

Evolution of Data Analytics and Reporting at ECU

Greg Harris & Beverly King
Presentation to Insight Community,
March 8, 2024



AGENDA

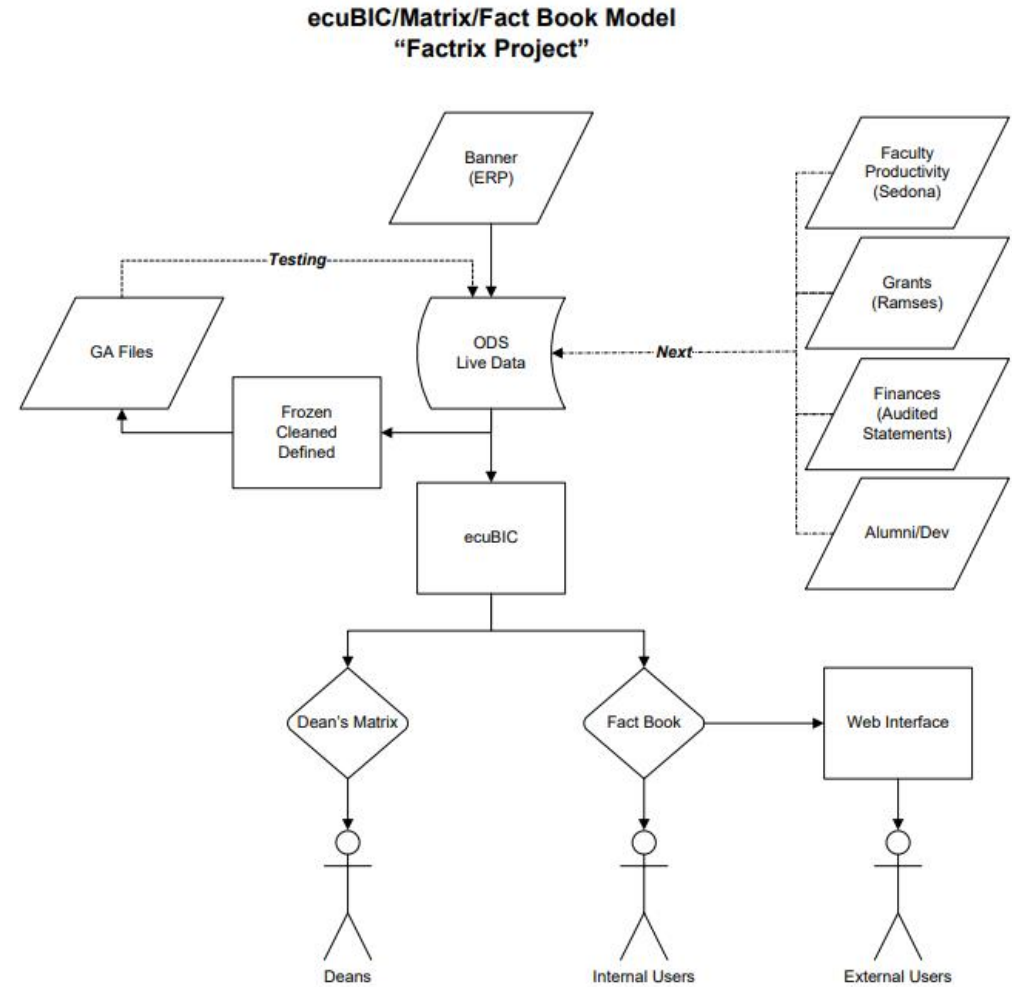
- Timeline of Business Intelligence within ECU's Office of Institutional Planning, Assessment, & Research (IPAR)
- Power BI Project
 - Formation of a Collaborative User Group
 - Planning, Development, Deployment in Phases
 - Training & Educating Campus Community
- Building Analytics Capacity within IPAR (Analytics Team & Projects)
- Assessing Institutional BI/Analytics Maturity at ECU

Timeline of Business Intelligence within ECU's Office of Institutional Planning, Assessment, & Research (IPAR)

