

The Capstone Experience

Dr. Wayne Dyksen

Department of Computer Science and Engineering
Michigan State University
Spring 2014



*From Students...
...to Professionals*

Course Goals

- Build a Significant Software System
- Work in a Team Environment
- Learn New Tools and Environments
- Build and Administer Systems
- Develop Communication Skills
- Develop Interview Talking Points
- Consider Issues of Ethics and Professionalism



Course Goals

- Teams of Students
- Build Significant Software System
 - Design
 - Develop
 - Debug
 - Document
 - Deliver
- For Corporate Clients
- In 15 (Short) Weeks



Project Deliverables

- Project Plan Document & Presentation
- Alpha Presentation
- Beta Presentation
- Project Software & Documentation
- Project Video
- Design Day

See [Major Milestones](#).



All-Hands Meetings

- MW, 3:00-3:50pm, 2250 Engineering Building
- Presentations By
 - Professor
 - Teams
 - Status Reports
 - Formal Presentations
 - Project Plan
 - Alpha
 - Beta
 - Project Videos
 - Guest Speakers



All-Hands Meetings

01/06: Course Overview
01/08: Project Plan
01/13: Risks and Prototypes
01/15: Schedule and Teamwork
01/20: (Martin Luther King Day, No Meeting)
01/22: Team [Status Report Presentations](#)
01/27: Team [Project Plan Presentations](#)
01/29: Team [Project Plan Presentations](#)
02/03: Team [Project Plan Presentations](#)
02/05: Team [Project Plan Presentations](#)
02/10: Resume Writing and Interviewing
02/12: Creating and Giving Presentations
02/17: Team [Alpha Presentations](#)
02/19: Team [Alpha Presentations](#)
02/24: Team [Alpha Presentations](#)
02/26: Team [Alpha Presentations](#)
03/03: (Spring Break, No Meeting)
03/05: (Spring Break, No Meeting)

03/10: Status Reports
03/12: Status Reports
03/17: [Design Day](#) and the [Project Videos](#)
03/19: Camtasia Demo
03/24: Ethics and Professionalism
03/26: Intellectual Property
03/31: [Beta Presentations](#)
04/02: [Beta Presentations](#)
04/07: [Beta Presentations](#)
04/09: [Beta Presentations](#)
04/14: Status Reports
04/16: Status Reports
04/21: [Project Videos](#)
04/23: [Project Videos](#) and [All Deliverables](#)
04/24: [Design Day Setup](#)
04/25: [Design Day](#)
04/28: [Project Videos](#)



MICHIGAN STATE
UNIVERSITY

The Capstone Experience

Team Auto-Owners

Department of Computer Science and Engineering
Michigan State University
Spring 2014



*From Students...
...to Professionals*



Auto-Owners Insurance

Life Home Car Business

The "No Problem" People®

***Auto-Owners Insurance***[Customer Center](#) | [Find a Career with Us](#)[OUR PRODUCTS](#)[CORPORATE INFORMATION](#)[CUSTOMER CLAIMS](#)[Find](#)

▼ Find a Local Agency

[Find](#)[or Search by Address](#)

Quality Coverage in 26 States

[► Start an Auto Quote](#)[► Customer Log In](#)

[Learn more >](#)

Drivers usually spend five seconds looking at their phones, which is enough time to cover more than the length of a football field going normal highway speeds.

Life Insurance

Protecting your family

Home Insurance

Property and liability

Car Insurance

Security while on the road

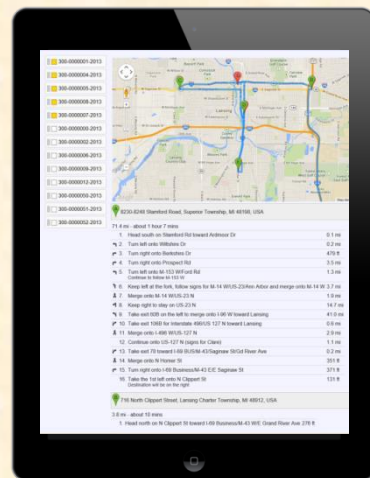
Business Insurance

Guarding your investment

Team Auto-Owners Project Overview

Mobile Audit Itinerary and Worksheet

- Functionalities
 - Collect Updated Policyholder Information
 - By Underwriting Field Service Representatives
 - Using Mobile Devices
- Features
 - Support Laptops, Tablets and Smartphones
 - List Daily Appointments
 - Map Out Route
 - Ability to Work Offline
 - Import/Export XML
 - Produce Reports in PDF
- Technologies
 - CSS3
 - HTML5
 - Java
 - JavaScript / jQuery
 - XML



Lansing, Michigan



Team Auto-Owners

Jacob Burger, Garrett Stevenson, Ladi Oyeleye

Team Auto-Owners Project Plan Presentation

Screen Mockup

Mockup of a web application interface for Team Auto-Owners, displayed in a Mozilla browser window.

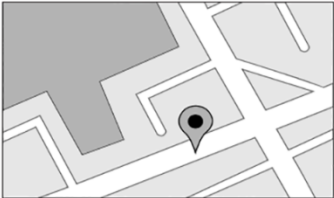
Browser Address Bar: http://moqups.com

Navigation Menu: Home, Import Data, Export Data, Generate Report

User Profile: User [Avatar]

Itinerary

So and So LCC
Go Go Toys >
Jiffy Clean
Sponge Co.
Izzo Name Drops



Directions
Start at X
Turn left at Y
Go four miles

Policy Holder Information

Name:	Go Go Toys	Payroll Information: Payroll Worksheet Employee Payroll Subcontractors OT/DT Worksheet
Address:	123 Street East Lansing MI 48823	
Directions:	On the left Across from the Denny's Square building Flashing Neon Sign	
		Sales Information: WC Audit Liability Audit

Screen Mockup: Main Page

Itinerary

Item 1	Item 2
Item 3	Item 4
Item 5	Item 6
Item 7	Item 8
Item 9	Item 10

Policy Holder Information

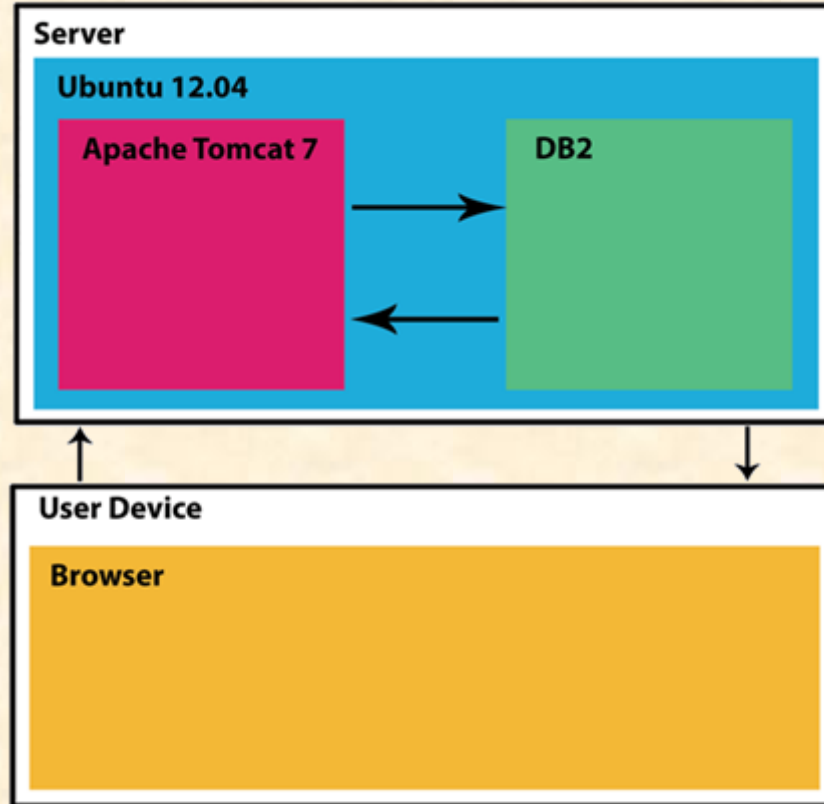
Name	Project Information
Address	Project Manager
City	Project Status

The Capstone Experience
Team Auto-Owners Project Plan

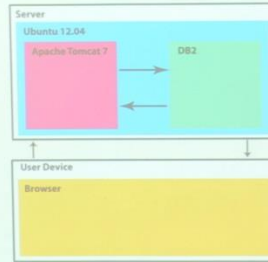
Team Auto-Owners
Project Plan Presentation

Team Auto-Owners Project Plan Presentation

Architecture Diagram



System Architecture



Team Auto-Owners
Project Plan Presentation

Team Auto-Owners Project Plan Presentation

Screen Mockup

The screen mockup displays a mobile application interface. At the top, there is a header bar with a menu icon on the left and a 'User' profile icon on the right. Below the header is a map showing a street grid with a location pin. Under the map, the word 'Directions' is centered. Below this, a list of business names is shown: 'So and So LCC', 'Go Go Toys >', 'Jifty Clean', 'Sponge Co.', and 'Izzo Name Drops'. At the bottom, there are two sections: 'Name:' with a text input field containing 'Go Go Toys', and 'Address:' with a text input field containing '123 Street', 'East Lansing MI', and '48823'. To the right of these input fields, under the heading 'Payroll Information:', there are four links: 'Payroll Worksheet', 'Employee Payroll', 'Subcontractors', and 'OT/PT Worksheet'.

Directions	
So and So LCC	
Go Go Toys >	
Jifty Clean	
Sponge Co.	
Izzo Name Drops	
Name:	Payroll Information:
<input type="text" value="Go Go Toys"/>	Payroll Worksheet
Address:	Employee Payroll
<input type="text" value="123 Street"/> <input type="text" value="East Lansing MI"/> <input type="text" value="48823"/>	Subcontractors
	OT/PT Worksheet



Team Auto-Owners Alpha Presentation

Team Auto-Owners Alpha Presentation

Itinerary & Google Map

Firefox | Auto-Owners Audit Itinerary | +

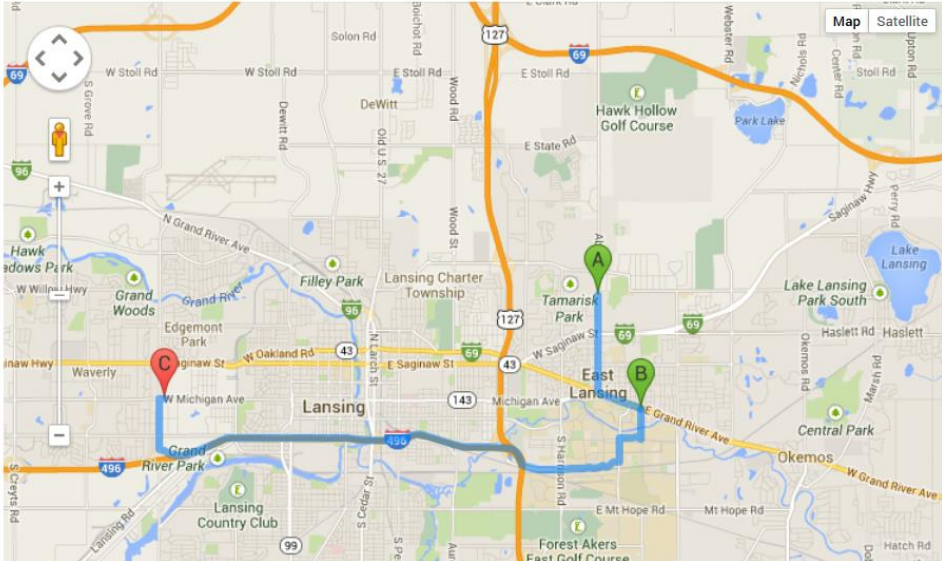
User: Default

Home Import Data Export Data Generate Report

Itinerary

- Go Go Toys
- Jiffy Clean
- So and So LCC
- Sponge Co.
- Izzo Name Drops

Itinerary Directions



Team Auto-Owners Alpha Presentation

Driving Directions

Firefox Auto-Owners Audit Itinerary

Total Distance: 10.430954976999999 mi

A 1850 Abbot Road, East Lansing, MI 48823, USA

2.0 mi - about 6 mins

1. Head **south** on **Abbot Rd** toward **Rampart Way** 1.4 mi
2. Turn **left** onto **E Grand River Ave** 0.6 mi
3. Turn **right** onto **Bogue St** 52 ft

B Michigan State University, 220 Trowbridge Rd, East Lansing, Michigan 48824, United States

8.4 mi - about 13 mins

1. Head **south** on **Bogue St** 0.4 mi
2. Turn **right** onto **N Shaw Ln** 0.3 mi
3. Turn **left** onto **Farm Ln** 0.3 mi
4. Turn **right** onto **Trowbridge Rd** 0.3 mi
5. Turn **left** to stay on **Trowbridge Rd** 1.1 mi
6. Merge onto **I-496 W** via the ramp to **Downtown/Lansing** 4.9 mi
7. Take exit **3** for **Waverly Rd** 0.4 mi
8. Turn **right** onto **S Waverly Rd** 0.7 mi
9. Take the 3rd **right** onto **W Michigan Ave** 404 ft
Destination will be on the right

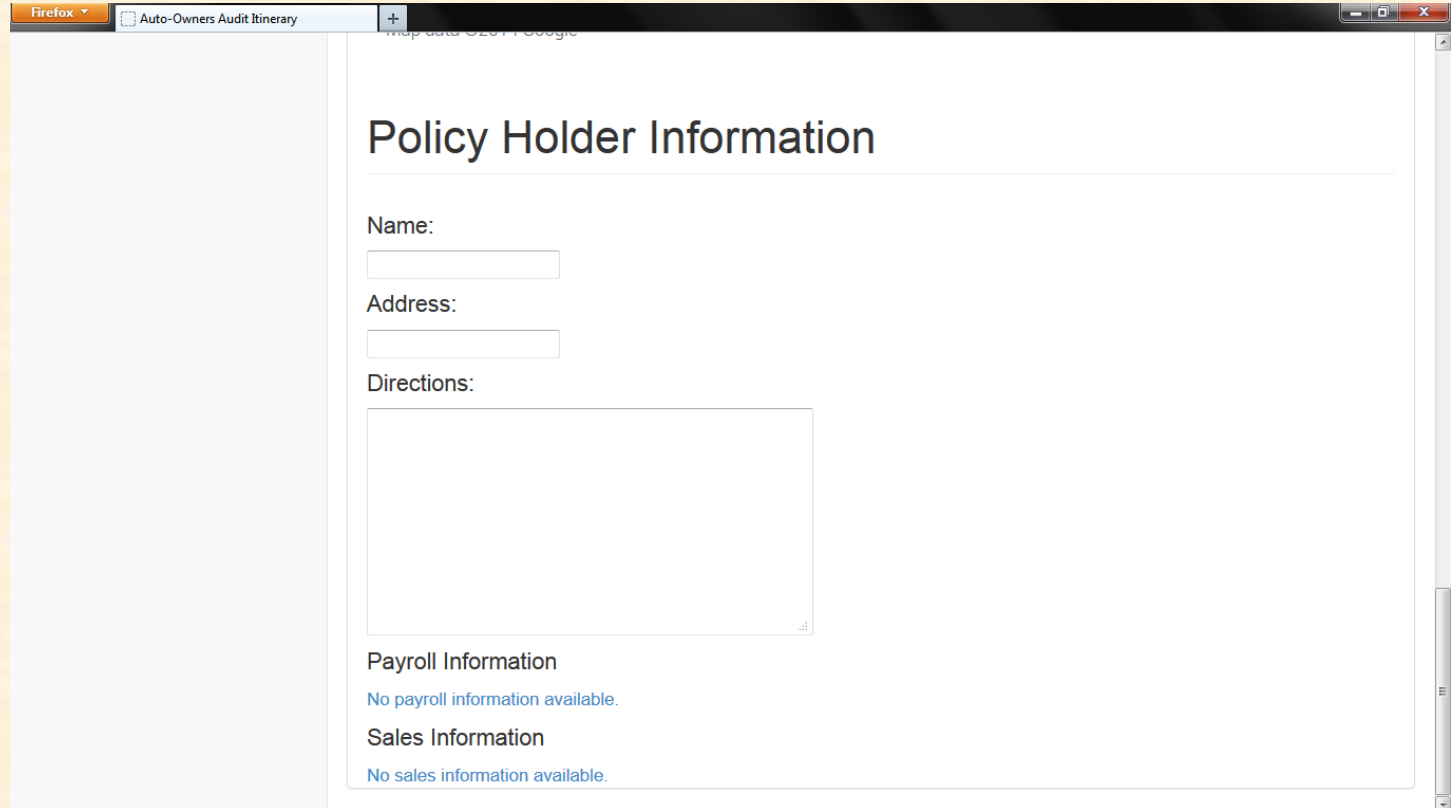
C 3721 West Michigan Avenue, Lansing, MI 48917, USA





Team Auto-Owners Alpha Presentation

Policyholder Information



The screenshot shows a web browser window with the title 'Auto-Owners Audit Itinerary'. The main content area is titled 'Policy Holder Information'. It contains three input fields: 'Name:', 'Address:', and 'Directions:'. Below these fields, there are two sections: 'Payroll Information' and 'Sales Information', both with the text 'No payroll information available.' and 'No sales information available.' respectively. The browser's address bar shows 'map data ©2014 Google'.

Firefox

Auto-Owners Audit Itinerary

map data ©2014 Google

Policy Holder Information

Name:

Address:

Directions:

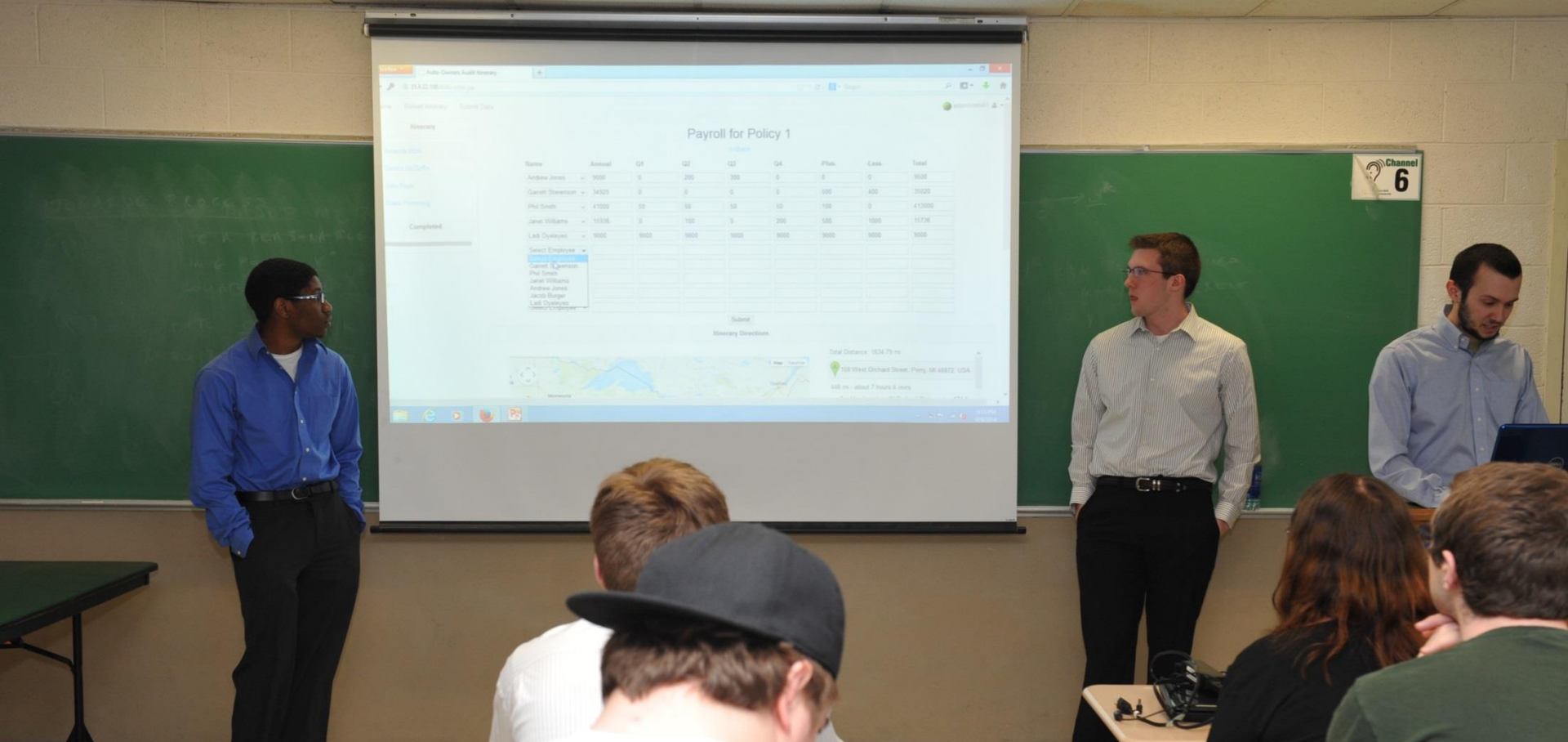
Payroll Information

[No payroll information available.](#)

Sales Information

[No sales information available.](#)





Payroll for Policy 1

Name	Annual	Q1	Q2	Q3	Q4	5Pct	Leak	Total
Andrew Jones	9000	0	200	200	0	0	0	9000
Garnett Stevenson	34000	0	0	0	0	0	400	35000
Phil Smith	41000	0	0	0	0	100	0	41000
Janet Williams	10000	0	100	0	200	0	0	10300
Lisa Ouellette	9000	9000	9000	9000	9000	9000	9000	9000

Select Employee

- Garnett Stevenson
- Phil Smith
- Janet Williams
- Andrew Jones
- Lisa Ouellette

Total Distance: 1034.75 mi

100 West Orchard Street, Perry, MI 48872, USA

400 mi. About 7 hours 4 mins

Team Auto-Owners Beta Presentation

Team Auto-Owners Beta Presentation

Policy Holder Information

Auto-Owners Audit Itinerary

35.9.22.108:8080/index.jsp

Home Import Data Export Data Generate Report

adamsmith61

Itinerary

Amanda Burk

Derrick McDuffie

Diane Flemming

John Peek

Completed

Policy Holder Information

Policy: 4

Company Name

Ashurtech Trison Group LLC

Address

1601 Main St, Luxemburg WI 54217-1311

Driving Directions

Second street after the CVS

Contact

Derrick McDuffie

Phone

900-621-5235

Email

derrickmcduffie@ashurtech.com

Payroll Information

[Payroll](#)

[Employee Payroll](#)

[Overtime/Double Time](#)

[Subcontractors](#)

Sales Information

[Liability Audit Recap](#)

[WC Audit Recap](#)

Itinerary Directions

Total Distance: 1626.94 mi

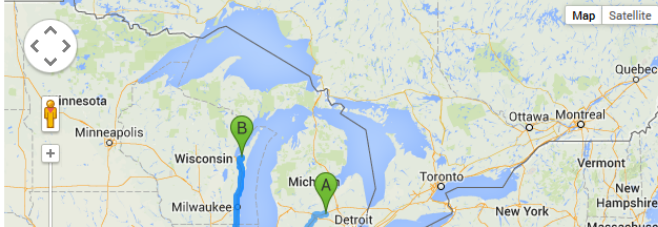
A 108 West Orchard Street, Perry, MI 48872, USA

446 mi - about 7 hours 4 mins

1. Head east on W Orchard St toward S Main St 174 ft

2. Turn left onto S Main St 0.9 mi


3. Continue onto M-52 N/S Michigan 52 0.4 mi



The Capstone Experience

Team Auto-Owners Beta Presentation


Report Generation



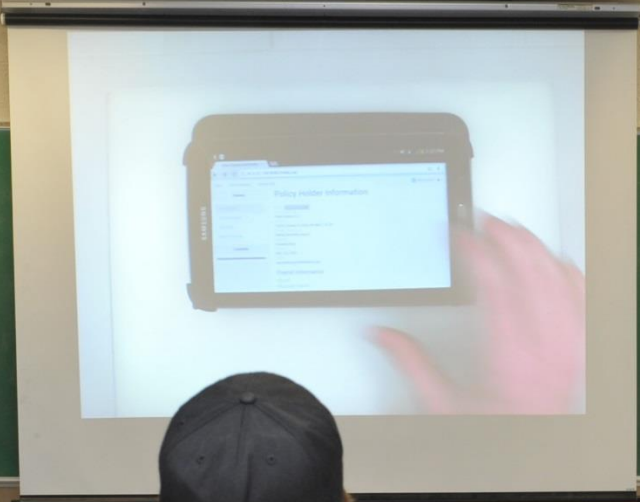
PO BOX 30323, 6200 ANACAPRI BLVD., LANSING, MI 48909

AGENCY CODE:	1
POLICYHOLDER:	Derrick McDuffie
POLICY #:	4 WC
POLICY #:	4 PREMIER
POLICY #:	4 GL(FTEE)
AUDIT PERIOD:	11/21/2013 - 11/21/2012
DATE:	03/31/2014
EFFECTIVE DATE:	03/31/2014
EMAIL ADDRESSES:	derrickmcduffie@ashurtech.com

AUDIT COMPLETED BY: Adam Smith
MICHIGAN Branch Underwriting Field Services
TELEPHONE: 517-391-1174 #6
1-800-445-4185 EXT. 1174 #6
FAX: (517)886-8833
CELL: (517)886-8833
EMAIL: Smith.Adam@aoins.com

Opening REPORT.pdf
You have chosen to open:
 **REPORT.pdf**
which is: Adobe Acrobat Document (263 KB)
from: data:
What should Firefox do with this file?
☐ Open with Adobe Reader (default)
☒ Save File
☐ Do this automatically for files like this from now on.
OK Cancel

WORKERS COMPENSATION & COMMERCIAL GENERAL LIABILITY & GARAGE LIABILITY AUDIT WORKSHEET



Team Auto-Owners Beta Presentation

Working Offline

The screenshot shows a web browser window with the title "Auto-Owners Audit Itinerary". The address bar displays "35.9.22.108:8080/index.jsp". The navigation bar includes links for "Home", "Import Data", "Export Data", and "Generate Report", along with a user profile "adamsnth61".

The main content area is divided into two sections. On the left, under the "itinerary" heading, there is a list of names: "Amanda Burk", "Derrick McDuffie", "John Peek", and "Diane Fleming". The "Completed" section is currently empty. The right section, titled "Policy Holder Information", displays details for a selected policy (24):

- Policy:** 24
- Company Name:** Rogers Construction
- Address:** 200 Bridge St, Wilmerding PA 15148-1020
- Driving Directions:** Large willow tree on the corner.
- Contact:** John Peek
- Phone:** 412-957-2349
- Email:** johnpeek@rogerscon.com

Below the "Policy Holder Information" section, there are two more categories of links:

- Payroll Information:** [Payroll](#), [Employee Payroll](#), [Overtime/Double Time](#), [Subcontractors](#)
- Sales Information:** [Liability Audit Recap](#), [WC Audit Recap](#)





Team Auto-Owners
Design Day

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The Capstone Experience

Team Boeing

Department of Computer Science and Engineering
Michigan State University
Spring 2014



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DUBAI AIRSHOW 2013

The New Boeing 777X



Team Boeing Project Overview

Flight Simulator Suite

- Functionalities
 - Flight Simulator Application Suite
 - Fly a Variety of Aircraft
 - In Locations Around the World
- Features
 - Based on FlightGear Flight Simulator
 - Support Networked Multiplayer Mode
 - Observe Flight Traffic Monitors
 - Collect Key Performance Statistics
- Technologies
 - FlightGear Flight Simulator
 - TCP/IP Networking
 - Python, Python GUI
 - Jenkins or GitHub
 - Open Message Queue (MQ)



St. Louis, Missouri





Team Boeing

Chris Ek, Stephi Stumpas, Mike Marinetti

Team Boeing Project Plan Presentation

Screen Mockup



Screen Mockup: GPS



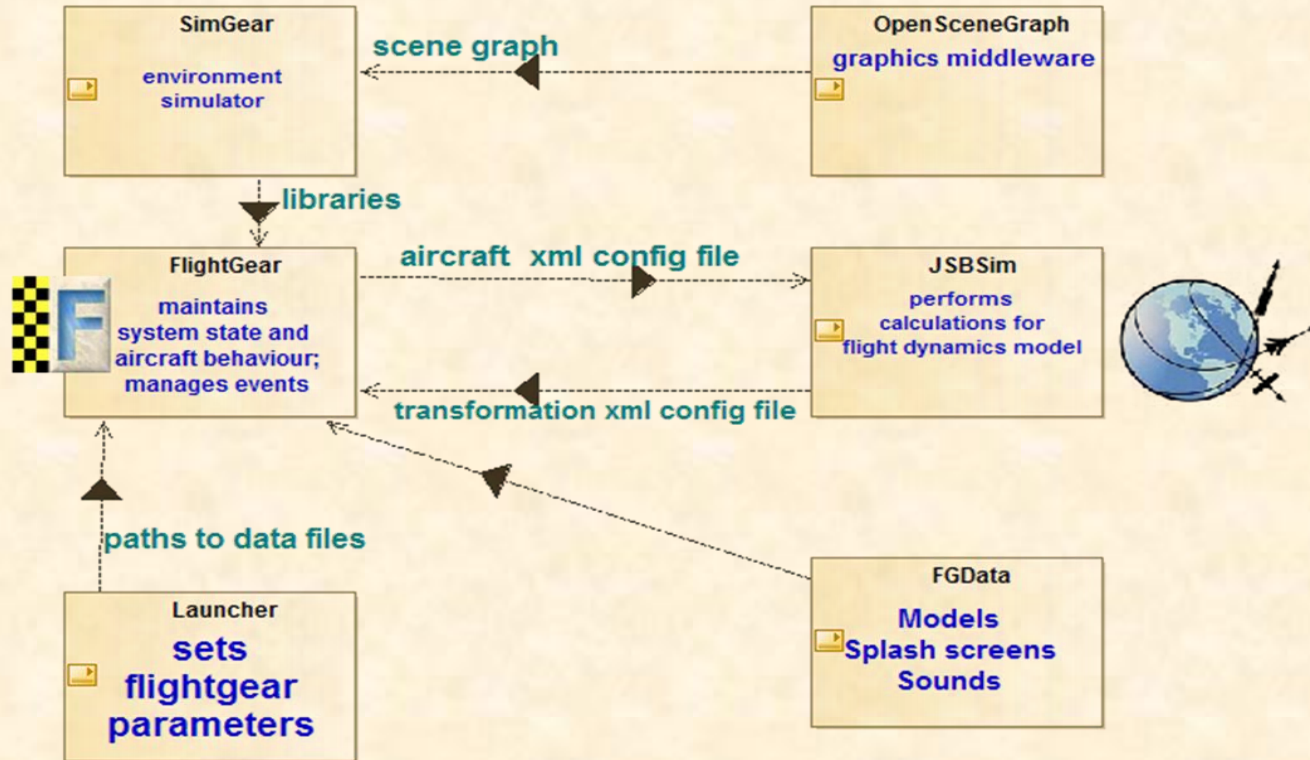
The Capstone Experience

Team Boeing Project Plan

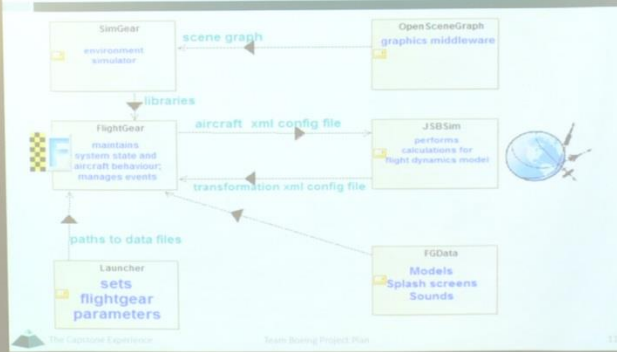
Team Boeing
Project Plan Presentation

Team Boeing Project Plan Presentation

Architecture Diagram



System Architecture



Team Boeing
Project Plan Presentation

Team Boeing Project Plan Presentation

Screen Mockups

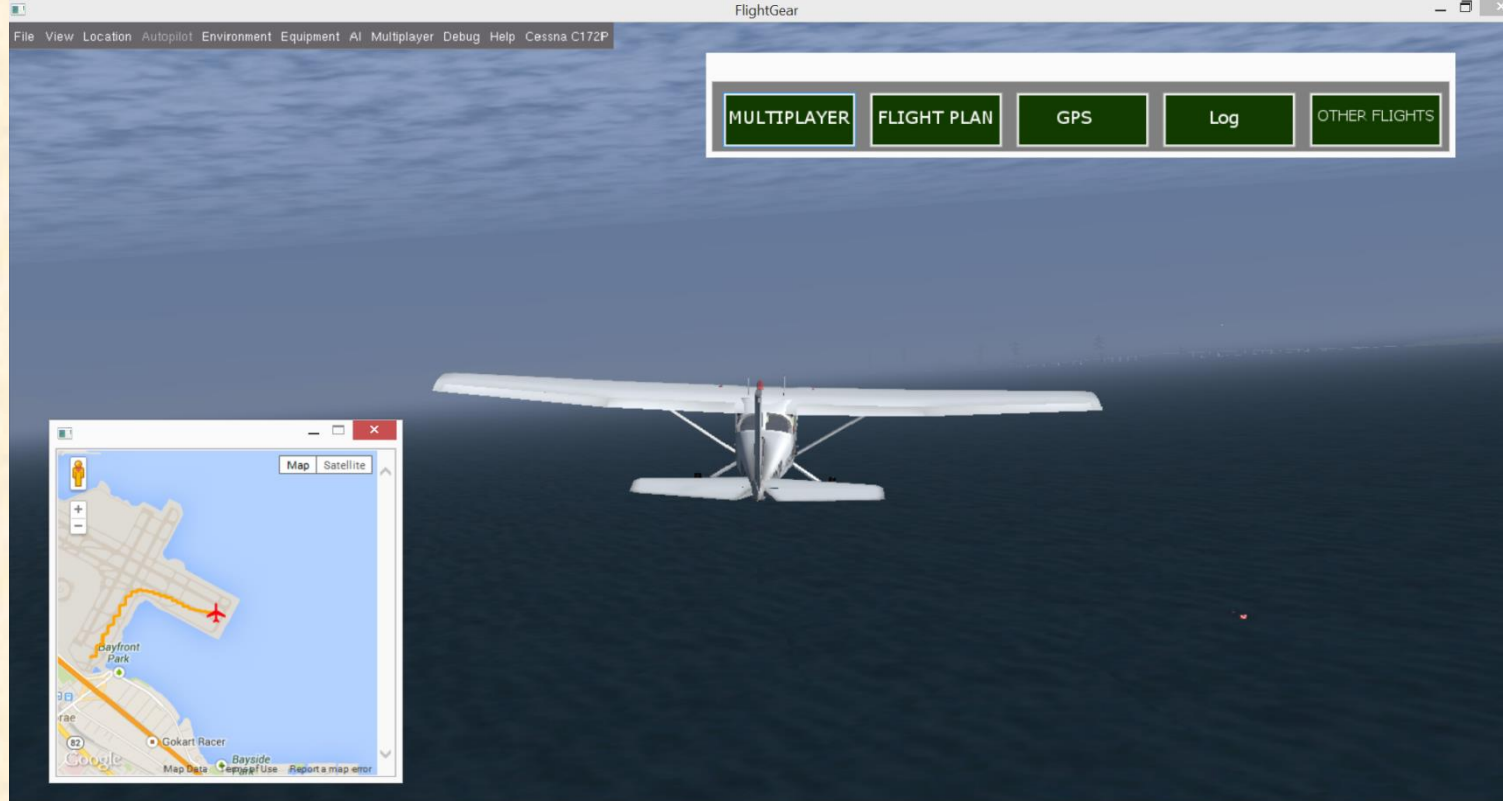




Team Boeing Alpha Presentation

Team Boeing Alpha Presentation

Basic GUI



The Capstone Experience



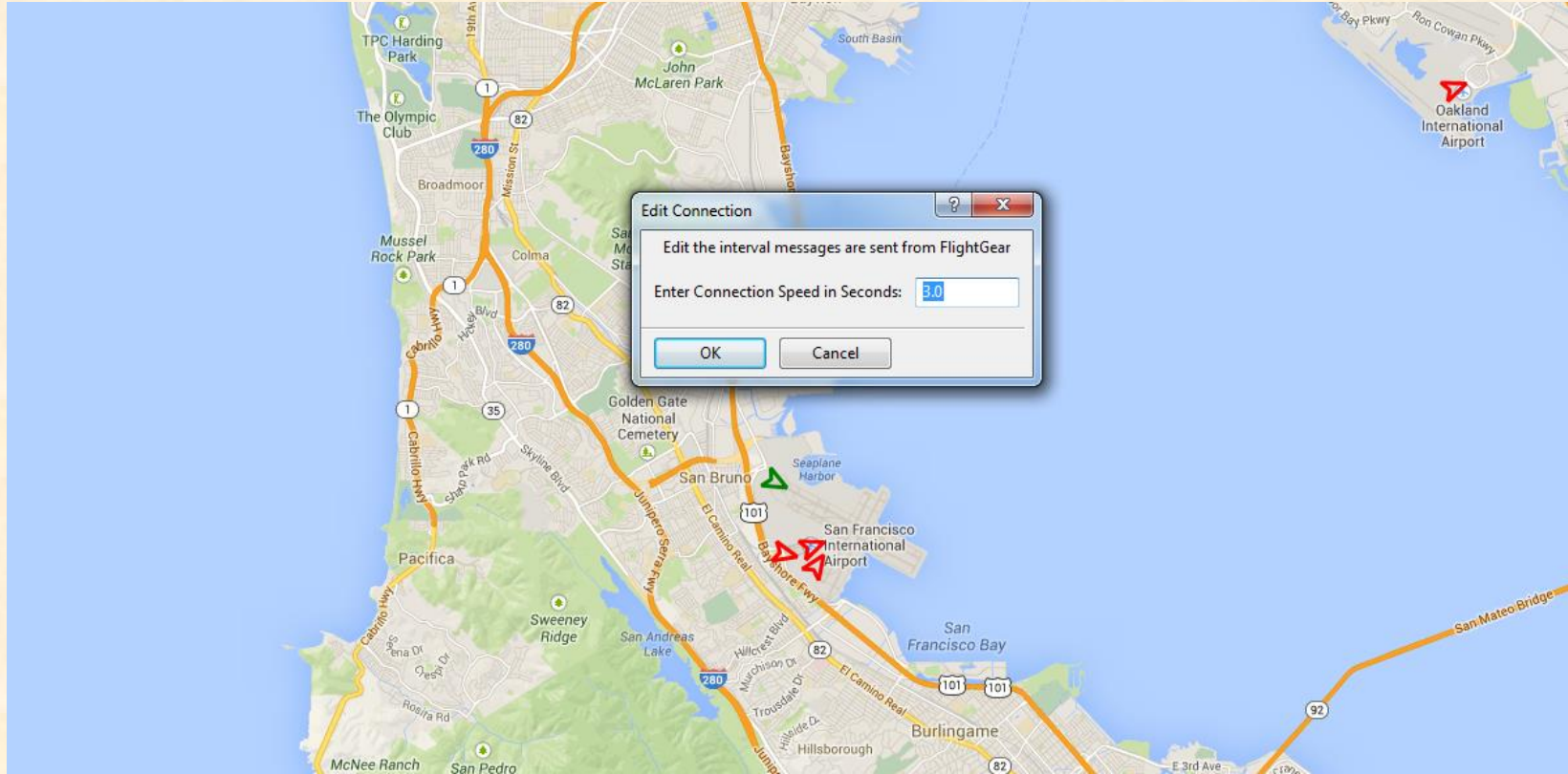
Team Boeing Alpha Presentation



Team Boeing Beta Presentation

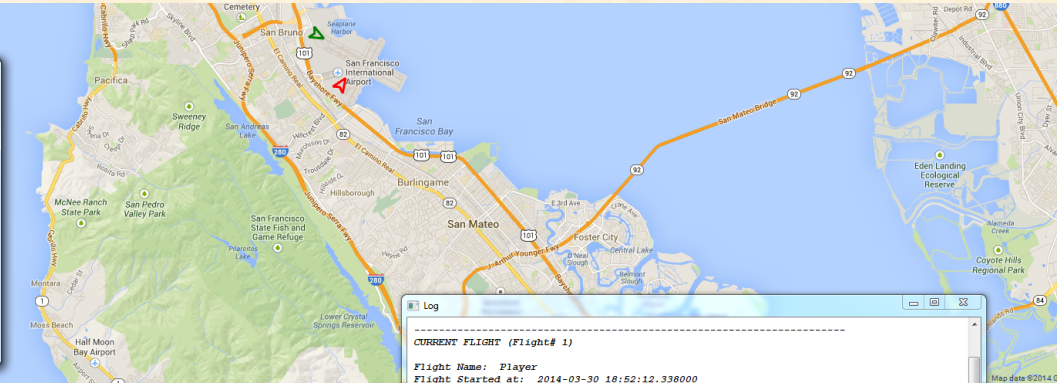
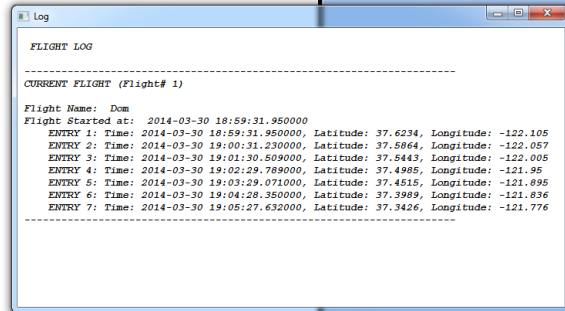
Team Boeing Beta Presentation

Slide Description



Team Boeing Beta Presentation

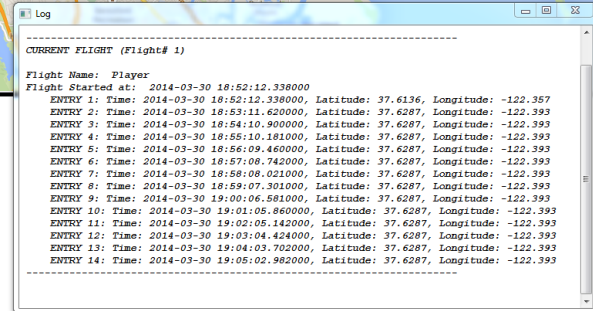
Flight Logs



A Flight:

Flight Info

- Flight Name: Player
- Latitude: 37.6287 Deg - Longitude: -122.393 Deg
- Speed: 2.52338 Knots
- Heading: 117.888 Deg
- Altitude: 6.01734 Ft?
- Current Fuel: 38.1865 Gals?
- Total Fuel Capacity: 56.0606 Gals?
- Flight Time: 0:15:08.989000
- Current Time: 2014-03-30 19:07:21.203000

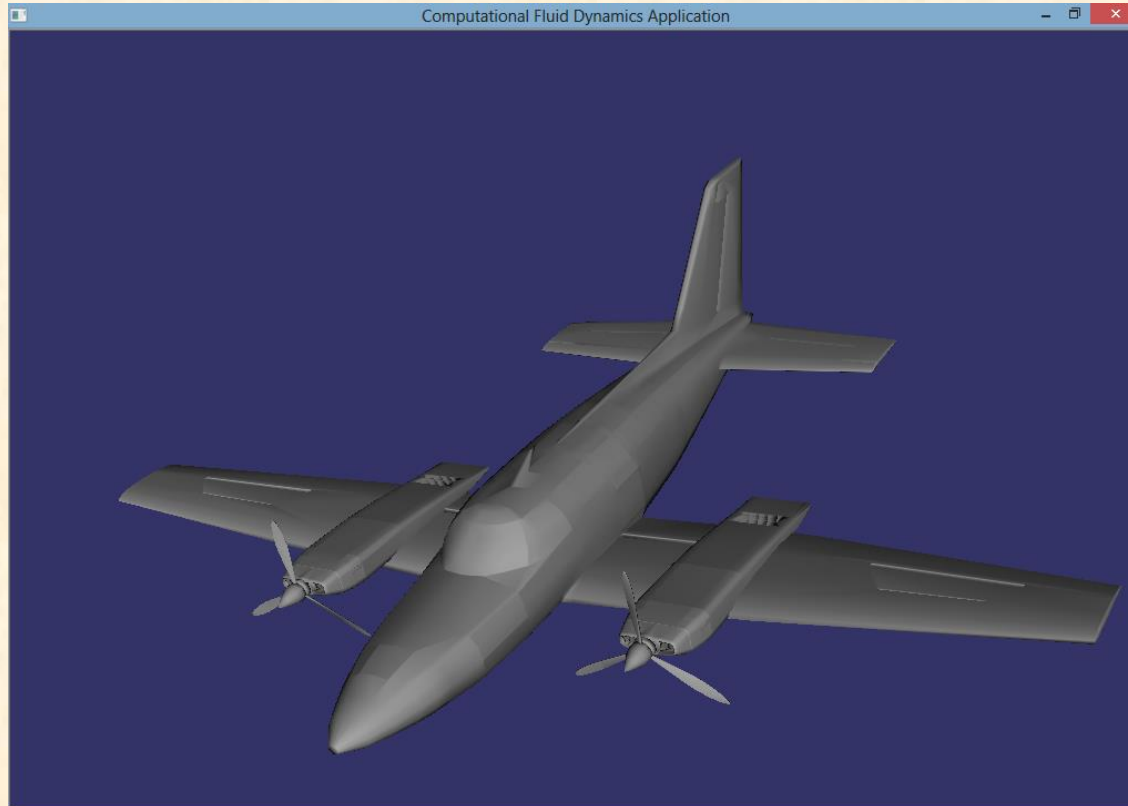




Team Boeing Beta Presentation

Team Boeing Beta Presentation

Plane Mesh



The Capstone Experience





Team Boeing
Design Day

MICHIGAN STATE
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The Capstone Experience

Team Ford

Department of Computer Science and Engineering
Michigan State University
Spring 2014



*From Students...
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Go Further

Ford Social



Support

Locate a Dealer

En Español

My Saved Items

More Ford 

 Search 

CARS

CROSSOVERS & SUVs


TRUCKS

HYBRIDS & EVs

COMMERCIAL


ALL

TECHNOLOGY

SHOPPING TOOLS 

MPG savvy and tech smart.



