

CHICAGO

MARCH 4-7

INTERNET2

2024
COMMUNITY
exchange

TCSG eCampus

Turning Commercial Cloud Into a Native Solution

March 7, 2024



Overview

Deona Carter, PhD
eCampus Director, Technical College System of Georgia

Steve Wheat
Associate Partner, McKinsey & Company

- Background
- Defining eCampus
- Key Terms
- Relationships
- Growth
- Course Design
- Background
- Implementation
 - Phase 1
 - Gap Analysis of Ellucian
 - Cloud Foundation Build
 - Cloud-native Integration
 - Phase 2
 - Cloud based Data Warehouse
 - Phase 3
 - Cloud based Data Warehouse
- Agile Scrum based Delivery framework
- Impact of eCampus engagement

Background

Technical College System of Georgia

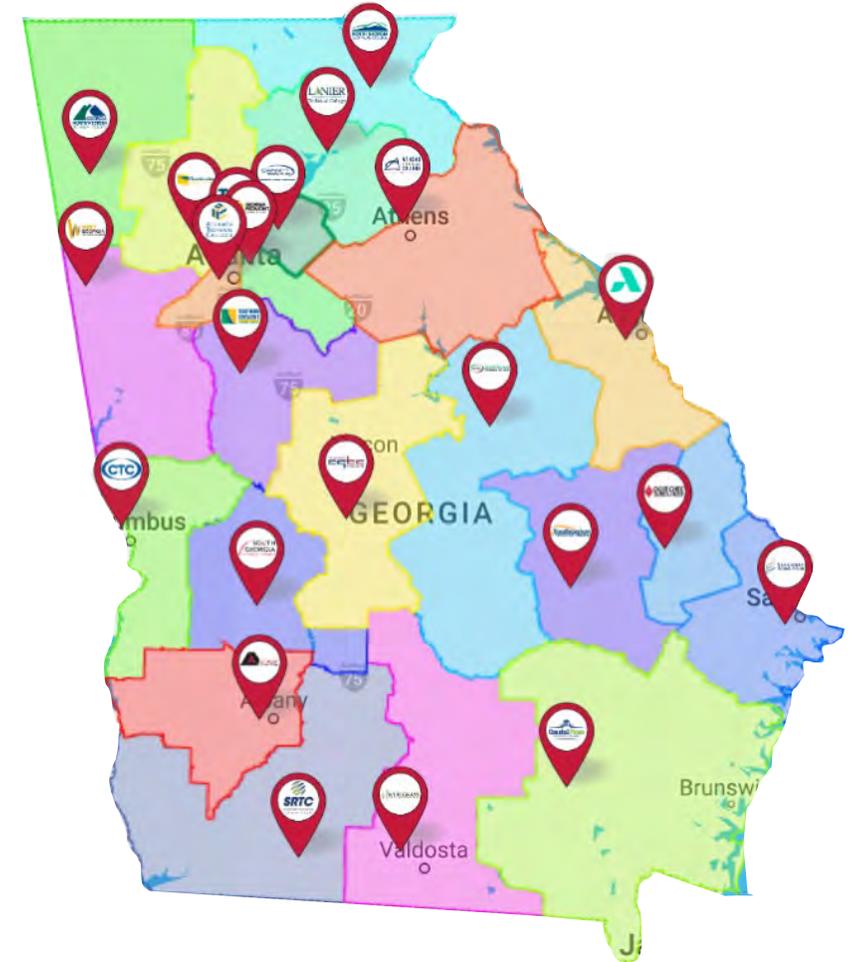
Quick Facts

- State-wide technical college system
- Oversees the state's technical colleges, adult education, and workforce and economic development programs
- 22 colleges
- 345,000 students
- 12,000 faculty

eCampus Initiative

- New online platform offering courses from across all 22 colleges in the system
- Provides students with access to faculty and courses not available at their home college
- Students receive credit for eCampus courses at their home college
- Accelerates program completion by making more courses available to fulfill program requirements
- eCampus courses prepare students for in-demand career opportunities

Source: <https://www.tcsg.edu/find-a-college/>



Functional side of eCampus



Defining eCampus

The eCampus platform allows students from across Georgia to enroll in online courses offered by Technical College System of Georgia (TCSG) colleges, providing students access to programs and courses that may not be available during the current term at their Home college. Upon completion of the eCampus course, the student will earn credit at their home college. The courses and programs available via the eCampus platform are chosen to prepare students for in-demand career opportunities.



eCampus is not...