2010-2020

Timeline: IPAR BI 2010-2011: Factrix

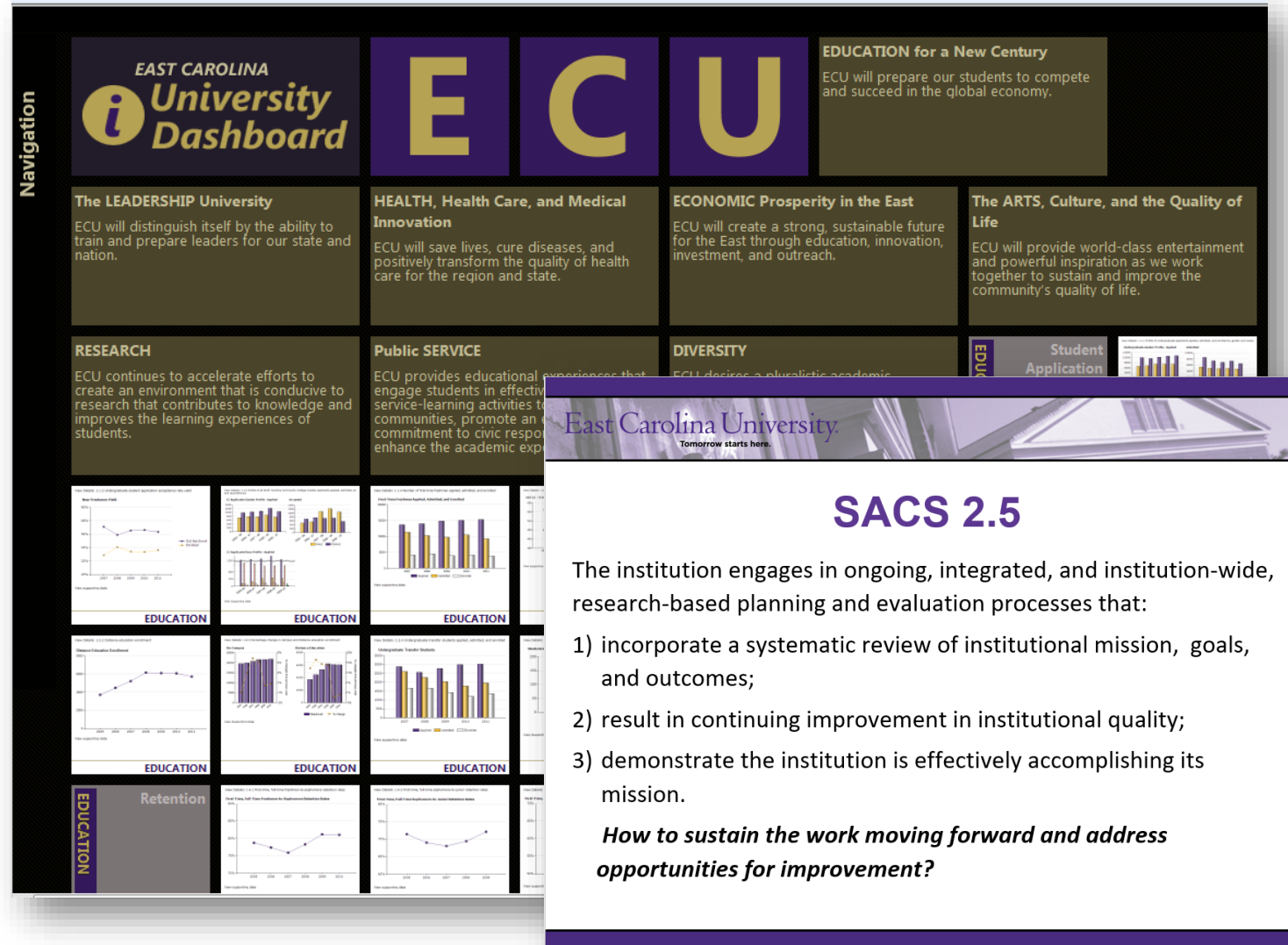
- Fall term SDF warehoused
 - Manual upload of data by ITCS
- Planning for Factrix Project
 - **Fact Book + Dean's Matrix = "Factrix"**
- Preparing for 2013 SACS Reaffirmation
- HRDM implemented by OSP



IPAR 06/03/10

Timeline: IPAR BI 2012-2014: University Dashboard

- University Dashboard
 - Home grown application
 - Partnership between IP and ITCS
 - Reports addressed specific SACS standards
 - Organized by ECU's strategic plan
- Support for:
 - 2013 SACS Reaffirmation
 - Knowledge Management Initiative
- SDM conceptualized, planned, and resourced by UNC-SO



SACS 2.5

The institution engages in ongoing, integrated, and institution-wide, research-based planning and evaluation processes that:

- 1) incorporate a systematic review of institutional mission, goals, and outcomes;
- 2) result in continuing improvement in institutional quality;
- 3) demonstrate the institution is effectively accomplishing its mission.

How to sustain the work moving forward and address opportunities for improvement?

