Report and Analysis of Data

R·I·T Office of Cooperative Education and Career Services

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Sr. Project Team
NOBY

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Project Description

- Reporting and analysis of co-op data
- Track student's progress
- Maintain employer listings
- Provide co-op data to other offices

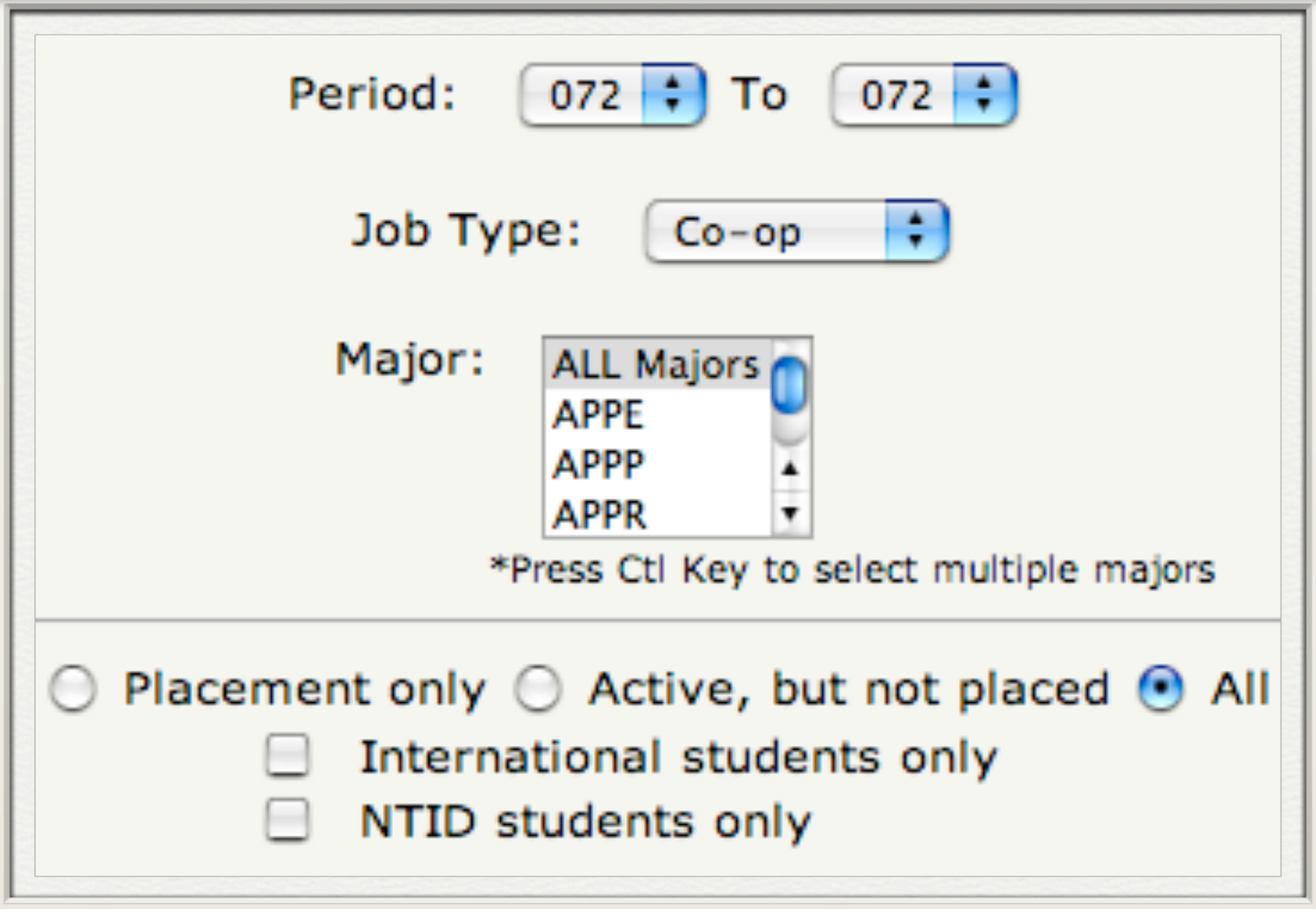
2

Technologies

- Web Services – C# & .NET
- SQL Server 2000
- ASP.NET
- Utilize RIT CAS authentication system