- Not the same at Georgia Virtual Technical Connection
 - Different from Transient Process
 - Students are only enrolled at one college
- Not a separate, stand-alone institution
 - All faculty come from existing Technical Colleges
 - Follow local college policy
- Not a singular initiative
 - A lot of new technologies were birthed out of the overarching initiative such as the implementation of a CRM

Source: <https://tcsg-itdr.atlassian.net/wiki/spaces/EC/overview>

Key Terms



Host College



Home College



eCampus Liaison

College Relationships

- Credit hours
- Host/Home Tuition Split
 - Student Fees
 - Course Fees
- Processing Financial Aid



Year to Year Growth

AY2021	AY2022	AY2023
35 Courses	162 Courses	272 Courses
465 Students	1,897 Students	3,679 Students



In Dollars and Cents

Summer 2021	Fall 2021	Spring 2022
\$43,790	\$82,930	\$66,630
Summer 2022	Fall 2022	Spring 2023
\$39,760	\$119,490	\$258,464.31
Summer 2023		
\$77,306		



Courses

- Standardization
- Syllabus Template
- Table of Contents (TOC) / Course Menu
- Course Enrollment/Participation Quiz
- Process
- Masters to Section Courses
- College Distance Ed POCs



Technical Nuts & Bolts



TCSG eCampus Implementation

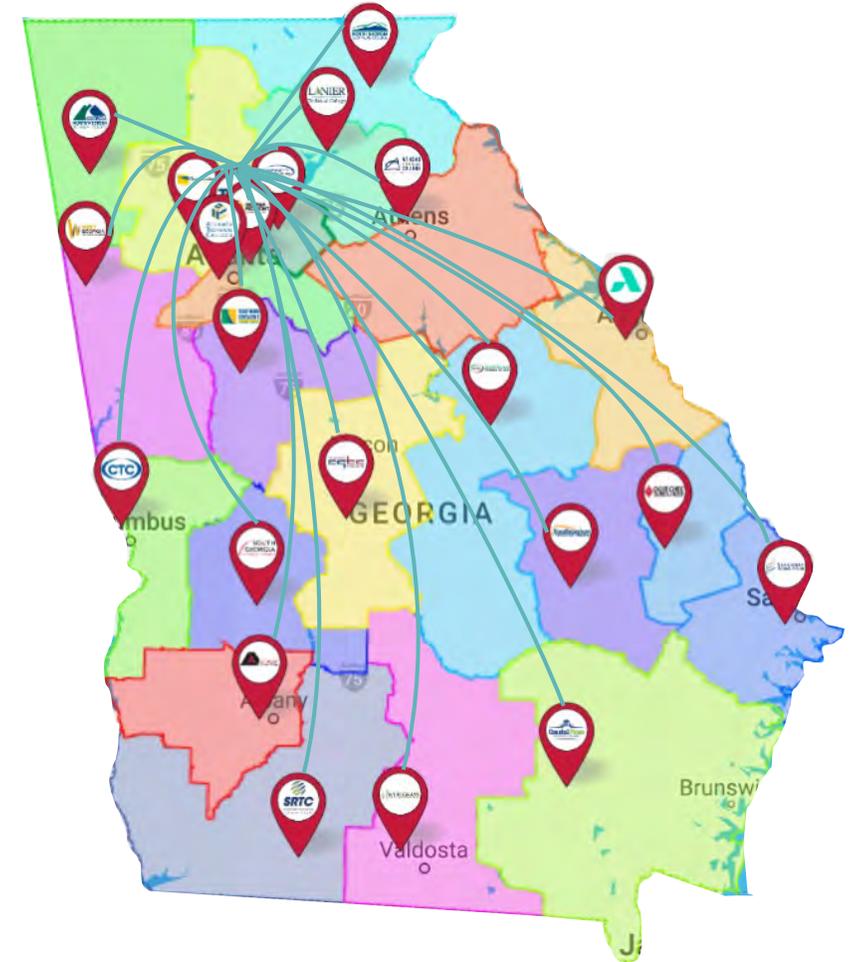
Rethinking academic practices, business processes, and technical infrastructure to deliver on the vision of eCampus