2014 **ESCAPE** 


EPA-estimated rating up to
32 MPG hwy*



2014 **FUSION + HYBRID** 

EPA-estimated rating up to
47 MPG city*



2014 **FOCUS** 

EPA-estimated rating up to
40 MPG hwy*



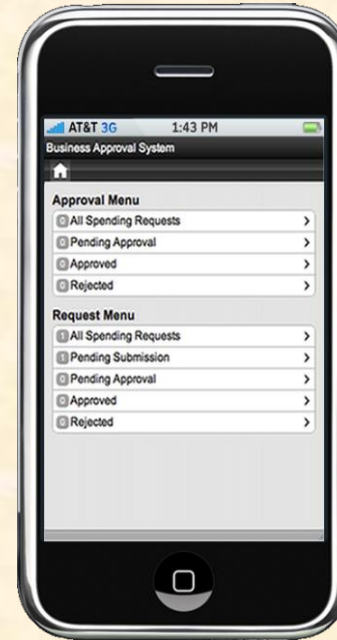
2014 **FIESTA** 

EPA-estimated rating up to
41 MPG hwy*

Team Ford Project Overview

Mobile Approver

- Functionalities
 - Simplify Business Approval Processes
 - Using Single Common Interface
 - On Mobile Devices
- Features
 - Support Laptops, Tablets and Smartphones
 - Approve, Reject or Send Back Requests
 - Drill Down Through Item-Related Business Logic
 - Connect to Various Existing Back-End Systems
 - Handle QR Code Input
- Technologies
 - CSS / HTML5
 - JavaScript / Ajax
 - PrimeFaces Mobile JSF
 - J2EE (Java 2 Platform Enterprise Edition)
 - Microsoft SQL Server 2008
 - QR (Quick Response) Codes



Dearborn, Michigan



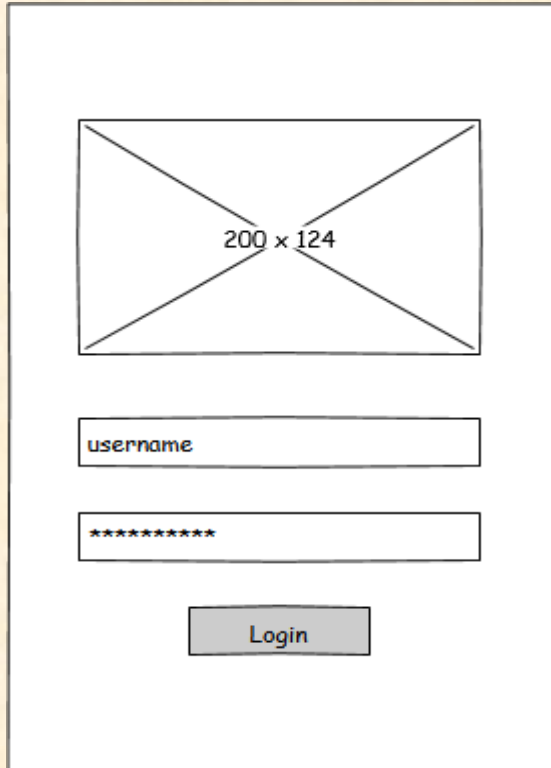


Team Ford

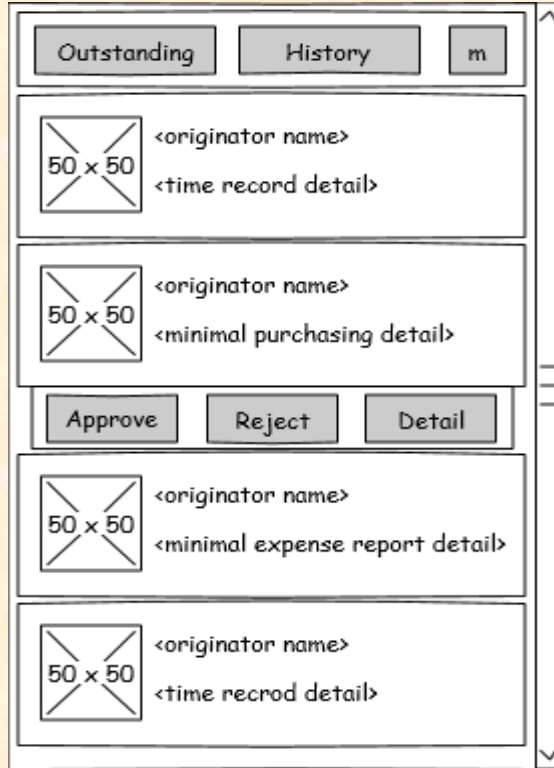
Nik Andrews, Anthony Russel, Tony Cooke

Team Ford Project Plan Presentation

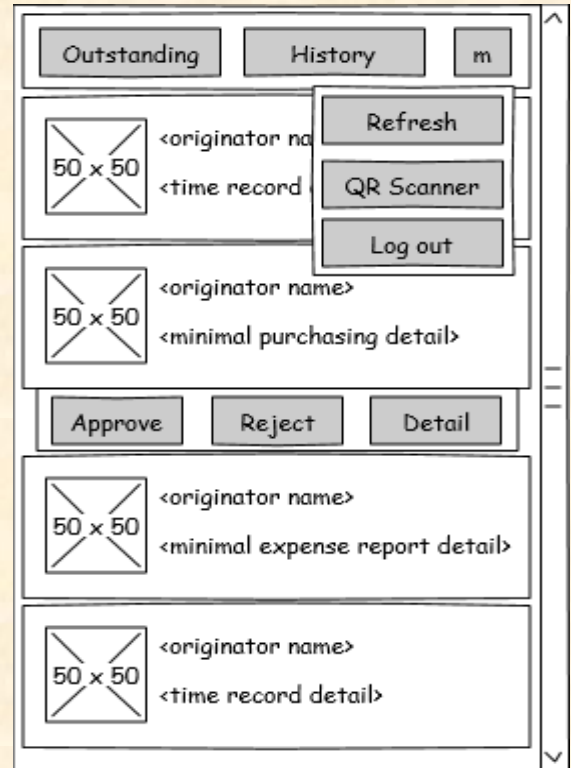
Screen Mockups



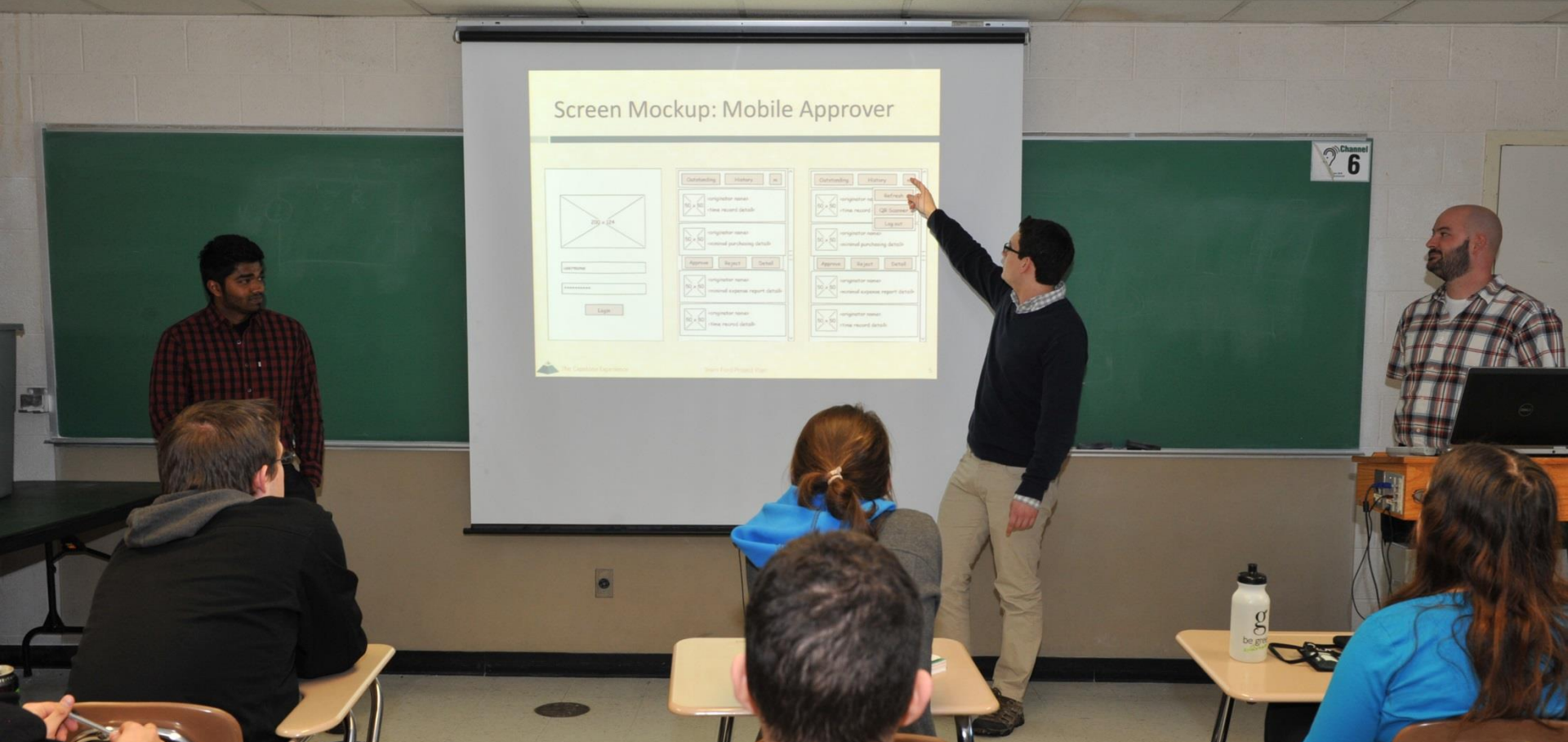
A login screen mockup. At the top is a large rectangular box with a diagonal cross and the text "200 x 124". Below this are two input fields: the first is labeled "username" and the second contains a series of asterisks "*****". At the bottom is a button labeled "Login".



A dashboard screen mockup. At the top are three buttons: "Outstanding", "History", and "m". Below are five rows of data. Each row starts with a square icon containing a diagonal cross and the text "50 x 50". The text to the right of each icon varies: the first two rows show "<originator name>" and "<time record detail>", the next two rows show "<originator name>" and "<minimal purchasing detail>", and the last row shows "<originator name>" and "<time recrod detail>". At the bottom are three buttons: "Approve", "Reject", and "Detail".



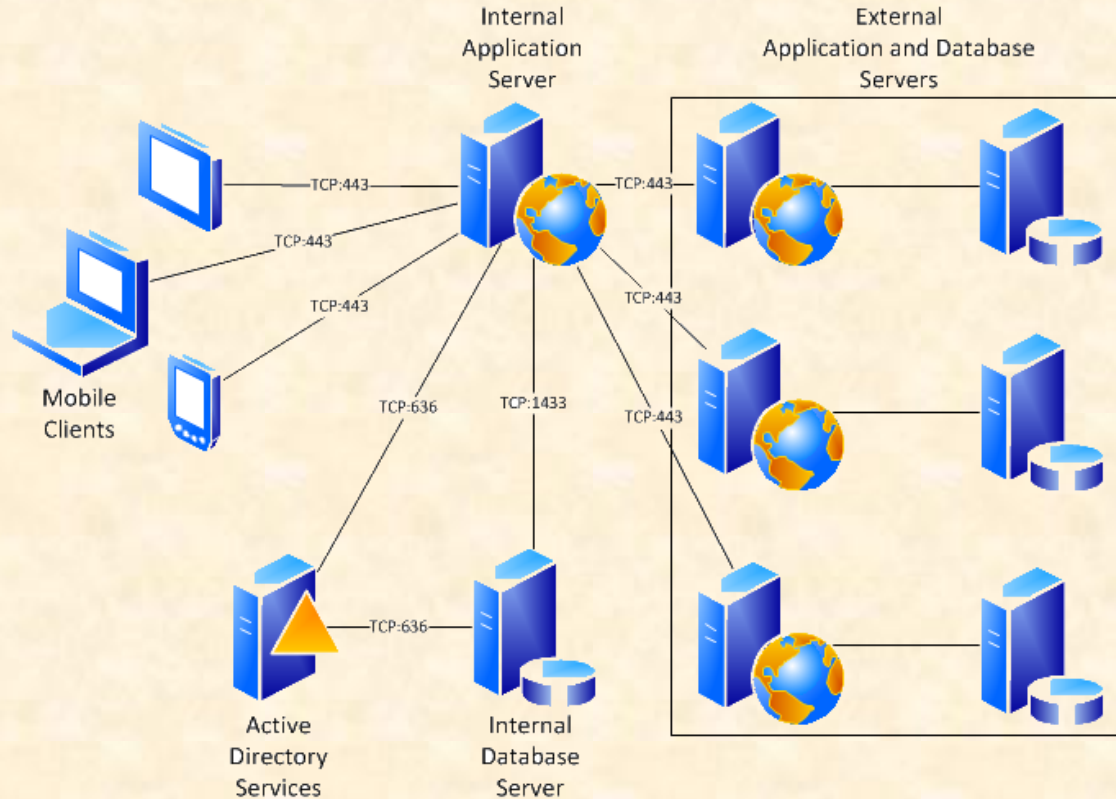
A dashboard screen mockup, similar to the one on the left but with additional features. It has the same top buttons ("Outstanding", "History", "m") and bottom buttons ("Approve", "Reject", "Detail"). The data rows are identical to the left mockup. Additionally, there is a vertical menu on the right side with three buttons: "Refresh", "QR Scanner", and "Log out".



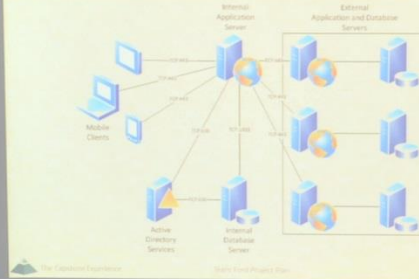
Team Ford Project Plan Presentation

Team Ford Project Plan Presentation

Architecture Diagram



System Architecture



Team Ford
Project Plan Presentation

Team Ford Project Plan Presentation

Screen Mockups

The image displays three side-by-side screen mockups of a web application interface, each with a vertical scrollbar on the right. All three mockups share a common header with three buttons: 'Outstanding', 'History', and 'm'.

Mockup 1 (Left): This screen shows a form with three main sections. The top section contains a '50 x 50' placeholder icon, a label '<originator name>', and a label '<time record detail>'. The middle section is a large text area labeled 'Comments'. Below the comments area are two buttons: 'Submit' and 'Cancel'. The bottom section contains another '50 x 50' placeholder icon, a label '<minimal expense report detail>', and a label '<time recrod detail>'.

Mockup 2 (Middle): This screen shows a form with a top section identical to Mockup 1. The middle section is a large text area labeled 'Data source specific text'. At the bottom of the form are three buttons: 'Approve', 'Reject', and 'Detail'.

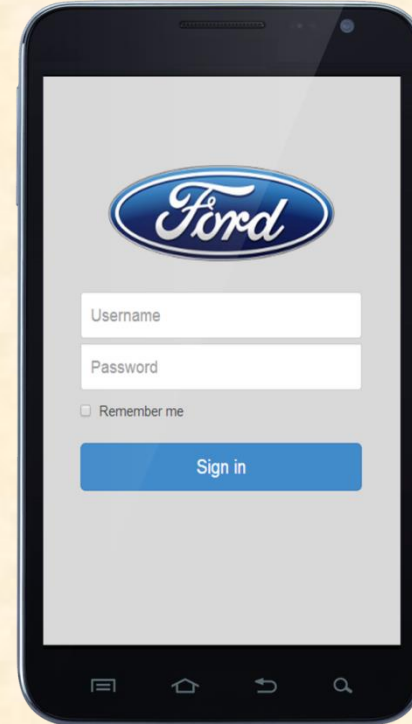
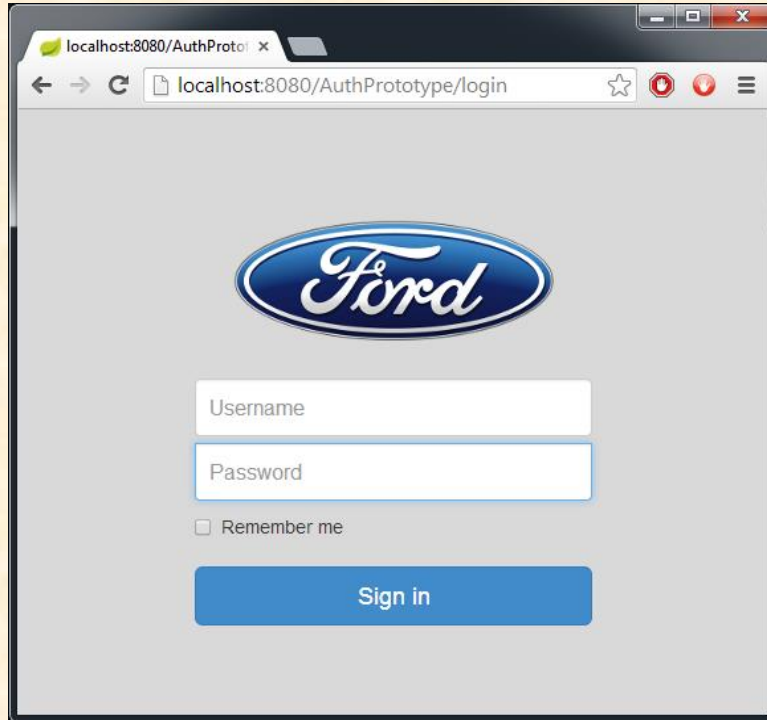
Mockup 3 (Right): This screen shows a form with a top section identical to Mockup 1. The middle section is a large text area labeled 'Comments'. Below the comments area are two buttons: 'Submit' and 'Cancel'. The bottom section is a large text area, and at the very bottom are three buttons: 'Approve', 'Reject', and 'Detail'.



Team Ford Alpha Presentation

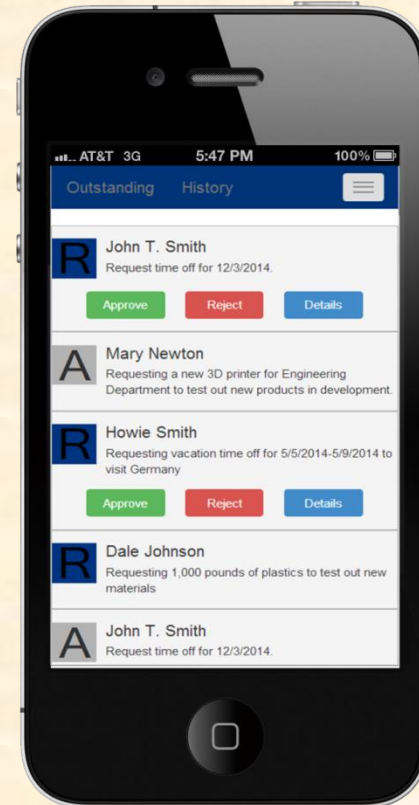
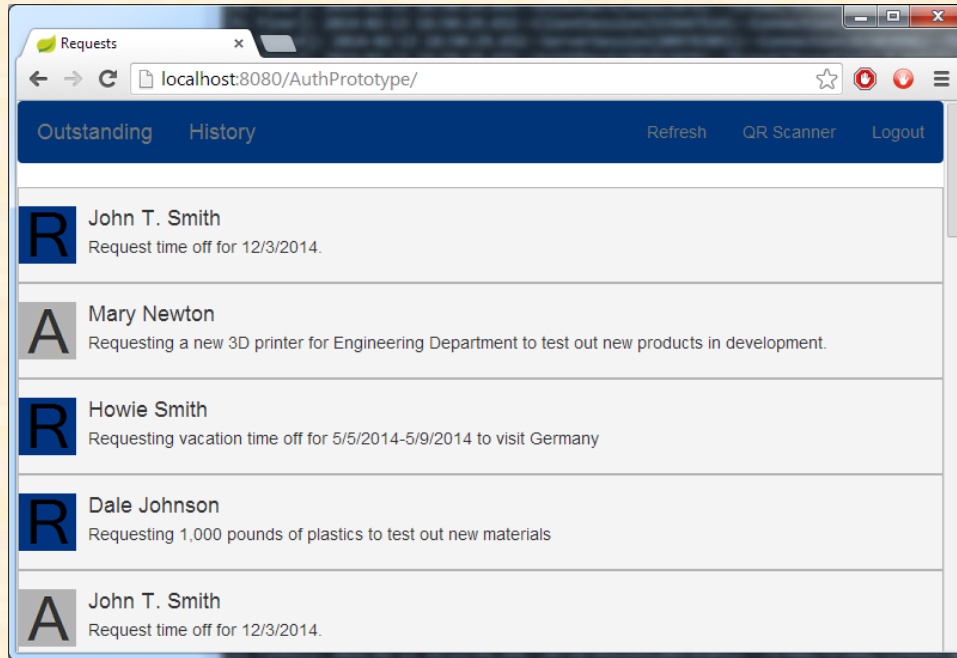
Team Ford Alpha Presentation

Login Screen



Team Ford Alpha Presentation

Request List

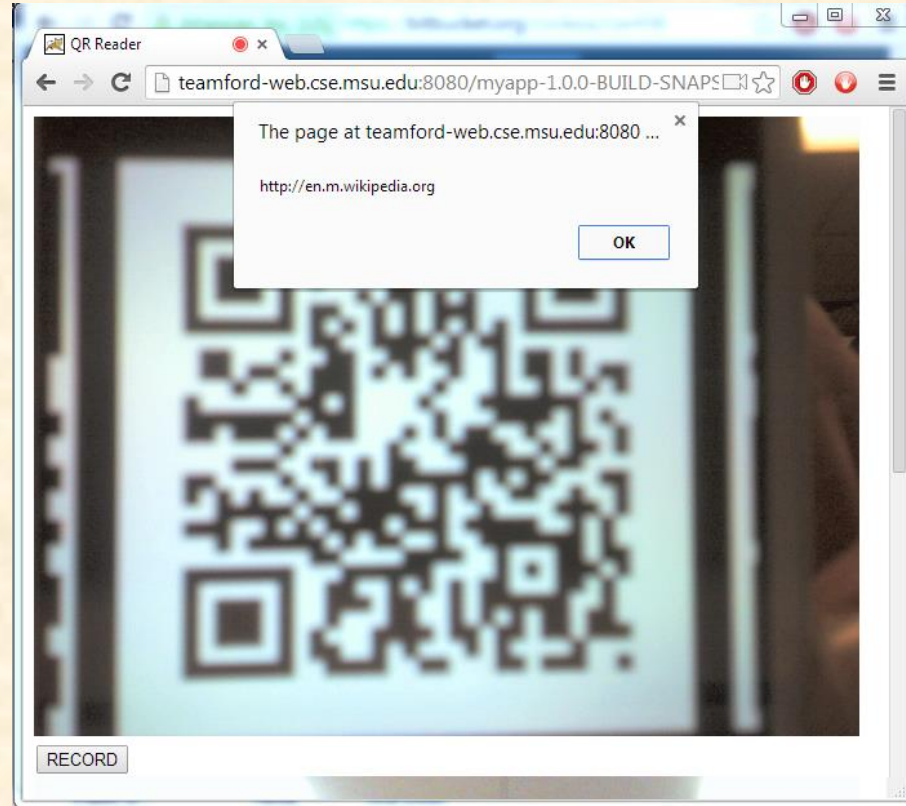


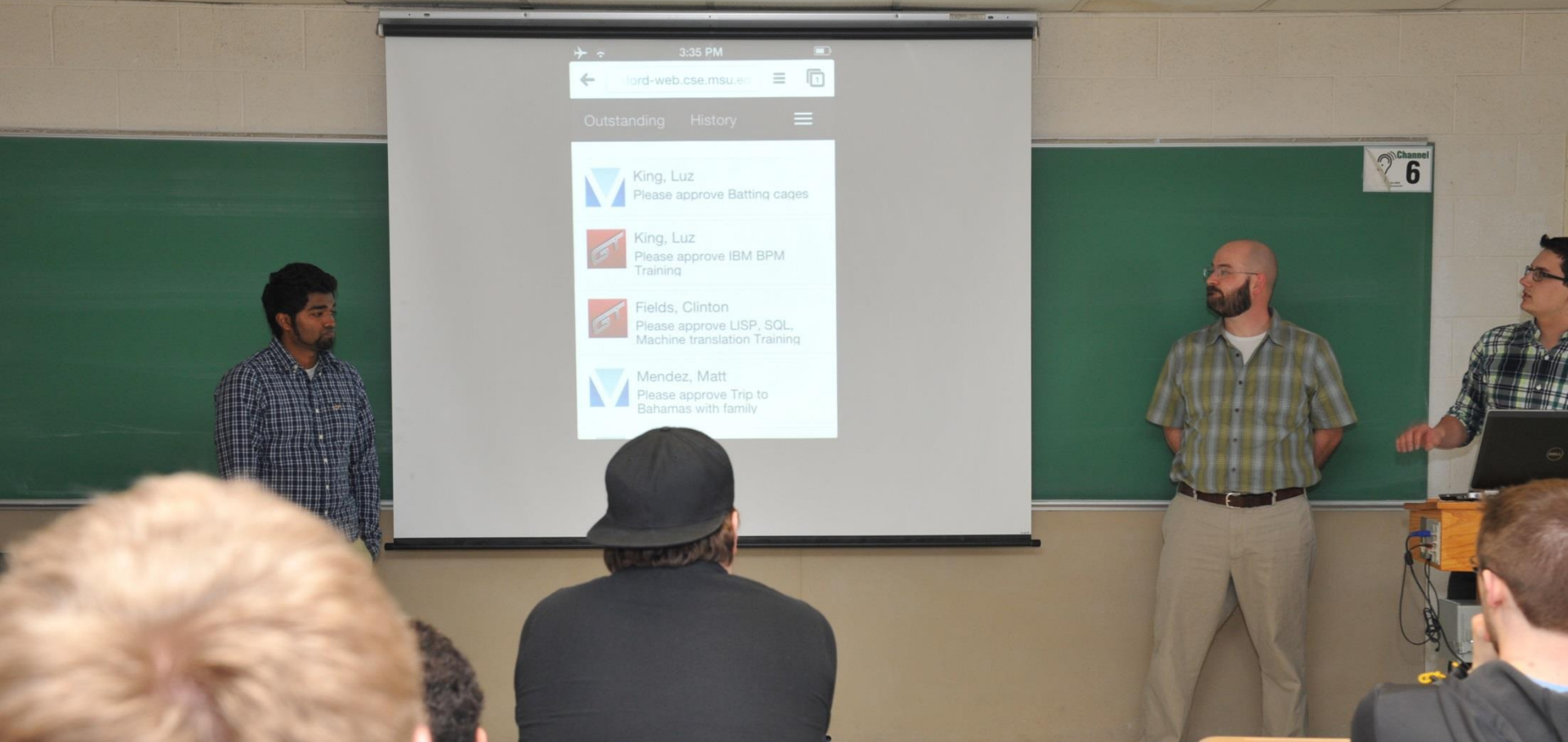


Team Ford Alpha Presentation

Team Ford Alpha Presentation

QR Code Scanner















Team Ford Beta Presentation

Team Ford Beta Presentation

Current Request List

Outstanding	History	
	Wheeler, Douglas Please approve Microsoft Excel Training	
	Mendez, Matt Please approve NCAA Bracket challenge	
	Vargas, Audrey Please approve C++ training	
	Powers, Salvatore Please approve Sharepoint Training	
	French, Robin Please approve Bahamas	

Outstanding	History	
	Wheeler, Douglas Please approve Microsoft Excel Training	
	Mendez, Matt Please approve NCAA Bracket challenge	
Approve	Reject	Details
	Vargas, Audrey Please approve C++ training	
	Powers, Salvatore Please approve Sharepoint Training	
	French, Robin Please approve Bahamas	



Team Ford Beta Presentation


Approve/Reject Details


Enter a comment for the approval ×


Sample approval text.

Close

Submit

 Vargas, Audrey
Please approve C++ training

 Powers, Salvatore
Please approve Sharepoint Training

 French, Robin
Please approve Bahamas

Outstanding

History

☰

Training Type:

Internal

Course Cost:

1.0000000000000000

End Date:

2014-03-28 00:00:00

Funding:

ITLD Budget

Requestor Comments:

No way is it 1\$

Requestor Name:

Wheeler, Douglas

Manager:

Hayes, Margaret

Training Location:

U of M, Ann Arbor

ID:

148

Department:

AD

Start Date:

2014-03-21 00:00:00

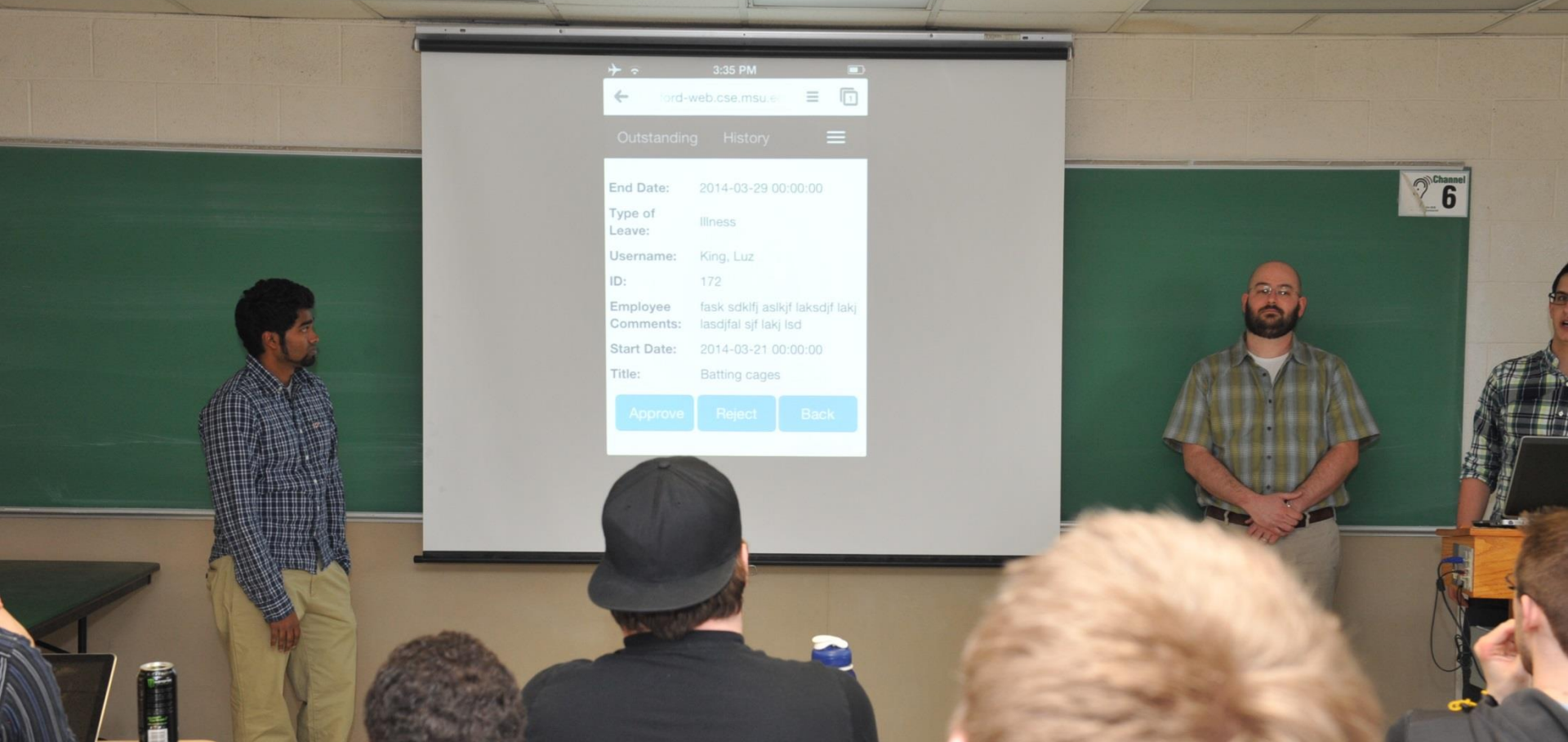
Title:

Microsoft Excel Training

Approve

Reject

Back



Team Ford Beta Presentation

Team Ford Beta Presentation

QR Code Scanning





Team Ford
Design Day

MICHIGAN STATE
UNIVERSITY

The Capstone Experience

Team GM

Department of Computer Science and Engineering
Michigan State University
Spring 2014



*From Students...
...to Professionals*





GENERAL MOTORS

VEHICLES ▶

INNOVATION ▶

COMPANY ▶

ALL GM SITES



CHEVROLET



BUICK

THE LATEST FROM GM:

1 2 3 4 5

Chevrolet Introduces Two New Sedans to Sonic Family

LOS ANGELES - Chevrolet today announced two new sedan options to the Sonic lineup in 2014 - the performance-inspired RS and the stylish Dusk - further demonstrating the brand's commitment to the subcompact segment and to... [Read](#)

Team GM

Project Overview

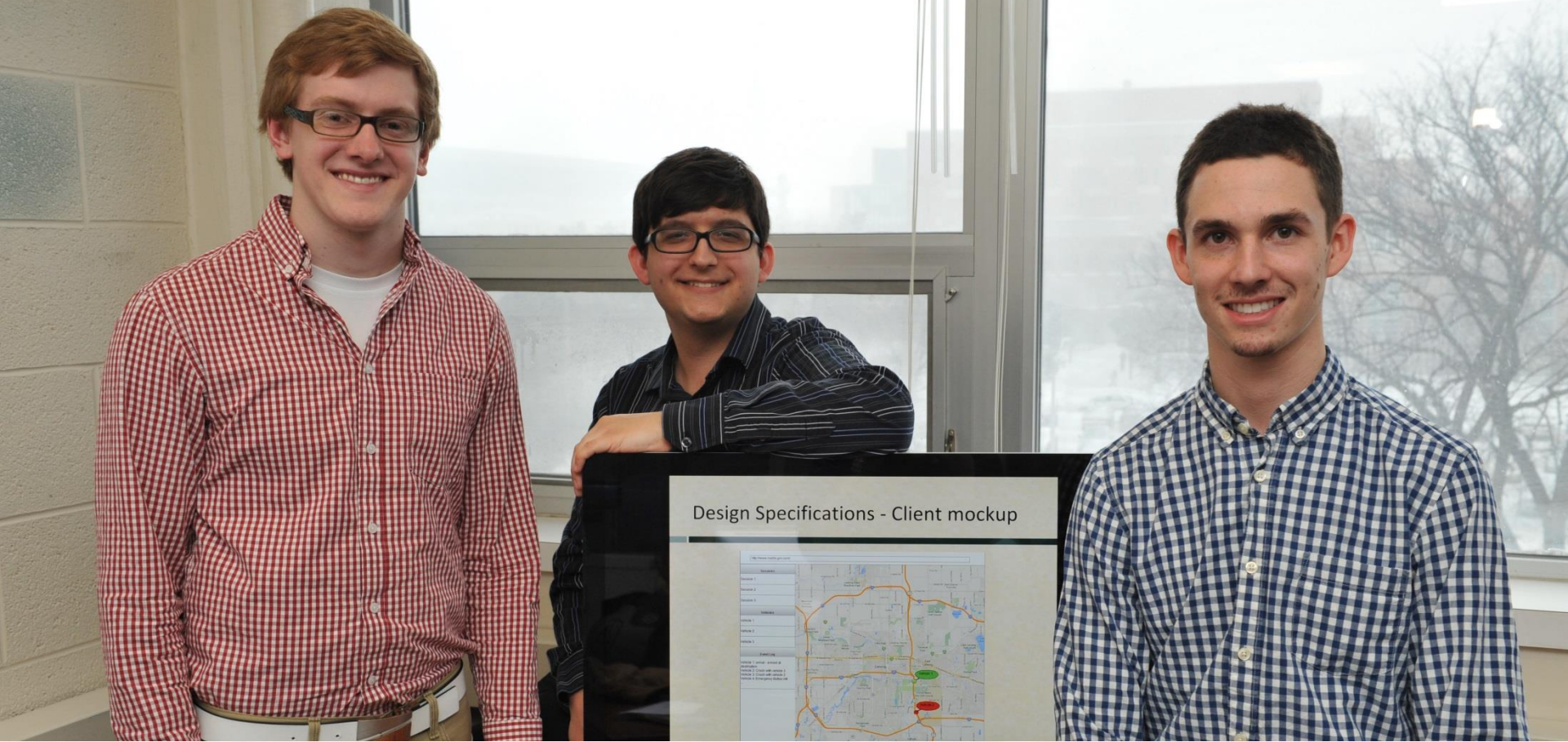
The Matrix: Vehicle Simulator System

- Functionalities
 - Simulate Vehicles Moving Along a Route
 - For Testing GM Location-Based Apps
 - Accessible Via Web Service API
- Features
 - Database of Vehicles
 - RESTful Web Services
 - Create Vehicle
 - Route Vehicle Along Waypoints
 - Discrete Timing Mechanism
 - Move Vehicle
 - Update Location-Based App
 - Create and Handle Named Events (i.e., “Crash”)
- Technologies
 - CSS / HTML / JavaScript
 - Java / J2EE
 - Java Web / Application Server
 - Oracle Database
 - Google Maps API



Detroit, Michigan





Team GM

Duncan Young, Sam Moore, Matt Wein

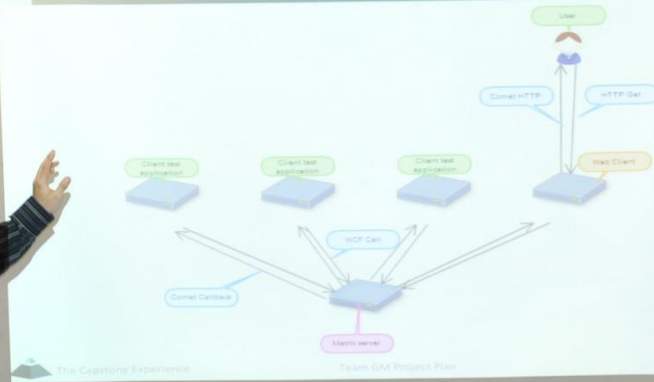
Team GM Project Plan Presentation

Library Mockup

```
1  using Matrix;
2
3  class MatrixClient
4  {
5      public static void Main(string[] args)
6      {
7          Simulator.config("http://www.myserver.com", 80);
8
9          Vehicle vehicle = Simulator.AddVehicle();
10         vehicle.SetStartingLocation("East Lansing, MI 48823");
11         vehicle.SetDestination("Tampa, FL 33602");
12
13         LocationEvent event = new Simulator.LocationEvent();
14         event.name = "Arrived at Destination";
15         event.location = v1.GetDestination();
16         event.callback = OnVehicleArrivedAtDestination;
17         vehicle.SetEventForLocation(event);
18
19         Simulator.Run();
20     }
21
22     public void OnVehicleArrivedAtDestination(EventData data)
23     {
24         Console.WriteLine("Vehicle arrived at destination: {0}", data.vehicle.GetName());
25
26         data.vehicle.SetDestination("East Lansing MI, 48823");
27     }
28 }
```