Timeline: IPAR BI

2014-2015: Analytics Portal

- New look and feel
 - Partnership with ITCS transitioned from IP to IR
- Support for:
 - Fact Book
 - Academic Program Review
- Fall, spring, summer SDF warehoused
 - Enhanced reporting views
 - Automated upload of data initiated by IR staff
- SDM implemented across UNC System

The screenshot displays the ECU Analytics Portal interface. At the top, a navigation bar includes 'ECU Analytics Portal', 'Goto', 'Contact', 'Search', 'Help', and 'Log in'. The main content area features the title 'ECU Analytics Portal' and a subtitle: 'ECU Analytics Portal provides a centralized, accessible, customizable, and secure interface for accessing ecuBIC reports ECU faculty, staff, and students'. A central window titled 'Fact Book 2' is open, showing a report with the following content:

Welcome to the East Carolina University

Fact Book

Below are some fast facts about the university for the most recent term.
To begin exploring the Fact Book, close this frame and use the folders in the menu on the left to navigate.

The Fact Book is updated each fall and spring term by the Institutional Research staff. Institutional Research is responsible for the analysis, distribution, and presentation of data and information for use in planning, decision-making, and policy formulation at East Carolina University. Please email us at jpar@ecu.edu with questions or comments regarding the Fact Book.

Total Enrollment: 26,595

In the Spring 2020 term, enrollment totaled 26,595 including both on-campus and distance education students. On-campus enrollment totaled 19,517.

East Carolina University | Powered by ecuBIC

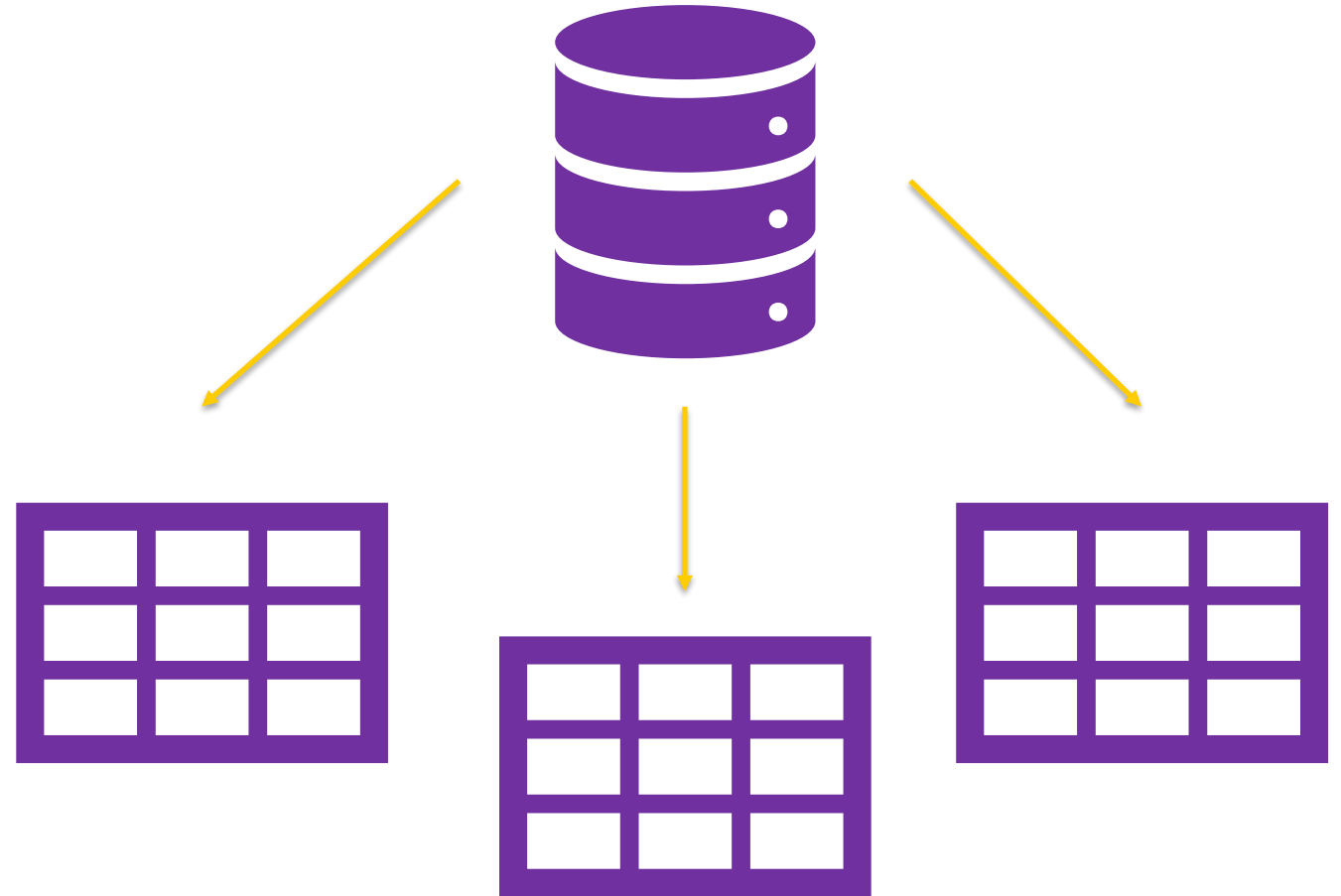
At the bottom of the portal, a navigation bar includes icons for 'Home', 'Educator Preparation Program', and 'Fact Book'.



