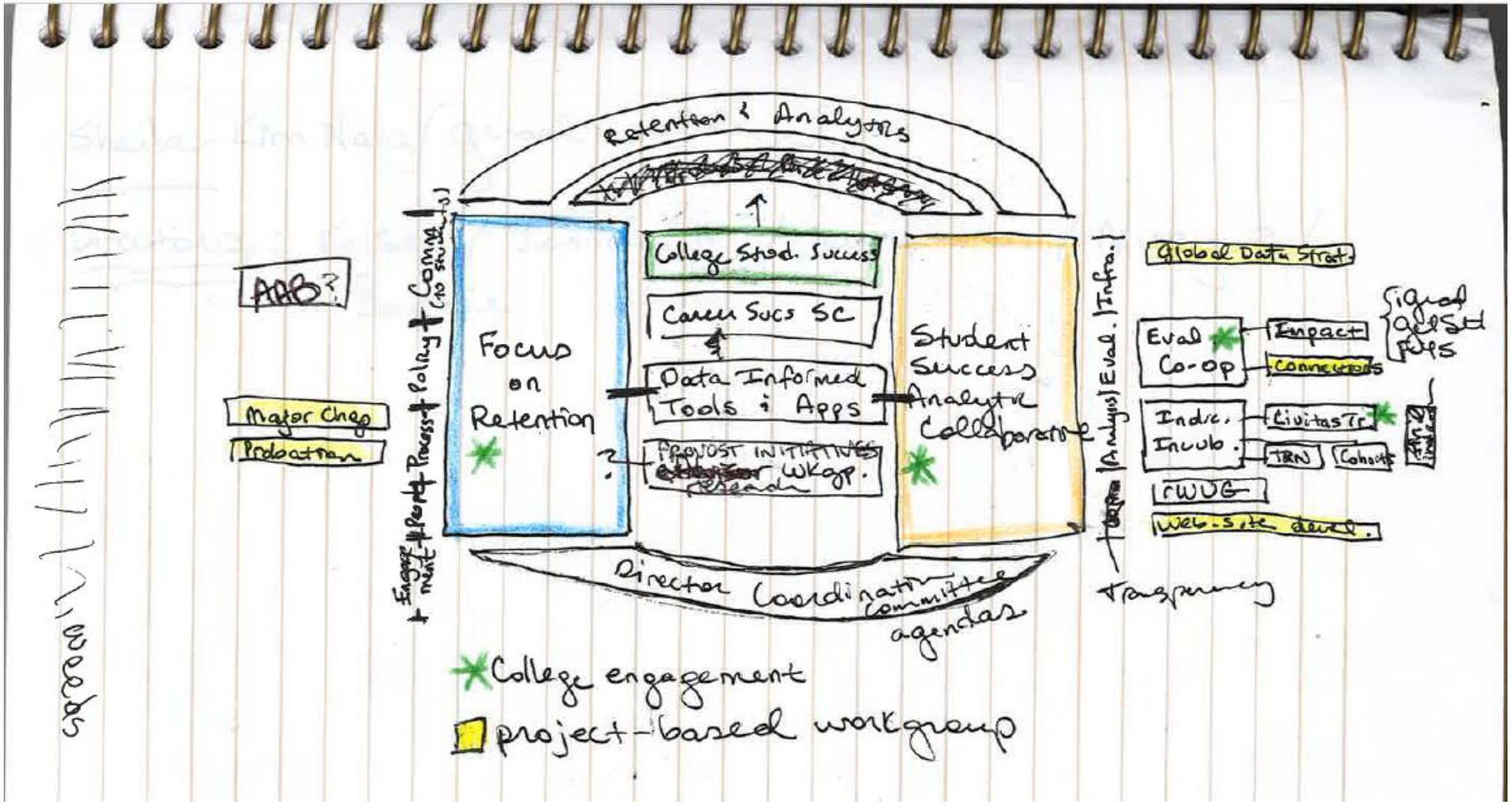
ASU, Amazon Web Services collaborate on Smart City Cloud Innovation Center

Center will use cloud computing, AI and machine learning to address regional challenges