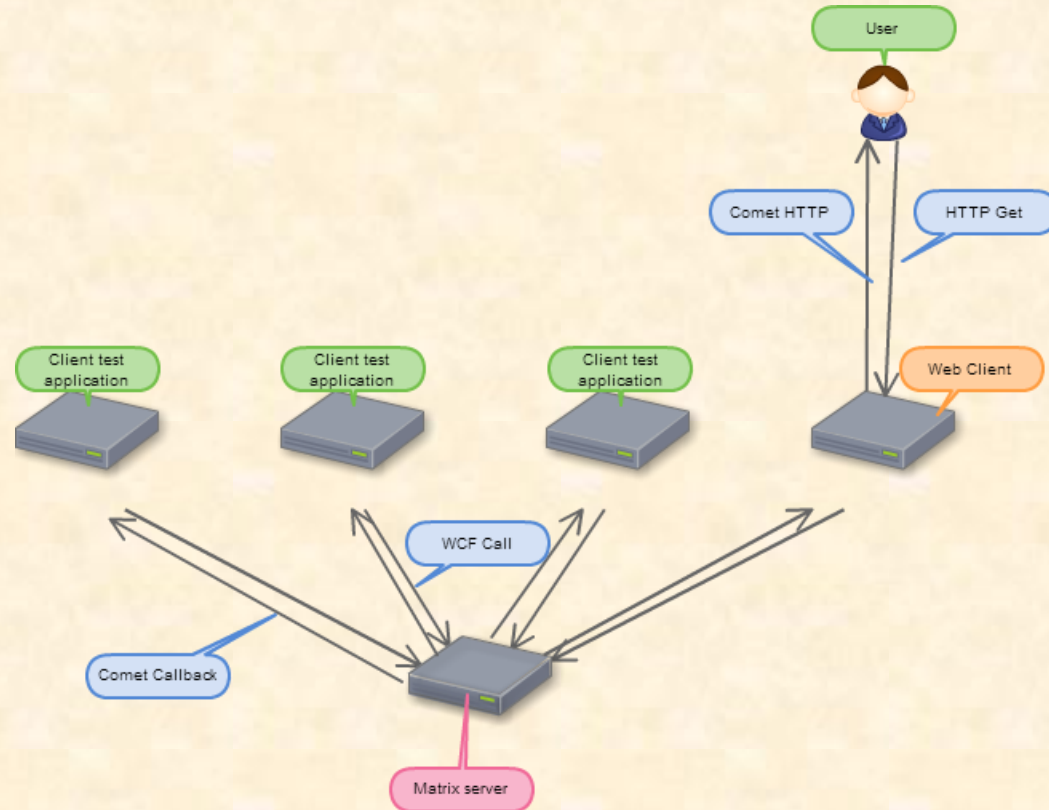
System Architecture



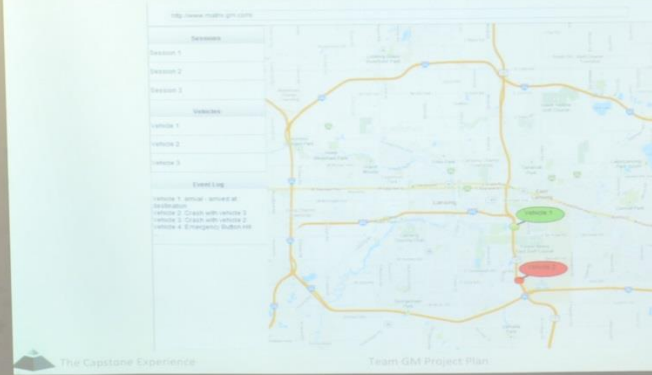
Team GM
Project Plan Presentation

Project Plan Presentation

Architecture Diagram



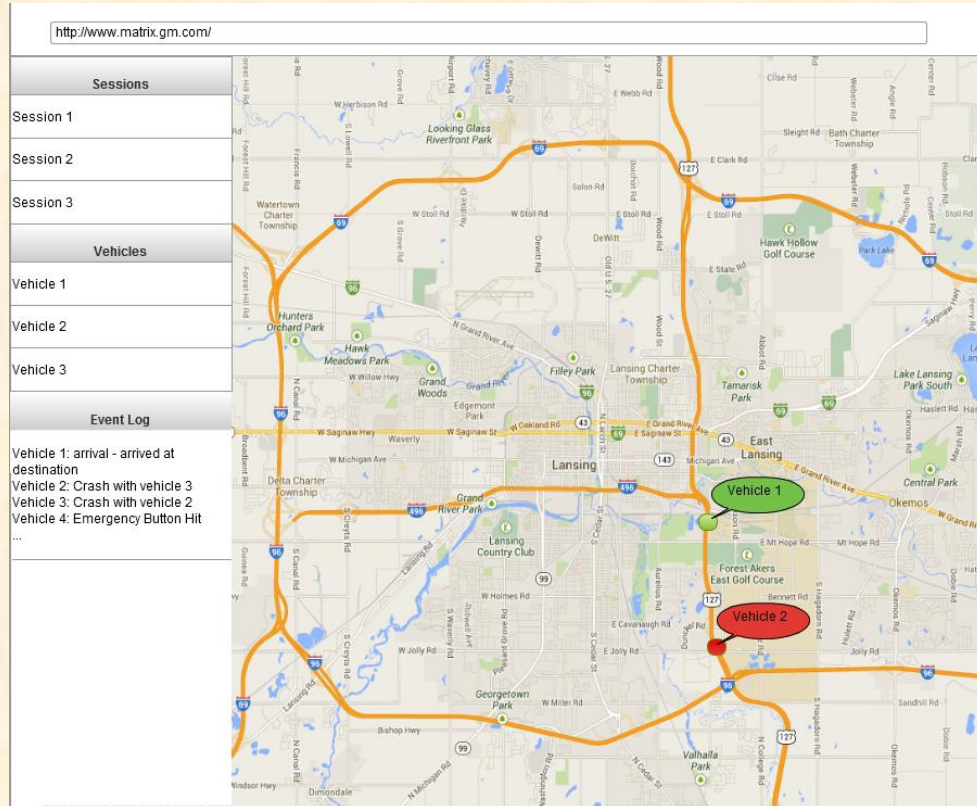
Design Specifications - Client mockup



Team GM
Project Plan Presentation

Team GM Project Plan Presentation

Screen Mockup





Team GM Alpha Presentation

Team GM Alpha Presentation

Developer API

```
RESTClient.Connect("http://35.9.22.109:8080/Matrix/");

Session session = new Session();
Vehicle vehicle = new Vehicle();
Vehicle vehicle2 = new Vehicle();
Vehicle vehicle3 = new Vehicle();
vehicle.m_name = "Spark";
vehicle2.m_name = "Silverado";
vehicle3.m_name = "Corvette";

Event e = new Event();
e.vehicle = vehicle;
e.name = "Made it to my house in EL";
e.m_threshold = 0.3f;
e.locationName = "1921 Abbot Rd, East Lansing, MI";

e.callbacks += EventHit;
RESTClient.eventCallbacks.Add(e.m_id, e.callbacks);

session.m_events.Add(e);

Event e2 = new Event();
e2.vehicle = vehicle2;
e2.name = "Duncan picked up his lunch";
e2.m_threshold = 0.3f;
e2.locationName = "1040 Blanchette Dr, East Lansing, MI";

e2.callbacks += EventHit;
RESTClient.eventCallbacks.Add(e2.m_id, e2.callbacks);
```

```
Dictionary<Vehicle, List<string>> waypoints = new Dictionary<Vehicle, List<string>>();
List<string> wp = new List<string>(){
    "189 Spartan Ave, East Lansing, MI",
    "1921 Abbot Rd, East Lansing, MI",
    "1140 Blanchette Dr, East Lansing, MI"
};
waypoints.Add(vehicle, wp);
List<string> wp2 = new List<string>(){
    "1140 Blanchette Dr, East Lansing, MI",
    "1040 Blanchette Dr, East Lansing, MI",
    "4642 S Hagadorn Rd, East Lansing, MI"
};
waypoints.Add(vehicle2, wp2);
List<string> wp3 = new List<string>(){
    "4642 S Hagadorn Rd, East Lansing, MI",
    "189 Spartan Ave, East Lansing, MI",
    "1921 Abbot Rd, East Lansing, MI"
};
waypoints.Add(vehicle3, wp3);
SessionWrapper wrapper = new SessionWrapper();
wrapper.session = session;
wrapper.waypoints = waypoints;

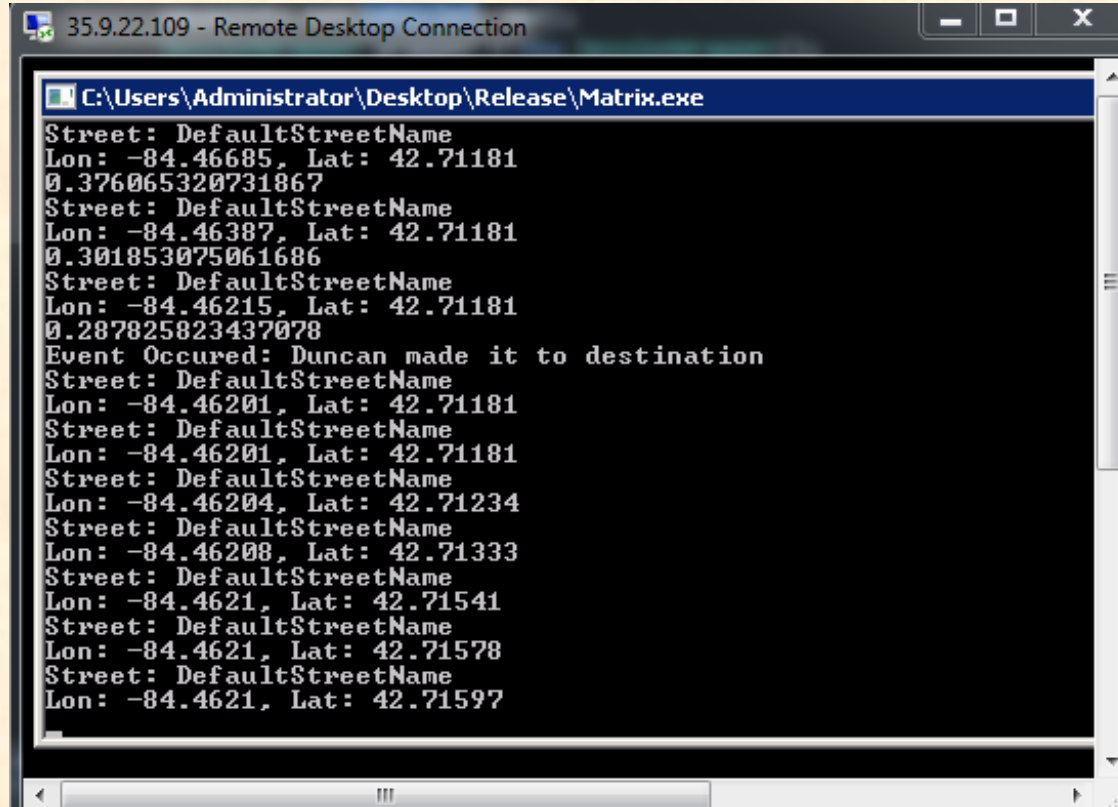
addCar(vehicle);
addCar(vehicle2);
addCar(vehicle3);

id = simulatorClient.CreateSession(wrapper);
RESTClient.ConnectCallback += Update;
RESTClient.SessionComplete += onSessionEnded;
```



Team GM Alpha Presentation

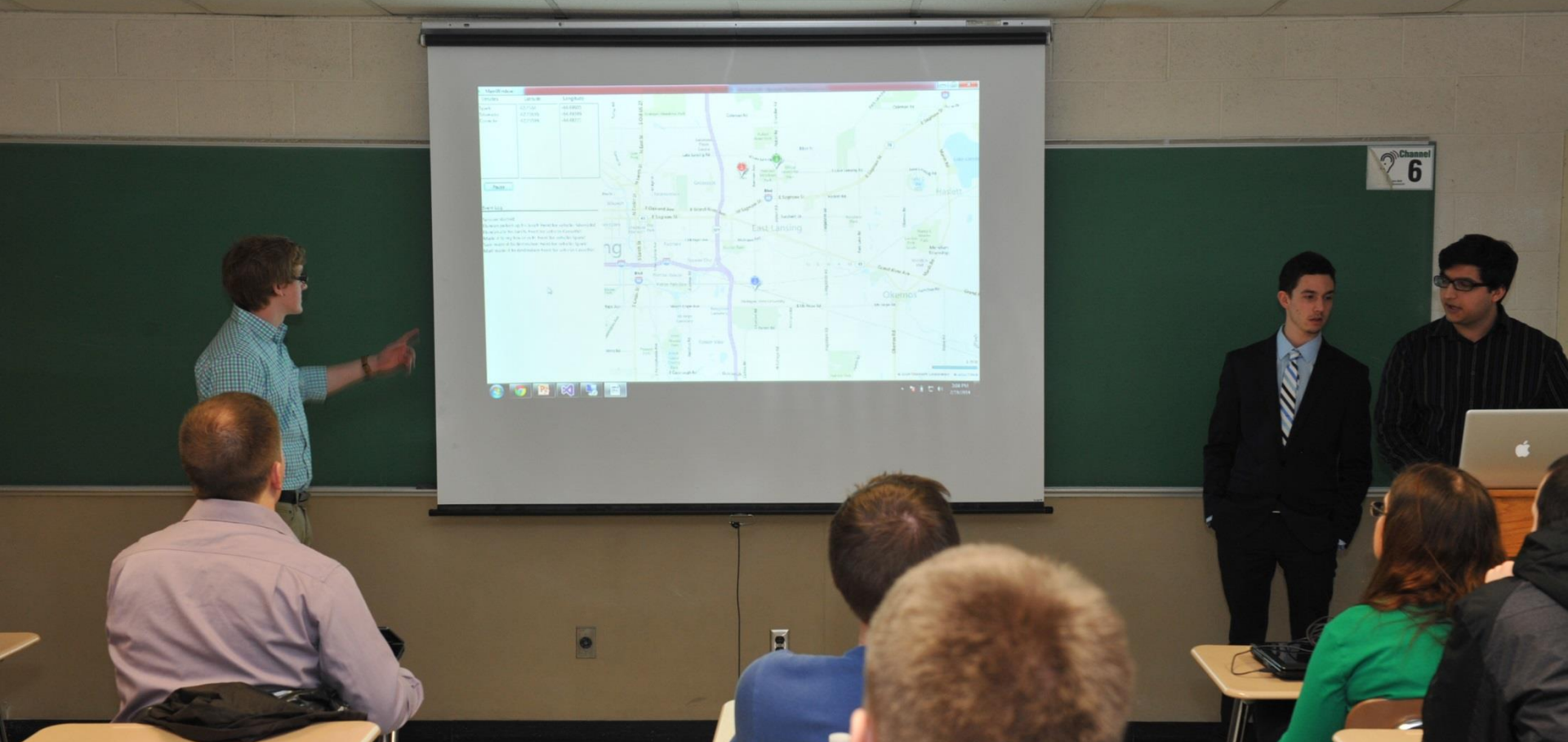
Matrix Server



A screenshot of a Remote Desktop Connection window titled "35.9.22.109 - Remote Desktop Connection". The window displays a command prompt window titled "C:\Users\Administrator\Desktop\Release\Matrix.exe". The output of the program is as follows:

```
Street: DefaultStreetName  
Lon: -84.46685, Lat: 42.71181  
0.376065320731867  
Street: DefaultStreetName  
Lon: -84.46387, Lat: 42.71181  
0.301853075061686  
Street: DefaultStreetName  
Lon: -84.46215, Lat: 42.71181  
0.287825823437078  
Event Occured: Duncan made it to destination  
Street: DefaultStreetName  
Lon: -84.46201, Lat: 42.71181  
Street: DefaultStreetName  
Lon: -84.46201, Lat: 42.71181  
Street: DefaultStreetName  
Lon: -84.46204, Lat: 42.71234  
Street: DefaultStreetName  
Lon: -84.46208, Lat: 42.71333  
Street: DefaultStreetName  
Lon: -84.4621, Lat: 42.71541  
Street: DefaultStreetName  
Lon: -84.4621, Lat: 42.71578  
Street: DefaultStreetName  
Lon: -84.4621, Lat: 42.71597
```

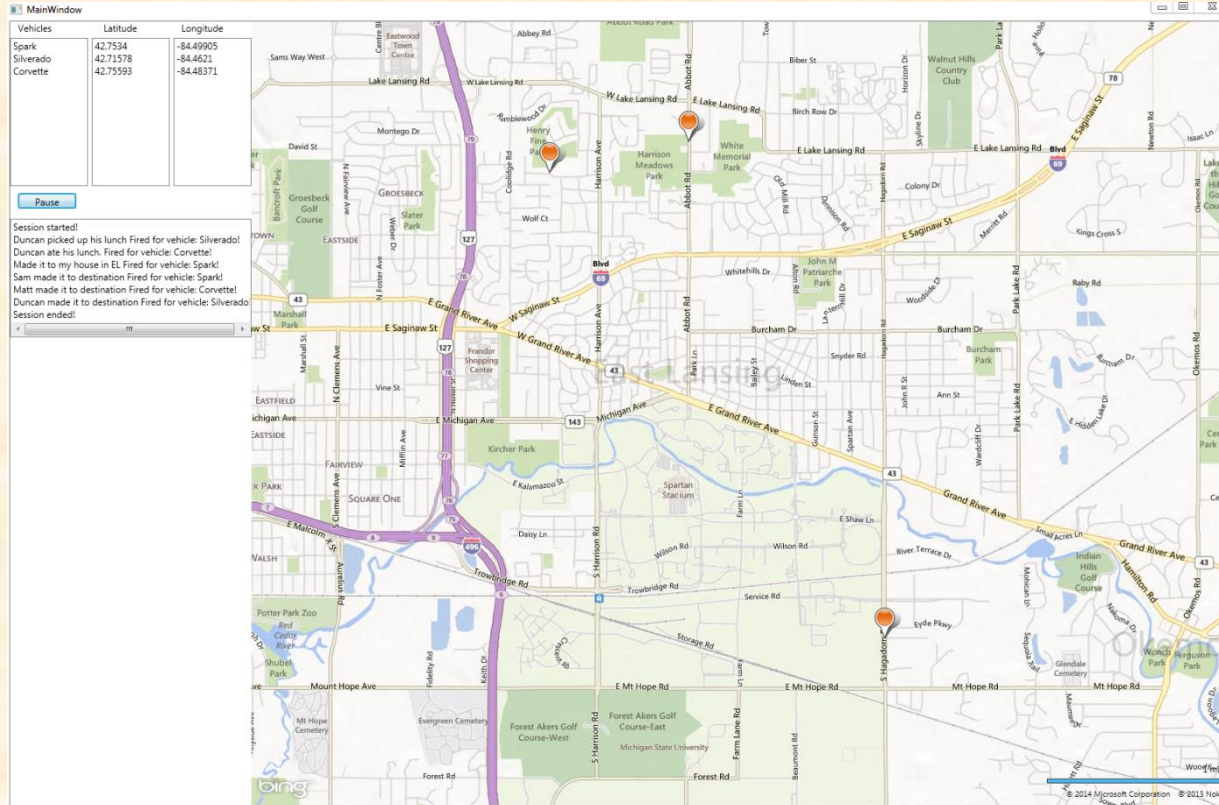


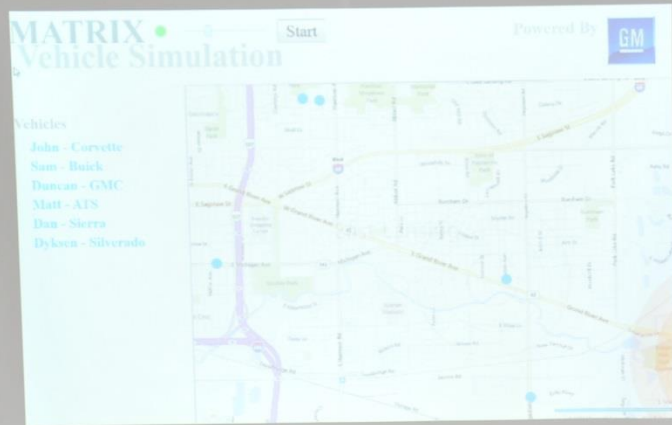


Team GM Alpha Presentation

Team GM Alpha Presentation

GUI





Team GM
Beta Presentation

Team GM Beta Presentation

Viewing Each Vehicle

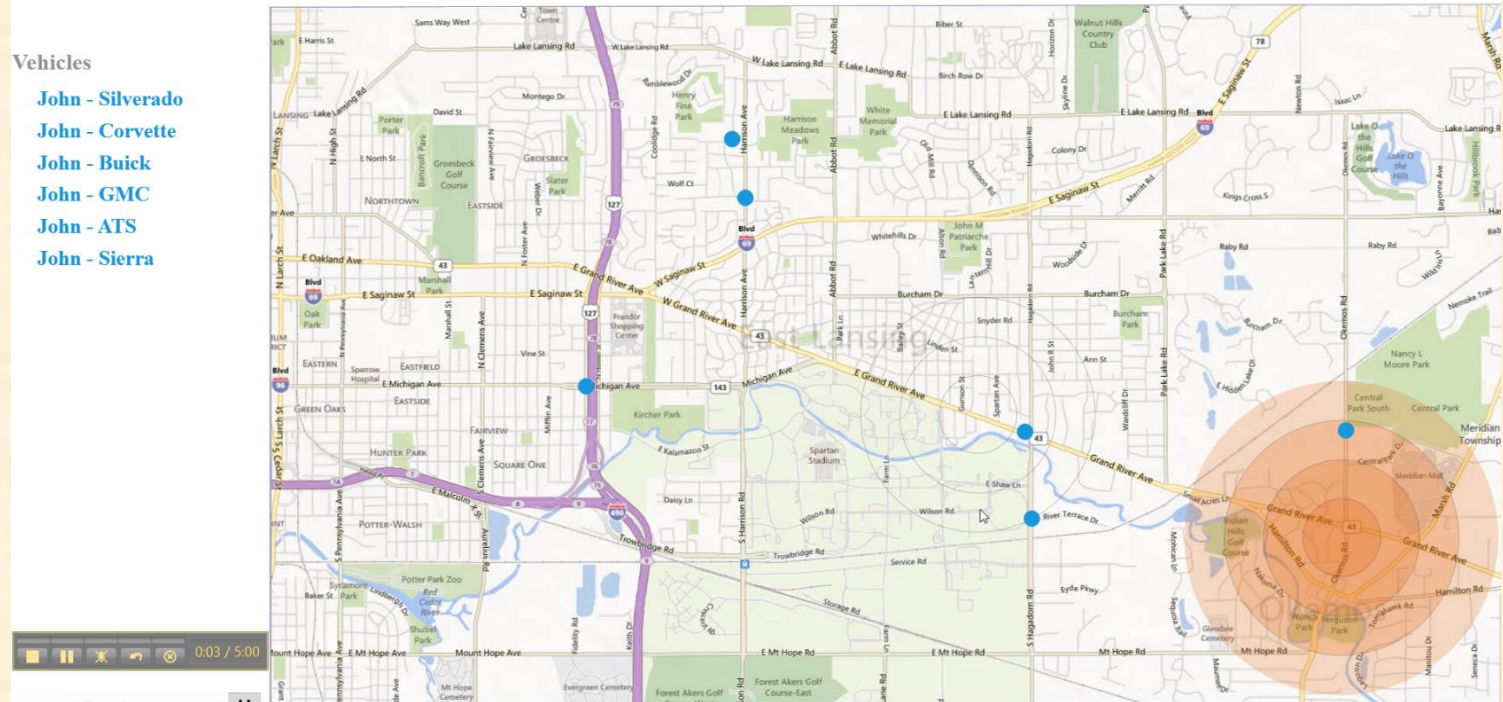
MATRIX Vehicle Simulation

Powered By



Vehicles

John - Silverado
John - Corvette
John - Buick
John - GMC
John - ATS
John - Sierra



Team GM Beta Presentation

Monitoring Vehicle Properties

MATRIX Vehicle Simulation

Powered By



John
Make - ATS

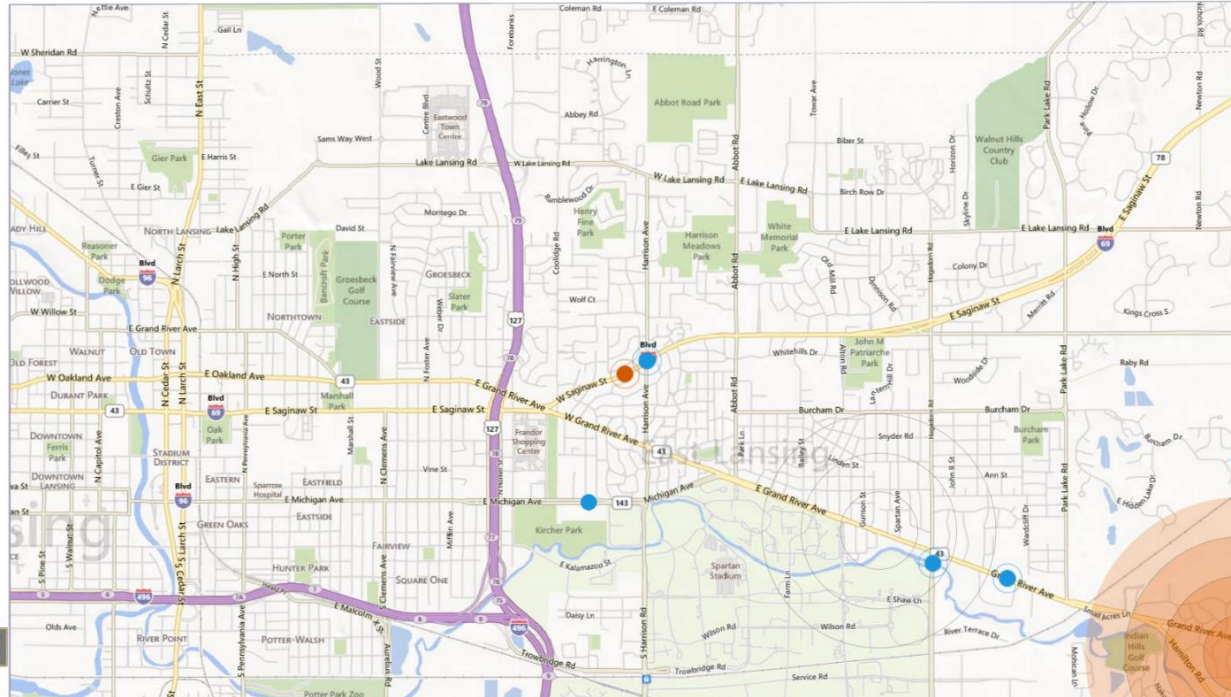


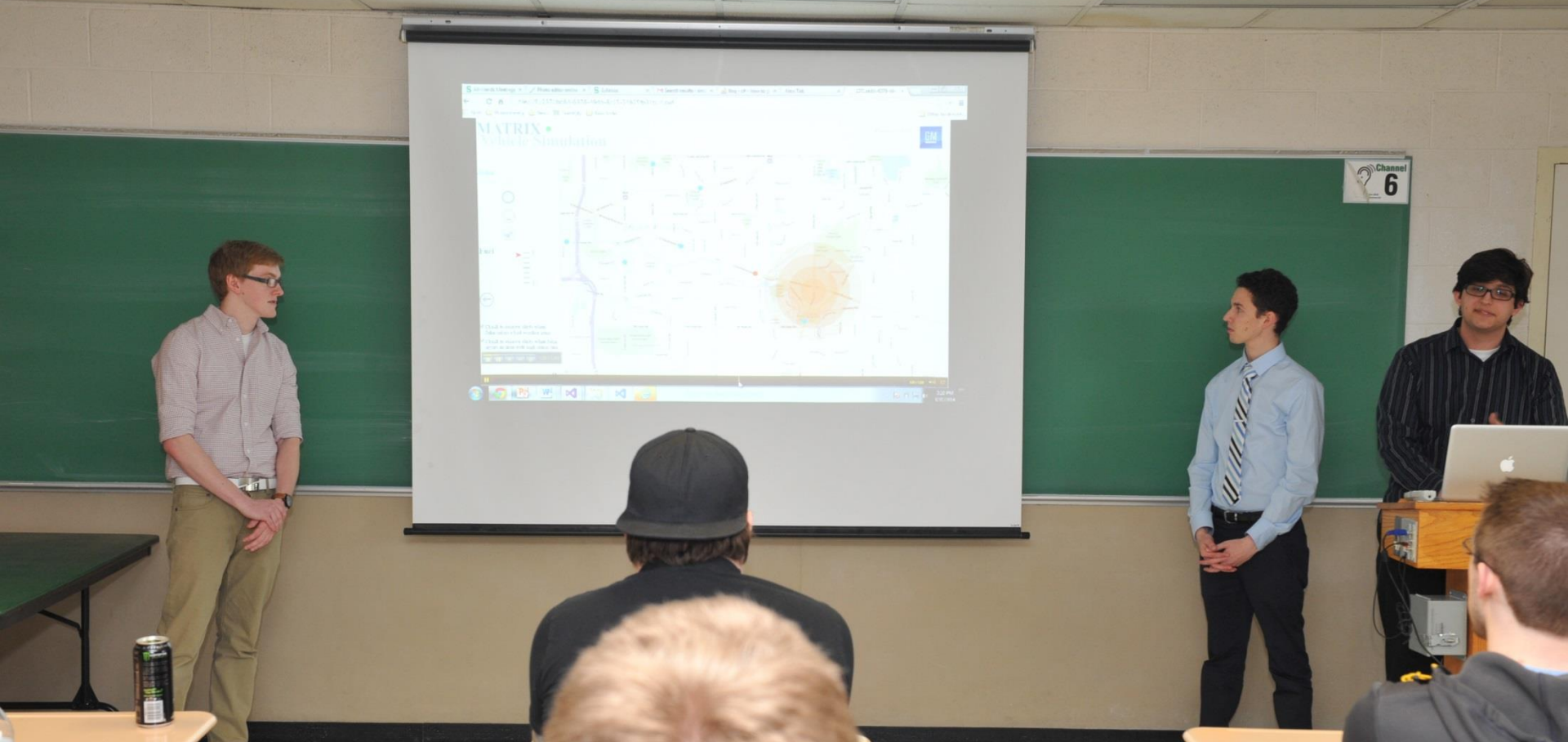
Fuel



- ☐ Check to receive alerts when John enters a bad weather zone
- ☐ Check to receive alerts when John enters an area with high crime rate.

0:31 / 5:00





Team GM Beta Presentation

Team GM Beta Presentation

Weather and Useful Notifications

MATRIX • Vehicle Simulation

Powered By



John
Make - Spark



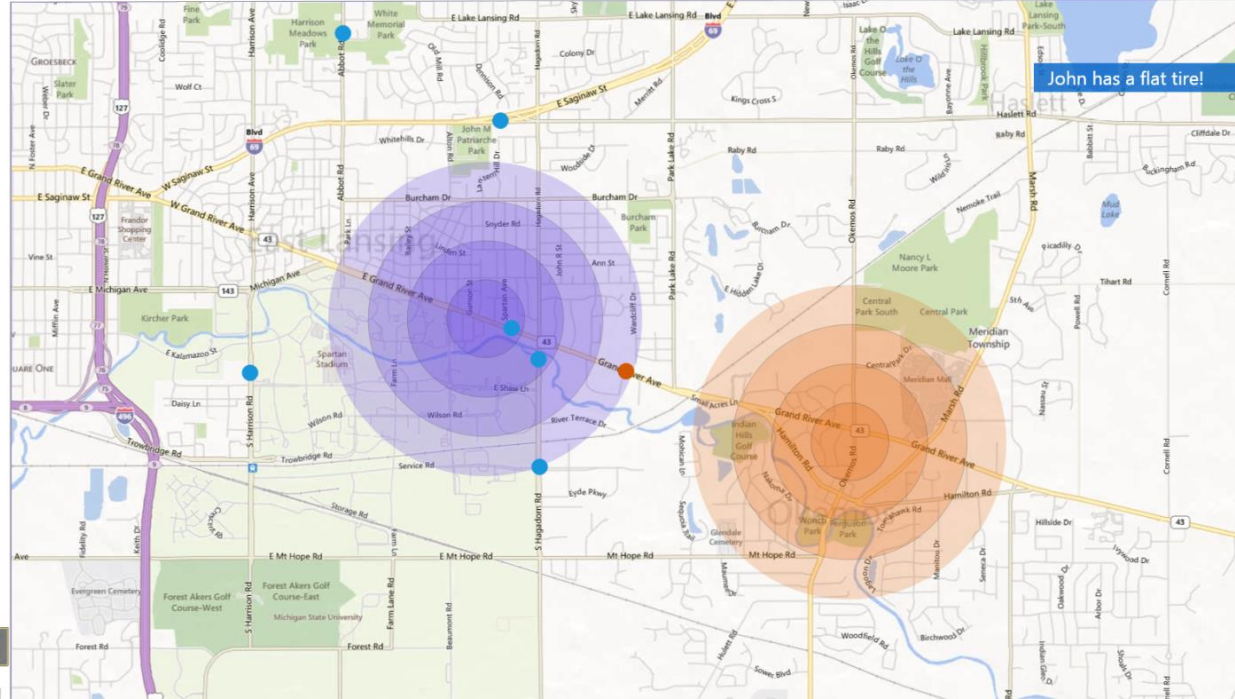
Fuel



- ✓ Check to receive alerts when John enters a bad weather zone
- ✓ Check to receive alerts when John enters an area with high crime rate.



John has a flat tire!





Team GM
Design Day

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UNIVERSITY

The Capstone Experience

Team Google

Department of Computer Science and Engineering
Michigan State University
Spring 2014

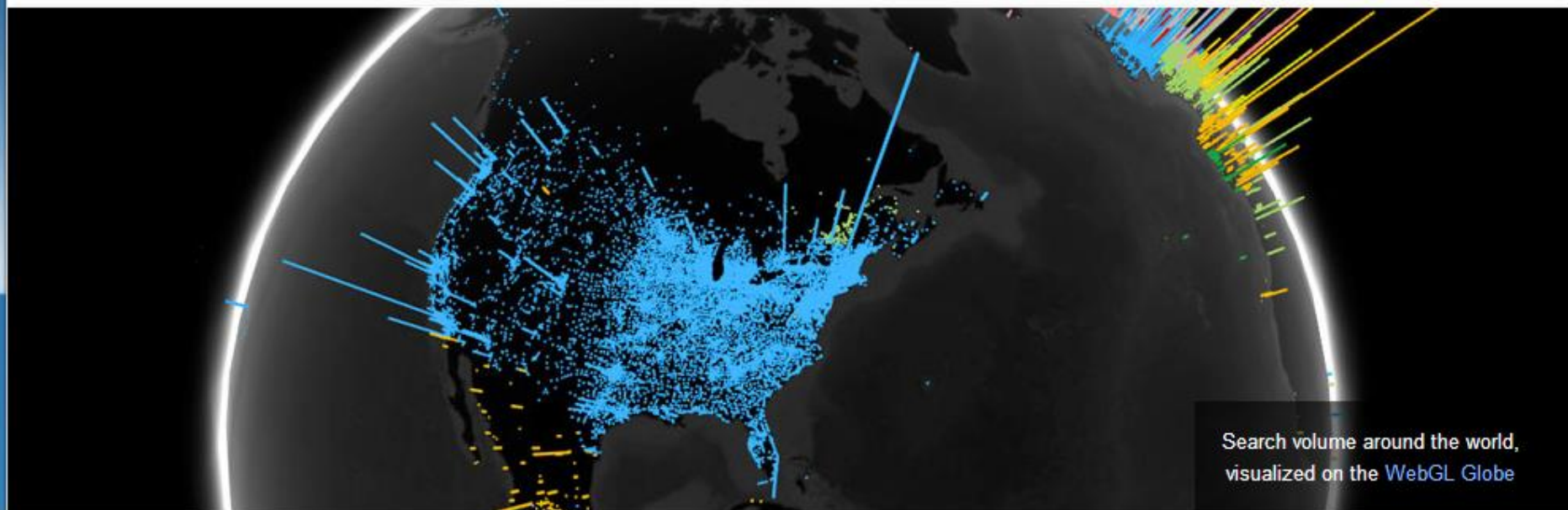


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...to Professionals*

Google™



About Google



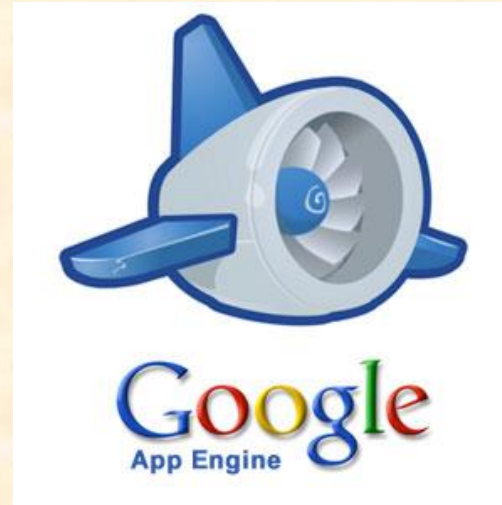
Google's mission is to organize the world's information and make it universally accessible and useful.

Team Google

Project Overview

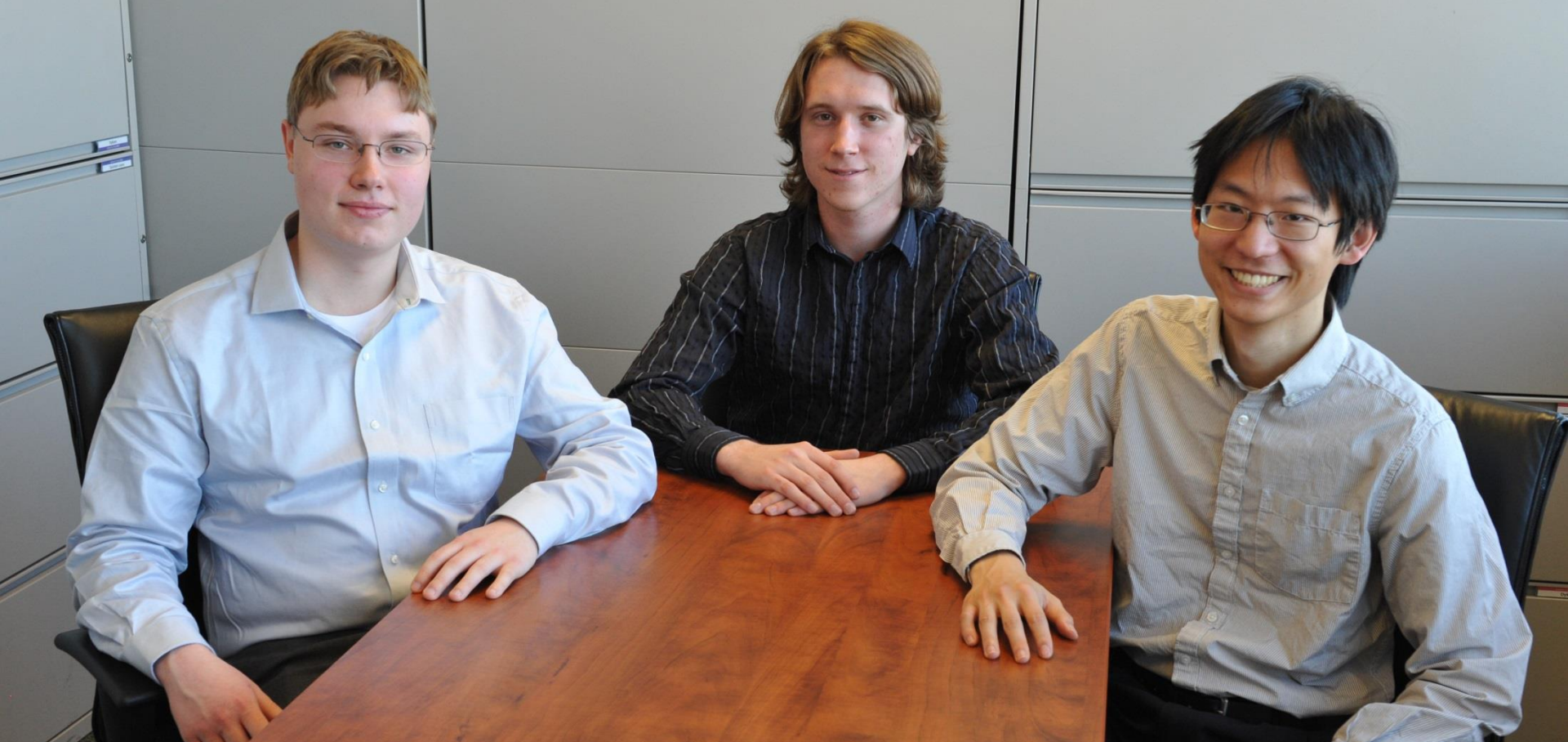
Change Management Software

- Functionalities
 - Provide Change Management System
 - Built “Google on Google”
 - (Replace Legacy System)
- Features
 - Underlying Data/Document Model
 - HTTP-Based API
(Create, Read, Modify and Change Requests)
 - Browser-Base User Interface
(Create, View, Edit, Review and Discard Requests)
- Technologies
 - CSS / HTML
 - JavaScript
 - Google App Engine
 - Python or Go



Mountain View, California





Team Google

Nick Vogt, Ben Bonnen, Albert Guo

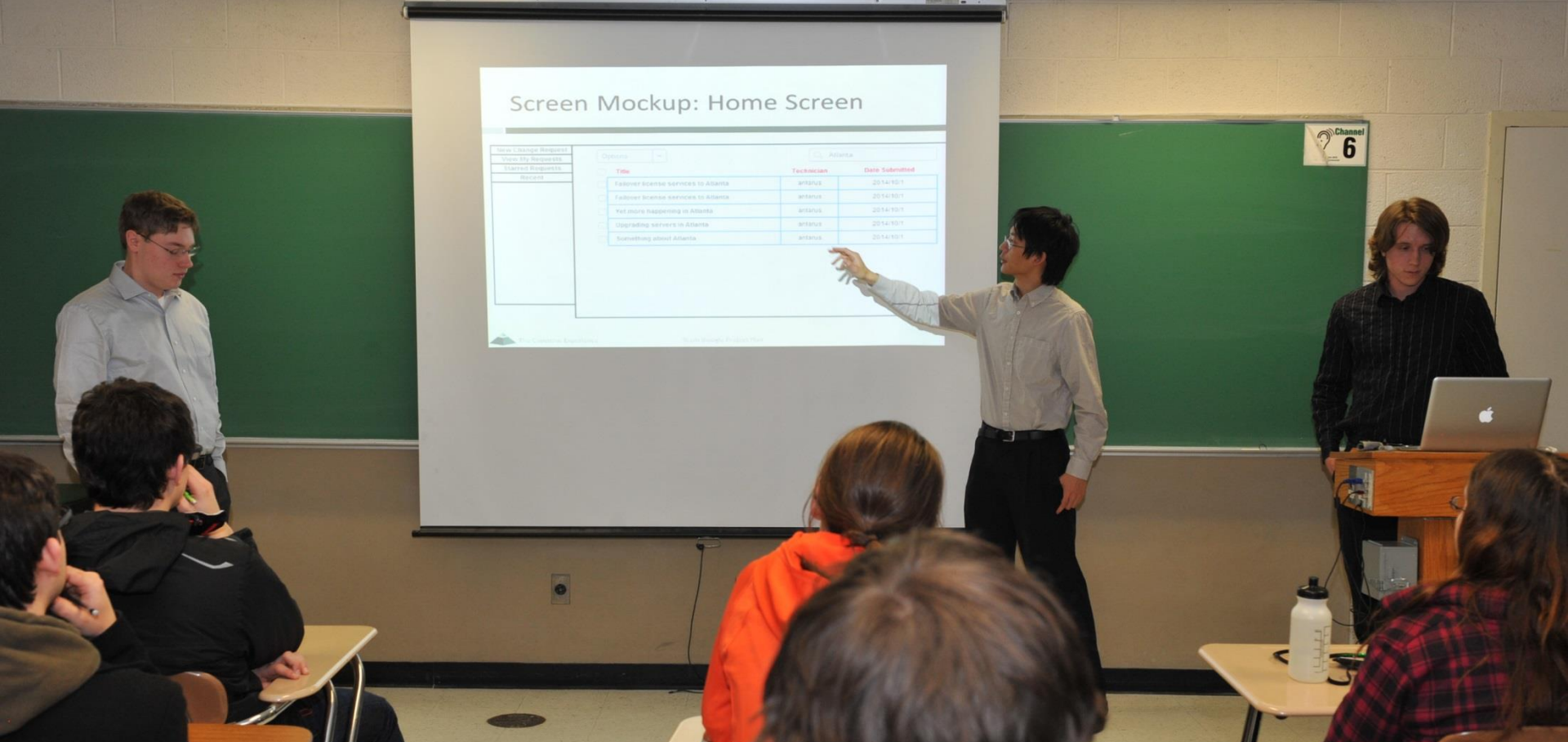
Team Google Project Plan Presentation

Screen Mockup

New Change Request
View My Requests
Starred Requests
Recent

Options ▾

<input type="checkbox"/> Title	Technician	Date Submitted
<input type="checkbox"/> Failover license services to Atlanta	antarus	2014/10/1
<input type="checkbox"/> Failover license services to Atlanta	antarus	2014/10/1
<input type="checkbox"/> Yet more happening in Atlanta	antarus	2014/10/1
<input type="checkbox"/> Upgrading servers in Atlanta	antarus	2014/10/1
<input type="checkbox"/> Something about Atlanta	antarus	2014/10/1



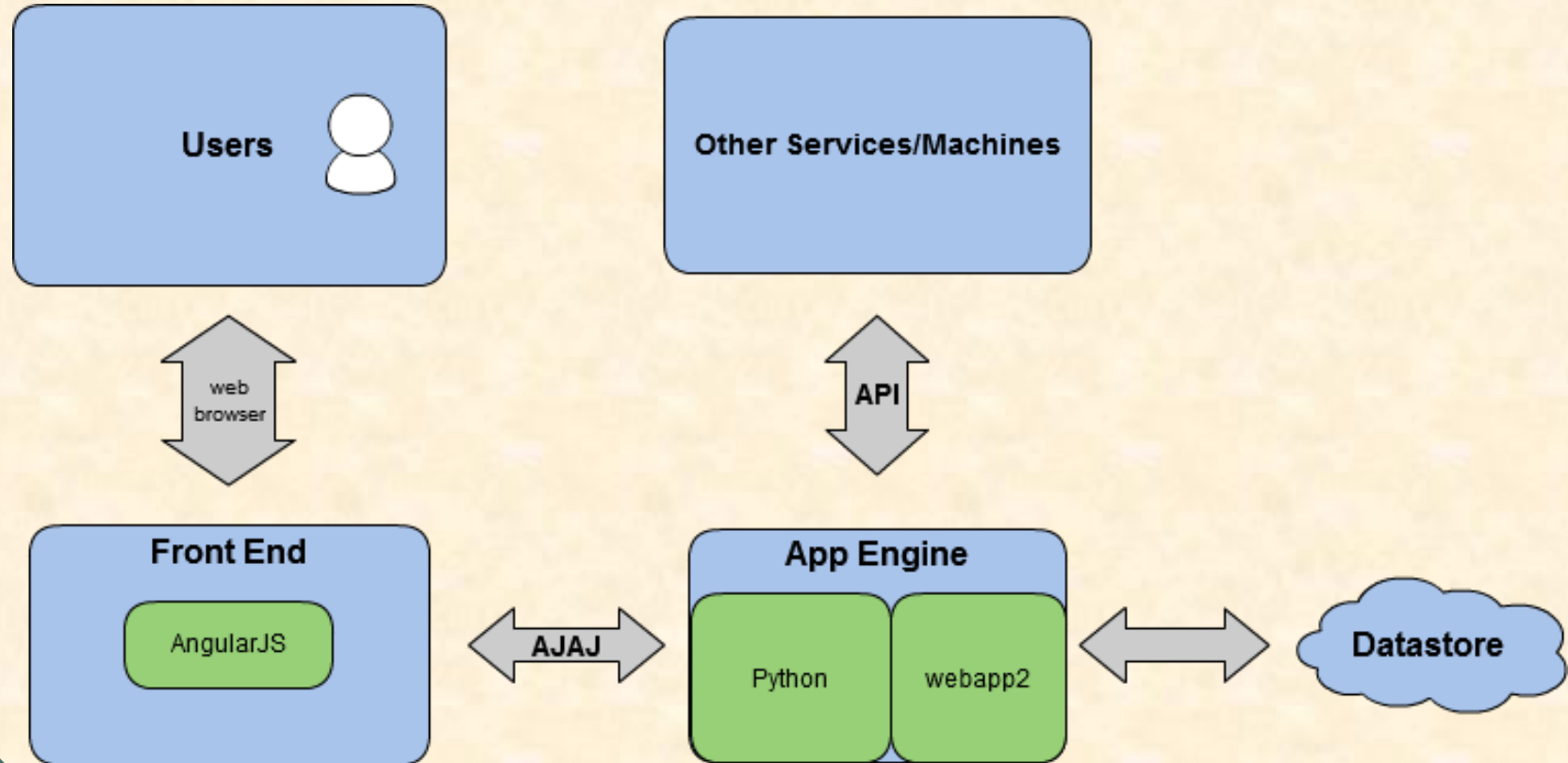
Screen Mockup: Home Screen

New Change Request View My Requests Unread Requests Recent	Atlanta		
	Title	Technician	Date Submitted
	Fullover server services in Atlanta	attatus	2014-10-1
	Fullover server services in Atlanta	attatus	2014-10-1
	Net more happening in Atlanta	attatus	2014-10-1
	Upgrading servers in Atlanta	attatus	2014-10-1
	Something about Atlanta	attatus	2014-10-1

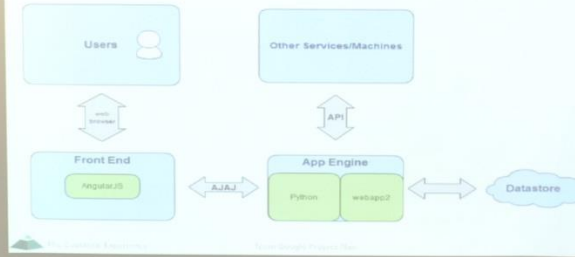
Team Google
Project Plan Presentation

Team Google Project Plan Presentation

Architecture Diagram



System Architecture



Team Google
Project Plan Presentation

Team Google Project Plan Presentation

Screen Mockup

You are currently logged in as: User [Logout](#)

Create a New Change Request

Summary

Description

Group

Locations Affected

Global	
North America	+
Asia	+

Note: Many other fields omitted.