Practices & Processes

- Provide a system-wide course catalog
- Cross-list high-impact courses across all 22 colleges each semester
- Implement a common digital learning platform for eCampus
- Provide a common customer service experience for students and faculty
- Report on eCampus student outcomes across the entire system

Technical Infrastructure & Skill

- Implement Ellucian course cross-listing and registration for the Banner student information system
- Provide system-wide single sign-on with Okta
- Implement TargetX (Salesforce) CRM
- Build an AWS landing zone for non-SaaS components of the solution
- Integrate 22 college student information systems with eCampus Blackboard
- Integrate 22 college TargetX CRMs
- Build a system-wide data warehouse in the cloud
- Train the TCSG IT team on all the above



Gap Analysis of Ellucian (TCSG's SIS vendor)

Helping TCSG get the most from their vendors and identify what remains to be built

Requirements

- Over six weeks while the team trained and ramped up on Agile practices, the team also defined 20 major epics describing functions, features, and infrastructure needed to implement eCampus
- Team met with Ellucian, TCSG's student information systems vendor, and reviewed requirements and product roadmaps to determine that 15 epics could be addressed by Ellucian in the timeline of the project if TCSG purchased and implemented Ellucian's cross-registration solution
- The remaining 5 epics described functions, feature, or infrastructure that TCSG would have to build

Remaining Requirements

1. Integration between the 22 college student information systems and eCampus Blackboard learning management system
2. System-wide data warehouse and reporting
3. Implement a common CRM across the system
4. Implement system-wide identity management and single sign-on
5. Build a landing zone in AWS to host these applications, integrations, and infrastructure

Cloud Build

Implementing a cloud landing zone to serve central IT and 22 colleges components of eCampus and the data warehouse

- AWS recommended an AWS Control Tower implementation to provision a multi-account landing zone for TCSG
- Provisioned 88 AWS accounts in total
 - 3 central accounts: root, log, and log-archive accounts
 - 19 TCSG central accounts: networking, shared services, sandbox accounts, and dev/test/prod for eCampus, analytics, and Enterprise Services groups
 - 66 dev/test/prod accounts for the 22 colleges to run college-specific components of the eCampus solution and other college-specific administrative applications and infrastructure
- Implement DirectConnect between the central TCSG network and AWS cloud
- Troubleshooting and testing of 22 colleges' connectivity to AWS through central TCSG network and DirectConnect
- Embedded one AWS team member full-time in the infrastructure and security team to assist and train the team

...

Root OU



Production OU

- eCampus Production
- eCampus Staging
- Analytics Staging

Core OU

- Log Archive
- Audit

Non production OU

- eCampus QA
- Analytics QA
- eCampus Dev
- Analytics Dev
- VMs

Infrastructure OU

- Networking
- Shared services

Sandbox OU

- eCampus Sandbox
- Analytics Sandbox

Cloud-Native Integration

Integrating 22 college student information systems with the eCampus learning management system