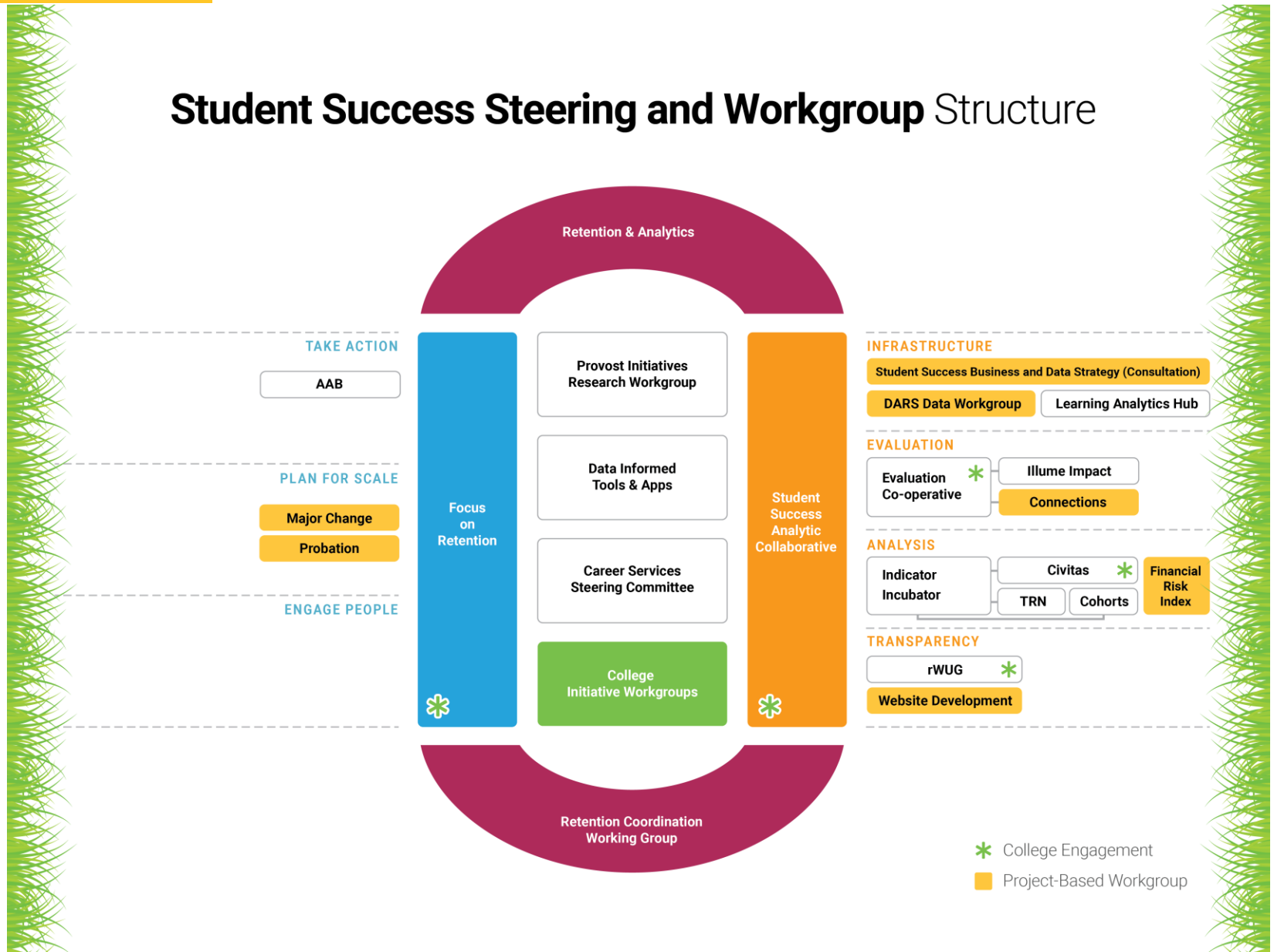
November 15, 2018

Arizona State University today announced the ASU Smart City Cloud Innovation Center (CIC) Powered by AWS, an initiative that focuses on building smarter communities in the Phoenix metropolitan area by using AWS Cloud to solve pressing community and regional challenges.