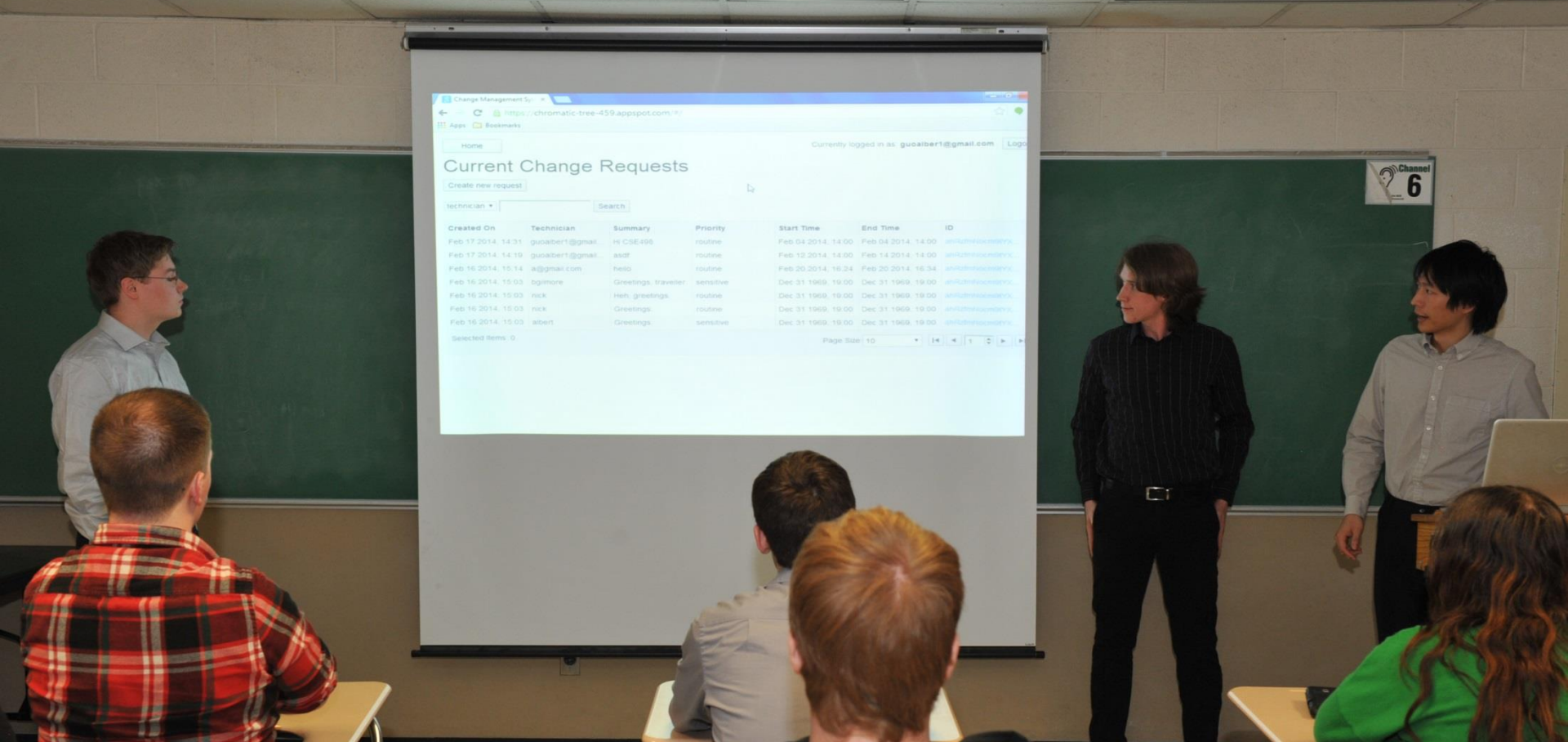
Start Time

October						
Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4

End Time

October						
Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4





Team Google Alpha Presentation

Team Google Alpha Presentation

Main Page

Change Management Sys: x

chromatic-tree-459.appspot.com/#/

Apps Bookmarks

Home

Currently logged in as: bbonnen@gmail.com Logout

Current Change Requests

Create new request

technician Search

Created On	Technician	Summary	Priority	Start Time	End Time	ID
Feb 16 2014, 15:14	a@gmail.com	hello	routine	Feb 20 2014, 16:24	Feb 20 2014, 16:34	ahRzfmNocm9tYXR...
Feb 16 2014, 15:03	bgilmore	Greetings, traveller.	sensitive	Dec 31 1969, 19:00	Dec 31 1969, 19:00	ahRzfmNocm9tYXR...
Feb 16 2014, 15:03	nick	Heh, greetings.	routine	Dec 31 1969, 19:00	Dec 31 1969, 19:00	ahRzfmNocm9tYXR...
Feb 16 2014, 15:03	nick	Greetings.	routine	Dec 31 1969, 19:00	Dec 31 1969, 19:00	ahRzfmNocm9tYXR...
Feb 16 2014, 15:03	albert	Greetings.	sensitive	Dec 31 1969, 19:00	Dec 31 1969, 19:00	ahRzfmNocm9tYXR...
Feb 16 2014, 15:03	nick	Greetings, traveller.	sensitive	Dec 31 1969, 19:00	Dec 31 1969, 19:00	ahRzfmNocm9tYXR...
Feb 16 2014, 15:03	albert	Greetings.	sensitive	Dec 31 1969, 19:00	Dec 31 1969, 19:00	ahRzfmNocm9tYXR...

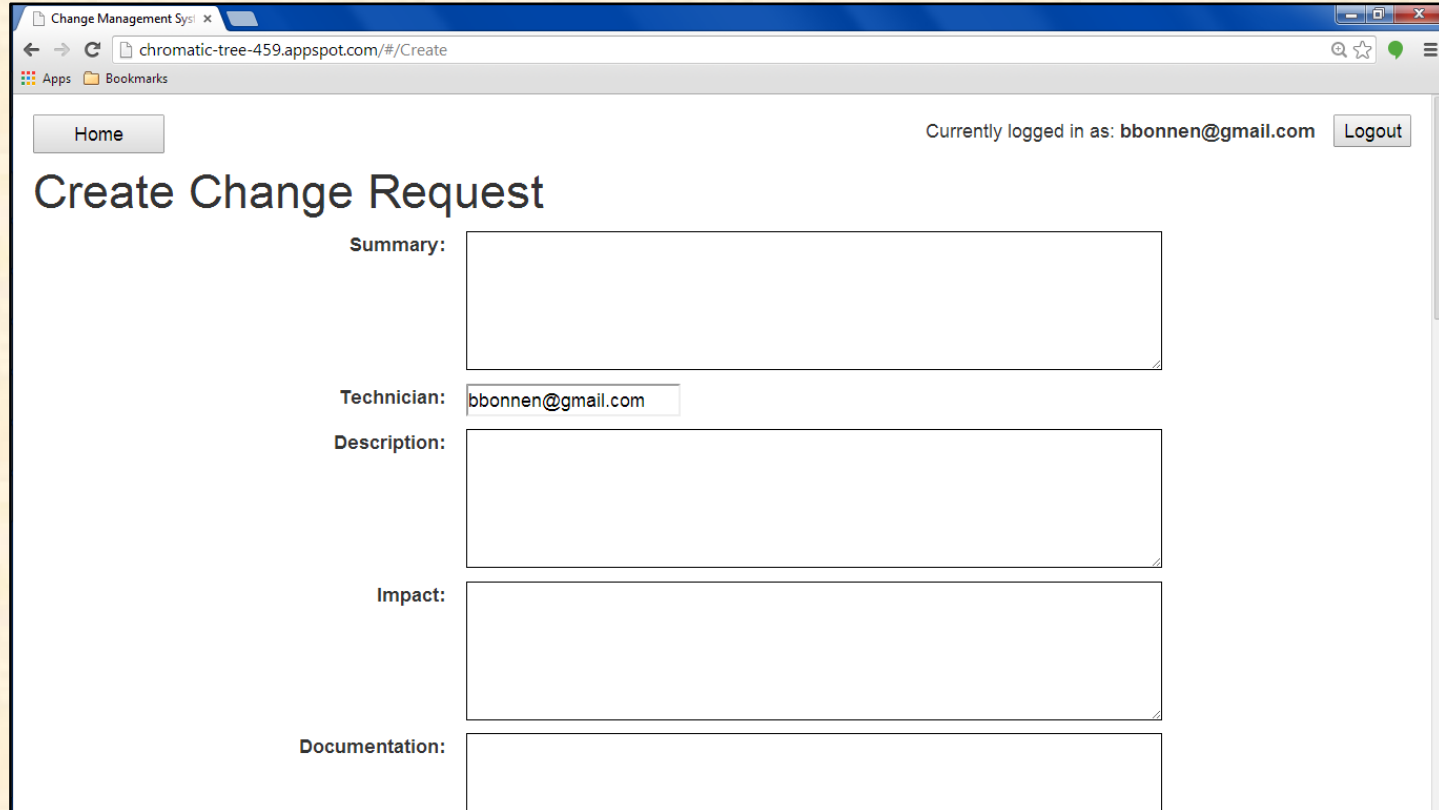
Selected Items: 0

Page Size: 10

1

Team Google Alpha Presentation

Create Page



Change Management Sys: x

chromatic-tree-459.appspot.com/#/Create

Apps Bookmarks

Home

Currently logged in as: bbonnen@gmail.com Logout

Create Change Request

Summary:

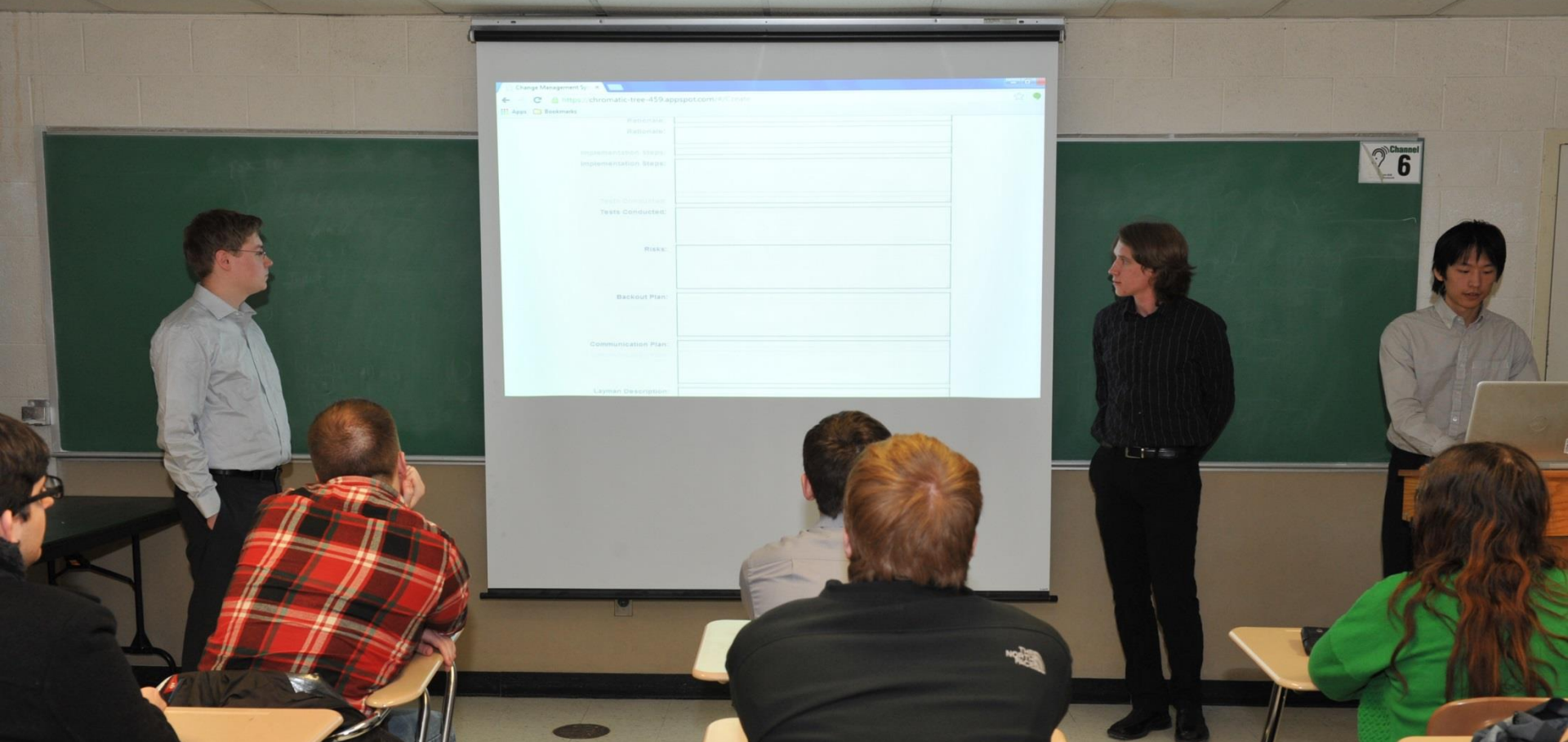
Technician:

Description:

Impact:

Documentation:





Team Google Alpha Presentation

Team Google Alpha Presentation

Edit Page

Change Management Sys: X

chromatic-tree-459.appspot.com/#/id=ahRzfmNocm9tYXRpYy10cmVILTQ1OXITCxiNQ2hhbmdlUmVxdWVzdBgBDA

Apps Bookmarks

Home

Currently logged in as: bbonnen@gmail.com Logout

Edit Change Request

Summary:

Technician:

Description:

Impact:

Documentation:





Team Google Beta Presentation

Team Google Beta Presentation

Main View

Change Management

chromatic-tree-459.appspot.com/#/?query=priority:routine

Apps Bookmarks

Home Create new request Create new template

Currently logged in as: bbonnen@gmail.com Logout Preferences

Change Requests My Drafts Awaiting Approval Recently Approved Templates

priority:routine

Advanced

Created On	Technician	Summary	Priority	Start Time	End Time	Status	ID
Aug 02 2013, 15:00	antarus@google.com	Routine switch maint...	routine	Aug 05 2013, 16:00	Aug 05 2013, 18:30	approved	92
Feb 09 2014, 23:00	krelinga@google.com	Switch maintenance	routine	Feb 17 2014, 10:00	Feb 19 2014, 11:30	approved	84
Jan 27 2014, 16:00	ben@google.com	Server update	routine	Feb 03 2014, 14:00	Feb 04 2014, 17:00	approved	74
Jul 04 2013, 09:30	bgilmore@google.com	Server update	routine	Jul 11 2013, 00:30	Jul 12 2013, 01:30	approved	81
Jul 31 2013, 11:30	albert@google.com	Database restructuring	routine	Aug 13 2013, 01:30	Aug 13 2013, 06:30	approved	95
Jun 25 2013, 12:00	bgilmore@google.com	Server update	routine	Jul 02 2013, 15:00	Jul 03 2013, 13:00	approved	86
Mar 13 2014, 16:18	guoalber1@gmail.com	hello	routine	Mar 13 2014, 18:00	Mar 21 2014, 04:00	created	380001
Mar 18 2014, 16:05	guoalber1@gmail.com		routine	Mar 18 2014, 16:00	Mar 18 2014, 16:00	created	450002
Nov 08 2013, 16:00	antarus@google.com	Database restructuring	routine	Nov 11 2013, 09:00	Nov 13 2013, 09:00	approved	76
Oct 23 2013, 14:30	krelinga@google.com	Server update	routine	Nov 07 2013, 00:30	Nov 08 2013, 01:30	approved	83

Selected Items: 0

Showing Results: 1-10

Page Size: 10

Team Google Beta Presentation

Create Change Request

Change Management x

chromatic-tree-459.appspot.com/#/id=310002

Apps Bookmarks

Start Time

11-March-2014 Select 0 : 0 PM

End Time

11-March-2014 Select 0 : 0 PM

Priority sensitive ▾

Tags: servers x Add a tag

Publish Save as Draft Unapprove Success Failure Subscribe

Leave a comment

On Mar 25 2014, 15:32 **antarus@google.com** edited this request:

Changed priority from "routine" to "sensitive"

On Mar 10 2014, 17:17 **vognnich@gmail.com** edited this request:

Changed startTime from "2014-03-10 21:00:00" to "2014-03-11 21:00:00"

Changed endTime from "2014-03-11 00:00:00" to "2014-03-12 00:00:00"





Team Google Beta Presentation

Team Google Beta Presentation

Advanced Search

Change Management x

chromatic-tree-459.appspot.com/#/search

Apps Bookmarks

Home Create new request Create new template

Currently logged in as: bbonnen@gmail.com Logout Preferences

Add Search Field Match ALL Queries

GLOBAL = X

summary = X

technician = X

priority = routine X

tags = X

startTime <= yyyy-mm-dd X

Sort by: created_on Descending

Search





Google Change Management Software

Google's mission is to organize the world's information and make it universally accessible and useful. To achieve this, Google engineers work long hours, often under pressure, to develop new products and services that improve the lives of billions of people. This requires a high level of organization and coordination.

Google's Change Management Software is a tool that helps engineers manage the complex process of changing a product or service. It allows engineers to track changes, communicate with stakeholders, and ensure that all changes are implemented correctly.

The Google Change Management Software is a powerful tool that helps engineers manage the complex process of changing a product or service. It allows engineers to track changes, communicate with stakeholders, and ensure that all changes are implemented correctly.

Google's Change Management Software is a powerful tool that helps engineers manage the complex process of changing a product or service. It allows engineers to track changes, communicate with stakeholders, and ensure that all changes are implemented correctly.

Change ID	Change Description	Change Status	Change Owner	Change Date
1	Change 1	Open	John Doe	2010-10-10
2	Change 2	In Progress	Jane Smith	2010-10-11
3	Change 3	Completed	Bob Johnson	2010-10-12
4	Change 4	Open	Alice Brown	2010-10-13
5	Change 5	In Progress	Charlie White	2010-10-14
6	Change 6	Completed	Diana Green	2010-10-15
7	Change 7	Open	Eve Black	2010-10-16
8	Change 8	In Progress	Frank Gray	2010-10-17
9	Change 9	Completed	Grace Blue	2010-10-18
10	Change 10	Open	Henry Red	2010-10-19

Google



Project Sponsors
Rick Yip
David Smith
John Doe
Jane Smith
Bob Johnson
Alice Brown
Charlie White
Diana Green
Eve Black
Frank Gray
Grace Blue
Henry Red



Team Google Design Day

MICHIGAN STATE
UNIVERSITY

The Capstone Experience

Team Meijer

Department of Computer Science and Engineering
Michigan State University
Spring 2014



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...to Professionals*

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when you use your Meijer Credit Card

apply now ▶

11/1 through 11/30

*,**Exclusions apply. See details ▶

sneak peek our
Black Friday
& Thanksgiving deals ▶



meijer

Weekly Ads

Gift Cards

mPerks

Find a Store

enter for a chance to win
FREE groceries for a year! *
enter now ▶

*see official rules for details



search



My Store ▼



My Account ▼



Cart

0

Grocery & Health | Clothing | Baby | Home | Furniture | Garden & Patio | Toys | Electronics | Sports | Christmas | Clearance

**Christmas
shop**

make the season bright
trees, lights, and more

25-40% off select items

shop now ▶

merci
Finest Selection

50¢ OFF
one 14.1 oz box of Merci

mperks.



start saving ▶

Team Meijer Project Overview

Mobile Customer Satisfaction App

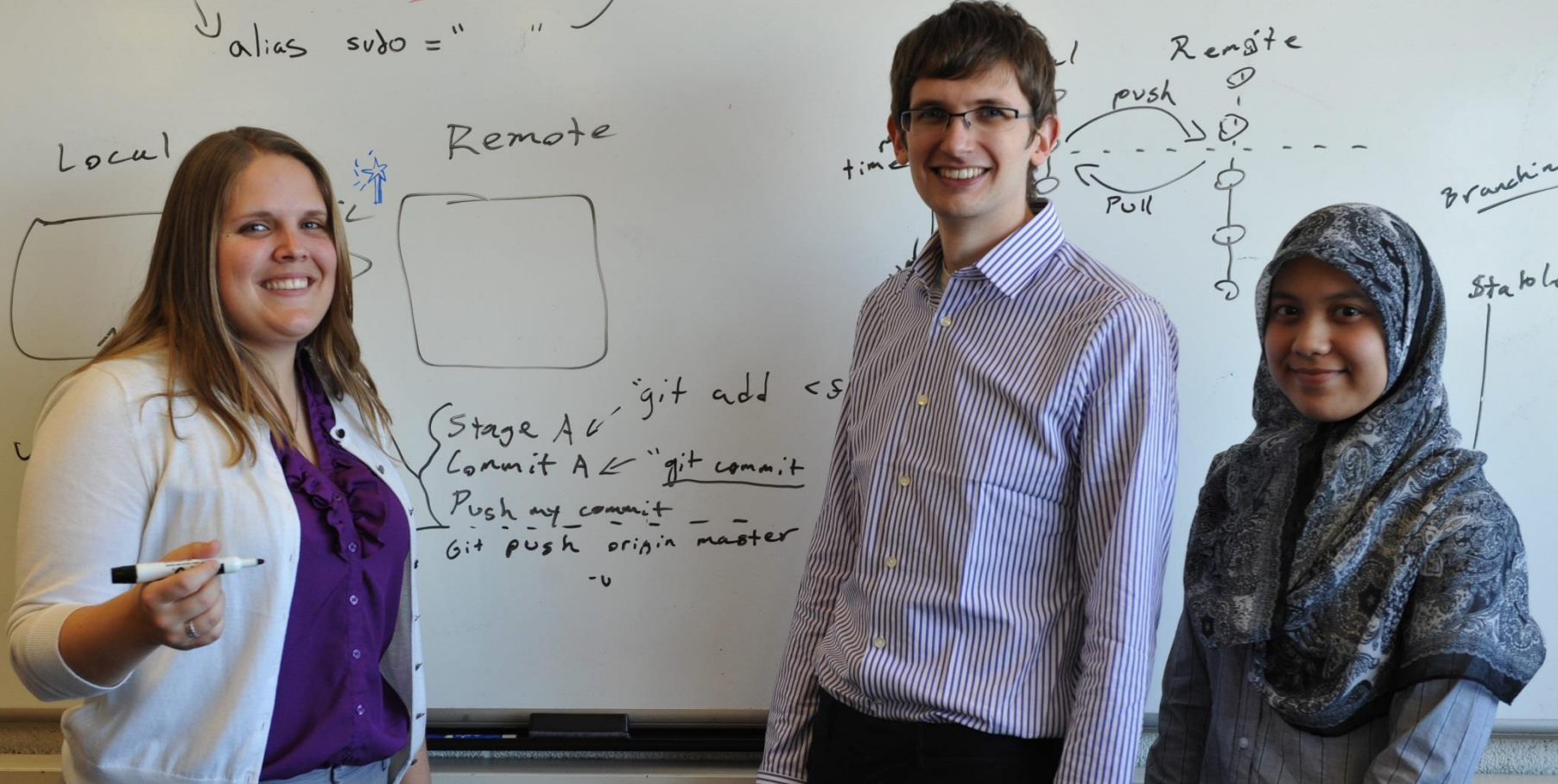
- Functionalities
 - Provide Feedback About Shopping Experience
 - By Customers
 - Quickly and Easily
 - Via Mobile Devices
- Features
 - Support Tablets and Smartphones
 - Use Cloud-Based Data Storage
 - Is Secure
 - Provide Web-Based Corporate User Interface
- Technologies
 - CSS / HTML5
 - Microsoft Azure Services
 - Mobile Development Methodologies
 - Social Media



meijer[®]

Grand Rapids, Michigan



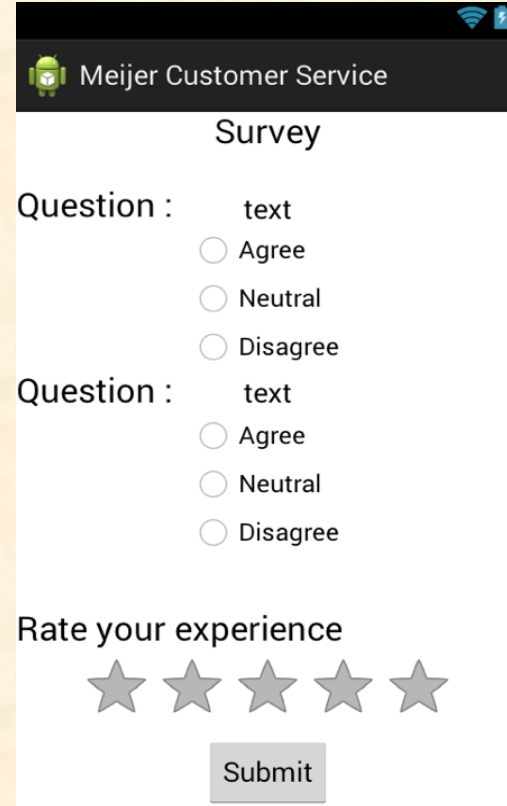
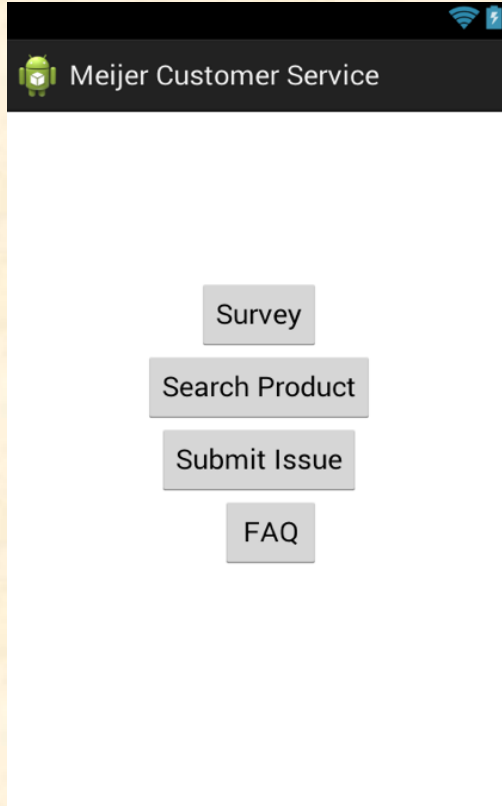


Team Meijer

Taylor Jones, Kaleb Friskey, Noor Hanan Ahmadkamel

Team Meijer Project Plan Presentation

Screen Mockups



Screen Mockup: Mobile Application

The image displays two side-by-side mobile application screen mockups for 'Meijer Customer Service'. Both screens have a dark header with the app name and a status bar at the top.

Left Mockup (Issues):

- Header: Meijer Customer Service
- Title: ISSUES
- List of issues:
 - Can't find product
 - Product out of stock
 - Aisle sign
 - Dirty bathroom
 - Self checkout difficulties
 - Long register lines
- Other: [Text input field]
- Submit: [Submit button]

Right Mockup (FAQ):

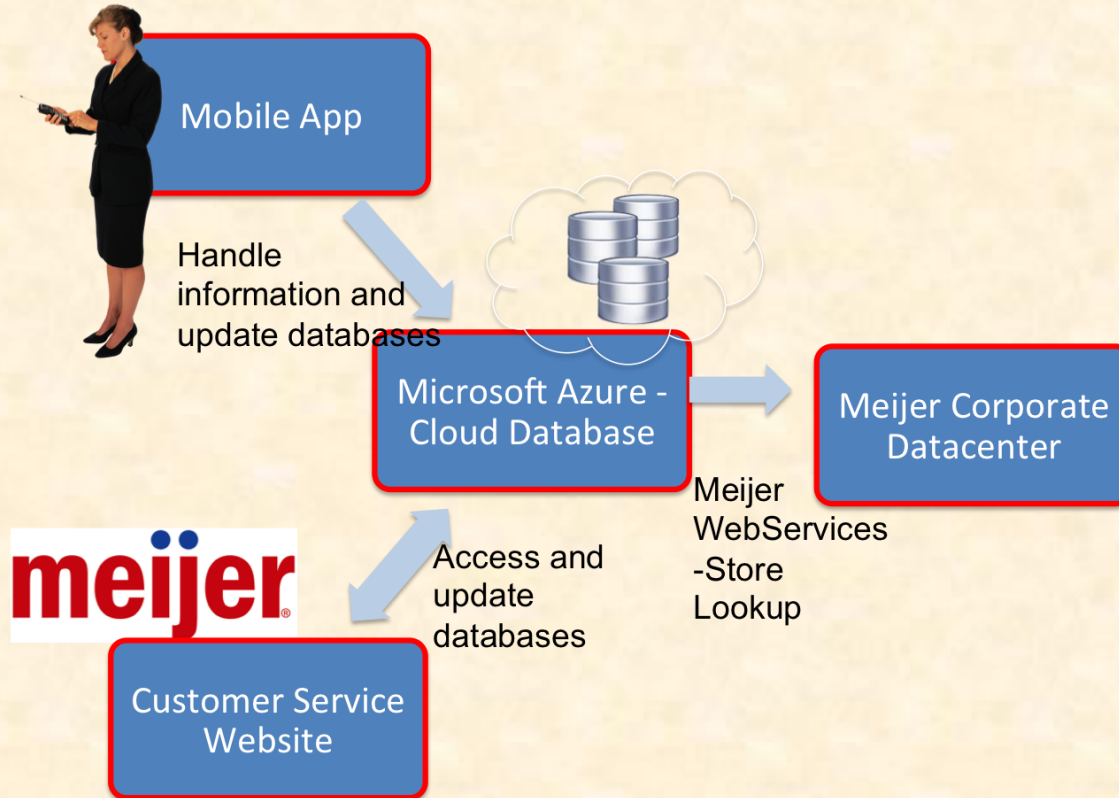
- Header: Meijer Customer Service
- Title: FAQ
- List of questions and answers:
 - Question : text
 - Answer : text
 - Question : text
 - Answer : text
 - ...
 - ...
 - ...

At the bottom of the projection, the text 'The Customer Experience' and 'Team Meijer Project Plan' is visible.

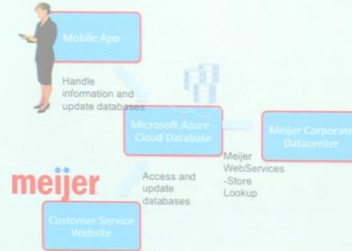
Team Meijer
Project Plan Presentation

Team Meijer Project Plan Presentation

Architecture Diagram



System Architecture



The Gateway Experience

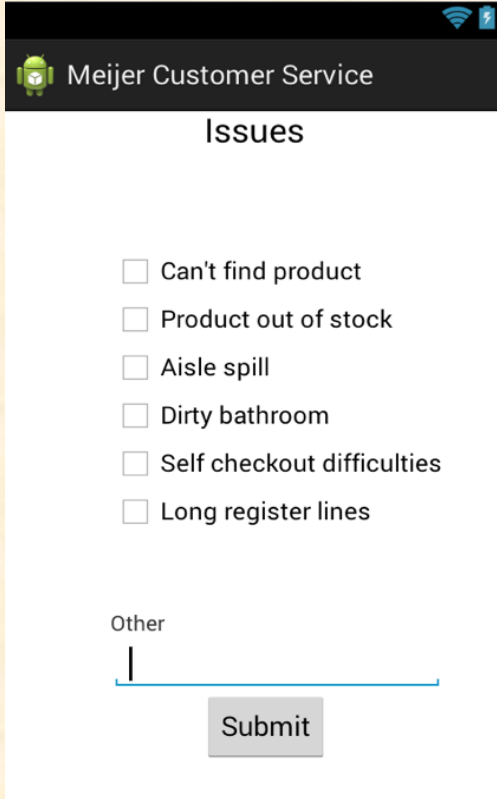
Team Meijer Project Plan

6

Team Meijer
Project Plan Presentation

Team Meijer Project Plan Presentation

Screen Mockups



Meijer Customer Service

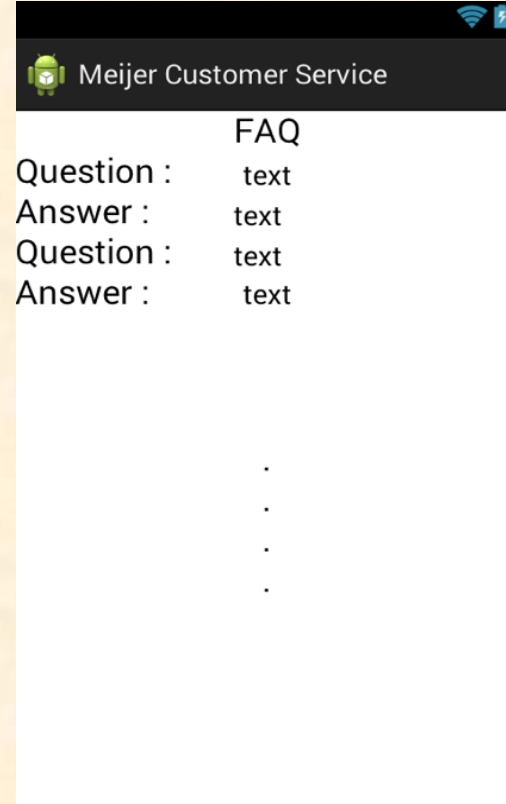
Issues

- ☐ Can't find product
- ☐ Product out of stock
- ☐ Aisle spill
- ☐ Dirty bathroom
- ☐ Self checkout difficulties
- ☐ Long register lines

Other

| _____

Submit



Meijer Customer Service

FAQ

Question : text

Answer : text

Question : text

Answer : text

.

.

.

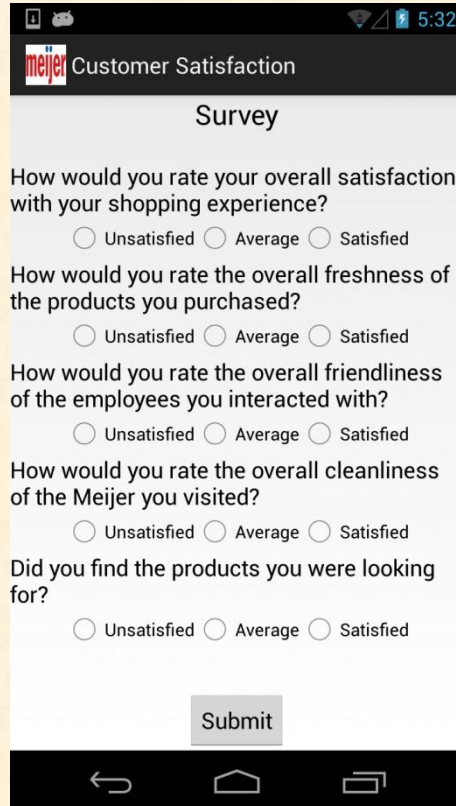
.



Team Meijer Alpha Presentation

Team Meijer Alpha Presentation

Survey and Issues



The screenshot shows the 'Survey' screen of the Meijer Customer Satisfaction app. At the top, there's a status bar with icons for signal, battery, and time (5:32). Below it is the app header with the Meijer logo and the title 'Customer Satisfaction'. The main heading is 'Survey'. There are five questions, each with three radio button options: 'Unsatisfied', 'Average', and 'Satisfied'. The questions are about overall satisfaction, freshness of products, friendliness of employees, cleanliness of the store, and finding products. A 'Submit' button is at the bottom.

meijer Customer Satisfaction

Survey

How would you rate your overall satisfaction with your shopping experience?

☐ Unsatisfied ☐ Average ☐ Satisfied

How would you rate the overall freshness of the products you purchased?

☐ Unsatisfied ☐ Average ☐ Satisfied

How would you rate the overall friendliness of the employees you interacted with?

☐ Unsatisfied ☐ Average ☐ Satisfied

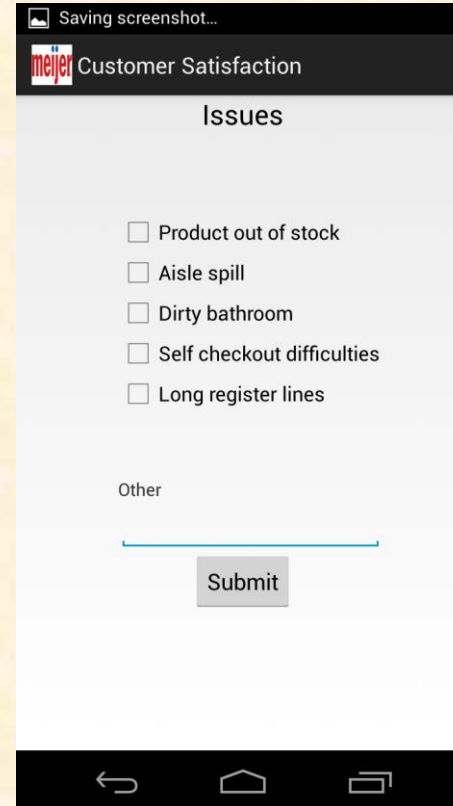
How would you rate the overall cleanliness of the Meijer you visited?

☐ Unsatisfied ☐ Average ☐ Satisfied

Did you find the products you were looking for?

☐ Unsatisfied ☐ Average ☐ Satisfied

Submit



The screenshot shows the 'Issues' screen of the Meijer Customer Satisfaction app. At the top, there's a status bar with icons for signal, battery, and time (5:32). Below it is the app header with the Meijer logo and the title 'Customer Satisfaction'. The main heading is 'Issues'. There are five checkboxes for common issues: 'Product out of stock', 'Aisle spill', 'Dirty bathroom', 'Self checkout difficulties', and 'Long register lines'. Below these is a text input field labeled 'Other' with a blue underline. A 'Submit' button is at the bottom.

Saving screenshot...

meijer Customer Satisfaction

Issues

☐ Product out of stock

☐ Aisle spill

☐ Dirty bathroom

☐ Self checkout difficulties

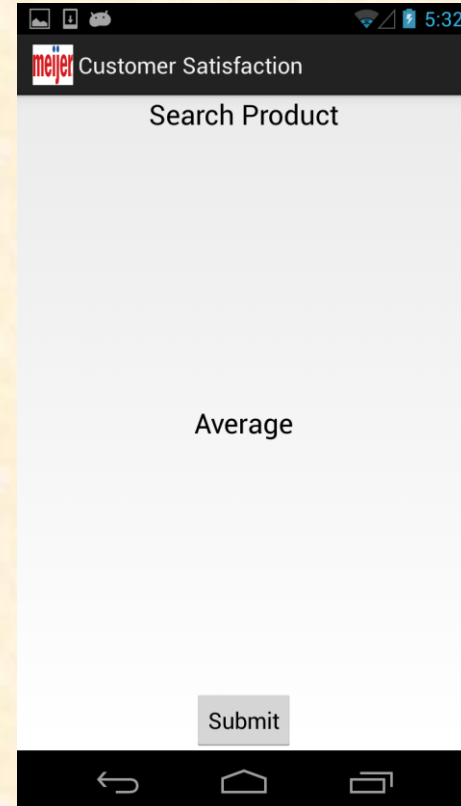
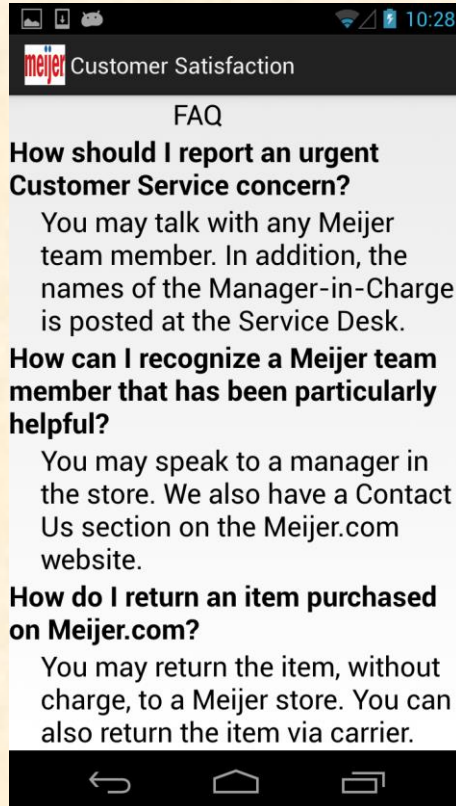
☐ Long register lines

Other

Submit

Team Meijer Alpha Presentation

FAQ and Product Search






Team Meijer
Alpha Presentation

Team Meijer Alpha Presentation

Meijer Website



Home Page

You logged in as Noor

- [Stores Ranking](#)
- [Find A Specific Store](#)
- [List All Surveys](#)
- [List All Issues](#)

[Logout](#)

List All Issues

Sort By Status

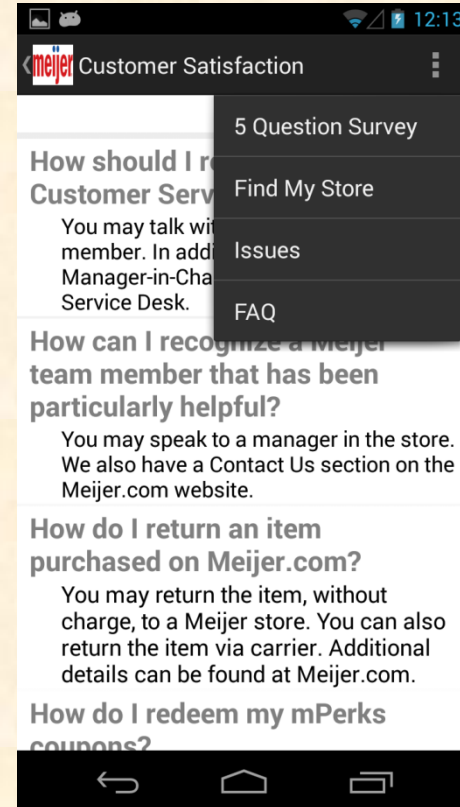
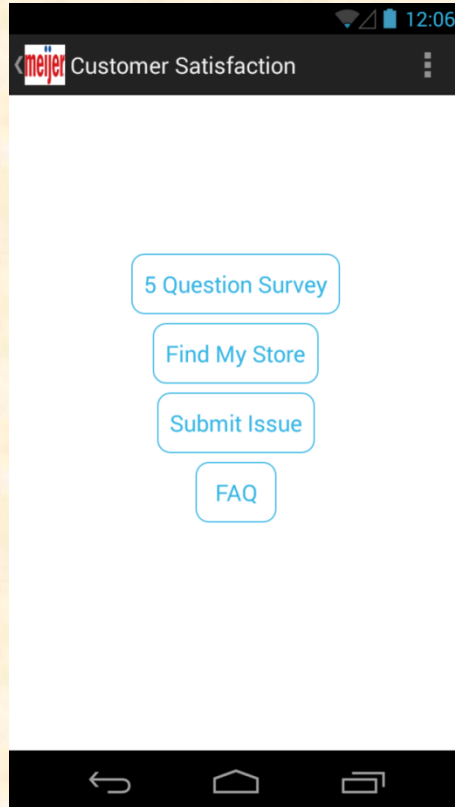
Action	Issue ID	Store Number	Messy Aisle	Dirty Bathroom	Long Register Lines	Self Checkout	Out Of Stock	Other	Severity	Status
Edit	9	517	0	0	0	0	0	0	0	Open
Edit	1010	517	0	0	0	0	0	0	0	Open
Edit	1011	517	0	0	1	0	0	1	0	Open
Edit	1028	517	0	0	0	0	0	0	0	Open
Edit	1032	517	0	0	0	0	0	0	0	Open
Edit	1034	517	0	0	0	0	0	0	0	Open
Edit	1035	517	0	0	0	0	1	0	0	Open
Edit	1039	517	0	0	0	0	0	1	0	Open
Edit	5	577	2				4	1	1	In Progress
Edit	7	517	0	0	1	0	1	0	2	In Progress
Edit	8	517	0	0	0	0	0	0	1	In Progress
Edit	6	543	2				1	1	2	Closed
Edit	4	517	1				1	1	1	Closed



Team Meijer Beta Presentation

Team Meijer Beta Presentation

Landing Page and Menu



Team Meijer Beta Presentation

Survey Page

Customer Satisfaction

5 Question Survey

How would you rate your overall satisfaction with your shopping experience?