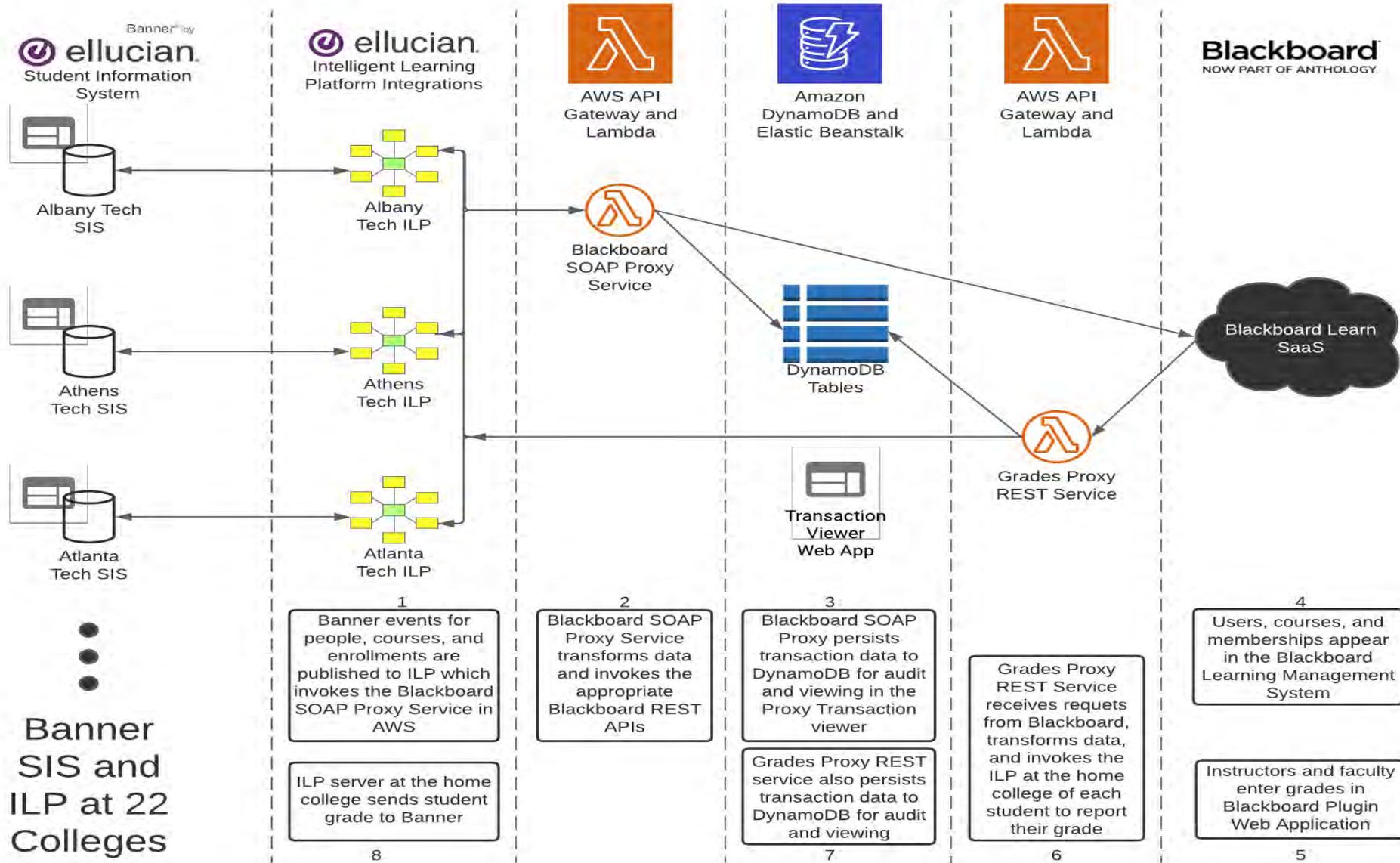
Provisioning the eCampus Blackboard LMS

- People (students, instructors, and faculty) in the 22 college student information systems must flow to the LMS so they can login and use the digital learning platform
- Course data for all cross-listed courses must flow to the LMS to create a courses in the LMS where instructors and faculty can create, manage, and deliver course content
- Course enrollments data must flow from all 22 colleges to the LMS to build a list of who is taking and teaching each course
- Event filtering and data transformation is required

Reporting Grades Recorded in the Blackboard LMS back to all 22 Home Colleges

- Instructors report grades for entire an entire course section in a Blackboard plugin web application
- The integration must look at the grade for each student coming in from Blackboard to determine the student's home college and route each grade to the proper college
- Data transformation is required

...