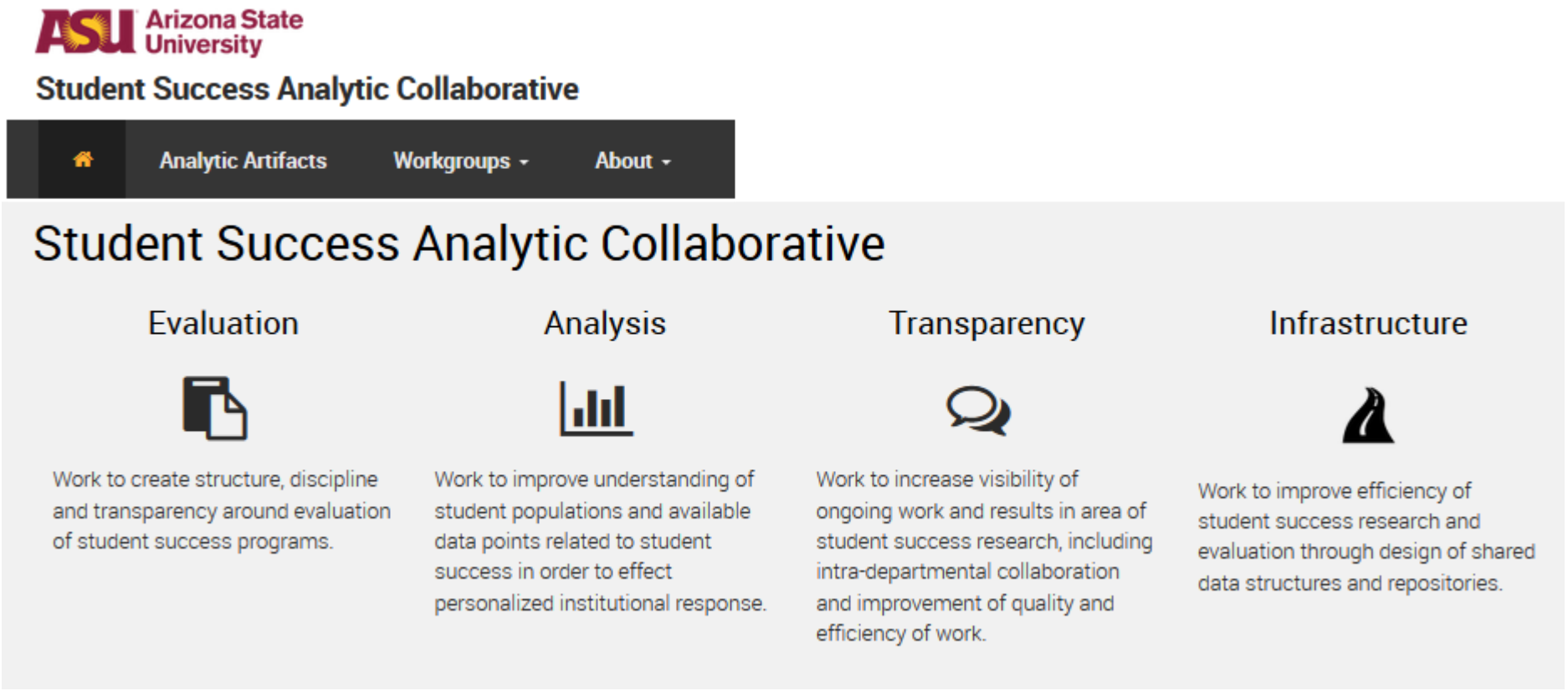
Meanwhile …


Retention & Analytics
Focus on Retention
College Stud. Success
Career Succs SC
Data Informed Tools + Apps
Student Success Analytics Collaborative
Director Coordination
Major Chgs
Global Data Strat.
Eval Co-op
Impact
Indic. Incub.
TRN
RWUG
Web-site devel.
Transparency
College engagement
project-based workgroup

Meanwhile …


Student Success Steering and Workgroup Structure
Retention & Analytics
TAKE ACTION
AAB
PLAN FOR SCALE
Major Change
Probation
ENGAGE PEOPLE
Focus on Retention
Provost Initiatives Research Workgroup
Data Informed Tools & Apps
Career Services Steering Committee
College Initiative Workgroups
Student Success Analytic Collaborative
INFRASTRUCTURE
Student Success Business and Data Strategy (Consultation)
DARS Data Workgroup
Learning Analytics Hub
EVALUATION
Evaluation Co-operative
Illume Impact
Connections
ANALYSIS
Indicator Incubator
Civitas
TRN
Cohorts
Financial Risk Index
TRANSPARENCY
rWUG
Website Development
Retention Coordination Working Group
College Engagement
Project-Based Workgroup

Meanwhile …


Arizona State University
Student Success Analytic Collaborative
Analytic Artifacts
Workgroups
About
Student Success Analytic Collaborative
Evaluation
Work to create structure, discipline and transparency around evaluation of student success programs.
Analysis
Work to improve understanding of student populations and available data points related to student success in order to effect personalized institutional response.
Transparency
Work to increase visibility of ongoing work and results in area of student success research, including intra-departmental collaboration and improvement of quality and efficiency of work.
Infrastructure
Work to improve efficiency of student success research and evaluation through design of shared data structures and repositories.

How do we take student success to the next level?

Learn to thrive!

Thank you!

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Questions or thoughts?