☐ Very Satisfied

Saved store: 1350 W Lake Lansing Rd, East

Is this the store that the survey is associated with?

No Yes

How would you rate your satisfaction of the overall freshness of the products you purchased?

☐ Very Satisfied

☐ Satisfied

☐ Average

☐ Unsatisfied

Saving screenshot...

Customer Satisfaction

5 Question Survey

How would you rate your overall satisfaction with your shopping experience?

☐ Very Satisfied

☐ Satisfied

☐ Average

☐ Unsatisfied

☐ Very Unsatisfied

How would you rate your satisfaction of the overall freshness of the products you purchased?

☐ Very Satisfied

☐ Satisfied

☐ Average

☐ Unsatisfied

Saving screenshot...

Customer Satisfaction

How would you rate your satisfaction of the ease and availability in the products you were looking for?

☐ Very Satisfied

☐ Satisfied

☐ Average

☐ Unsatisfied

☐ Very Unsatisfied

Submit



meijer

Home Page

Two logged in users

- Global Ranking
- Global Specific Sites
- Global Metrics
- Global Summary

Global

SURVEY SUMMARY

Total number of submissions: 10

Survey	Global	US	Canada	UK	France	Product Brand
Survey Location	100%	100%	100%	100%	100%	100%
Survey	100%	100%	100%	100%	100%	100%
Response	100%	100%	100%	100%	100%	100%
Submitted	100%	100%	100%	100%	100%	100%
Rate	100%	100%	100%	100%	100%	100%
Submitted	100%	100%	100%	100%	100%	100%
Rate	100%	100%	100%	100%	100%	100%

All (100%)

Total number of submissions: 10

100% of submissions are valid submissions

Team Meijer
Beta Presentation

Team Meijer Beta Presentation

List All Issues

The screenshot shows a web browser window with the URL `teammeijer2014.azurewebsites.net/list_issues.php`. The page features the Meijer logo at the top. On the left, a sidebar contains links for 'Home Page', 'You logged in as test', 'Stores Ranking', 'Find A Specific Store', 'List All Surveys', 'List All Issues', and 'Logout'. The main content area is titled 'List All Issues' and includes a 'Sort All Issues By:' section with a dropdown menu set to 'Status' and a 'Sort' button. Below this, there are two instructions: '**Click on Issue ID to get the issuer details' and '**Click on Action to edit status, severity and actions taken'. A table with 12 columns and 5 rows displays issue data. The columns are: Action, Issue ID, Store Number, Messy Aisle, Dirty Bathroom, Long Register Lines, Self Checkout, Out Of Stock, Other (click for details), Severity, Status, Actions Taken, and Images. The table rows show issues 4107 through 4110, all with a status of 'Open' and severity of 'Low'. The 'Images' column contains small profile pictures for each issue.

Action	Issue ID	Store Number	Messy Aisle	Dirty Bathroom	Long Register Lines	Self Checkout	Out Of Stock	Other (click for details)	Severity	Status	Actions Taken	Images
Edit	4107	52	F	True	F	F	F	True	Low	Open		
Edit	4108	52	F	F	F	F	F	F	Low	Open		
Edit	4109	52	F	F	F	F	F	F	Low	Open		
Edit	4110	52	F	F	True	F	F	F	Low	Open		



Team Meijer
Design Day

MICHIGAN STATE
UNIVERSITY

The Capstone Experience

Team MSUFCU

Department of Computer Science and Engineering
Michigan State University
Spring 2014



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...to Professionals*



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Business

Account Services

Join MSUFCU

**V.me** by Visa is here.**It's the free virtual wallet that is
secure, personal, and simple.****What's New @ MSUFCU**

Parents - Our Financially Made Contest is back!

New educational Money.edu app is available

Simplify your finances with MSUFCU's Bill Payment

Upcoming Events **MSUFCU Day at MSU Women's
Volleyball**

Friday, November 22

[View all events >>](#)[Locations](#)[ATMs](#)[Careers](#)[FAQs](#)[Forms & Applications](#)[Rates](#)[About Us](#)[Contact Us](#)

Search



Search Site or Find ATMs by City, State or Zip

[MSUFCU ID Sign In](#)

MSUFCU Routing Number: 272479663

MSUFCU SWIFT Code: MSUCUS44

ComputerLine - Protected by TrulyU®

Base Account #

Password

[Request Password](#)[Login](#)**Online Chat**
is currently
unavailable**Send Us a
Secure Email**

800-678-4968 • 517-333-2424

Mon-Fri: 7:00 a.m. - 9:00 p.m. ET

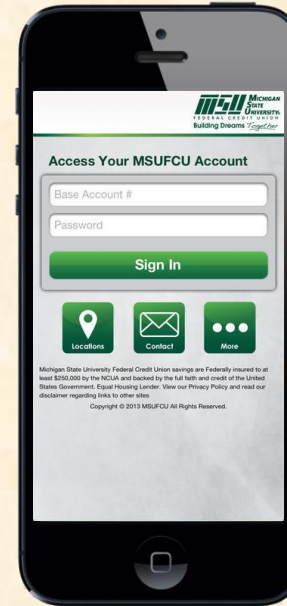
Sat: 9:00 a.m. - 3:00 p.m. ET

**Current Rates** [Loans](#)[Home Loans](#)[Savings](#)[Business](#)

Team MSUFCU Project Overview

Mobile Financial Education App

- Functionalities
 - Provide Financial Educational Tools and Resources
 - For University Students
 - Via Mobile Devices
- Features
 - Support both iPhone, iPad and Android Devices
 - Cover Various Topics
 - Budgeting
 - Building Savings and Credit
 - Protection from Identity Theft and Fraud
 - Glossary of Terms
 - Financial Calculator
 - Ask an Expert
- Technologies
 - CSS / HTML / PHP / JavaScript
 - Android Development / Java
 - iPhone and iPad Development / Objective-C
 - Microsoft SQL Server



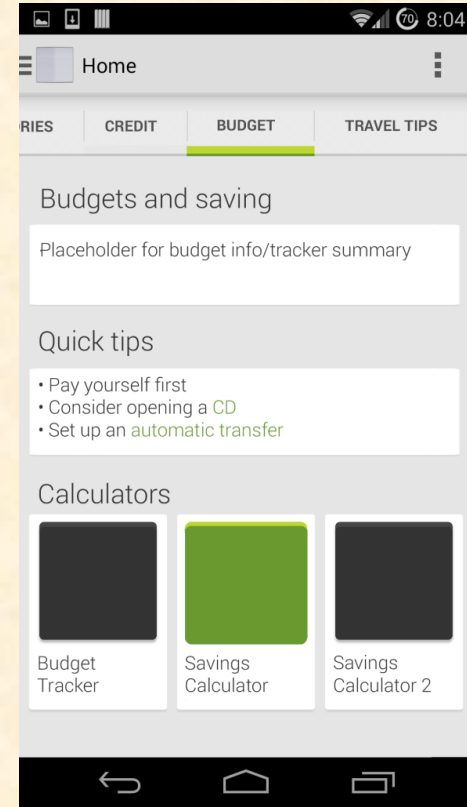
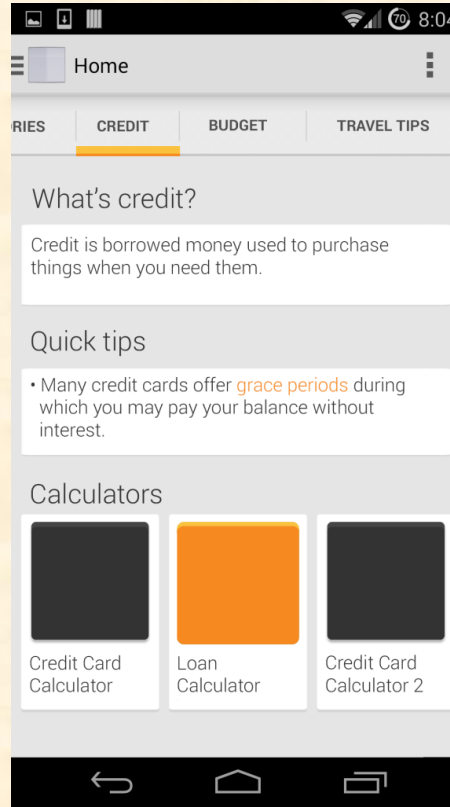
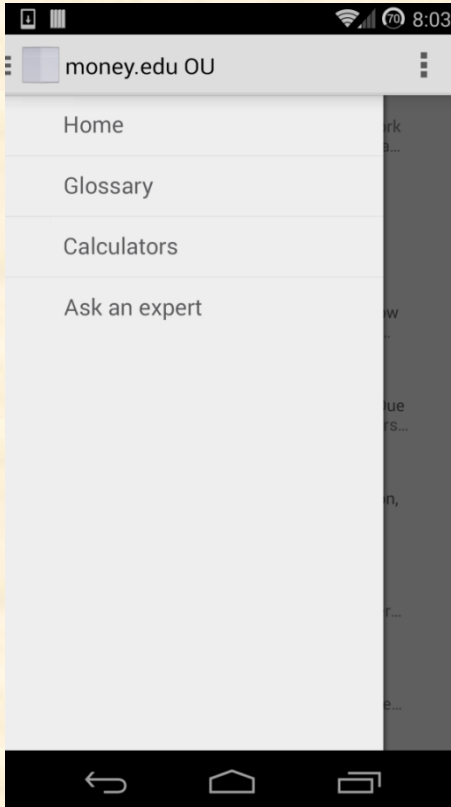


Team MSUFCU

Drew Dakin, Jenny Manning, Kyle Ladd

Team MSUFCU Project Plan Presentation

Screen Mockups

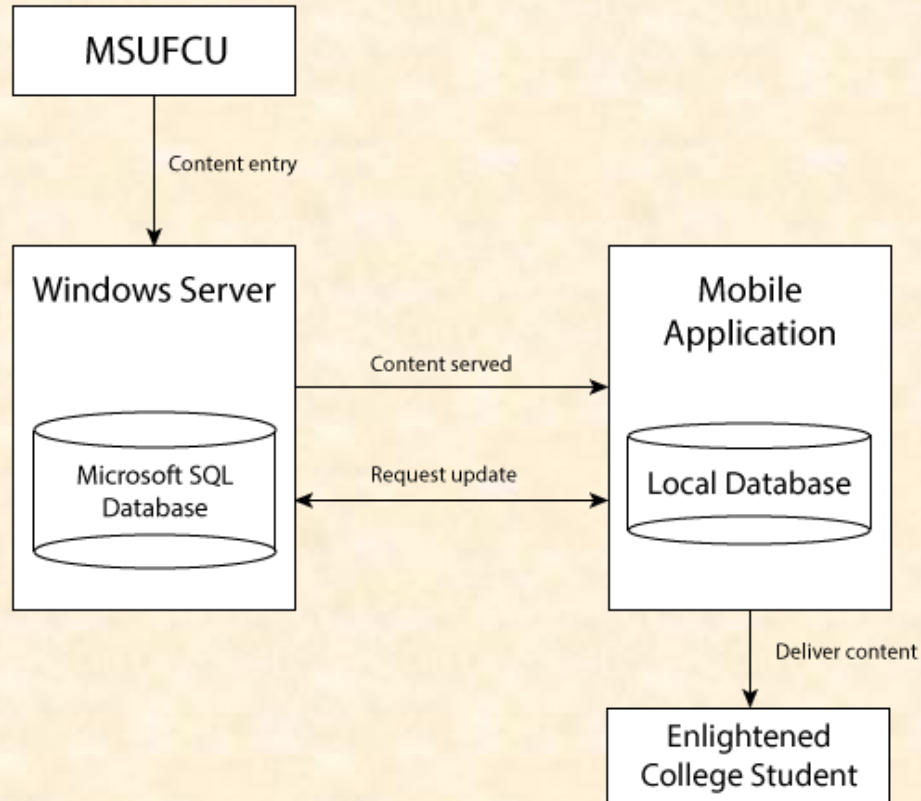




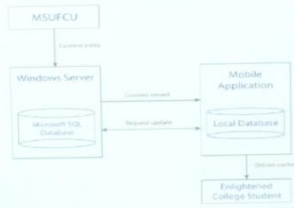
Team MSUFCU Project Plan Presentation

Team MSUFCU Project Plan Presentation

Architecture Diagram



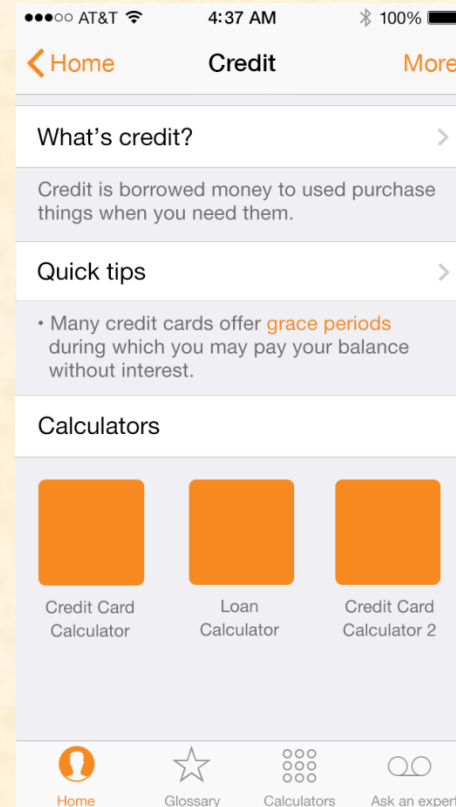
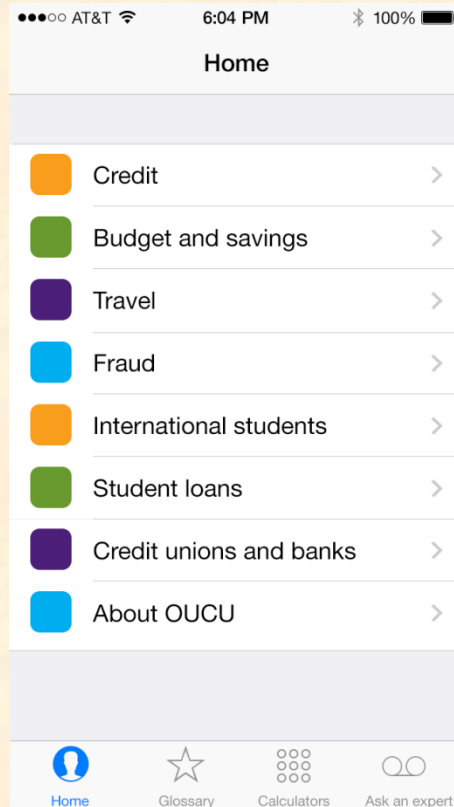
System Architecture



Team MSUFCU
Project Plan Presentation

Team MSUFCU Project Plan Presentation

Screen Mockups

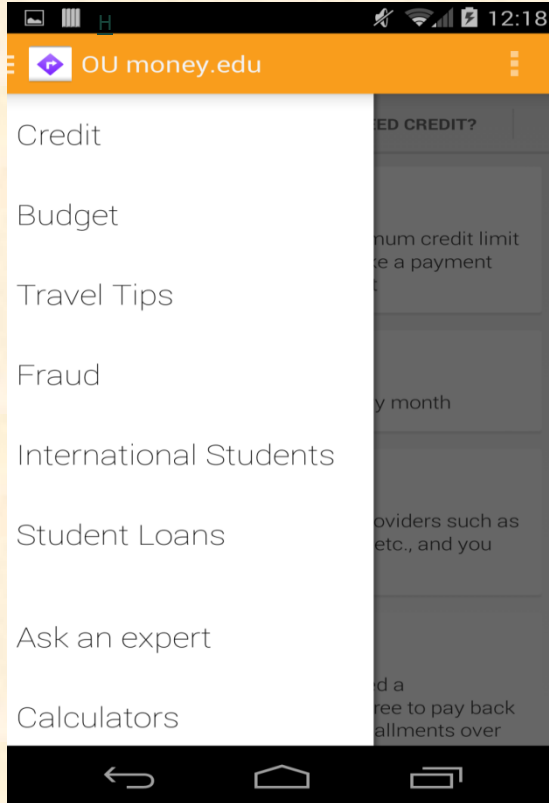




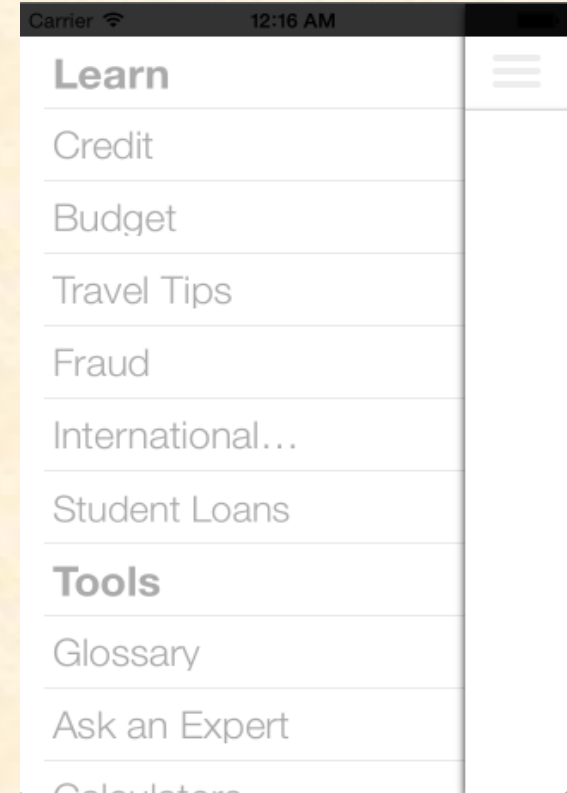
Team MSUFCU Alpha Presentation

Team MSUFCU Alpha Presentation

Navigation Drawer

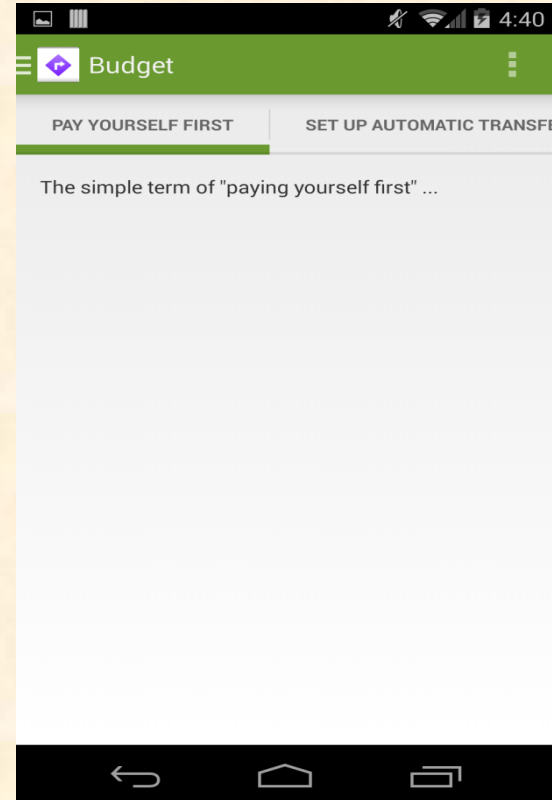
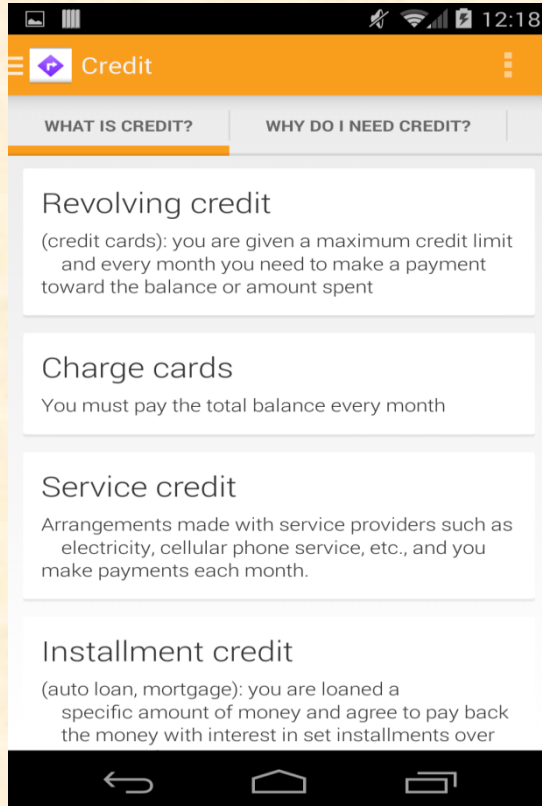


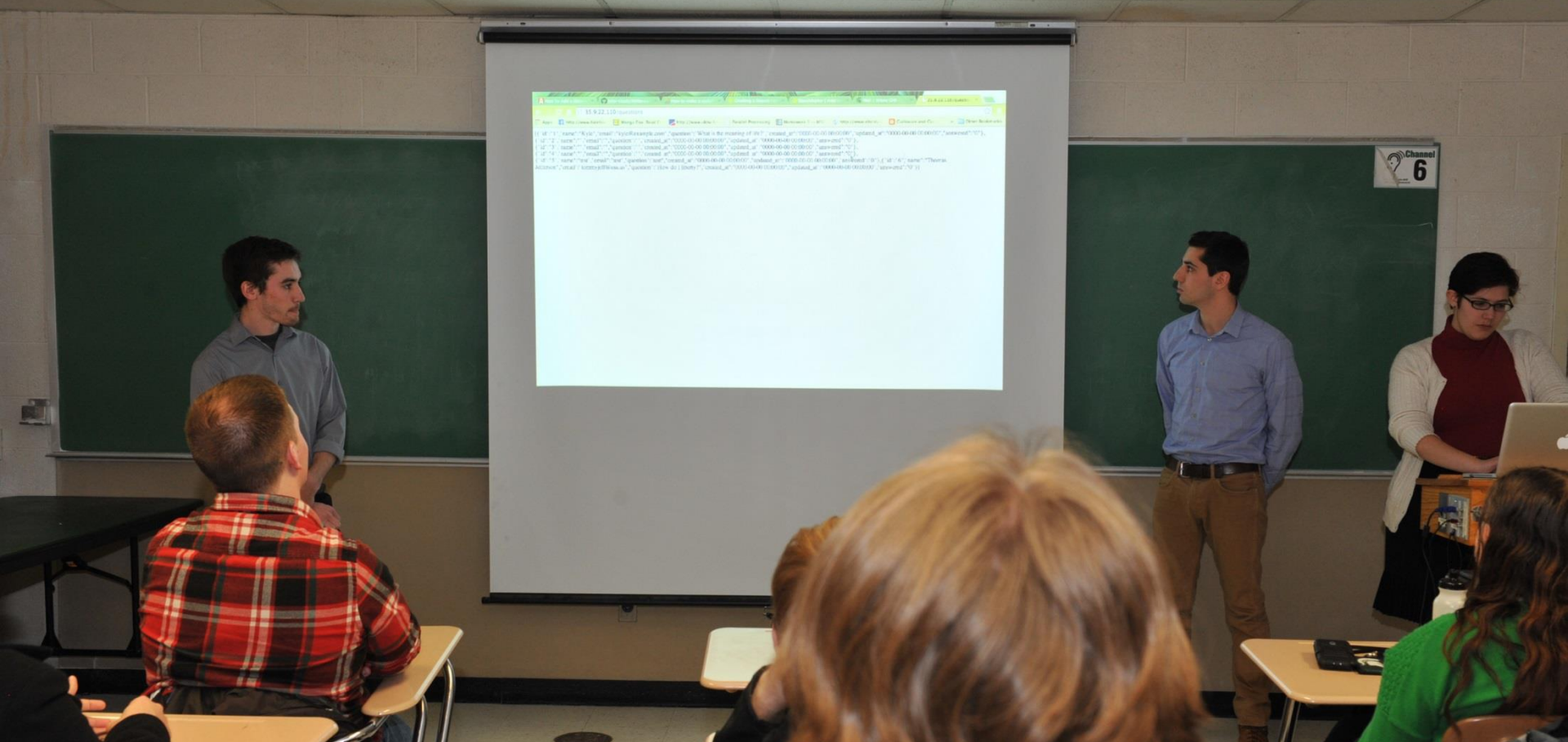
← **Android**
iOS →



Team MSUFCU Alpha Presentation

Categories

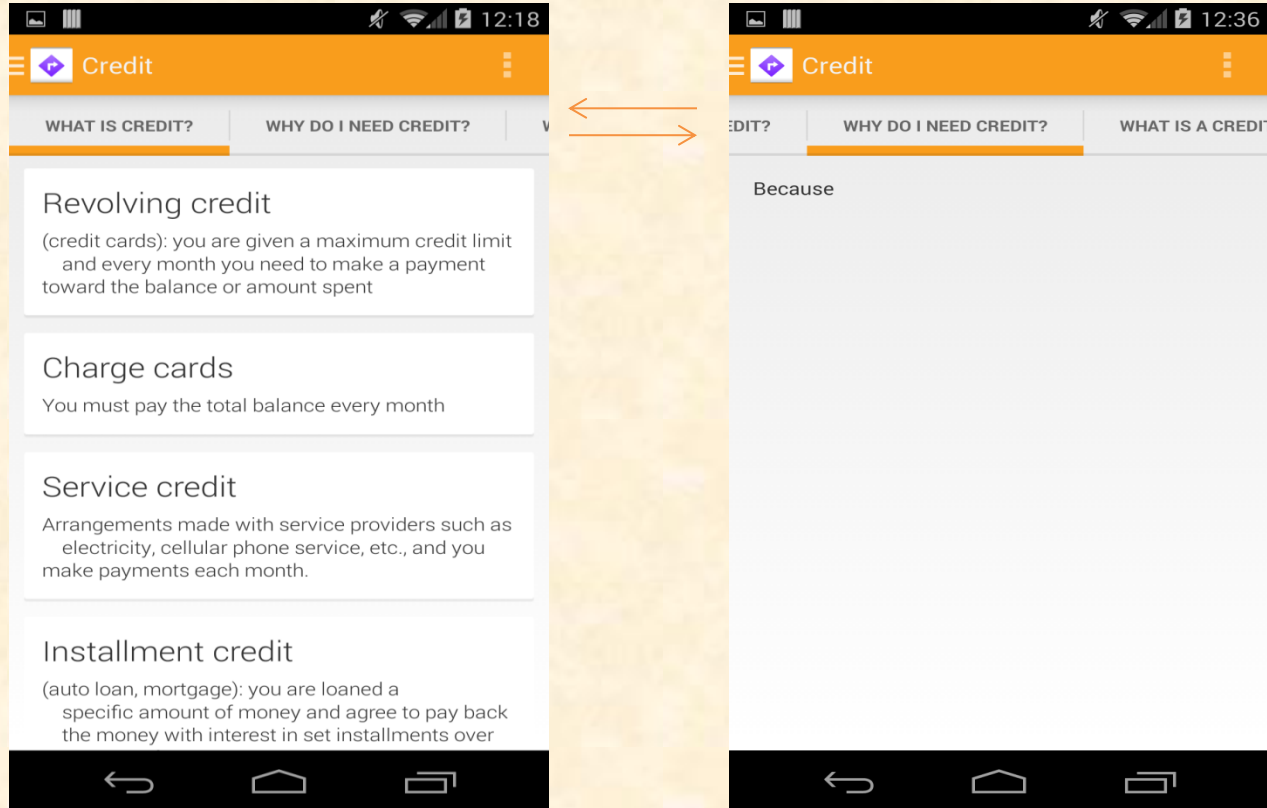




Team MSUFCU Alpha Presentation

Team MSUFCU Alpha Presentation

Sliding Tab Strip

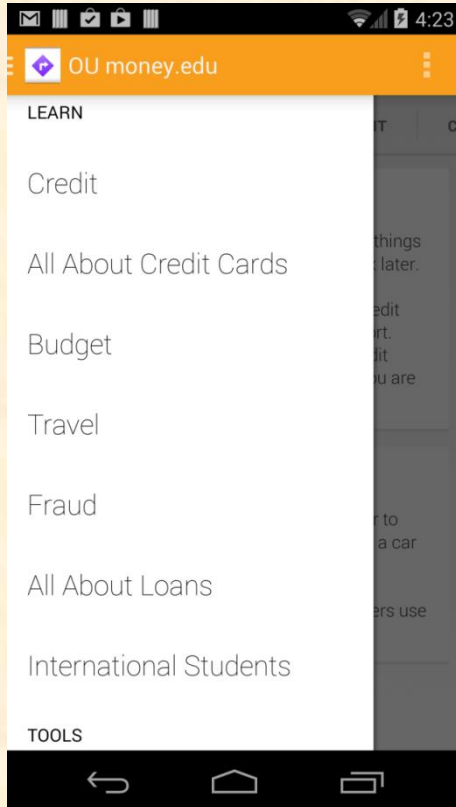




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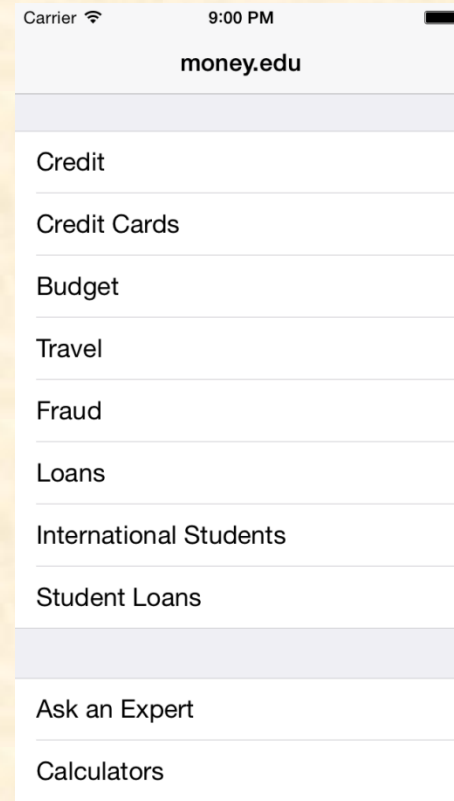
Team MSUFCU Beta Presentation

Navigations Drawer



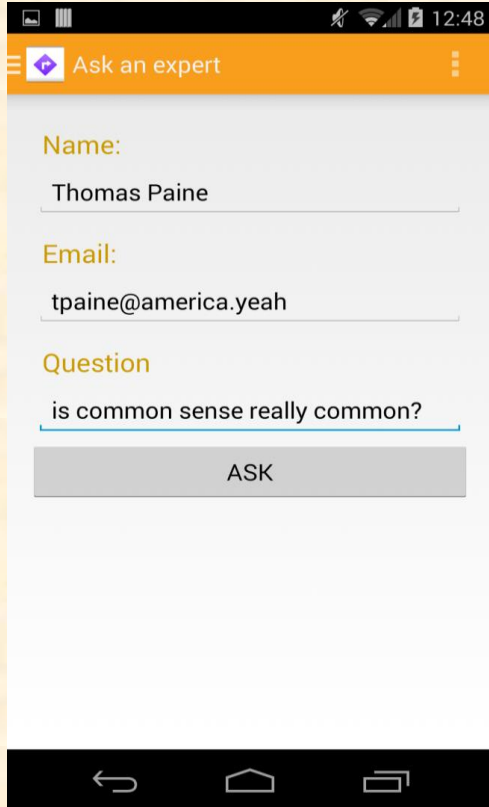
← **Android**

iOS →



Team MSUFCU Beta Presentation

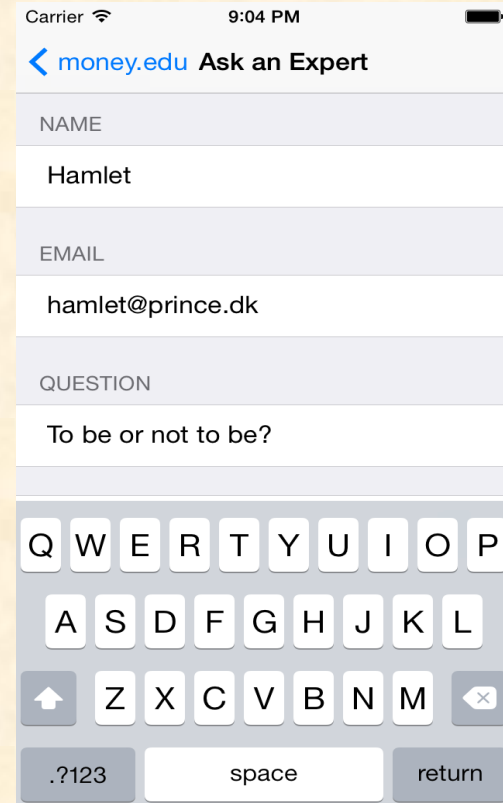
Tools: Ask An Expert



The Android app interface features an orange header with a menu icon, a purple expert icon, and the text 'Ask an expert'. The form includes three sections: 'Name:' with the text 'Thomas Paine', 'Email:' with the text 'tpaine@america.yeah', and 'Question' with the text 'is common sense really common?'. A grey 'ASK' button is positioned at the bottom of the form. The status bar at the top shows the time as 12:48, and the bottom navigation bar contains standard Android icons.

← **Android**

iOS →



The iOS app interface has a white header with the text 'money.edu Ask an Expert'. The form contains three sections: 'NAME' with the text 'Hamlet', 'EMAIL' with the text 'hamlet@prince.dk', and 'QUESTION' with the text 'To be or not to be?'. A standard iOS keyboard is visible at the bottom. The status bar at the top shows the time as 9:04 PM.

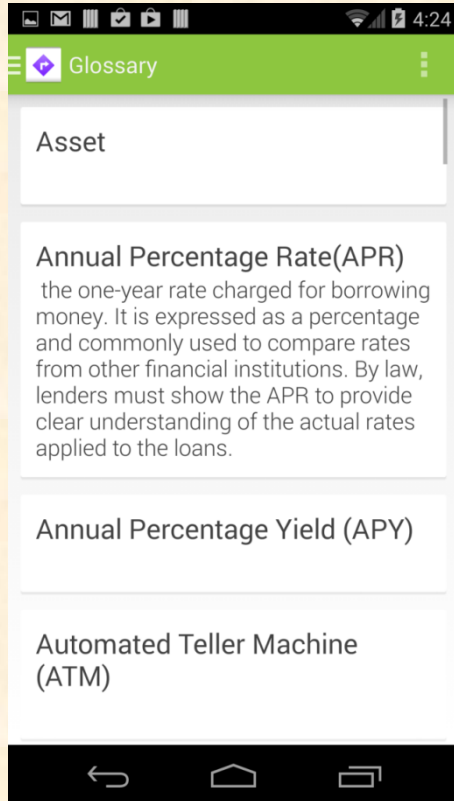




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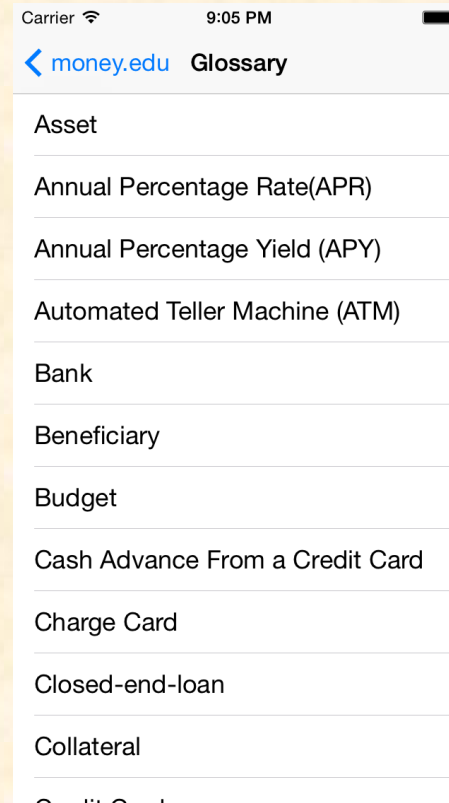
Team MSUFCU Beta Presentation

Tools: Glossary



← **Android**

iOS →





Team MSUFCU
Design Day

The Capstone Experience

Team Quicken Loans

Department of Computer Science and Engineering
Michigan State University
Spring 2014



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...to Professionals*

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Team Quicken Loans Project Overview

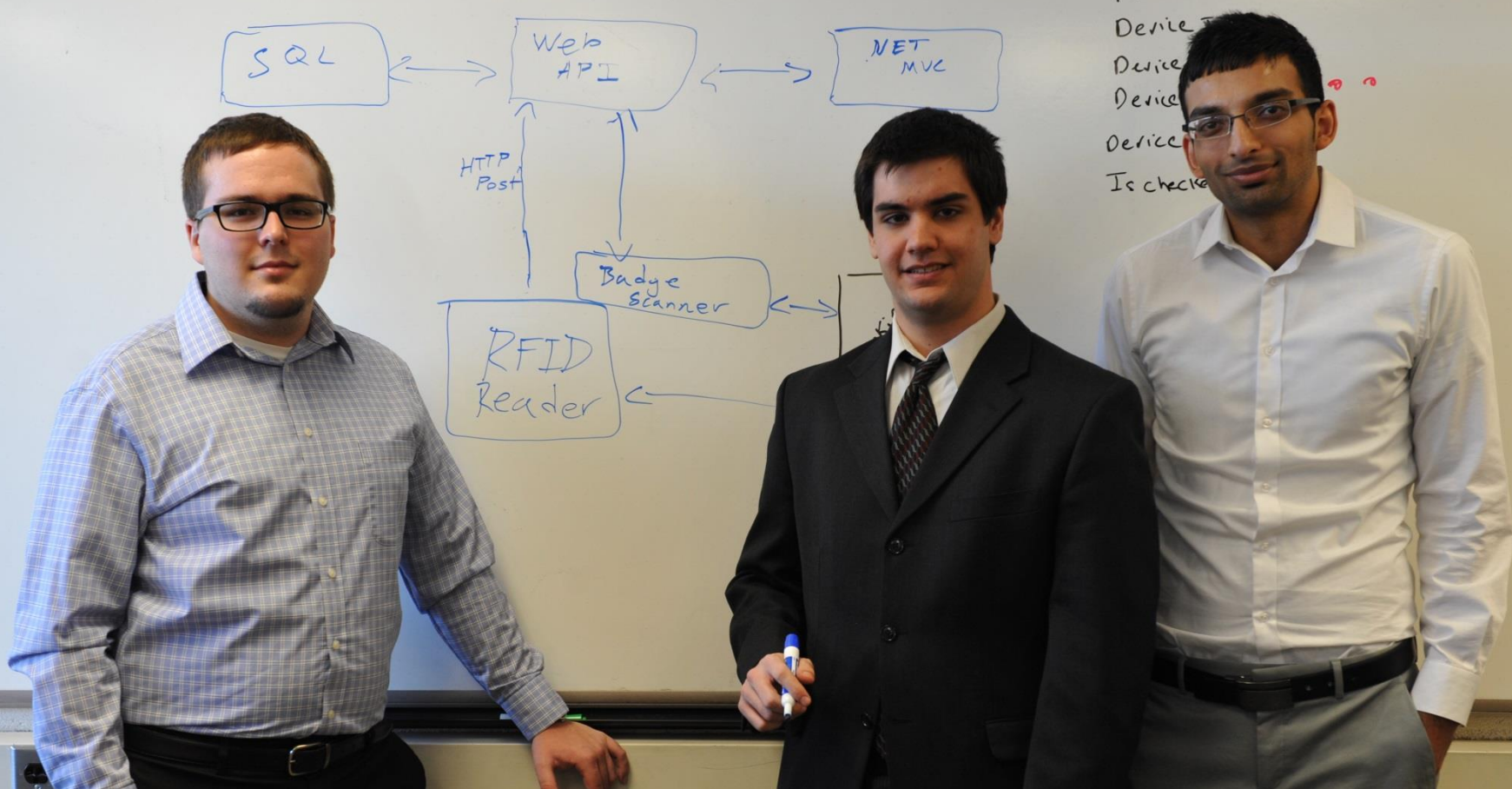
Mobile RFID Inventory Tracking System

- Functionalities
 - Monitor and Track Mobile Test Device Inventory
 - Used by QL's Mobile Application Development Team
 - Based On RFID Tags
- Features
 - Snapshot of Device Inventory
 - Checked Into Mobile Devices Cabinet
 - Checked Out to Developers
 - Authenticate and Track Users
 - Provide Website with Information on All Devices
 - Produce Detailed Reports
 - Send Email to Users
- Technologies
 - Impinj Speedway
 - R420 RFID Reader
 - Connect RFID Management Software
 - RFIDEas RDR-6081AKU NFC Badge Reader
 - .Net Integration
 - With RFID Hardware
 - Into Database
 - Microsoft SQL Server



Quicken®Loans®
Engineered to **Amaze™**
Detroit, Michigan






Team Quicken Loans
Jacob Riesser, Josh Rasor, K.P. Patel

Team Quicken Loans Project Plan Presentation

Screen Mockups

RFID Tag Number	Device Type	Device Manufacturer	Device Name	Device OS	OS Version	Is checked out?	Check-in Date/Time	
123456789	iPad	Apple	TestIPad	iOS	50.1	No	1/2/3456 7:89 PM	Get Device History
111111111	Galaxy S3	Samsung	TesterPhone	Android	3.14	Yes		
	Badge No.	User ID	First Name	Last Name	Extension	Device Checkout Date/Time		
	12345	usr_ID	Tester	Tester	#28718	1/10/2014 5:00PM		Get User History
987654321	iPhone	Apple	PhoneyTest	iOS	40.2.1	No	2/5/2012 3:22 PM	Get Device History
192837465	Windows Surf.	Microsoft	TesterTablet	Windows 8	2.43	No	5/10/2013 9:01 AM	Get Device History



Screen Mockup: Inventory Page

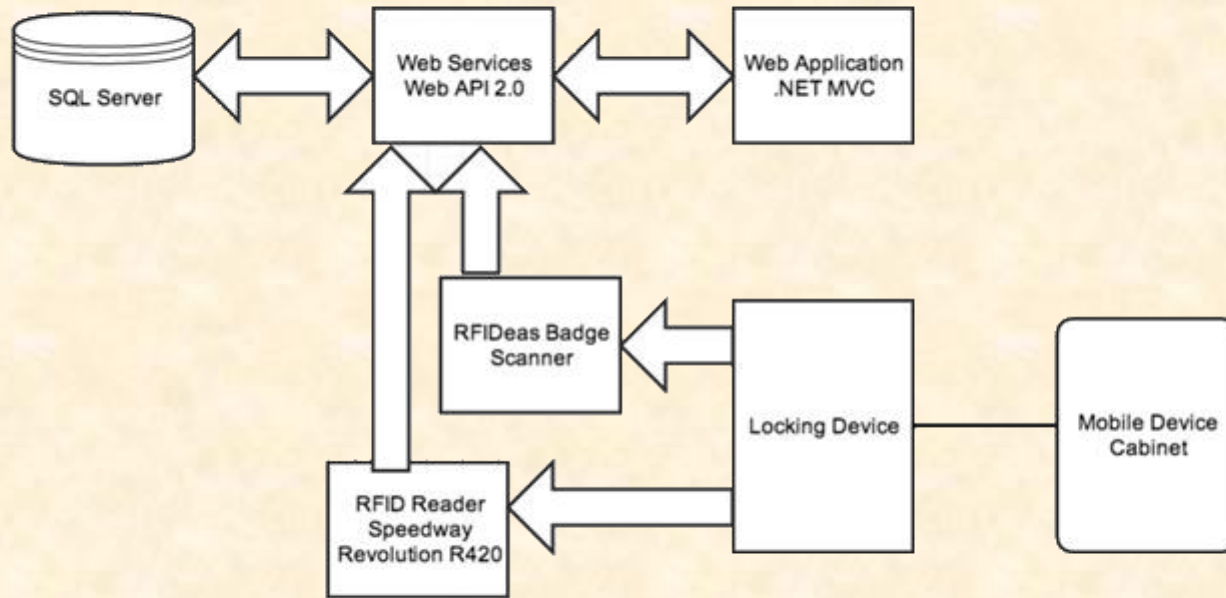
RFID Tag Number	Device Type	Device Manufacturer	Device Name	Device OS	OS Version	is checked out?	Check-in Date/Time	
123456789	Pad	Apple	Test-Pad	iOS	10.1	No	1/2/2016 7:59 PM	Get Device History
111111111	Galaxy S3	Samsung	TesterPhone	Android	3.14	Yes		
Badge No.	User ID	First Name	Last Name	Extension	Device Checkout Date/Time			
12345	usr_id	Tester	Tester	#28718	1/10/2014 5:00PM			Get User History
987654321	Phone	Apple	PhoneyTest	iOS	40.2.1	No	2/5/2012 3:22 PM	Get Device History
182827465	Windows Surf	Microsoft	TesterTablet	Windows 8	2.43	No	5/10/2013 9:01 AM	Get Device History

The Captioned Experience
Team Quicken Loans, Project Plan

Team Quicken Loans
Project Plan Presentation

Team Quicken Loans Project Plan Presentation

Architecture Diagram



System Components

- Hardware Platforms
 - Windows Server 2008 equipped with Microsoft SQL database 2014
 - Speedway Revolution R420 RFID reader
- Software Platforms / Technologies
 - Speedway Connect middleware
 - ASP.NET MVC, Web API 2.0
 - Microsoft SQL database


The University of Tennessee

Team Quicken Loans Project Plan

Team Quicken Loans
Project Plan Presentation

Team Quicken Loans Project Plan Presentation

Screen Mockup



Badge No.	User ID	First Name	Last Name	Extension
12345	usr_ID	Tester	Tester	#28718

Search Users...