Current System

- System has been in production use since 1999
- Two-tier web application
- Code has become bloated and parts are obsolete
- Productivity is affected by poor system performance
- Architecture limits extensibility and maintainability



Sample Query

Context & Deployment

- Users
  - RIT OCECS
  - Internal RIT consumers
  - External RIT consumers
- Deployment
  - Full production use by RIT OCECS

6

Primary Goals

- Three-tiered architecture using web services
- Must be maintainable and extensible
- Increased speed over existing system
- Implement current system features

Three-Tier Architecture

- Separation of concerns
- Extensible
- Maintainable
- Testable

Satisfying Customer Goals

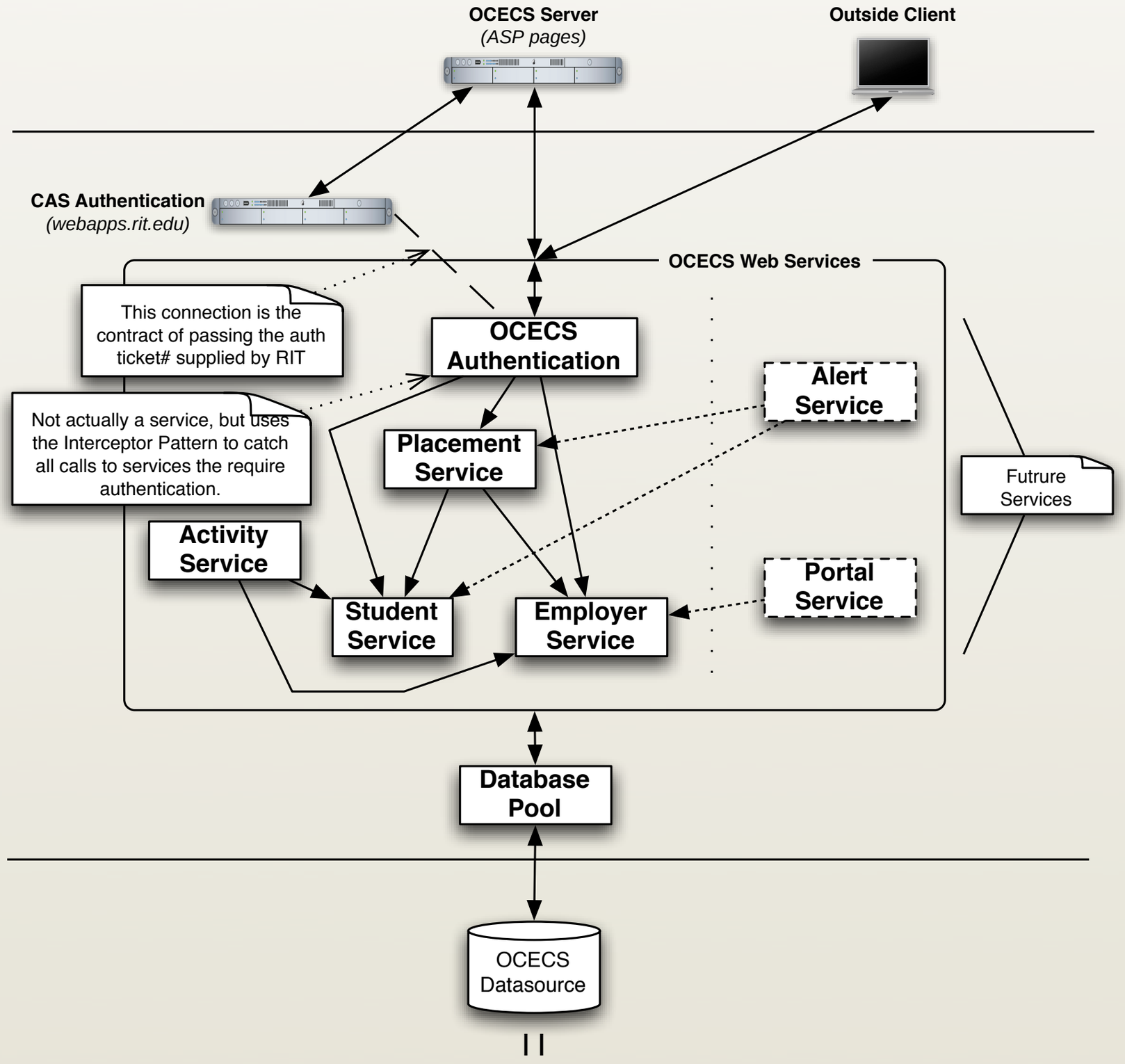
- Separation of responsibilities
- Easier to extend
- No single library file to modify
- Data is now portable to many platforms