Timeline: IPAR BI

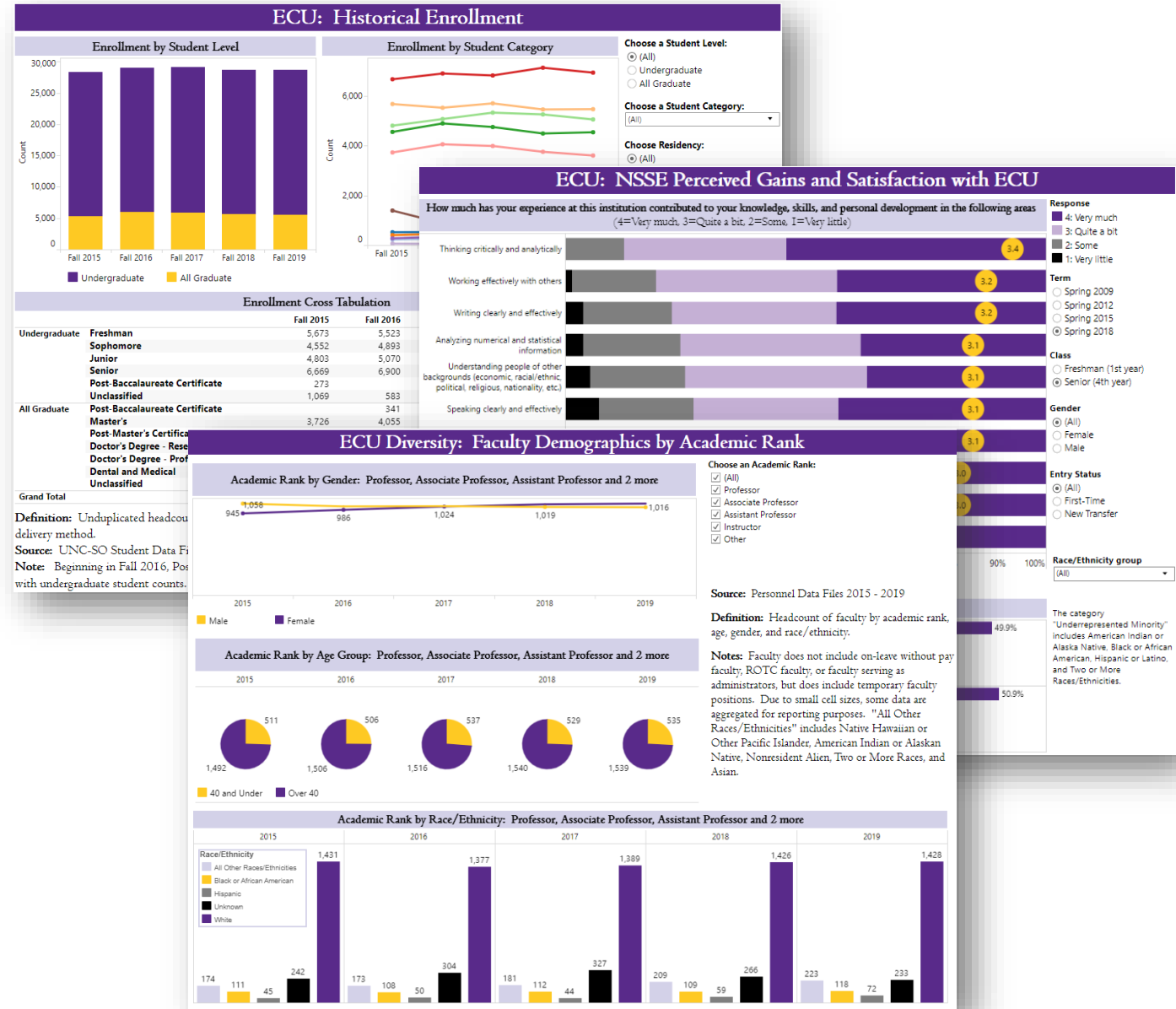
2015-2016: Staying Afloat

- IR's products dependent on SDF
- ITCS needed to support other units
- New leadership in IPAR
- Lack of training resources on SDM datasets
- Convert SDM datasets to SDF flat file format