User History for Tester Tester

RFID Tag Number	Device Type	Device Manufacturer	Device Name	Device OS	OS Version	Check in - check out	
123456789	iPad	Apple	TestiPad	iOS	50.1	1/2/3456 7:89 PM - 1/4/3456 1:00 PM	Get Device History
111111111	Galaxy S3	Samsung	TesterPhone	Android	3.14	4/2/2013 3:23 PM - 4/3/2013 3:24 PM	Get Device History
987654321	iPhone	Apple	PhoneyTest	iOS	40.2.1	2/5/2012 3:22 PM - 2/19/2012 3:21 PM	Get Device History
192837465	Windows Surf.	Microsoft	TesterTablet	Windows 8	2.43	5/10/2014 9:01 AM - current	Get Device History



Current Device Inventory

Show 10 Rows

Rfid Tag Number	Manufacturer	Name	OS	OS Version	Checked Out?
90	Apple	iOS App Tester	iOS	7.0	False
91	Apple	iOS Production Tester	iOS	6.0	False
92	Microsoft	Windows Tester	Windows	8.0	False
93	Nokia	Windows Backup	Windows	8.0	False
94	HTC	Preparation Tablet	Windows	8.0	False
95	HTC	External App Tester	Android	4.0	False
96	HTC	Compassion Tester	Android	4.2.2	False
98	Samung	Tablet Test	Android	4.0	False
	Samung	S4 Tester	Android	4.2.2	False

Team Quicken Loans Alpha Presentation

Team Quicken Loans Alpha Presentation

Web Applications

Current Inventory - RFID T x

35.9.22.101:8081/DeviceTracking/Device/Inventory

RFID Front End

Current Device Inventory

Show 10 Rows

RFID Tag Number	Type	Manufacturer	Name	OS	OS Version	Checked Out?
1234	2	Apple	Internal App Tester	iOS	6.0	✓
2357	1	Apple	Tester Phone	iOS	7.0	✓
7576	4	Nokia	Stress Tester	Android	4.0	✓
9876	3	Samsung	App Compatability Tester	Android	4.4	✓

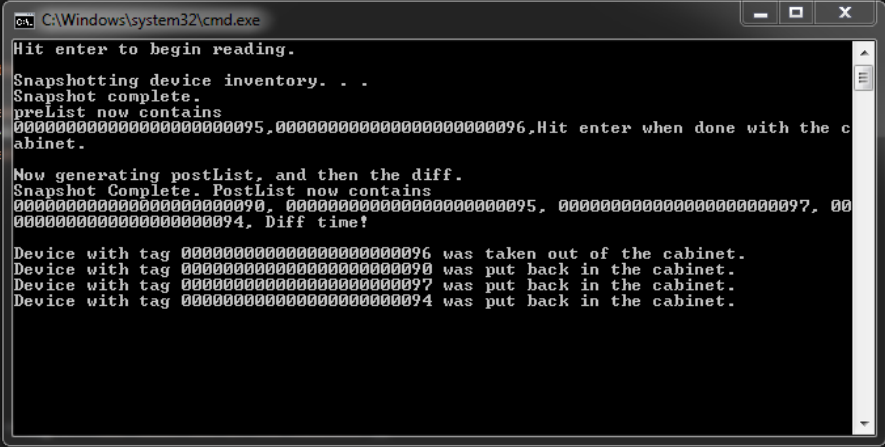
Showing 1 to 4 of 4 entries

Previous Next

Team Quicken Loans Alpha Presentation

RFID Scanner

```
... contains");  
...  
... when done with t  
... ating postList, a  
... t, READER_HOSTNA  
... complete. PostLi  
... st)  
... ;  
... );  
... ");  
... st)  
... g))  
... evice with tag "  
  
... ist)  
... g))  
... evice with tag " + tag + " was put back in the cabinet.");
```



```
Hit enter to begin reading.  
Snapshotting device inventory. . .  
Snapshot complete.  
preList now contains  
00000000000000000000000095,00000000000000000000000096.Hit enter when done with the c  
abinet.  
  
Now generating postList, and then the diff.  
Snapshot Complete. PostList now contains  
00000000000000000000000090, 00000000000000000000000095, 0000000000000000000097, 00  
000000000000000000000094. Diff time!  
  
Device with tag 000000000000000000000096 was taken out of the cabinet.  
Device with tag 000000000000000000000090 was put back in the cabinet.  
Device with tag 000000000000000000000097 was put back in the cabinet.  
Device with tag 000000000000000000000094 was put back in the cabinet.
```



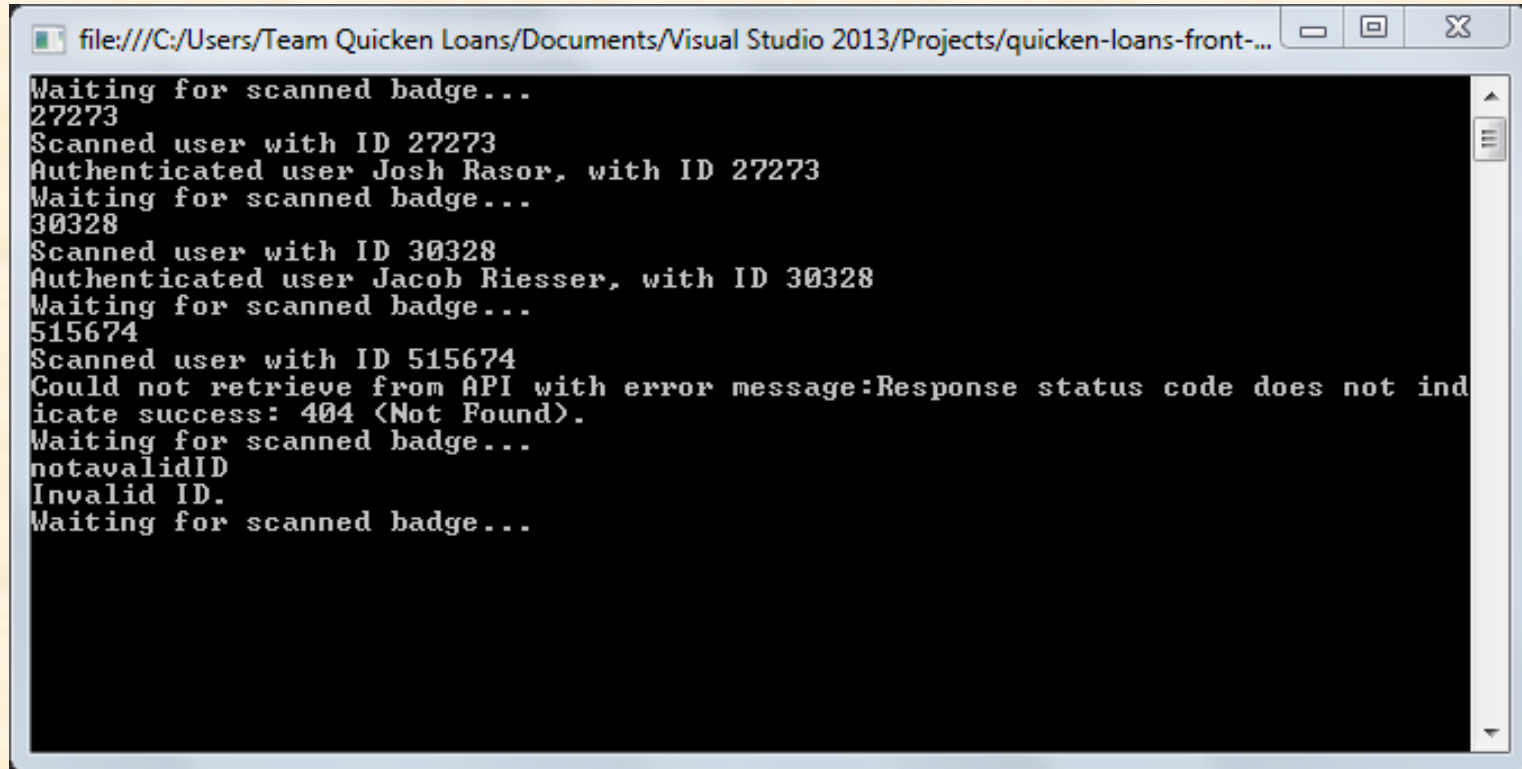

```
Checked out device to MRI with ID 74
Checked out device to API with ID 74
Checked out device to API with ID 98
Checked out device to API with ID 93
Waiting for scanned badge...
38328
Scanned user with ID 38328
Authenticated user Jake Riosser, with ID 38328
Hit enter to begin reading.

Snapshotting device inventory. . .
Snapshot complete.
prelist now contains
91.96.90.97.Hit enter when done with the cabinet.
Now generating postlist, and then the diff.
Snapshot Complete. Postlist now contains
91, 92, 95, 93, 98, 97, 94, 96, 90.
Diff time!
Device with tag 92 was put back in the cabinet.
Device with tag 95 was put back in the cabinet.
Device with tag 93 was put back in the cabinet.
Device with tag 98 was put back in the cabinet.
Device with tag 94 was put back in the cabinet.
Checked in device to API with ID 92
Checked in device to API with ID 95
Checked in device to API with ID 93
Checked in device to API with ID 98
Checked in device to API with ID 94
Waiting for scanned badge...
```

Team Quicken Loans Alpha Presentation

Team Quicken Loans Alpha Presentation

Badge Scanner

A screenshot of a terminal window with a light blue title bar. The title bar text is 'file:///C:/Users/Team Quicken Loans/Documents/Visual Studio 2013/Projects/quicken-loans-front-...'. The terminal has a black background with white text. The text shows a sequence of events: waiting for a scanned badge, receiving ID 27273, scanning user Josh Rasor, waiting for another badge, receiving ID 30328, scanning user Jacob Riesser, waiting for a third badge, receiving ID 515674, attempting to retrieve data from an API, receiving a 404 error, and finally receiving 'notavalidID' and 'Invalid ID.' before waiting for a fourth badge.

```
Waiting for scanned badge...
27273
Scanned user with ID 27273
Authenticated user Josh Rasor, with ID 27273
Waiting for scanned badge...
30328
Scanned user with ID 30328
Authenticated user Jacob Riesser, with ID 30328
Waiting for scanned badge...
515674
Scanned user with ID 515674
Could not retrieve from API with error message:Response status code does not ind
icate success: 404 (Not Found).
Waiting for scanned badge...
notavalidID
Invalid ID.
Waiting for scanned badge...
```

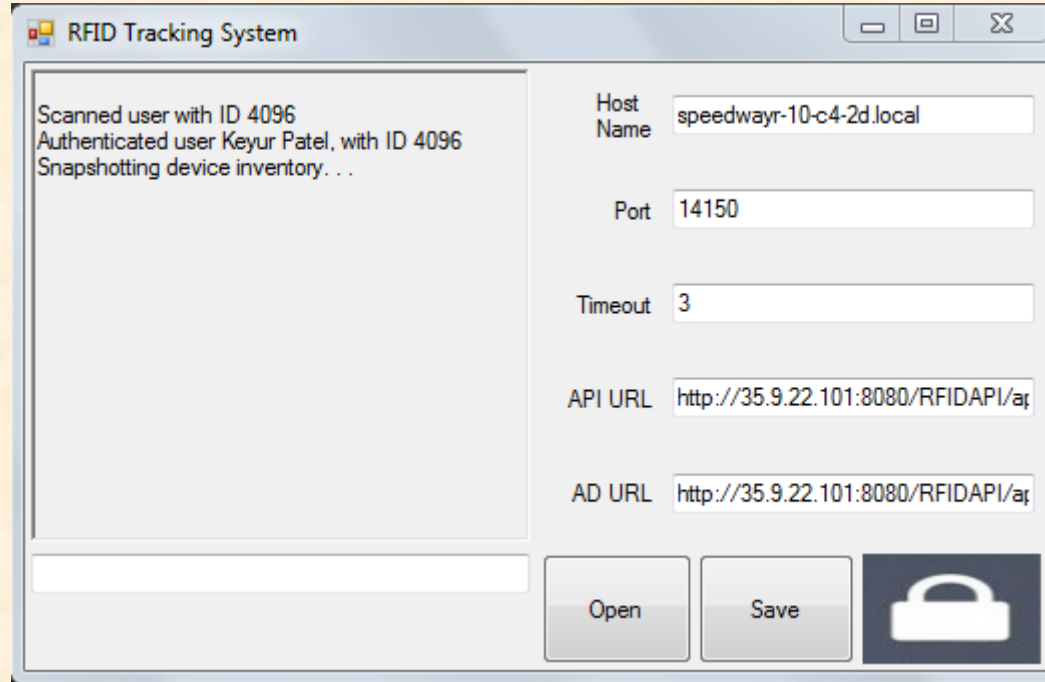




Team Quicken Loans Beta Presentation

Team Quicken Loans Beta Presentation

RFID Tracking System



The screenshot shows a Windows-style application window titled "RFID Tracking System". The window is divided into two main sections. The left section contains a text area with the following text: "Scanned user with ID 4096", "Authenticated user Keyur Patel, with ID 4096", and "Snapshotting device inventory. . .". Below this text area is a small, empty white rectangular box. The right section contains several input fields and buttons. The fields are labeled "Host Name", "Port", "Timeout", "API URL", and "AD URL". The "Host Name" field contains the text "speedway-10-c4-2d.local". The "Port" field contains "14150". The "Timeout" field contains "3". The "API URL" and "AD URL" fields both contain the text "http://35.9.22.101:8080/RFIDAPI/ar". At the bottom of the right section, there are three buttons: "Open", "Save", and a button with a white padlock icon on a dark blue background.

RFID Tracking System

Scanned user with ID 4096
Authenticated user Keyur Patel, with ID 4096
Snapshotting device inventory. . .


Host Name: speedway-10-c4-2d.local

Port: 14150

Timeout: 3

API URL: http://35.9.22.101:8080/RFIDAPI/ar

AD URL: http://35.9.22.101:8080/RFIDAPI/ar

Open Save 



Team Quicken Loans Beta Presentation

Front End Device History

Device History For Windows x

35.9.22.101:8081/DeviceTracking/device/history/91

RFID Front End QLAD\Jake

Device Information

Device Name	Windows Tester	RFID Tag Number	91
Checked Out?	False	Type	Microsoft Windows 8.0

Device History

Full Name	Username	Check Out Time	Check In Time
Rasor, Josh	QLAD\Josh	3/25/2014 2:21:53 PM	3/25/2014 2:25:10 PM
Patel, Keyur	QLAD\KP	3/24/2014 1:23:58 PM	3/24/2014 1:24:23 PM
Patel, Keyur	QLAD\KP	3/24/2014 1:19:25 PM	3/24/2014 1:20:46 PM
Patel, Keyur	QLAD\KP	3/21/2014 11:28:41 AM	3/21/2014 11:31:16 AM
Rasor, Josh	QLAD\Josh	3/21/2014 10:26:55 AM	3/21/2014 11:10:30 AM
Rasor, Josh	QLAD\Josh	3/14/2014 12:00:00 AM	3/18/2014 12:00:00 AM





Team Quicken Loans Beta Presentation

Team Quicken Loans Beta Presentation

Add Device/CRUD Operations

Browser: Add New Device - RFID Tr x
URL: 35.9.22.101:8081/DeviceTracking/Administration/AddDevice

RFID Front End Inventory Users QLAD\Jake ▾

Device Information

DeviceName

RFIDTagNumber

DeviceType

[Add Device](#)

Device Management

[+ Add Device](#)

[Device Inventory](#)

Device Type Management

[+ Add Device Type](#)

[Device Type List](#)

Manufacturer Management

[+ Add Manufacturer](#)

[Manufacturer List](#)

Operating System Management

[+ Add Device](#)

[OS List](#)





Team Quicken Loans
Design Day

MICHIGAN STATE
UNIVERSITY

The Capstone Experience

Team Spectrum Health

Department of Computer Science and Engineering
Michigan State University
Spring 2014



*From Students...
...to Professionals*

SPECTRUM HEALTH



FOR
CLINICIANSFOR THE
MEDIAFOR
VENDORSFOR JOB
SEEKERSRESEARCH &
CLINICAL TRIALS

MySpectrum Log In



Search



Advanced Search



Who We Are

Patients & Visitors

Medical Services

Quality


Locations

Online Services

Health Information

Find a Physician

Visit Our Blogs

Keep up with the latest health information,
expert advice, recipes, and more! 



Gandalf's Gala 2



Doctor Dialogue



Visit Our Blogs

MySpectrum™

User Name:

Password:

> Forgot User Name

> Forgot Password

Log In

Enroll Now

> Learn More

Locations

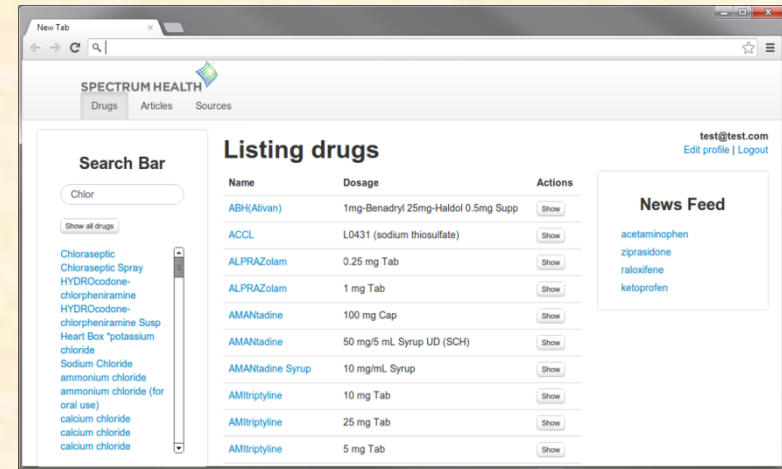
Select Type of Location



Team Spectrum Health Project Overview

Medications Shortages Dashboard

- Functionalities
 - Manage Shortages of Key Medication
 - By Pharmacists
 - Chose Best Course of Action
 - Weather the Shortage
 - Seek Additional Stock from the Grey Market
 - Swap the Medication for an Alternative
- Features
 - Create Comprehensive View of Industry Shortages
 - XML/RSS Feeds
 - ASHP (American Society of Hospital Pharmacists)
 - FDA (Food and Drug Administration)
 - Formulary and Inventory Information from Pyxis and Talyst
 - Spectrum Pharmacies and Store Rooms
 - Identify and Handle Specific Shortages
 - Record, Monitor and Track
 - Log Comments, Plans of Action and Status
- Technologies
 - CSS / HTML5
 - JavaScript / AngularJS
 - ASP.net MVC
 - Microsoft Internet Information Services (IIS) 7.0
 - Microsoft SQL Server
 - REST Service Layer
 - Medication Shortages Dashboard, Fall 2012

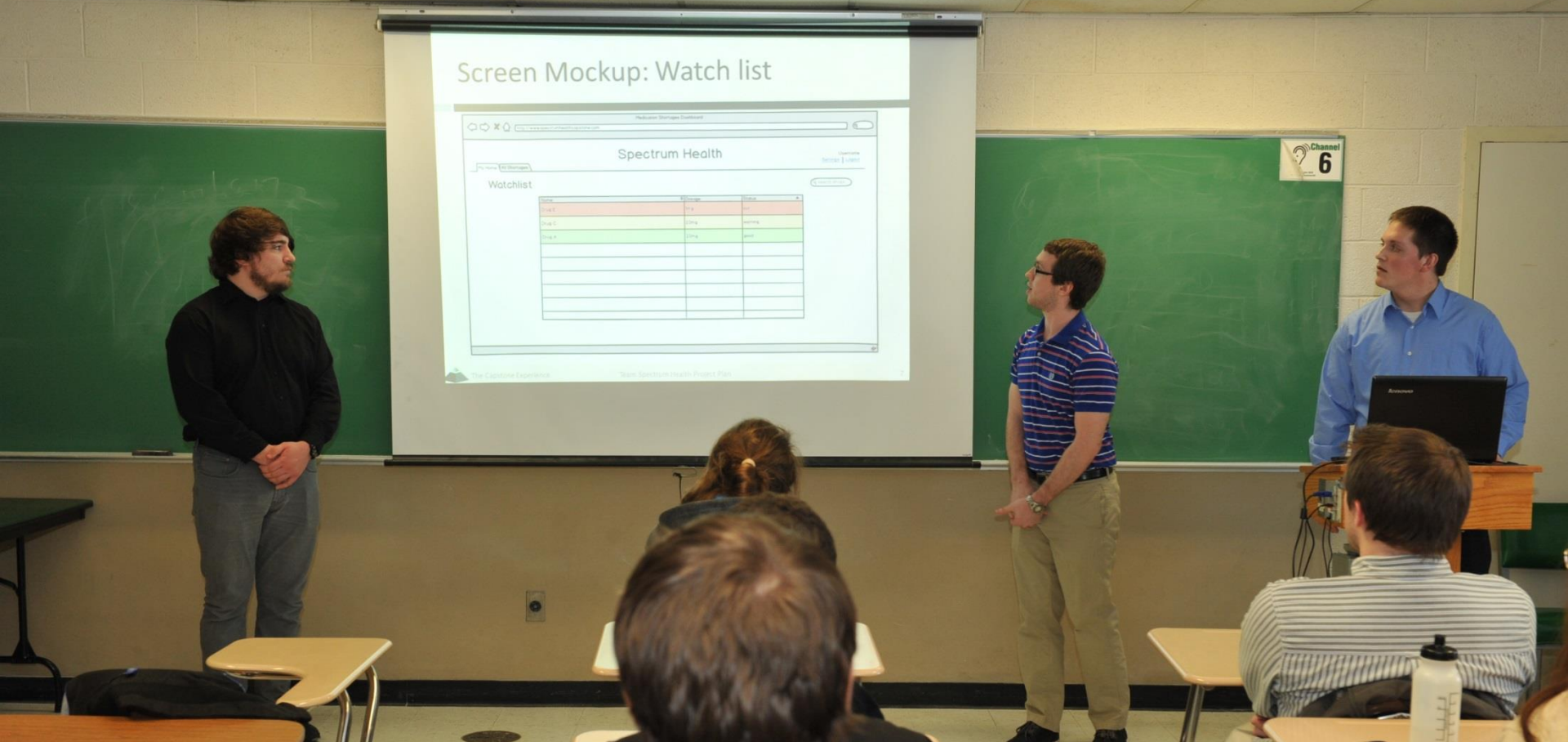


SPECTRUM HEALTH

Grand Rapids, Michigan



Team Spectrum Health
Cam Keif, Alexander Lockwood, Alex Seling



Screen Mockup: Watch list

Spectrum Health		
Watchlist		
Name	Location	Status
John D.	City	OK
Jane E.	City	Warning
Mike A.	City	Alert
John A.	City	Alert

Team Spectrum Health
Alexander Lockwood, Alex Seling, Cam Keif

Team Spectrum Health Project Plan Presentation

Screen Mockup

Medication Shortages Dashboard

← → × 🏠

http://www.spectrumhealthcapstone.com

🔍

Spectrum Health

My Home

All Shortages

Username

[Settings](#) | [Logout](#)

Watchlist

🔍 search drugs

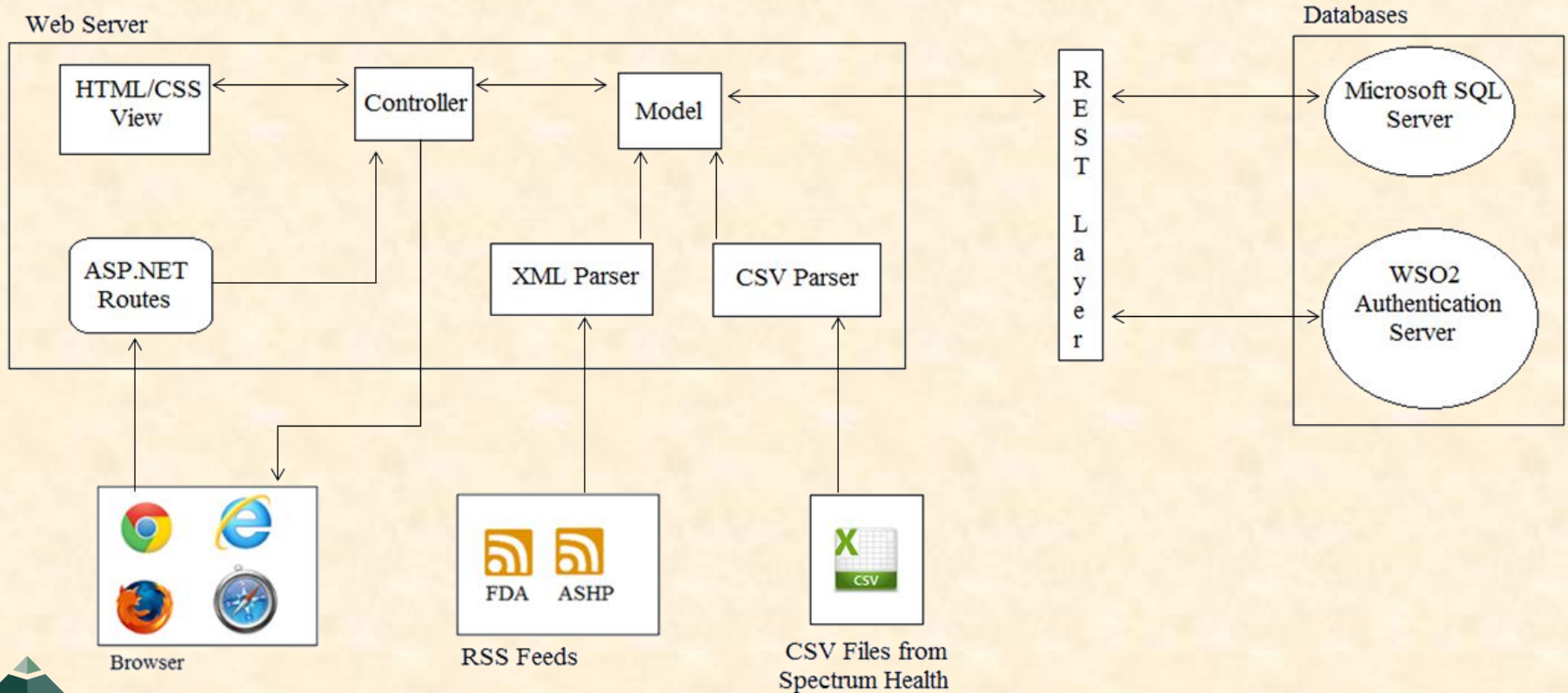
Name	Dosage	Status
Drug E	1mg	out
Drug C	20mg	warning
Drug A	20mg	good



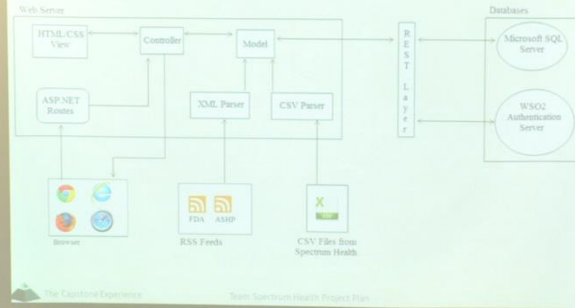
Team Spectrum Health
Project Plan Presentation

Team Spectrum Health Project Plan Presentation

Architecture Diagram



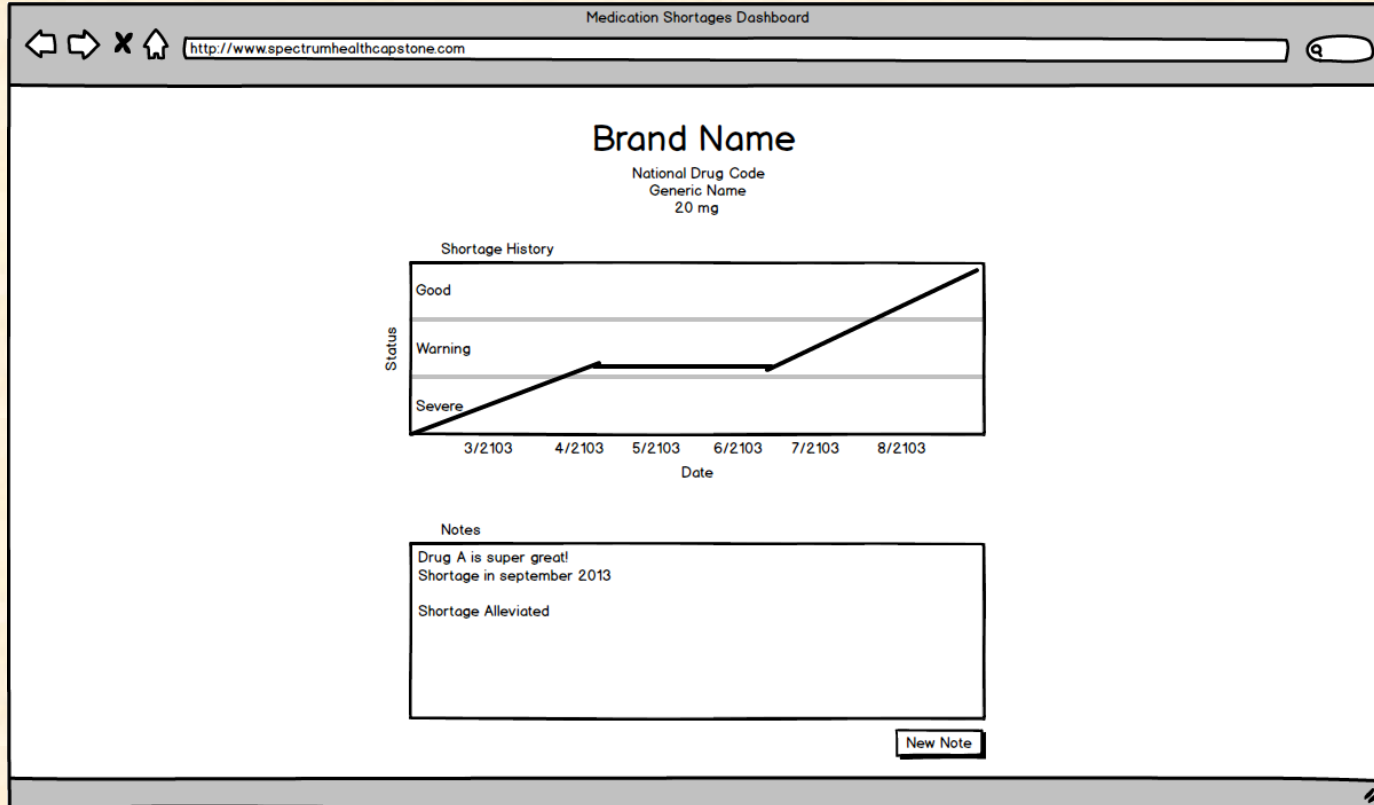
System Architecture



Team Spectrum Health
Project Plan Presentation

Team Spectrum Health Project Plan Presentation

Screen Mockup

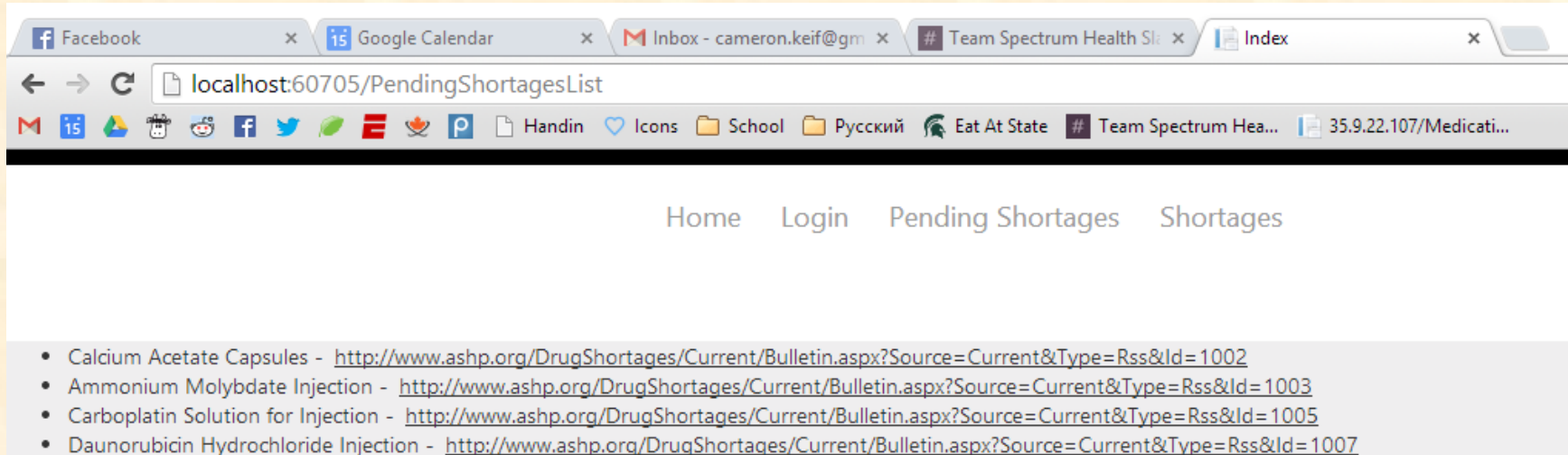




Team Spectrum Health Alpha Presentation

Team Spectrum Health Alpha Presentation

ASHP Feed Processing



The screenshot shows a web browser window with multiple tabs. The active tab is titled "Index" and shows the URL "localhost:60705/PendingShortagesList". The browser's address bar and toolbar are visible, along with a navigation menu at the top of the page. The main content area displays a list of drug shortages with their respective ASHP URLs.

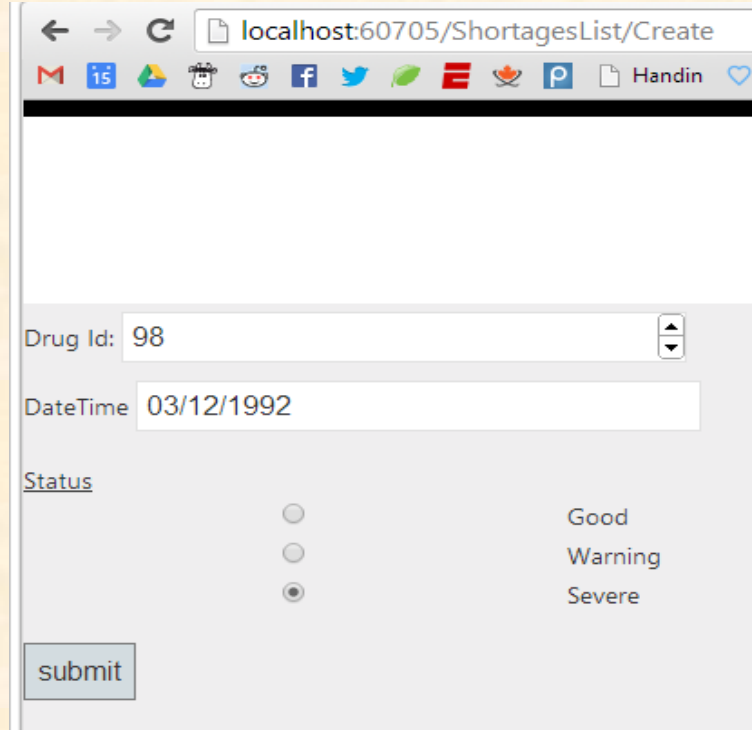
Navigation: Home Login Pending Shortages Shortages

- Calcium Acetate Capsules - <http://www.ashp.org/DrugShortages/Current/Bulletin.aspx?Source=Current&Type=Rss&Id=1002>
- Ammonium Molybdate Injection - <http://www.ashp.org/DrugShortages/Current/Bulletin.aspx?Source=Current&Type=Rss&Id=1003>
- Carboplatin Solution for Injection - <http://www.ashp.org/DrugShortages/Current/Bulletin.aspx?Source=Current&Type=Rss&Id=1005>
- Daunorubicin Hydrochloride Injection - <http://www.ashp.org/DrugShortages/Current/Bulletin.aspx?Source=Current&Type=Rss&Id=1007>

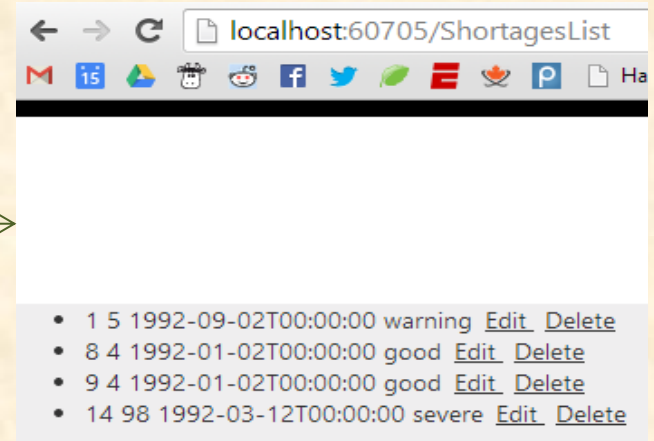


Team Spectrum Health Alpha Presentation

MS SQL Server Interactions

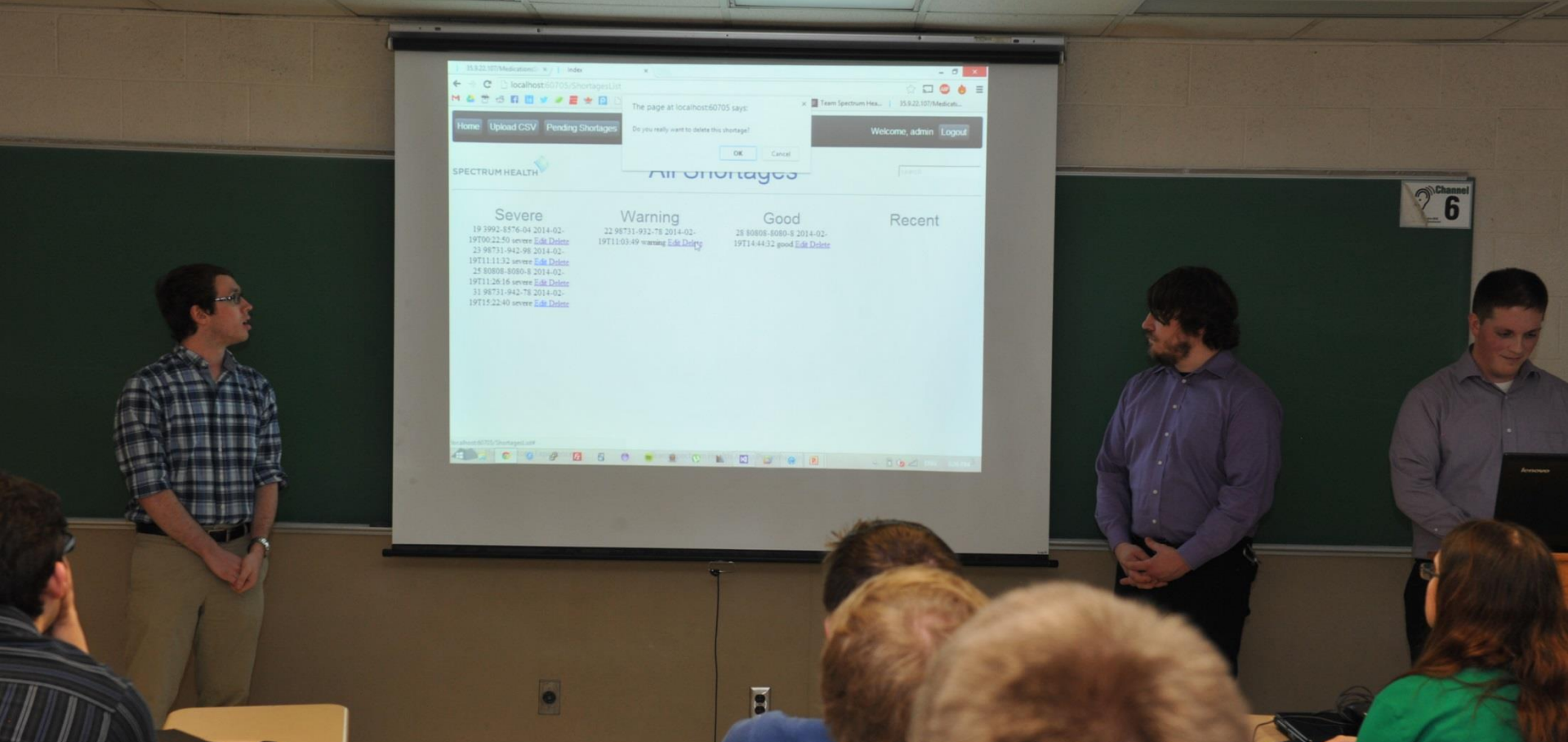


A screenshot of a web browser showing a form titled "localhost:60705/ShortagesList/Create". The form includes a "Drug Id" field with the value "98", a "DateTime" field with the value "03/12/1992", and a "Status" section with three radio buttons labeled "Good", "Warning", and "Severe". The "Severe" radio button is selected. A "submit" button is located at the bottom left of the form.