Cloud-Based Data Warehouse

Replicating 22 college student information systems to the cloud and building a data warehouse in the cloud

Replicating Student Information System Databases to the Cloud

- 22 AWS Data Migration Service processes replicate each On-Prem Banner Oracle DB into AWS RDS PostgreSQL DB
- Complete replication of each On-Prem DB
- Executed on a schedule but can be executed manually

Cloud-Based Data Warehouse Processes (After Replications)

- Federated Data Wrapper captures structure of each cloud DB
- 22 schemas are created in AWS Aurora DB, one for each replicated college DB in the previous step
- Schemas only have tables necessary to support reporting
- E – All data is consolidated into Staging schema upon extract
- T – Data is validated per client defined criteria via policies
- L – Cleansed, valid data is loaded into Reporting schema
- Colleges are processed individually so errors do not affect other college ETL processes
- Executed on a schedule but can be executed manually

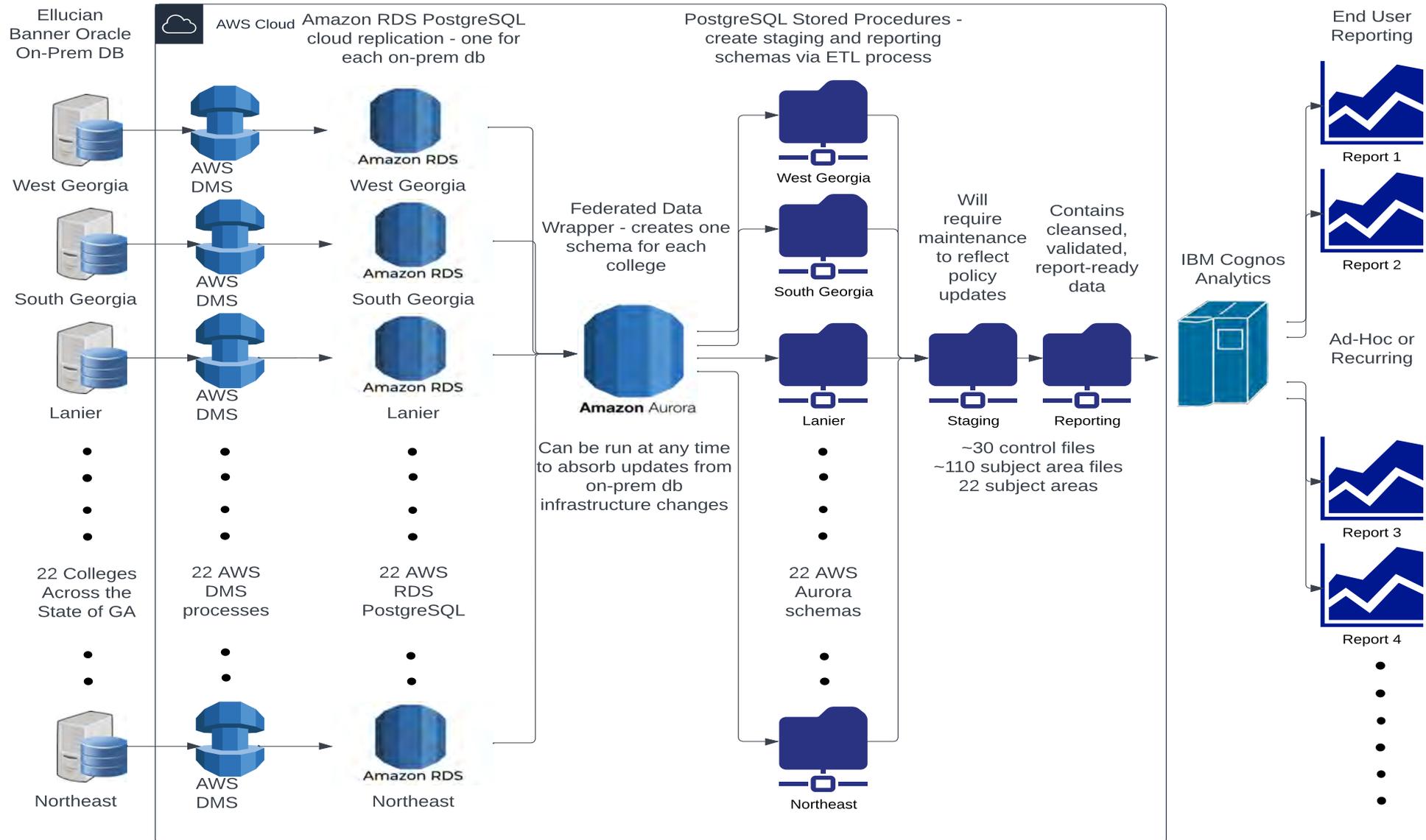
Subject Areas Completed

1. Attribute
2. Class Offering
3. Course Enrollment
4. Course Grade
5. Leavers
6. Person
7. Program
8. Student Plan
9. Admission Test
10. Admitted Student
11. Advisor
12. Disabled
13. Disadvantaged
14. Financial Aid
15. Grade Change
16. GPA

Reporting

- End users will have access to the data in the Reporting schema via Cognos
- Ad-Hoc or recurring reports, charts, graphs, etc.

TCSG Data Warehouse Flow



Agile Scrum Framework Used for Delivery

Scrum was used transform the team

TCSG wanted to learn more about Agile practices

- McKinsey bought on a certified Scrum Master/Agile Coach to lead the transition
- Used the Agile Scrum framework