9

Project Scope

- Scoped to the business tier
  - Developing primary services
  - Maintainability
  - Extensibility
  - Performance
- Presentation tier will be handled by OCECS
- Data tier already in place
  - Implementing database optimizations

10


OCECS Server
(ASP pages)
Outside Client
CAS Authentication
(webapps.rit.edu)
OCECS Web Services
This connection is the contract of passing the auth ticket# supplied by RIT
OCECS Authentication
Alert Service
Not actually a service, but uses the Interceptor Pattern to catch all calls to services the require authentication.
Placement Service
Futrure Services
Activity Service
Portal Service
Student Service
Employer Service
Database Pool
OCECS Datasource

SCRUM Process

- Incremental development
- Allows for work when requirements are not set
- Visibility and communication
- Customer feedback

12

NOBY & SCRUM

- Product backlog
- Burndown chart
- SCRUM meetings
- Sprint planning/review
- Frequent customer meetings

13

Process

- Implementation is done in parallel
  - Team - web services layer
  - OCECS – Presentation layer
- 7 Sprints
  - 1-3 : Design
  - 4-6 : Implementation & testing
  - 7 : Project delivery

14

Requirements Phase

- Analysis of high level architecture helped solidify requirements
- It took time to find the scope of our requirements in customers broad vision of final system

15

Final Requirements

- Elicitation was more a continual growth of understanding rather than iterations
- 4 Primary Web-Services
- 69 functional requirements of the system
- Requirement volatility has been minimized during the requirements phase

16

Testing

- Automated testing
  - JMeter
- Accuracy
  - Compare result sets from old system
- Parallel development will act as functional testing

17

Project Status

- Current
  - Finalized requirements
  - Finished design and architecture
  - End of Sprint 3
- Future / spring quarter
  - Implementation
  - Testing

18

Metrics

- Effort Metrics
  - Estimation accuracy
- Progress Metrics
  - Slippage
    - Plan accordingly to make sure deadlines are met
- Earned Value
  - Make sure the team is progressing forward

19

Quality Metrics

- Lines per code per module
- Query response time
  - use results from automated testing to compare improvement

20

Task Estimation

- Project plan & product backlog list all tasks for each sprint
- Task duration is estimated during sprint planning sessions
- On average, each item ran over 30%