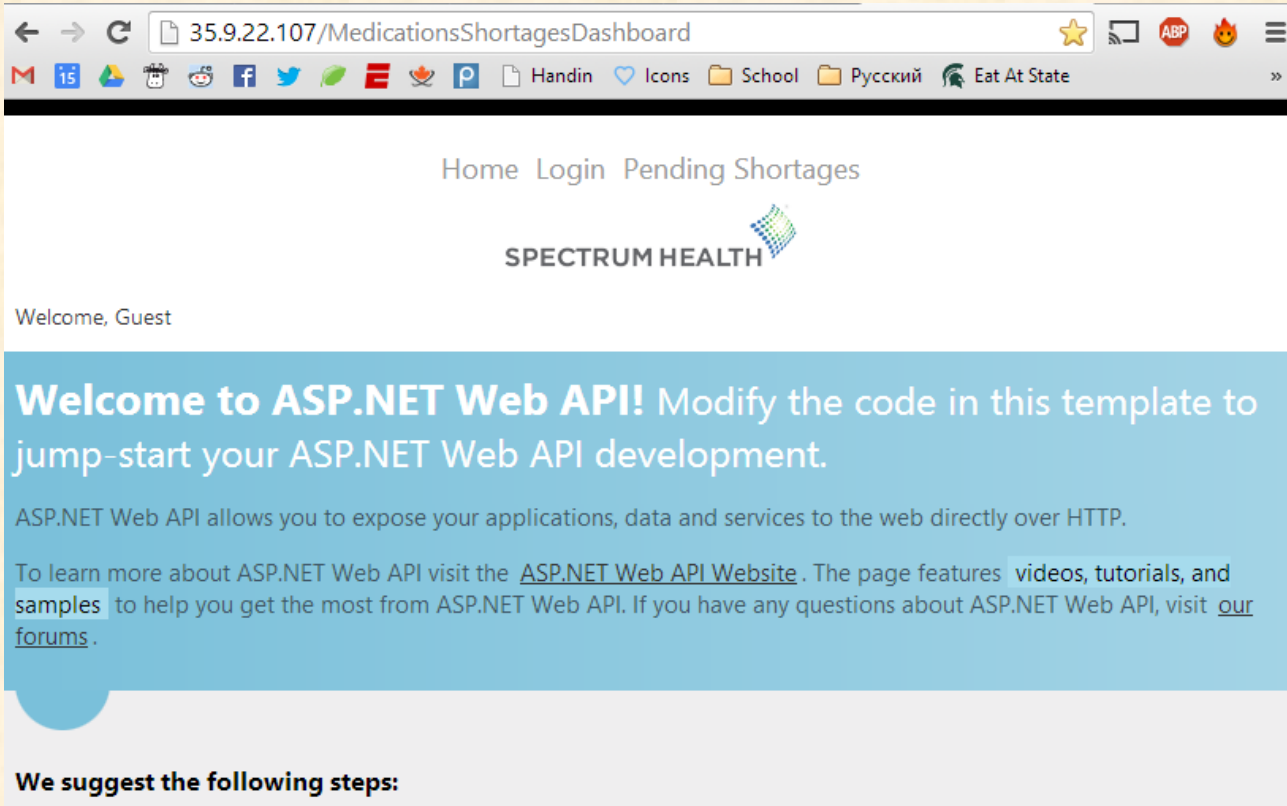


A screenshot of a web browser showing a list of shortage entries titled "localhost:60705/ShortagesList". The list contains four entries, each with a drug ID, a date, a status, and links to "Edit" and "Delete".

1	5	1992-09-02T00:00:00	warning	Edit	Delete
8	4	1992-01-02T00:00:00	good	Edit	Delete
9	4	1992-01-02T00:00:00	good	Edit	Delete
14	98	1992-03-12T00:00:00	severe	Edit	Delete



Team Spectrum Health Alpha Presentation





Current Shortages

Severe	Warning	Good	Recent
APP Leucovorin Calcium Injection 250 mg	zinc sulfate 10mg	vitamin E topical oil	APP Leucovorin Calcium Injection 250 mg
Caviston 750mg	Apremil 50mg	Adios 500mg	Brinta 80mg
Coumadin 3mg	Brinta 80mg	Aquasol E 50mg/ml	zinc sulfate 10mg
Tylenol 400mg	Elipros 667 mg	Chamex 10mg	Coumadin 3mg
	Tylenol 200mg	Coumadin 3mg	Coumadin 3mg
			vitamin E topical oil
			Aquasol E 50mg/ml
			Zylo 600mg
			Coumadin 3mg
			RETron 1mg

Team Spectrum Health
Beta Presentation

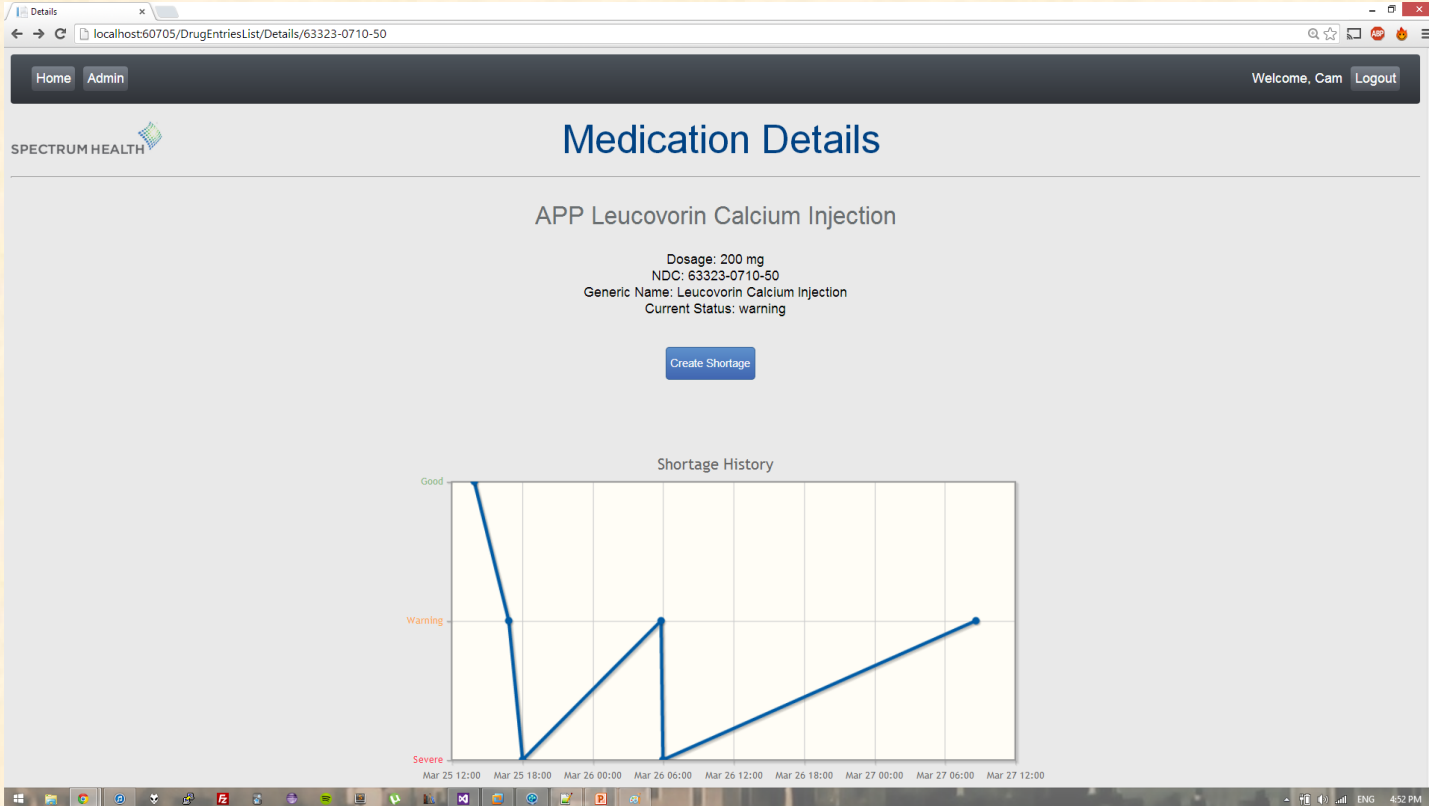
Team Spectrum Health Beta Presentation

Current Shortages

Severe	Warning	Good	Recent
• Cayston 750mg ★	Brilinta 80mg ★	Actos 500mg ★	Tylenol 400mg ★
Tylenol 400mg ★	Eliphos 667 mg ★	Glienya 450mg ★	APP Leucovorin Calcium Injection 200 mg ★
<< 1 >>	APP Leucovorin Calcium Injection 200 mg ★	Saphris 350mg ★	• Cayston 750mg ★
	Apsonal 50mg ★	Tylenol 800mg ★	Test Brand 20mg ★
	Tylenol 200mg ★	Champix 10mg ★	Micardis 75mg ★
	<< 1 >>	<< 1 >>	Tylenol 200mg ★
			Saphris 350mg ★
			Eliphos 667 mg ★
			Tylenol 800mg ★
			Foradil 5mg ★

Team Spectrum Health Beta Presentation

Medication Detail





Team Spectrum Health Beta Presentation

Team Spectrum Health Beta Presentation

ASHP Feed

The screenshot displays the ASHP Feed web application. The main content area lists various pharmaceutical products, including Hydrocortisone Sodium Succinate Injection, Azithromycin Injection, Fluorouracil Injection, Norepinephrine Injection, Doxorubicin Liposomal Injection, Amphotericin B Cholesteryl Sulfate Complex Injection, Isosorbide Dinitrate Immediate Release Tablets, Thiotepa for Injection, Choline Magnesium Trisilicate, Heparin Sodium Injection, Leucovorin Calcium Injection, and Amikacin Injection. Below the list, the 'Products Affected' section details Amikacin injection, Bedford, 250 mg/mL, 4 mL vials, package of 10 (NDC 55390-0226-04). The 'Reason for the Shortage' section provides a list of reasons, including Ben Venue's production stoppage, Hospira's discontinuation in 2010, Teva's manufacturing delays, Sandoz's discontinuation in 2006, and Heritage's launch in March 2014. A 'View Full Report' link and a 'Create Shortage' button are also visible.

Create Shortage

NDC:

Status: ☐ Good ☒ Warning ☐ Severe

Seven day supply (250 character limit):

Seven day usage (250 character limit):

Mitigation Actions (5000 character limit):



Team Spectrum Health
Design Day

MICHIGAN STATE
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The Capstone Experience

Team TechSmith

Department of Computer Science and Engineering
Michigan State University
Spring 2014



*From Students...
...to Professionals*



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TechSmith helps you solve everyday problems with ease. Whether you're trying to explain something over email or keep your students' attention, TechSmith can help you work faster and smarter.



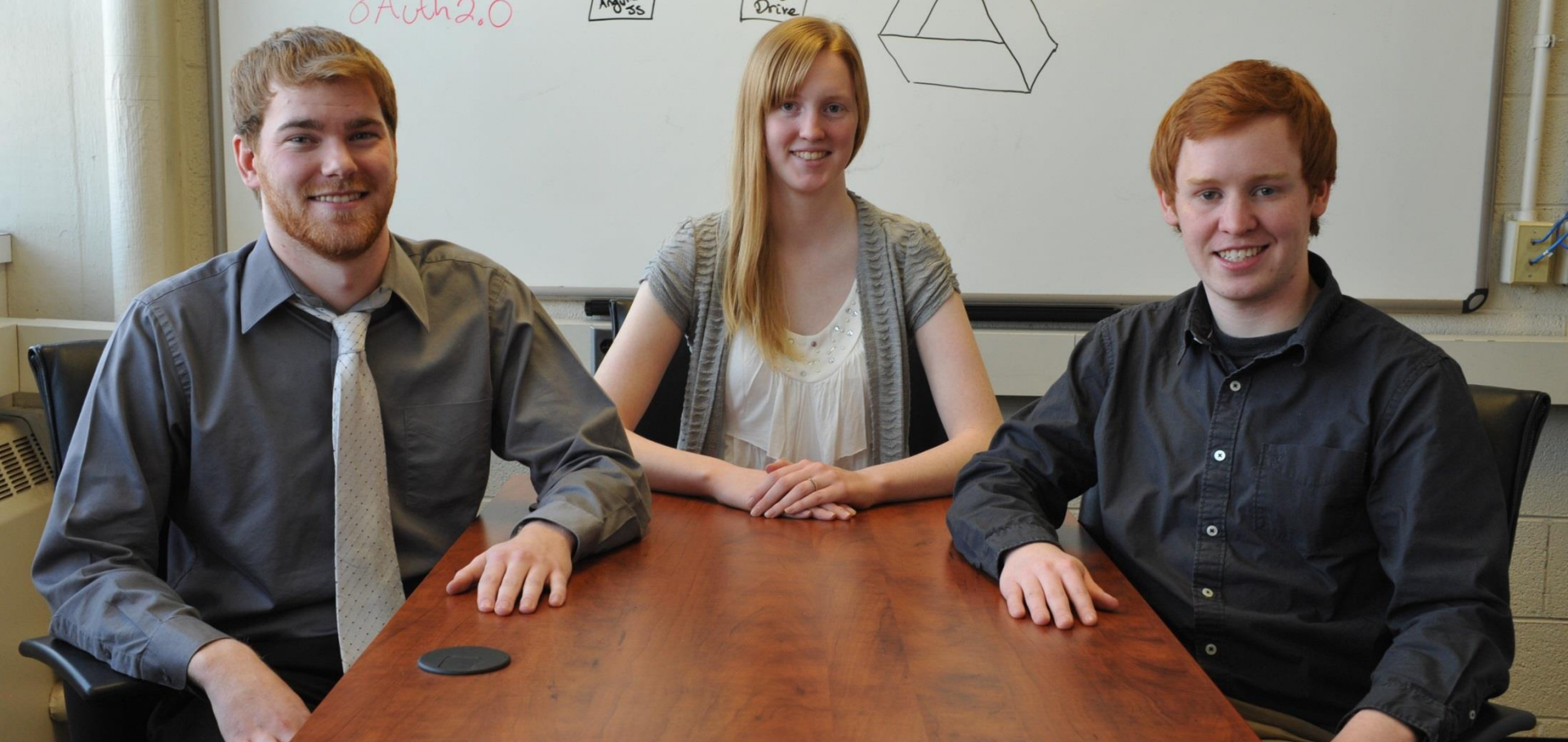
WATCH NOW

Team TechSmith Project Overview

ClassView

- Functionalities
 - Dashboard View of Google Drive
 - For Teachers and Students
 - Via Chrome App
- Features
 - Models the Classroom
 - Helps with Content Management
 - Facilitates Assignments and Collaboration
 - Teacher Dashboard and Student Dashboard
 - Notifications for Key Events
 - Assignment Posted
 - Assignment Due
 - Assignment “Progress” Mechanism
 - Provide Usage Statistics
- Technologies
 - CSS / HTML5 / JavaScript
 - Chrome App APIs
 - Google Drive SDK
 - Google Analytics



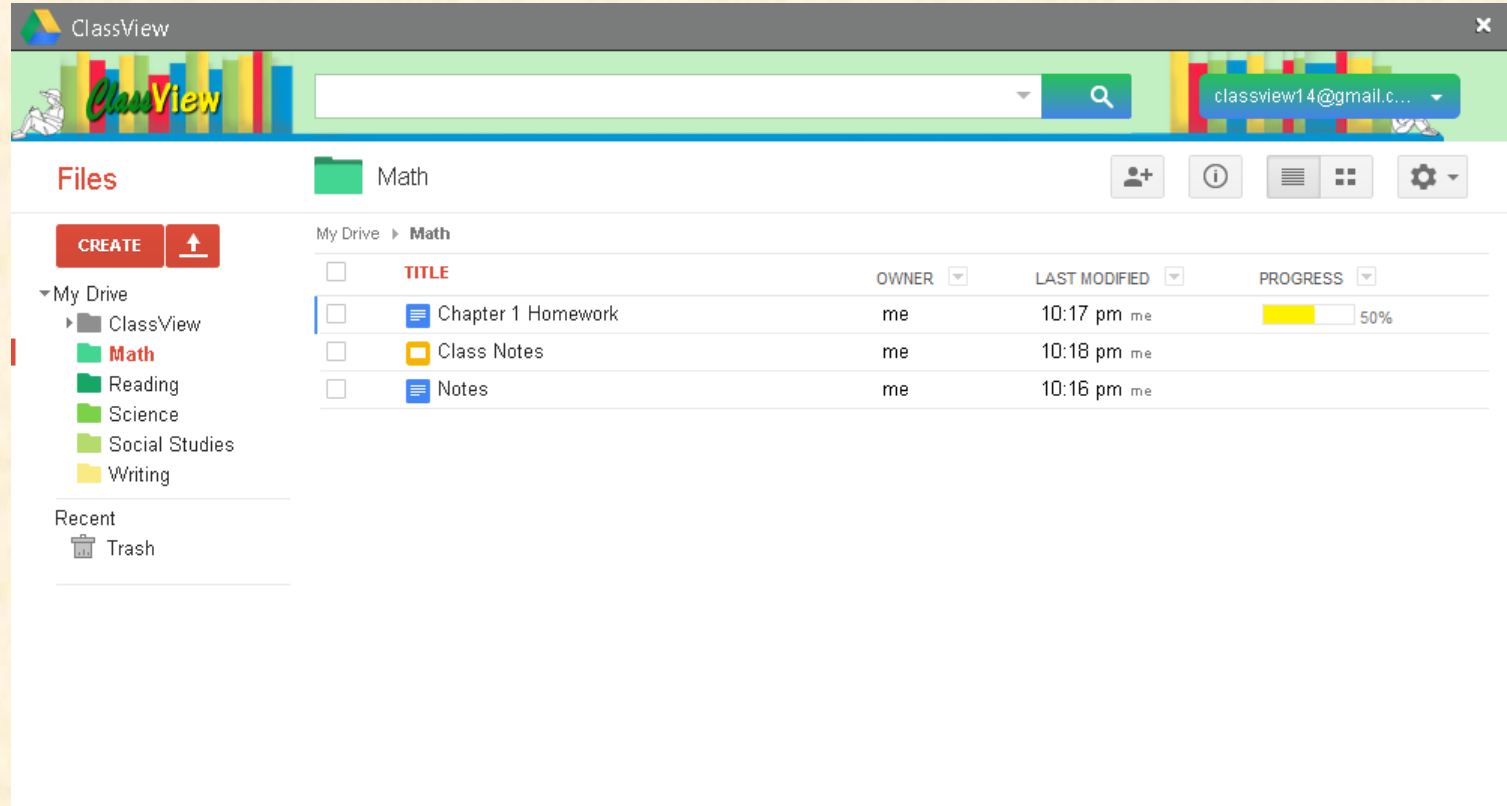


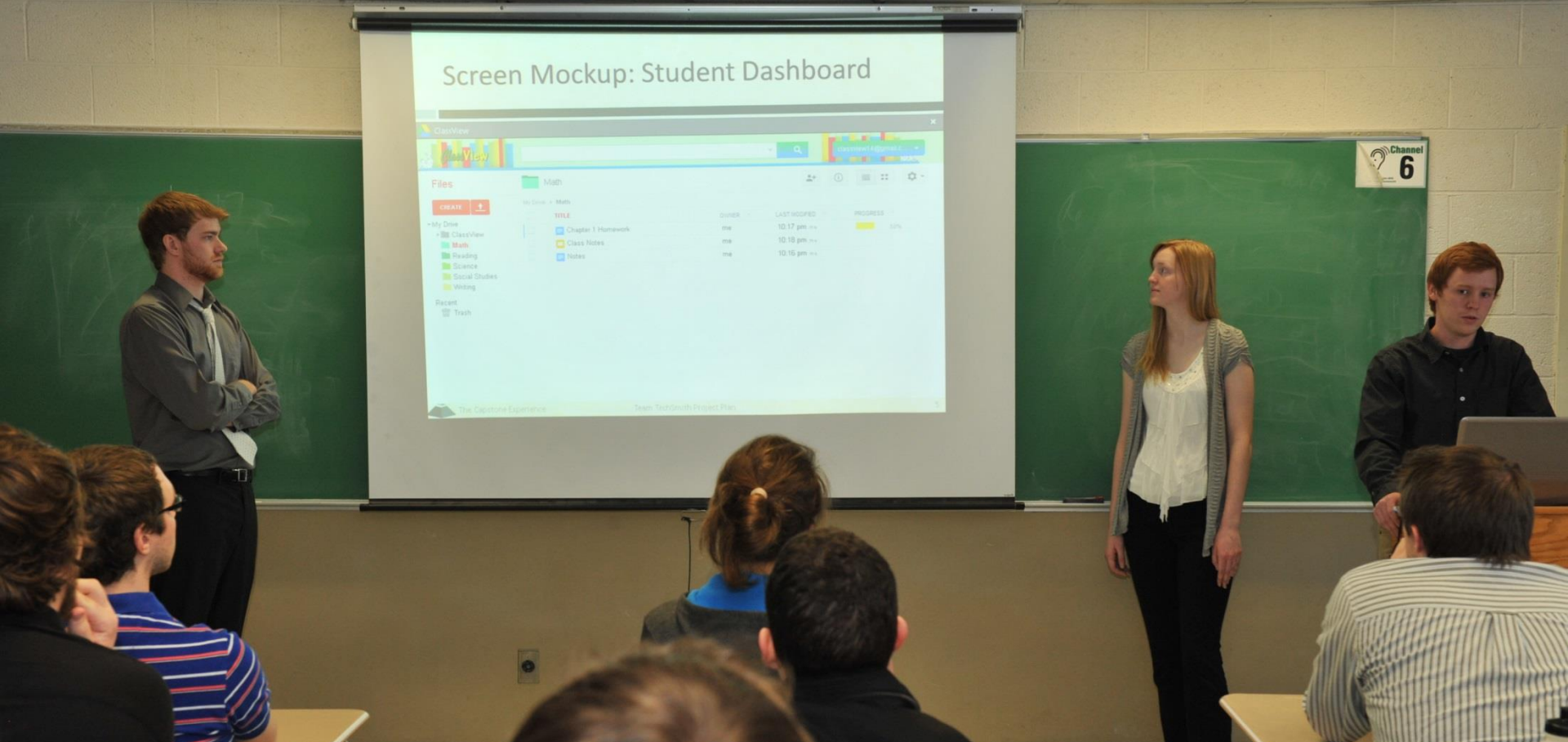
Team TechSmith

Eric Austin, Rebecca Collins, Kyle Woodward

Team TechSmith Project Plan Presentation

Screen Mockup

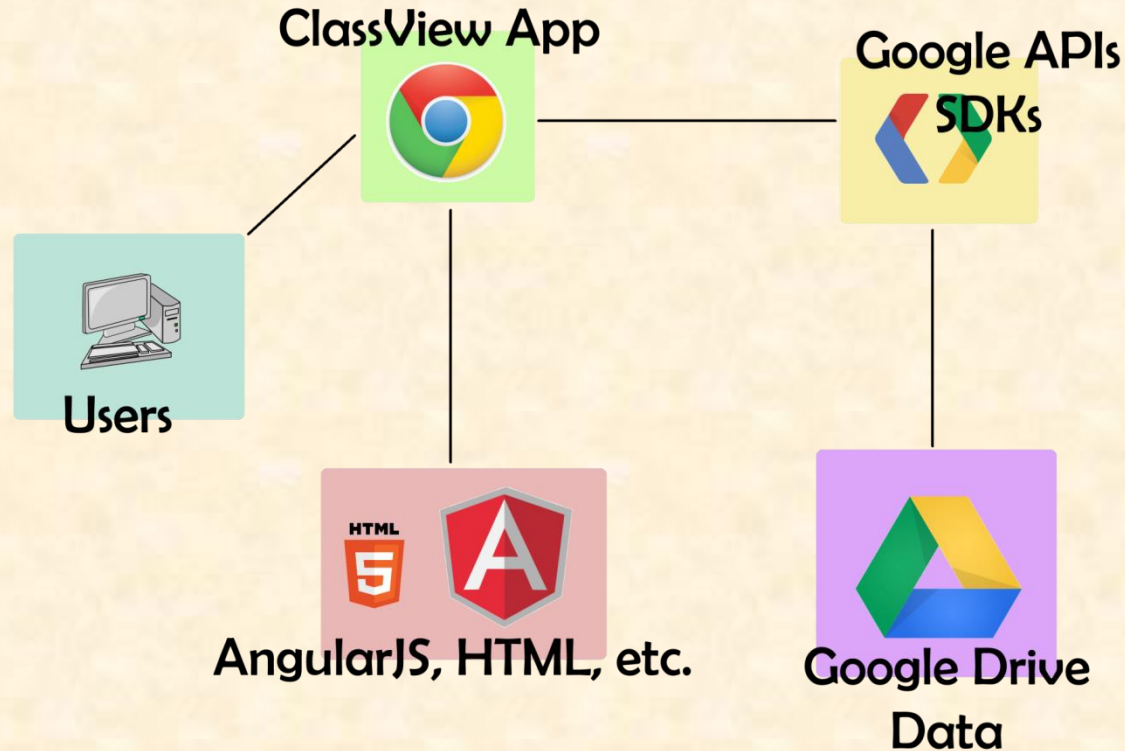




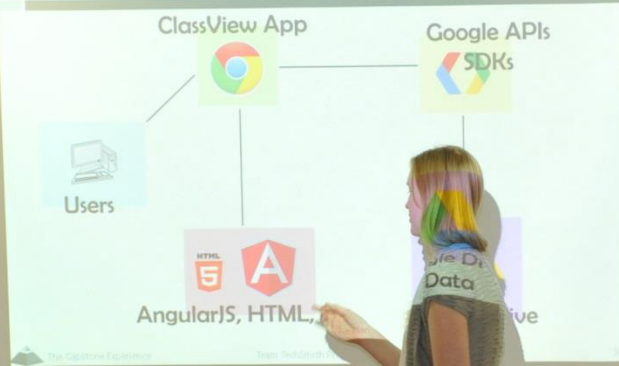
Team TechSmith Project Plan Presentation

Team TechSmith Project Plan Presentation

Architecture Diagram



System Architecture



Team TechSmith
Project Plan Presentation

Team TechSmith Project Plan Presentation

Screen Mockups

Class1

Class2

Class3

Add New

<Student Name>

<Student Name>

<Student Name>

<Student Name>

Manage

Class1

Class2

Class3

Add New

Class Name:

Student:

Add

Group:

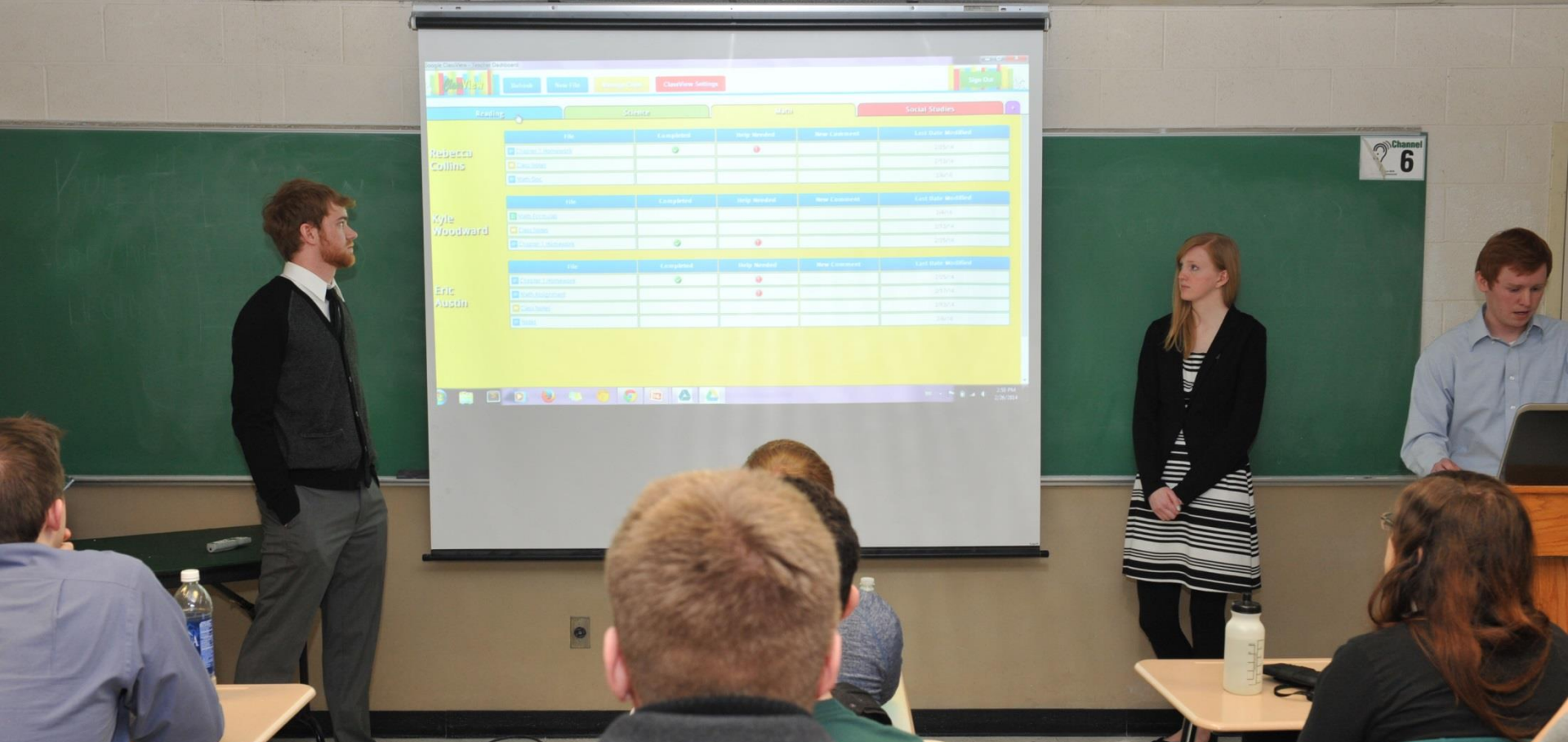
Add

	A Team	B Team
Billy Bob Joe Bob	✓	
Student2		
Stormageddon		✓

Groups

Save





Team TechSmith Alpha Presentation

Team TechSmith Alpha Presentation

Student Dashboard

The screenshot shows the ClassView application window. The title bar reads 'ClassView'. The interface has a green header with the 'ClassView' logo, a search bar, and a user profile dropdown showing 'classview14@gmail.c...'. Below the header, the 'Files' section is active, displaying a folder named 'Math'. On the left, a sidebar shows 'My Drive' with folders for Math, Reading, Science, Social Studies, and Writing, and a 'Recent' section with 'Trash'. The main area shows the contents of the 'Math' folder as a table.

<input type="checkbox"/>	TITLE	OWNER	LAST MODIFIED
<input type="checkbox"/>	Chapter 1 Homework	me	10:17 pm me
<input type="checkbox"/>	Class Notes	me	10:18 pm me
<input type="checkbox"/>	Notes	me	10:16 pm me

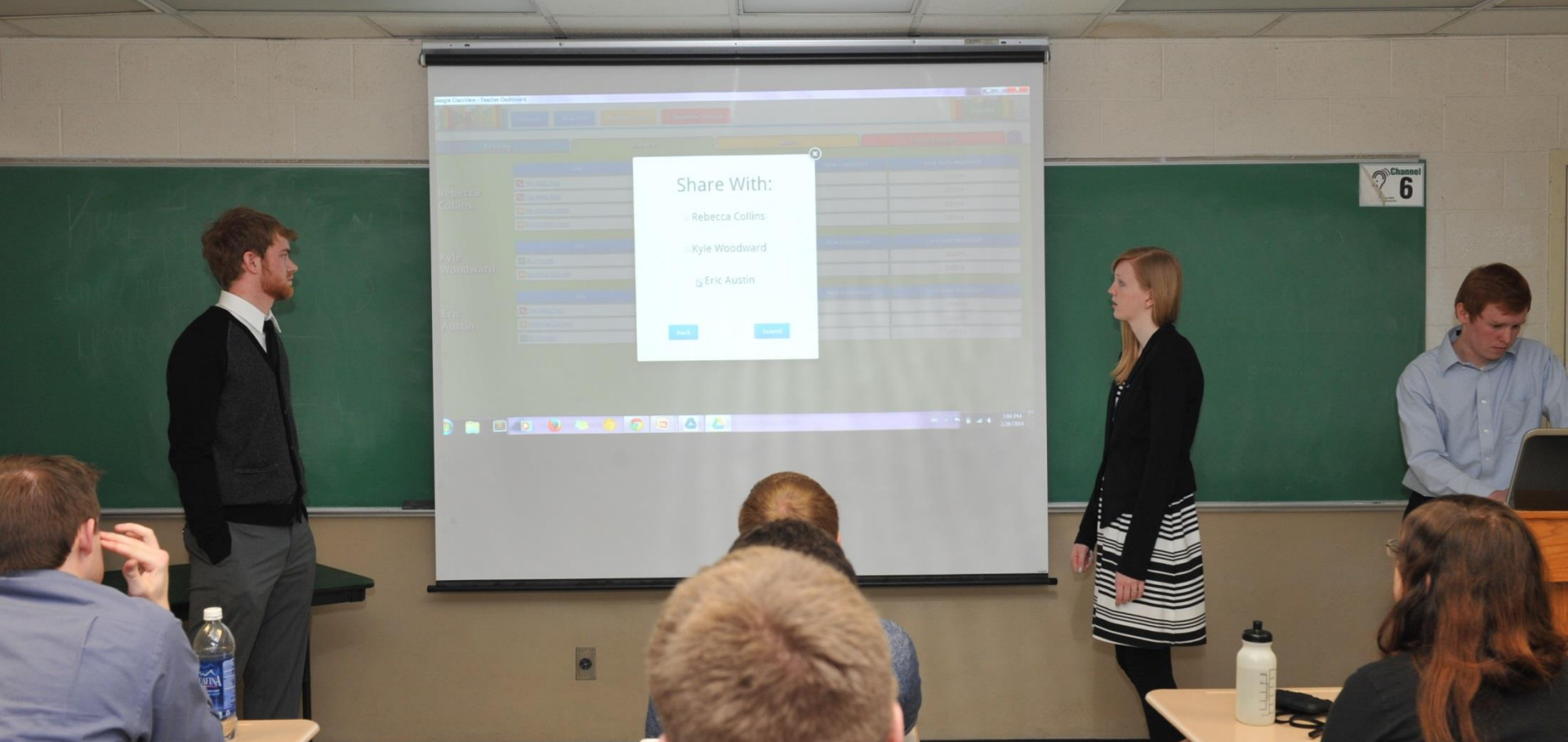
Team TechSmith Alpha Presentation

Teacher Dashboard

The screenshot shows a web application interface for a teacher dashboard. At the top, there is a navigation bar with the 'ClassView' logo and tabs for 'Math', 'Writing', 'Social Studies', 'Science', 'Reading', and '+ New Class'. A 'Sign Out' button is located on the right. Below the navigation bar, there are three buttons: 'Refresh', 'Add Student', and 'New Assignment'. The dashboard is organized into three sections, each for a different student: Rebecca Collins, Kyle Woodward, and Eric Austin. Each section displays a list of items with icons, titles, and dates.

Student	Item	Date
Rebecca Collins	Class Notes	2/13/14
	Chapter 1 Homework	2/13/14
	Math - rebecca.t.collins@gmail.com	2/13/14
	Math Doc ✓	2/6/14
Kyle Woodward	Math Formulas ✓	2/4/14
	Class Notes	2/13/14
	Math - woodwa68@gmail.com	2/11/14
	Chapter 1 Homework	2/13/14
Eric Austin	Math - xxfendericxx@gmail.com	2/13/14
	Class Notes	2/13/14
	Chapter 1 Homework	2/13/14
	Notes	2/6/14





Team TechSmith Alpha Presentation

Team TechSmith Alpha Presentation

Teacher Dashboard

The screenshot shows the ClassView Teacher Dashboard interface. At the top, there's a navigation bar with tabs for Math, Writing, Social Studies, Science, Reading, and a '+ New Class' button. A 'Sign Out' button is also present. Below the navigation bar, there are three buttons: 'Refresh', 'Add Student', and 'New Assignment'. The dashboard lists three students: Rebecca Collins, Kyle Woodward, and Eric Austin. Each student has a list of assignments with icons for Class Notes, Chapter 1 Homework, Math, and Math Doc. A modal form is open in the center, allowing the teacher to add a new student by entering their Name and Email, followed by a 'Submit' button.

Student Name	Assignment	Due Date
Rebecca Collins	Class Notes	2/13/14
	Chapter 1 Homework	2/13/14
	Math - rebecca.t.collins@gmail.com	2/13/14
	Math Doc ✓	2/6/14
Kyle Woodward	Math Formulas ✓	2/4/14
	Class Notes	2/13/14
	Math - woodwa69@gmail.com	2/11/14
	Chapter 1 Homework	2/13/14
Eric Austin	Math - xxfendericxx@gmail.com	2/13/14
	Class Notes	2/13/14
	Chapter 1 Homework	2/13/14
	Notes	2/6/14

Name:

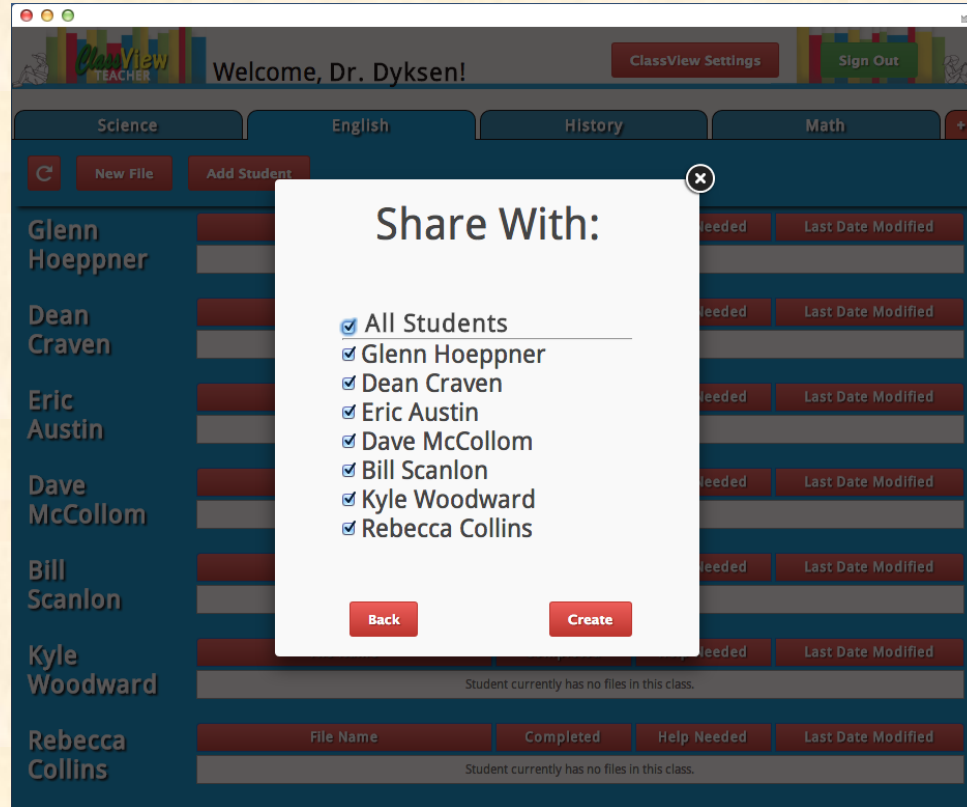
Email:



Team TechSmith Beta Presentation

Team TechSmith Beta Presentation

Teacher Sharing with Class



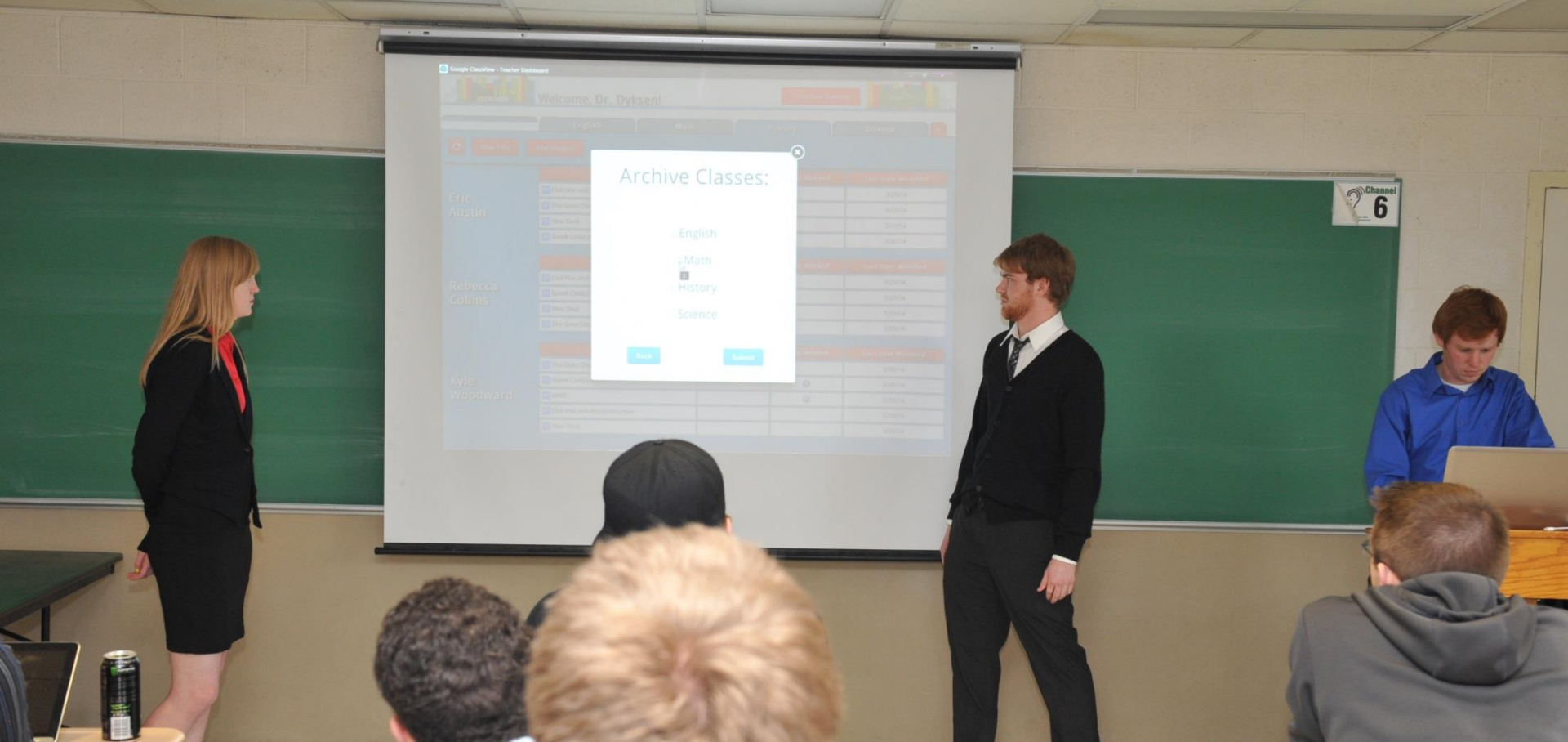
Team TechSmith Beta Presentation

Student Asking for Help



The screenshot shows the ClassView Student interface. At the top, there's a header with the ClassView logo, a welcome message "Welcome, Eric Austin!", and a "Sign Out" button. Below the header, there are four tabs: "Math", "Science", "English", and "History". The "History" tab is currently selected. Under the "History" tab, there are four buttons: "Open", "Ask For Help", "Mark as Complete", and "Download". Below these buttons is a table with five columns: "File Name", "Completed", "Help Needed", "Feedback", and "Last Date Modified". The table contains four rows of data:

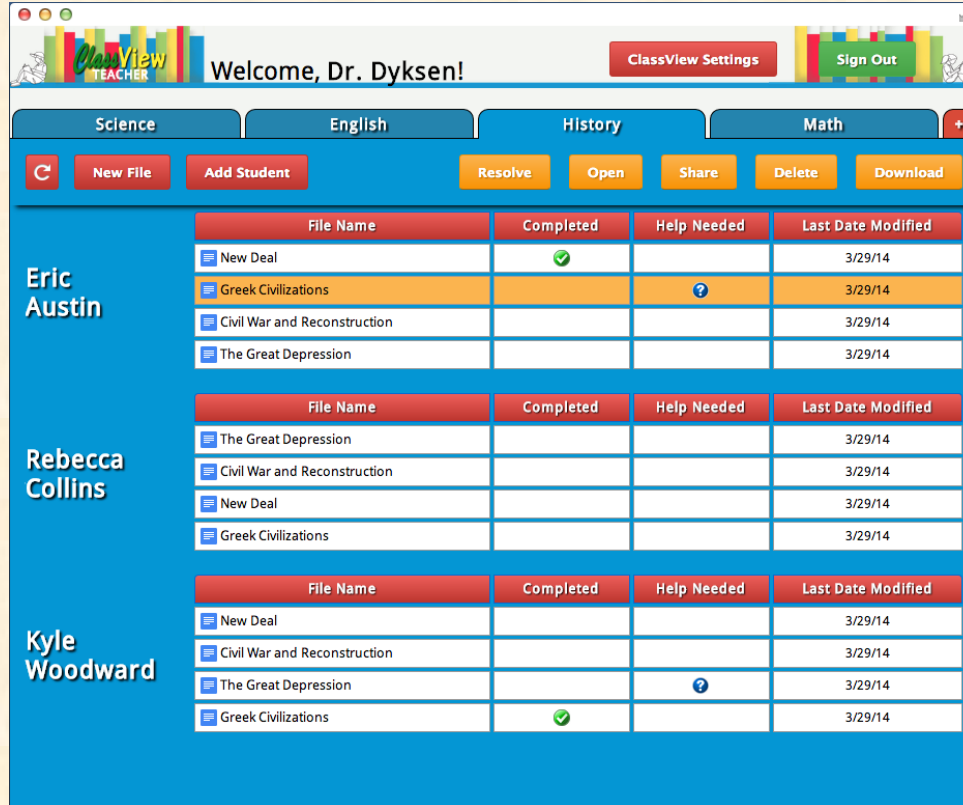
File Name	Completed	Help Needed	Feedback	Last Date Modified
Civil War and Reconstruction			!	3/29/14
Greek Civilizations		?		3/29/14
The Great Depression				3/29/14
New Deal	✓			3/29/14



Team TechSmith
Beta Presentation

Team TechSmith Beta Presentation

Teacher Resolving Help



The screenshot shows the ClassView Teacher web application interface. At the top, a welcome message "Welcome, Dr. Dyksen!" is displayed next to a "ClassView Settings" button and a "Sign Out" button. Below the header, there are tabs for "Science", "English", "History", and "Math". A row of action buttons includes "New File", "Add Student", "Resolve", "Open", "Share", "Delete", and "Download".