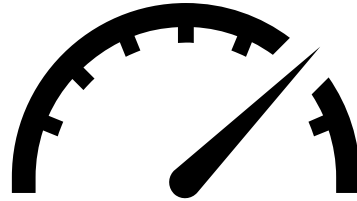
Timeline: IPAR BI 2016-2019: Tableau Public

- Additional Analytics Portal content
 - Academic Program Planning
 - Data Retrieval Guides
 - Survey Resources
- Adoption of Tableau Public
 - New University Dashboard
 - Strategic Planning Dashboards
 - OED Dashboards
 - IE/IA Dashboards
- Strengthening of predictive analytics capacity within IPAR



Timeline: IPAR BI 2019-2020: Time for Change

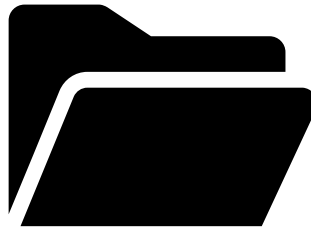
- Future of Analytics Portal
 - Lacks interactivity
 - Performance issues
 - No mobile support
 - Enhancements not priority
- Established new IPAR-BI team with members from IA and IR
- Search for new BI tool:
 - SAS Visual Analytics
 - Tableau
 - Microsoft Power BI
- Change from SDF to SDM data



40+ Tableau Dashboards



500+ ecuBIC Reports



Six Portal Desktops

Power BI

2020 - Today



Formation of a Collaborative User Group

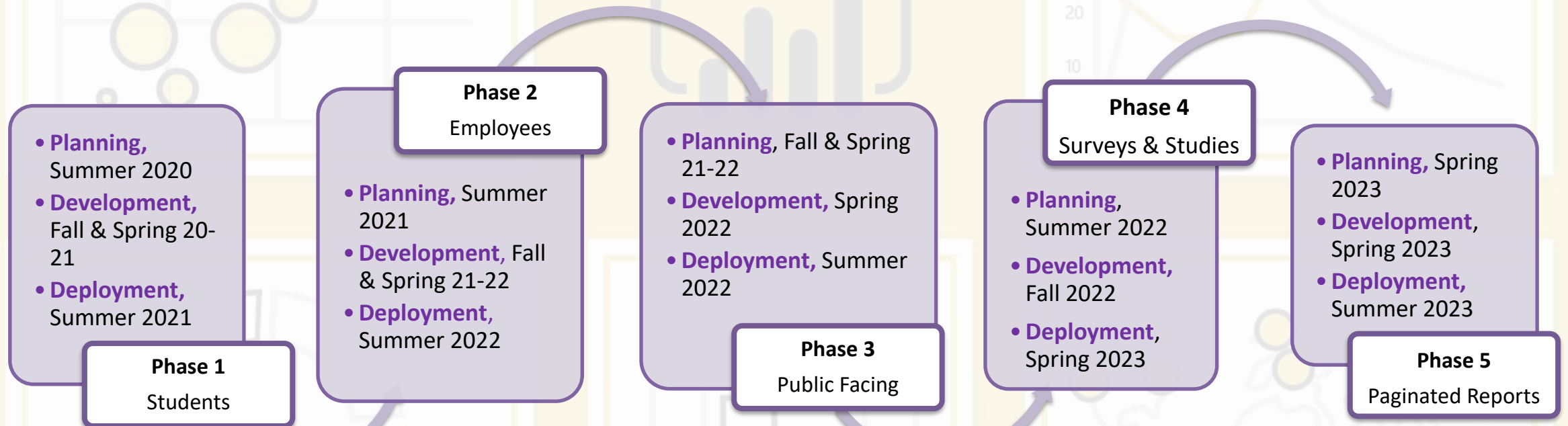
Planning, Development, Deployment in Phases

Training & Educating Campus Community

Formation of a Collaborative User Group

- Led by Associate Director, IR
- Membership
 - All members of Institutional Assessment, IPAR
 - All members of IPAR Business Intelligence Team
 - Director, IR
 - Senior Research Associate, IR
 - Senior Associate Director, Student Affairs Assessment
 - Associate Dean for Planning, College of Arts & Sciences
 - Assistant Dean for Undergraduate Studies & Assessment, College of Health & Human Performance
 - Associate Dean, College of Fine Arts & Communication