21

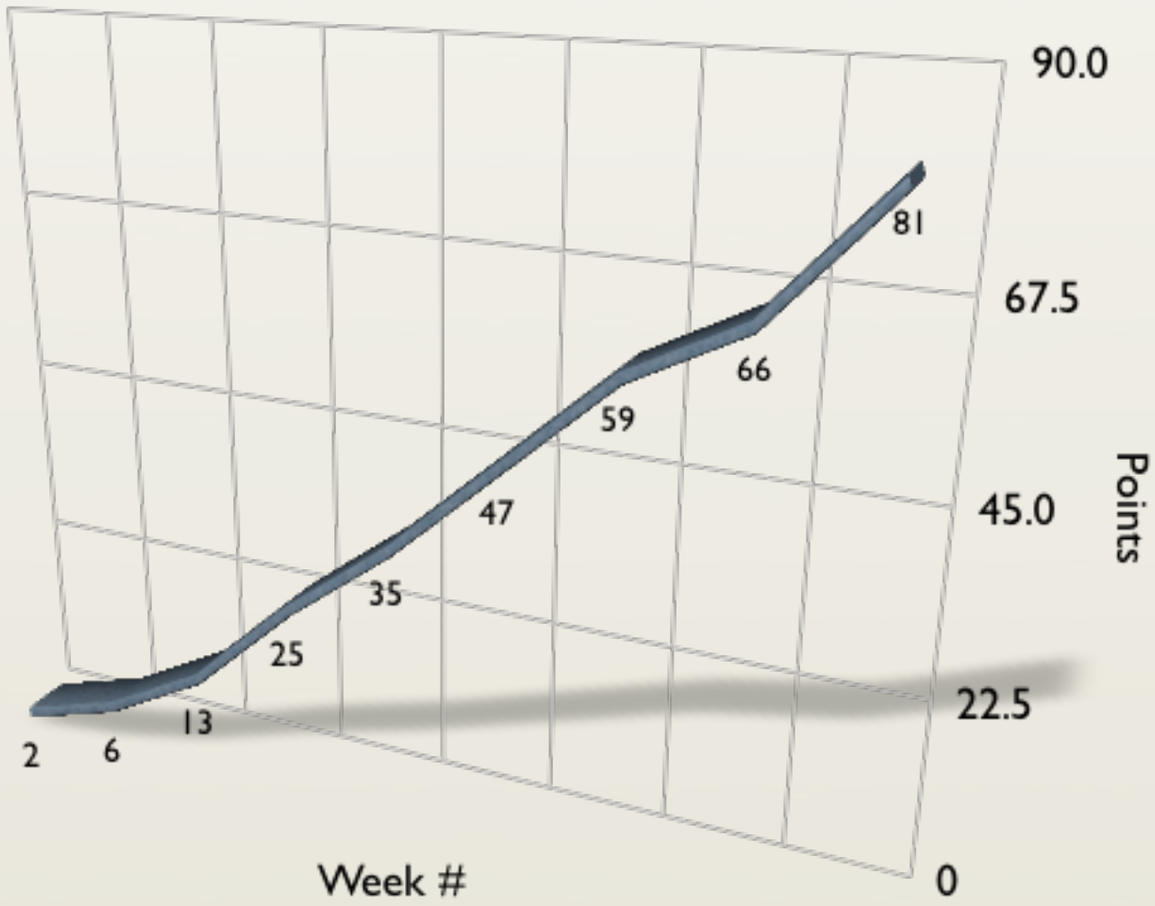
Slippage

- Slippage metrics are important to prevent senioritious from setting in and causing a build up of work near graduation.
- Week 4: Sprints were pushed back by 2 days to add the next weekends to the sprints
  - Done to give extra time after meeting with the Co-op office on Thursday
- Sprints overall have not be delayed
  - Items have been shifted around in general between sprints but the planned workload has remained consistent

22

Earned Value Metrics

- Points are assigned for every item that needs completion
  - Project Plan
  - Architecture Document
  - Requirements Document
  - Diagrams
  - Customer Meetings / Interviews



Risks

- Understanding system
- Feature creep
- Parallel development with presentation layer
- Time management
- Senioritis

24

Reflection

- System learning curve was steep which slowed requirements elicitation
- Creating the architecture helped to understand the system and drove requirement elicitation
- Frequent meetings with customer helped

Questions?