- Scrum roles (team members, product owners, scrum master) identified
- Roles were filled by members from TCSG, AWS, and McKinsey

Training held

- Agile 101 Introduction and Overview – presented to wide group of management and stakeholders
- Agile 102 Scrum Mechanics – presented to product owner and Scrum team
- Agile 103 Product backlog and writing effective User Stories – presented to all product owners
- Agile 104 Estimating and planning – presented to Scrum team and product owners

Subject Areas Completed

- Phase 1 of project used 1-week sprints to enhance ramp up speed
- Phase 2 used 2-week sprints as team agile capability and delivery velocity improved
- Product backlog created via user story workshops
- Product roadmap planning performed with all stakeholders
- Roadmap delivery tracked via metrics dashboards
- Delivery metrics and roadmap reviewed every sprint with leadership
- Team used sprint reviews and retrospectives to focus on continuous improvement
- Other teams saw success and began move to Scrum as well

Moving forward

- TCSG identified their first Scrum Master
- She has attended Scrum Master Certification Training
- Coached by McKinsey Agile Coach to take over phase 3

TCSG eCampus Impact

Rollout and impact of eCampus
in 2021 and 2022

- Specialized faculty retained by one college can serve students at all colleges
- 100 courses cross-listed in 2022 with 5000 students participating in online campus courses
- 2% annual increases in enrollment by 2024
- Accelerate time to complete programs with improved course availability

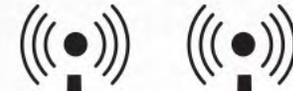
*Thank
You*

Contacts:

Dr. Deona Carter dmcarter@tcsq.edu

Steve Wheat steve_wheat@mckinsey.com

CHICAGO



INTERNET2

2024

**COMMUNITY
exchange**