Planning, Development, & Deployment in Phases





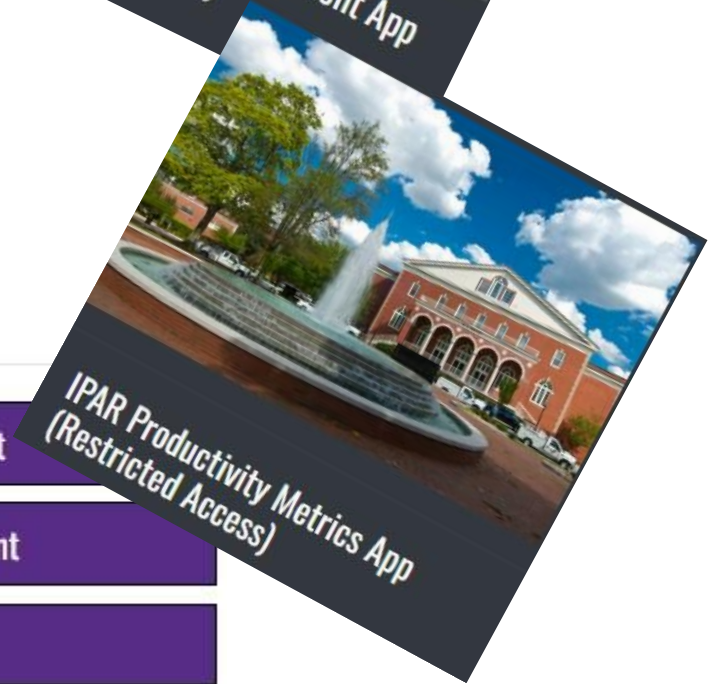
IPAR Business Intelligence App



IPAR Strategic Actions App



IPAR Enrollment Management App
(Restricted Access)



IPAR Productivity Metrics App
(Restricted Access)

University Dashboard

Admissions

New Students

Enrollment

Courses

Graduation

Achievement

First Destination

Faculty

Staff

Training & Educating Campus Community

- Since summer 2021, have extended open invitations in multiple venues to meet with faculty/staff one-on-one or in groups to demo the Power BI dashboards.
- Present each year to faculty who sign up for a webinar on data resources through our Office of Faculty Excellence.
- Provide introduction to the IPAR Business Intelligence App in Academic Program Review orientations.
- Put links to Power BI dashboards in strategic planning and similar documents.
- Refer data requesters to dashboards when requested data available there.
- Throughout summer & fall 2023, conducted training sessions by college for administrators and advisors on IPAR BI App.
- Most recently --
 - Reached out to Faculty Senate to do demos to FS committees for whom the dashboard data would be relevant.
 - Will add a “Data Byte” to each monthly Provost newsletter to campus.

Training & Educating Campus Community

- Added items to our [IR FAQ](#) page related to data resources & training.
- Created a [video](#) on how to navigate the IPAR BI App linked from this page.

Institutional Research FAQs

Click on a question below to be taken to the answer.

Who are we?

- [What is Institutional Research?](#)
- [What are the major responsibilities of ECU's office of Institutional Research?](#)

Definitions

- [What are "official" data?](#)
- [What is a "census day"?](#)
- [Where can I find data definitions used by IR?](#)
- [How are minority and underrepresented minority defined by IR?](#)
- [What's the difference between federal and non-federal race/ethnicity categories?](#)
- [Why do numbers for the same variable sometimes differ?](#)

Interactive reports & dashboards

- [How do I request training on IR's reports and dashboards?](#)
- [Why are sets of IPAR dashboards called "apps"?](#)
- [How do I know which data resource to use?](#)
- [What if I need a refresher on navigating the IPAR Business Intelligence App?](#)
- [When and how often are interactive reports and dashboards updated?](#)
- [How do historical changes in university practices or data collection impact interpretation of the visualizations?](#)
- [What do I do if the Glossary of Terms in the IPAR BI App won't open for me?](#)

Data requests

- [When do I request data from IR versus other units on campus?](#)
- [What data resources are available to me without having to request data from IR?](#)
- [What is the process for requesting data from IR?](#)

Building Analytics Capacity within IPAR

ANALYTICS TEAM & PROJECTS

General Analytics Capabilities at ECU

Traditional

- ITCS Enterprise Data Services
 - Includes Enterprise Analytics & Business Intelligence
- Institutional Research
 - Director, Associate Director, 4 Research Associates

Additions

- IPAR Predictive Analytics Team (from 2017)
- Analytics Development Community (from 2020)
 - Meets monthly
 - 66 members from across campus

Members of IPAR Analytics Team

- Associate Provost, IPAR
- Director, IR
- Senior Research Associate, IR
- Statistician, IR
- 2 IPAR Assessment Associates
- Senior Associate Director, Student Affairs Assessment
- Research Associate, Office of Equity & Diversity

Sample Projects, Analytics Team

- Enrollment Projections (variety of methods including Monte Carlo simulations)
- Predicting Community College Transfer Success
- Survival Analysis of Transfer Students
- Chemistry Sequence Study
- Math Pathways Analysis
- Gender & Academic Success
- Retention Models (first-to-second & second-to-third year)
- Study of Non-enrollees, including Summer Melt
- Factors Influencing Yield
- SSOI Analyses (course evals)
- Course Demand Analysis

Assessing Institutional Intelligence/Analytics Maturity

AT EAST CAROLINA UNIVERSITY



First attempt

- In spring 2021, sparked by a discussion with UNC system office personnel, ECU's DGSC began investigating analytics maturity assessment instruments.
- First tool piloted: [MATURITY MODEL FOR INSTITUTIONAL INTELLIGENCE v1.0](#)
 - Developed specifically for use in higher education
 - Primary authors from Spain with contributions by authors from UK, Germany, & US
- Administered only to a few IR and ITCS staff as a pilot.

MATURITY MODEL FOR INSTITUTIONAL INTELLIGENCE v1.0

- Institutional Intelligence (I2) assessed along nine dimensions on a scale from 1 to 5 (1=Absent, 2=Initial, 3=Expanding, 4=Consolidated, 5=Institutionalized): (ECU scores)
 - I2 Team: The existence and organization of an I2 team (4)
 - Scope: The breadth of scope of the I2 platform in terms of key functional areas included (4.4)
 - SBU Role: The role of business units in the information supply chain (4)
 - Data Products: The level of sophistication of the data products being offered to the users (3.6)
 - User Coverage: The level of coverage of the potential universe of users (3.6)
 - Users Engagement: The role of the users of the resulting data products (4)
 - Data Management: The effective address of the most relevant aspects of data management (3.4)
 - Business Value: The perceived business value of the data products being offered (3.8)
 - Strategic Support: The position of the institutional intelligence initiative in the institutional strategy (4)
- Overall score (3.8; Consolidated) obtained with status of Incomplete, Centered, Unbalanced, or Evolved (Unbalanced)

OVERALL MATURITY LEVELS

LEVEL	NAME	GENERAL DESCRIPTION
1	ABSENT	No formal institutional intelligence initiative is in place, or it is in such an early state that it cannot be perceived as such. Data usage is, in general, limited to operational contexts.
2	INITIAL	The notion of data as a valuable asset that must be provided to certain addressees in an efficient, trustworthy way is perceived in some functional areas, and some local initiatives arise. Small scale, local success stories regarding data analysis services may happen.
3	EXPANDING	The potential of data to empower the institution at all levels is clearly perceived. There is a strong desire to build on the small, local institutional intelligence success stories and translate that success to a bigger, global scale. The first global, coordinated efforts are put in place and gradually incorporate/substitute the previous local initiatives.
4	CONSOLIDATED	Institutional Intelligence is clearly established as a permanent, global, visible, and valued program resulting in an effective internal service. Several data products targeted to different user groups and covering different functional areas have been created and are actively used.
5	INSTITUTIONALIZED	Institutional intelligence forms an integral part of the institutional culture, and is taken for granted. Its effective use by all relevant user groups through an extensive set of data products covering all key functional areas is very high.

MATURITY LEVEL CHARACTERIZATION

INCOMPLETE	The achieved maturity level is weak, and suggests the need of leveling the low scoring dimensions to consolidate it.
CENTERED	The level is well consolidated and the initiative is balanced.
UNBALANCED	The achieved maturity level shows an unbalanced general situation where efforts must be made to improve the weak dimensions (probably by taking advantage of the strong ones).
EVOLVED	The achieved maturity level shows a transitioning situation to the next overall maturity level

MATURITY MODEL FOR INSTITUTIONAL INTELLIGENCE v1.0

- DGSC decided not to continue use of this assessment instrument for several reasons, including the following:
 - Instrument very complex.
 - Concepts difficult to explain, even to people most involved in analytics & business intelligence.
 - Challenging to establish goals/actions for increasing maturity based upon responses.

Next tool

- [Analytics Institutional Self-Assessment](#)
 - Developed by [EDUCAUSE](#)
 - Designed to help analytics professionals understand the level of analytics capabilities at their institutions and get some ideas about how to improve those capabilities.
 - Consists of almost 30 questions and divided into sections on Workforce (WF), Data Governance (DG), Data Management (DM), Leadership (L), and Data-Informed Culture (DIC).
 - Each question rated on a 3-point scale (low, medium, or high maturity).

Analytics Institutional Self-Assessment

Sample Question

- Data Governance

- There are clear and widely communicated data definitions and standards.

- Data definitions are not consistent across the institution. Some progress may be underway to establish data definitions but details are not well-communicated. There is no central source or data dictionary for defining key terms, or such resources are out of date.

(Low maturity)

- Data are somewhat or mostly well-defined and understood. Communication about data definitions and standards could be improved. There is a data dictionary or similar resource available, but it may be incomplete or need improvement. (Mid-level maturity)

- Data are well defined and understood, with consistent cross-institution communication about data definitions and standards. There are source(s) such as data dictionaries readily available for staff to reference. (High maturity)

Analytics Institutional Self-Assessment

Administration, Round 1

- Assessment items distributed to members of the DGSC, the DSC, and the ADC (N=66) as a Qualtrics survey.
 - Only two-thirds opened survey; about 1/3 completed it.
- Most notable result: Large variance in responses, not explained by unit or group
 - Perhaps due to misunderstanding of terms & lack of university-wide communication or education about data governance.
- Working group formed to review, revise, pilot, and revised again.
 - Revision was focused on clarifying survey questions (e.g., defining terms) and making questions more specific to ECU. Some questions were eliminated. On the revised survey, a 5-point response scale was used.

Analytics Institutional Self-Assessment

Revision, Sample Question

WF Workforce (non-management employees both in central IT and across the institution)

WF1 Data literacy is a cross-institutional focus here at ECU. (Data literacy is the ability to understand and communicate about data in context, including the range of skills and knowledge necessary to find, manage, evaluation, create, and communicate about data. The depth of data literacy required for each person depends on the role or position.)

There is no focus on data literacy based upon the lack of written policies, training, or development efforts.

Many understand the importance of data literacy due to our written policies, training, and development efforts.

Data literacy is universally understood by everyone due to our written policies, training, and development efforts.

1

2

3

4

5

Click on slider to move.



Analytics Institutional Self-Assessment

Administration & Results, Round 2

- Revised survey distributed during the 22-23 academic year, again to members of DGSC, DSC, and ADC.
- 84 people received survey. Just over half opened; about 1/3 completed it. (No improvement in response rate over first administration.)
- Same variation in ratings as in round 1 indicating a continued need for more communication and education of the campus community about analytics.
- Although there were individual responses on the low end of the response range (1s & 2s), no average was below a 3 indicating mid-range analytics maturity.
- Respondents indicated ECU had highest level of maturity in areas of data governance & data security.

- The items with the lowest overall ratings (although still at a mid-range maturity level) are listed below. They are organized into priority categories based upon overall maturity rating averages and ranges, with Priority 1 items requiring the most immediate and greatest action. Highlighted items are those targeted by DGSC as those to improve before next administration of survey.
 - PRIORITY 1:
 - Data literacy is a cross-institutional focus here at ECU.
 - Role agility is a cross-institutional focus when it comes to analytics here at ECU.
 - Where to acquire, and how to interpret, data to track metrics and make decisions is common knowledge at ECU.
 - PRIORITY 2:
 - Expenses related to data analytics (e.g., salaries for data analysts, professional development for data analysts, software for data analysis, etc.) are seen by leaders as an investment.
 - ECU is adept at change management.
 - There are clear and widely communicated data definitions and standards.
 - PRIORITY 3:
 - When it comes to analytics at ECU, communication and collaboration among units are common.
 - There are jobs or roles related to analytics outside of IT or IR.
 - Data analytics is used to make decisions, track progress on goals, and adjust institutional course as it specifically relates to supporting the access, representation, persistence, and success of a diverse student, staff, and faculty body (DEI).

Analytics Institutional Self-Assessment

The Future at ECU

- Decisions made by the DGSC about the assessment:
 - The assessment should be redeployed every two years in the spring (to allow time for data collection, review, and implementation of actions). Thus, the next deployment would be spring, 2025.
 - Before another assessment in 2025, the DGSC will discuss whether (and how) the survey audience should be broadened.
 - The DGSC meeting in late May/early June following survey administration will be devoted to reviewing the survey results and creating/prioritizing actions to be taken to improve analytics maturity at ECU.