The main content area displays three student progress tables for Eric Austin, Rebecca Collins, and Kyle Woodward. Each table has four columns: File Name, Completed, Help Needed, and Last Date Modified. The "Completed" column uses green checkmarks for completed items, and the "Help Needed" column uses blue question marks for items needing assistance.

Student	File Name	Completed	Help Needed	Last Date Modified
Eric Austin	New Deal	✓		3/29/14
	Greek Civilizations		?	3/29/14
	Civil War and Reconstruction			3/29/14
	The Great Depression			3/29/14
Rebecca Collins	The Great Depression			3/29/14
	Civil War and Reconstruction			3/29/14
	New Deal			3/29/14
	Greek Civilizations			3/29/14
Kyle Woodward	New Deal			3/29/14
	Civil War and Reconstruction			3/29/14
	The Great Depression		?	3/29/14
	Greek Civilizations	✓		3/29/14



Team TechSmith
Design Day

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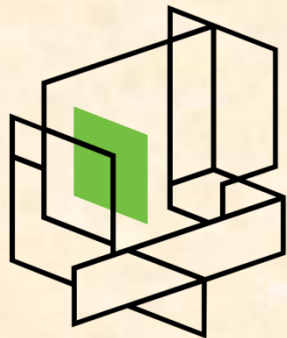
The Capstone Experience

Team Urban Science

Department of Computer Science and Engineering
Michigan State University
Spring 2014



*From Students...
...to Professionals*



URBAN SCIENCE™



URBAN SCIENCE

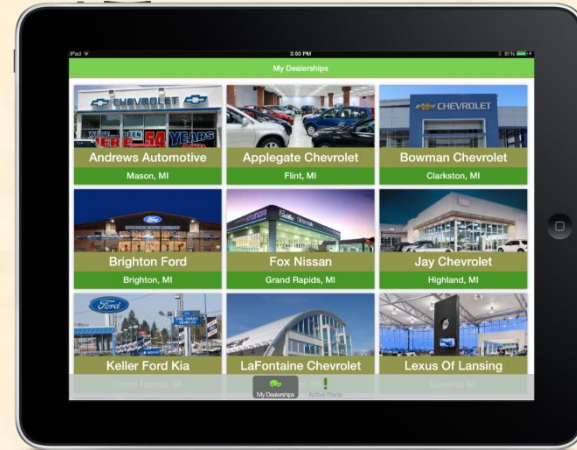
[CAREERS ▾](#)[LIBRARY ▾](#)[ABOUT US ▾](#)[CONTACT US](#)[MAILING LIST](#)[UNITED STATES](#)[Develop Dealer Network](#)[Improve Dealer Performance](#)[Manage Leads](#)[Optimize Marketing](#)[The Power of 4™](#)

THE POWER OF 4™

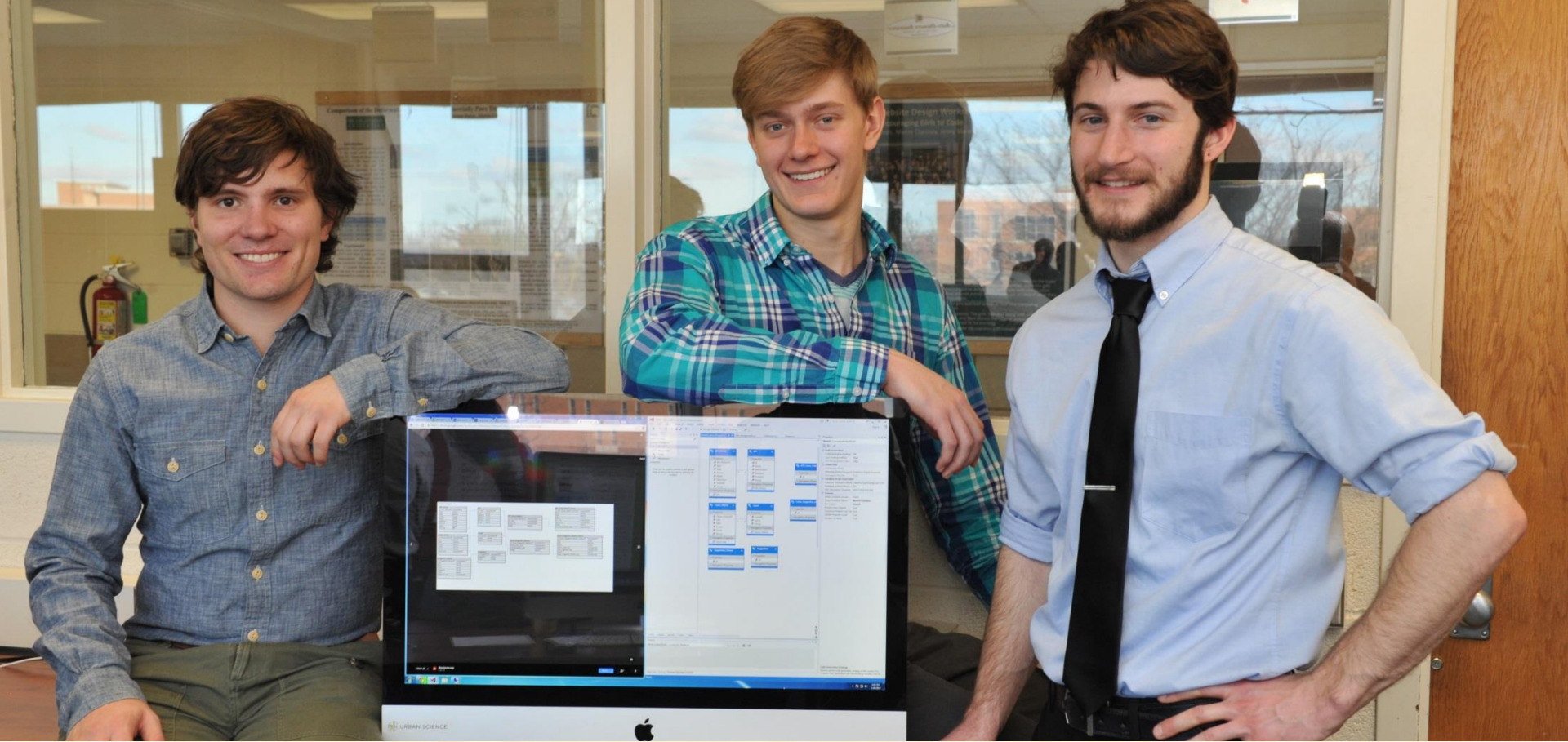
Team Urban Science Project Overview

Dealer Improvement Recommender System

- Functionalities
 - Recommendation System for Automobile Dealerships
 - Based On Weighted Expected Outcomes
 - For Use by Urban Science Consultants
- Features
 - Native iPad App
 - Create, Edit, Delete and Visualize
 - Expected Outcomes
 - Weights
 - Relationships Between Outcomes
 - Integrated with Dealership Performance Data
- Technologies
 - iPad Development / Objective-C
 - Web Development
 - Visualization Libraries
 - Web Services
 - SQL Server



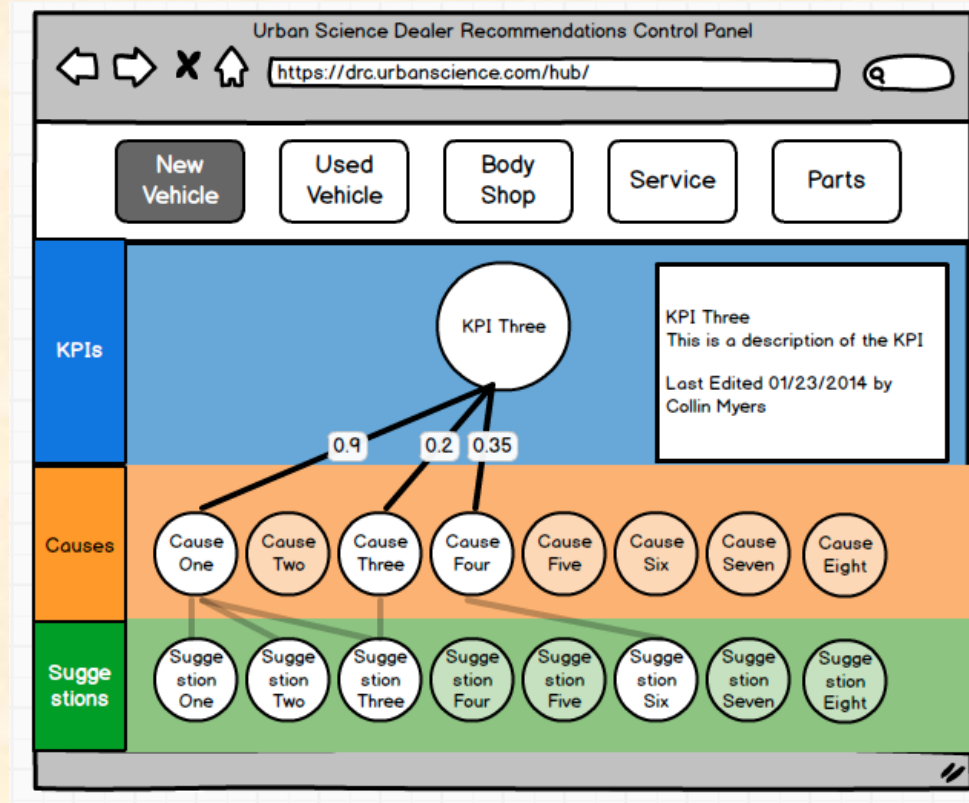
URBAN SCIENCE
Detroit, Michigan



Team Urban Science
Ben Mastay, Collin Myers, Ty Jones

Team Urban Science Project Plan Presentation

Screen Mockups

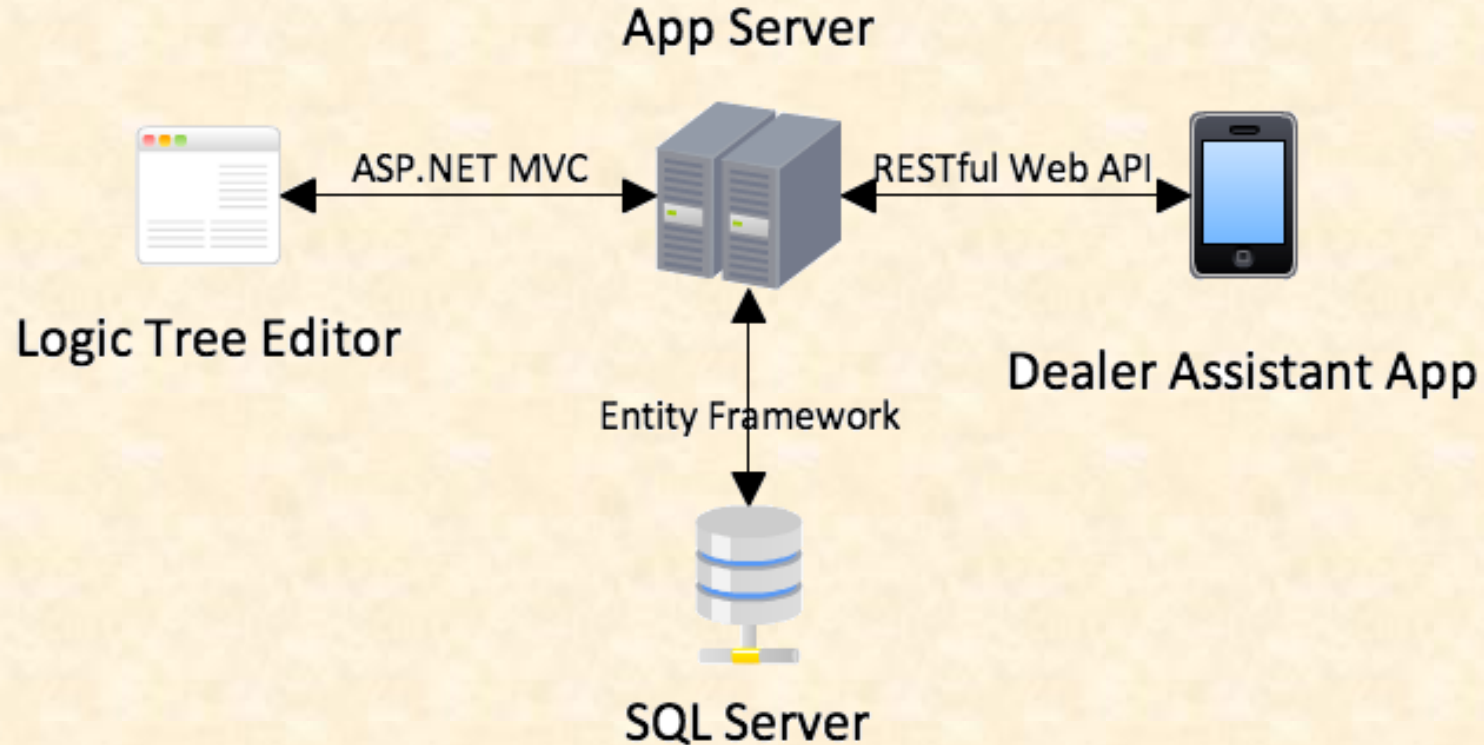


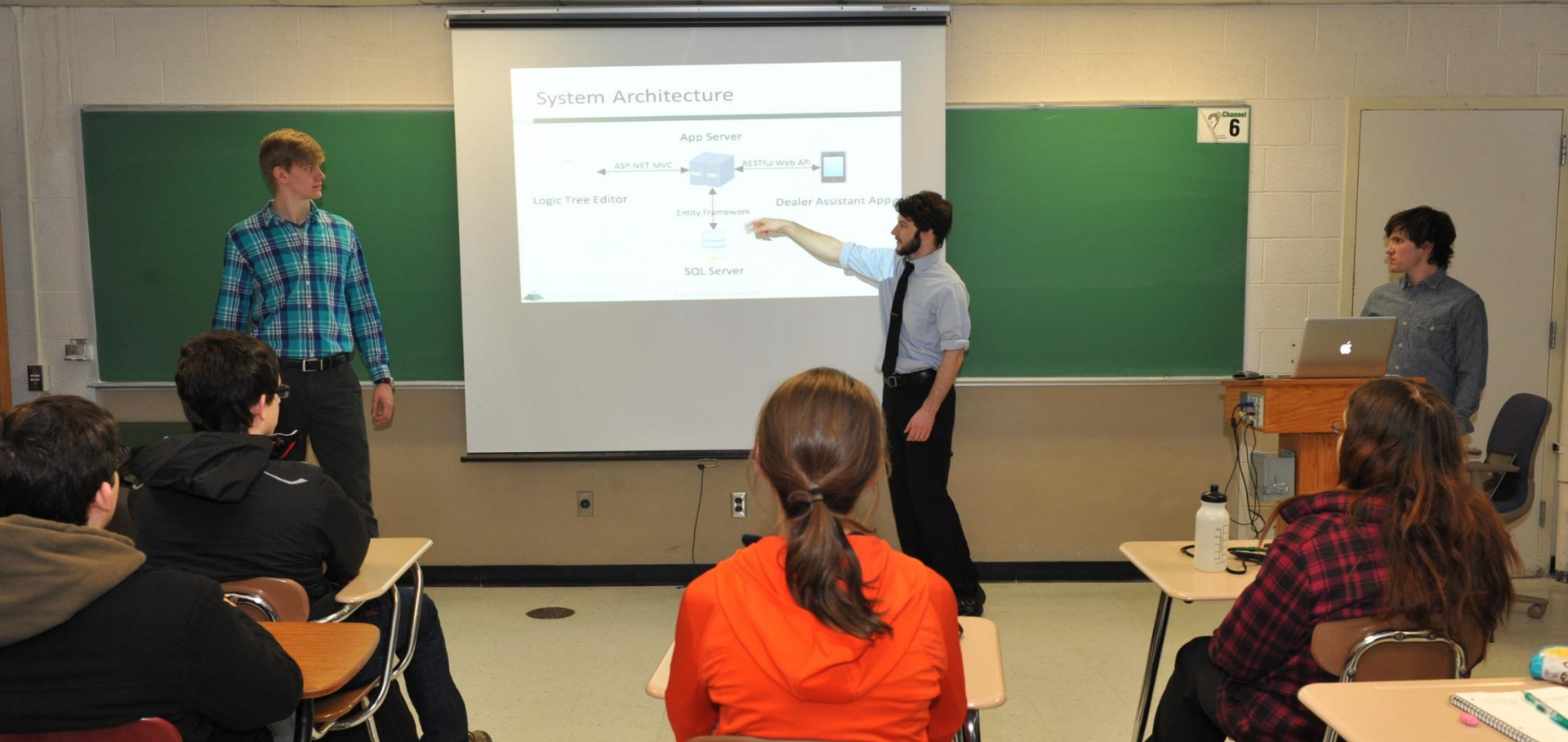


Team Urban Science Project Plan Presentation

Team Urban Science Project Plan Presentation

Architecture Diagram

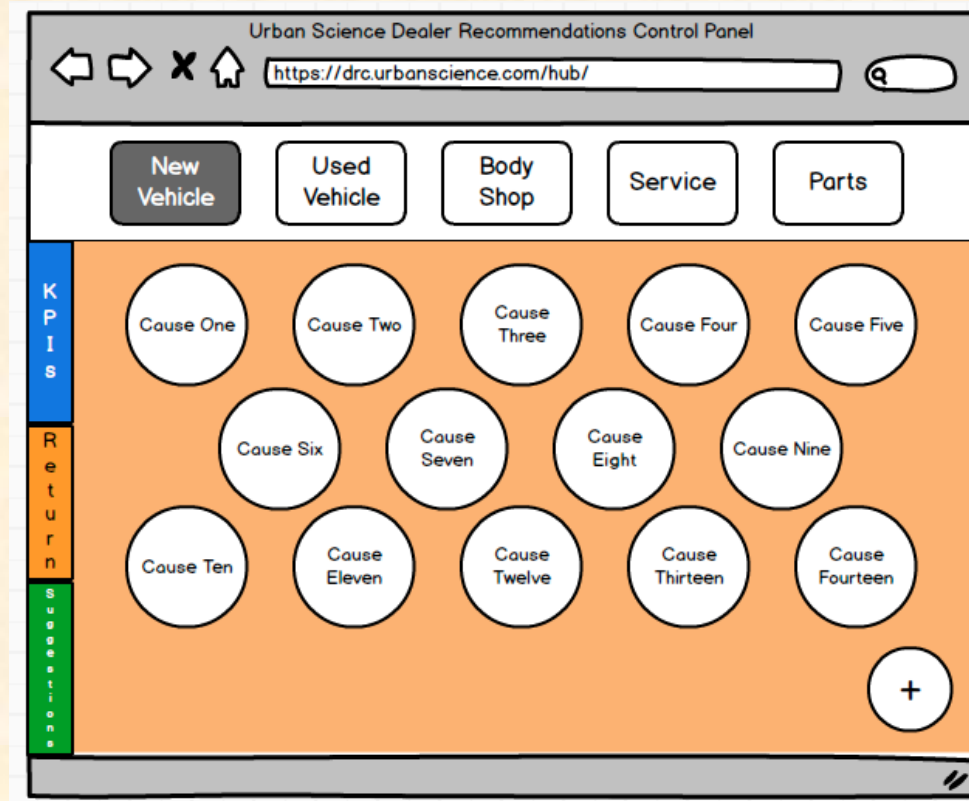


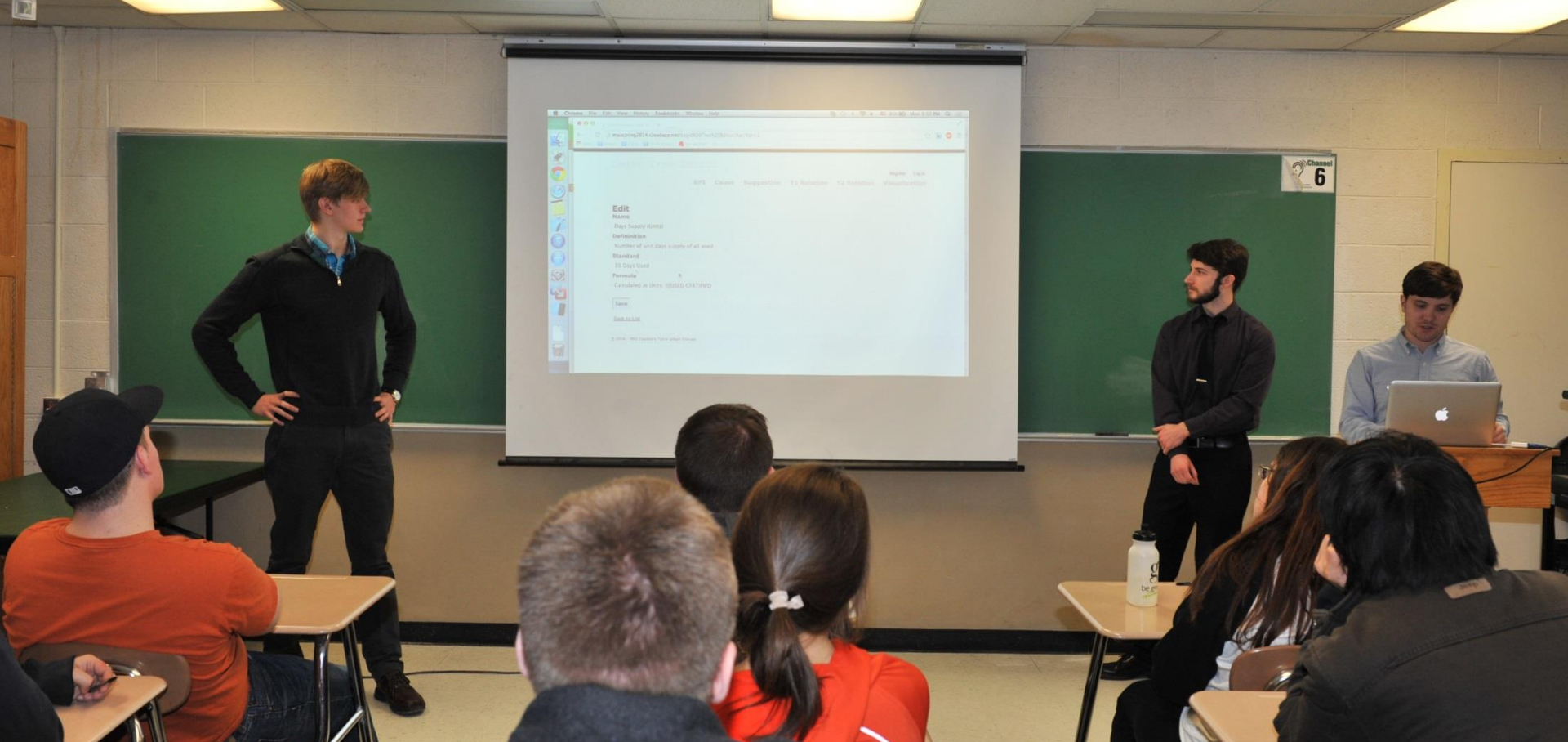


Team Urban Science Project Plan Presentation

Team Urban Science Project Plan Presentation

Screen Mockup

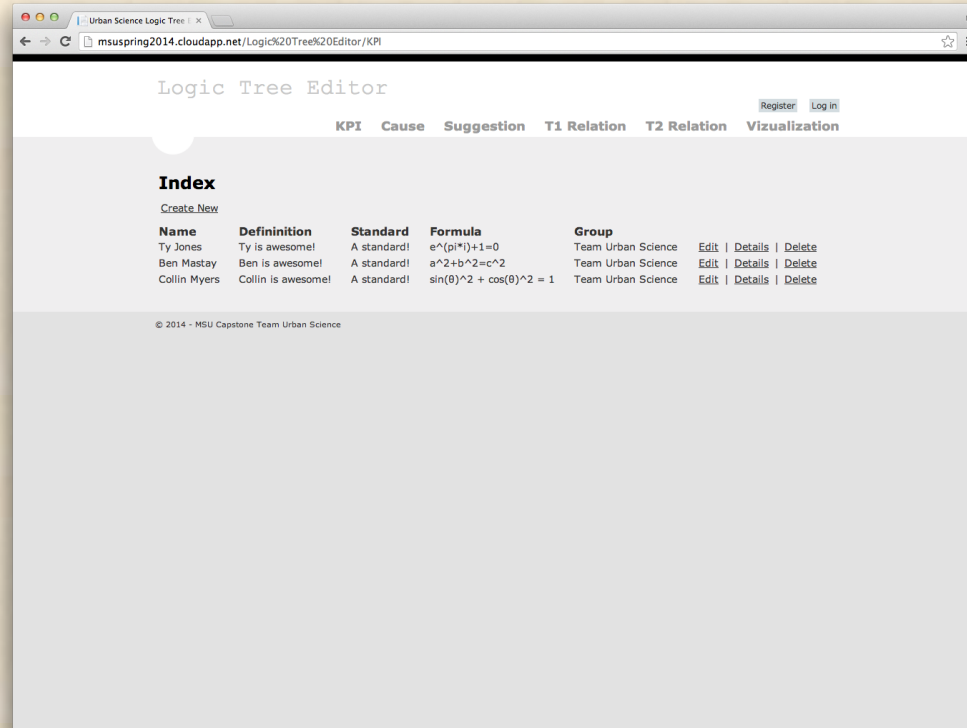




Team Urban Science Alpha Presentation

Team Urban Science Alpha Presentation

KPI View



The screenshot shows a web browser window with the URL `msuspring2014.cloudapp.net/Logic%20Tree%20Editor/KPI`. The page title is "Logic Tree Editor". Below the title, there are navigation tabs: "KPI", "Cause", "Suggestion", "T1 Relation", "T2 Relation", and "Vizualization". The "KPI" tab is selected. Below the tabs, there is a section titled "Index" with a link "Create New". Below this, there is a table with the following data:

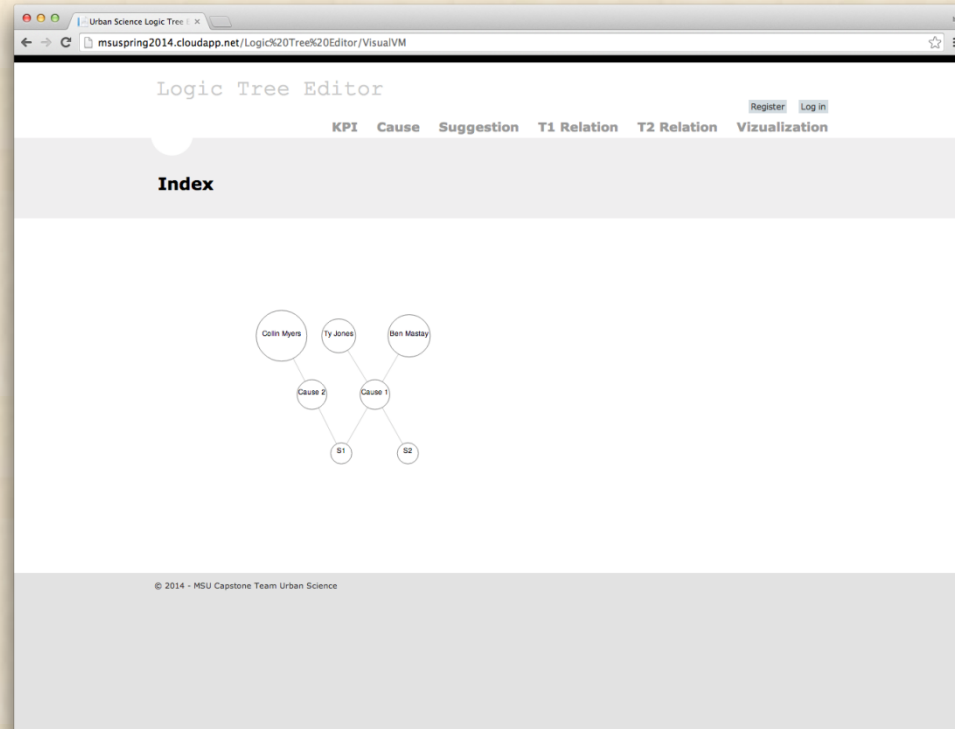
Name	Definition	Standard	Formula	Group	
Ty Jones	Ty is awesome!	A standard!	$e^{(\pi i)} + 1 = 0$	Team Urban Science	Edit Details Delete
Ben Mastay	Ben is awesome!	A standard!	$a^2 + b^2 = c^2$	Team Urban Science	Edit Details Delete
Collin Myers	Collin is awesome!	A standard!	$\sin(\theta)^2 + \cos(\theta)^2 = 1$	Team Urban Science	Edit Details Delete

At the bottom of the page, there is a copyright notice: "© 2014 - MSU Capstone Team Urban Science".



Team Urban Science Alpha Presentation

Logic Tree Visualization

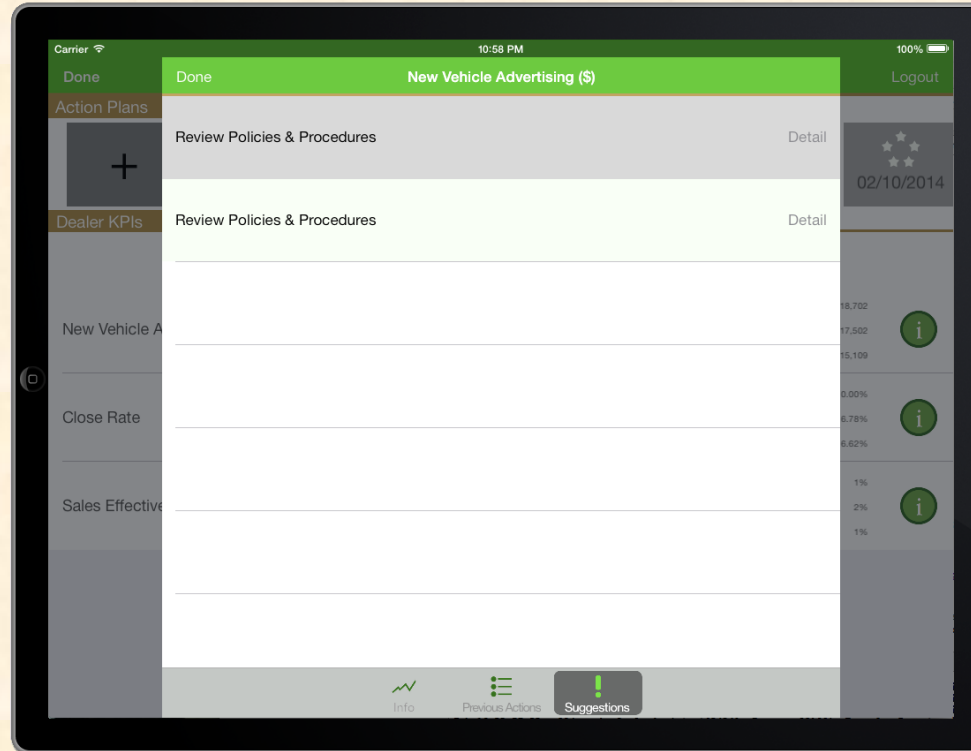




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Team Urban Science Alpha Presentation

iPad App Extension

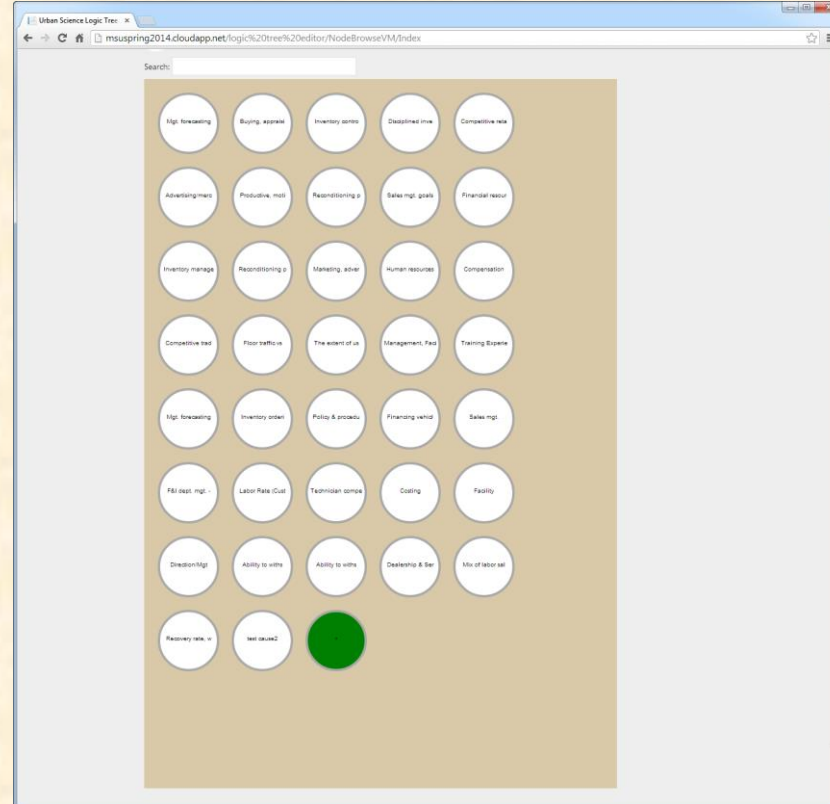




Team Urban Science Beta Presentation

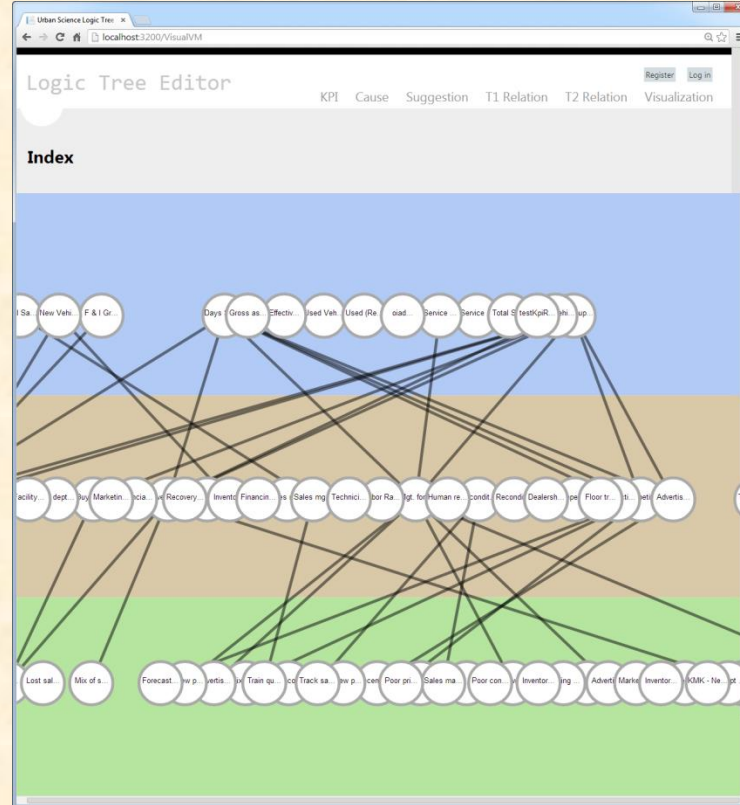
Team Urban Science Beta Presentation

Node Browse View



Team Urban Science Beta Presentation

Overview Visualization





Team Urban Science Beta Presentation

KPI Suggest

The Capstone Experience





Team Urban Science
Design Day

MICHIGAN STATE
UNIVERSITY

The Capstone Experience

Team Whirlpool

Department of Computer Science and Engineering
Michigan State University
Spring 2014



From Students...
...to Professionals



Whirlpool

CORPORATION



LAUNDRY

KITCHEN

HOME SOLUTIONS

FILTERS & ACCESSORIES

SERVICE & SUPPORT



True innovation takes the complexity out.

The Whirlpool Dishwasher uses Sensor Cycle to automatically select the right wash and dry

See Details

View Demo



Team Whirlpool Project Overview

Virtual Appliance Simulator

- Functionalities
 - Simulate 1 to 1000's of Virtual Appliances
 - Used During Development of Connectivity Solutions
 - For Whirlpool's Connected Appliances
- Features
 - Appliance Configurator
 - API Interface
 - Scheduler
 - Execution Engine
 - Communication Interface with the Cloud
- Technologies
 - Linux Operating System
 - Thread Computing in Linux
 - Linux Shell Scripting
 - Cloud-Based Computing
 - Java



Benton Harbor, Michigan



Team Whirlpool
Evan Liang, Lisa Kelly, Cody Littlely

Team Whirlpool Project Plan Presentation

Screen Mockup

Whirlpool Virtual Appliance Simulator Configurator

Load Appliance

Load

Appliance

Washing Machine

Quantity: 5

Load Scripts

Load

script1.scr

Remove

script2.scr

Remove

Instances of Appliance

Set

Start



Screen Mockup: Configurator

Whirlpool Virtual Appliance Simulator Configurator

Load Appliance
Location:

Load Simul.
Simul. ID:

Instances of Appliance
1

Appliance
Whispering Vespene
Quantity: 1

The Whirlpool Experience

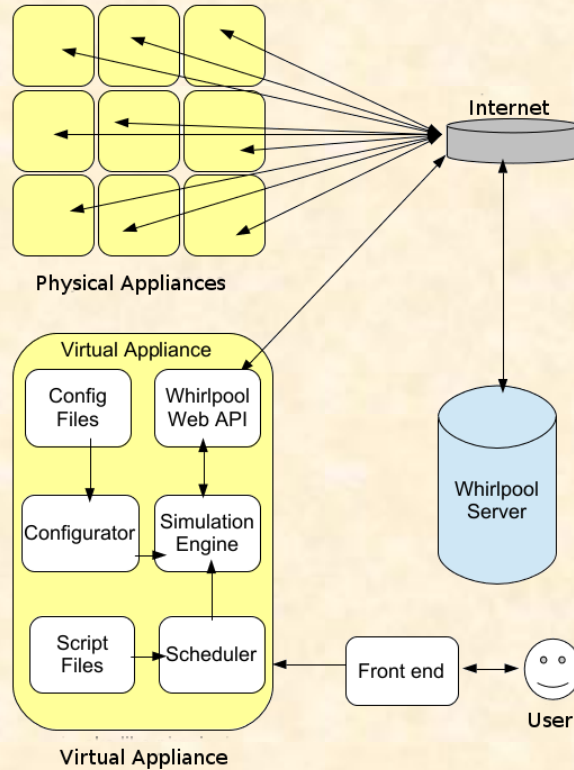
Search Whirlpool Product Page

UK

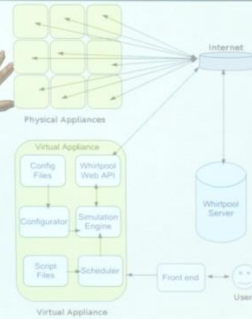
Team Whirlpool
Project Plan Presentation

Team Whirlpool Project Plan Presentation

Architecture Diagram



System Architecture



Team Whirlpool
Project Plan Presentation

Team Whirlpool Project Plan Presentation

Screen Mockup

Whirlpool Virtual Appliance Simulator Configurator

5 instances of appliance Washing Machine created.

5 instances of appliance Washing Machine running.

Pause Instance(s)

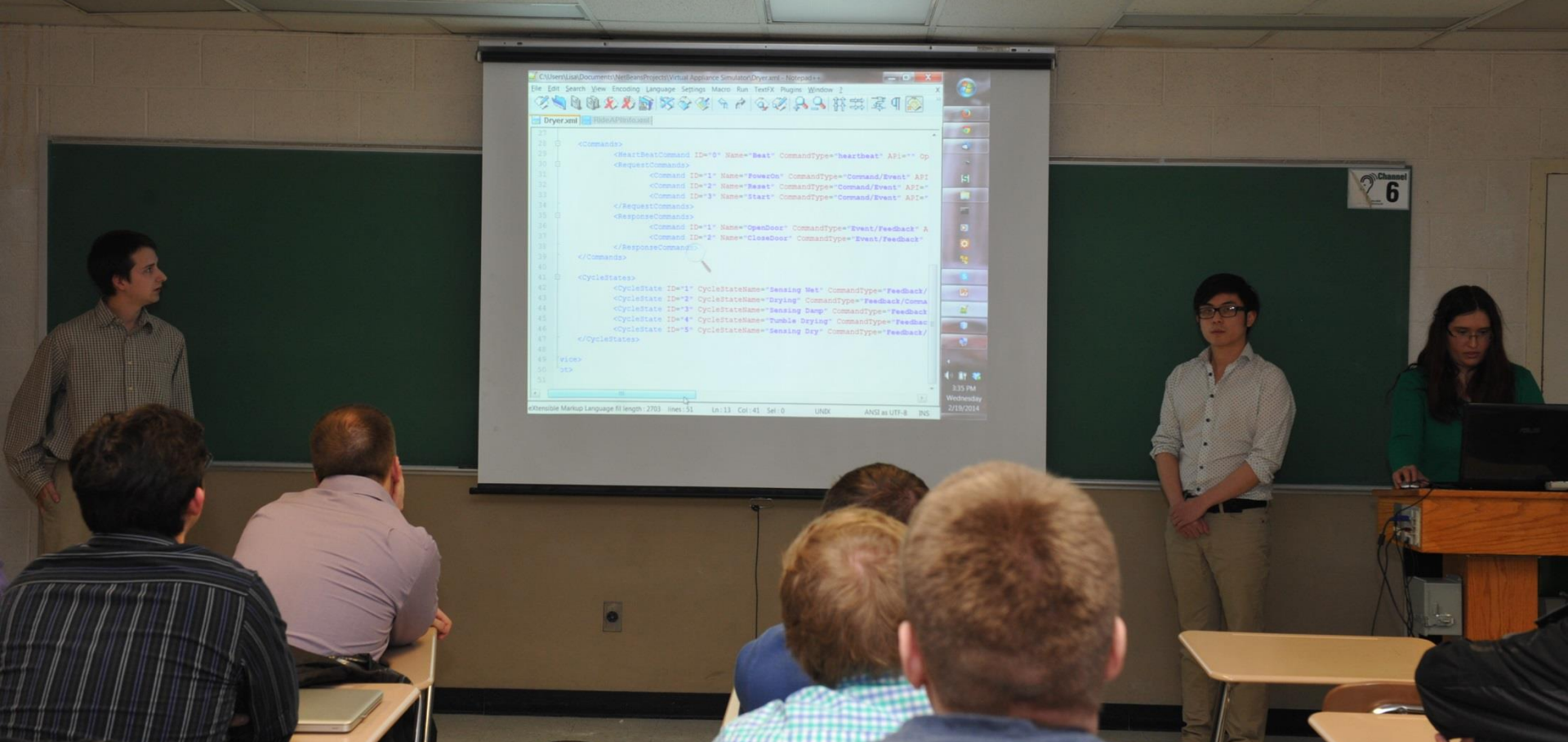
[Appliance Links](#)

Pause

Stop

Unpause Instance(s)





Team Whirlpool Alpha Presentation

Team Whirlpool Alpha Presentation

Example Script File

```
<root>
  <Device ID="1" Name="Washer" DisplayName="Washer">
    <ActionStates>
      <Actions Type="CycleState" ID="1" Name="Fill" Duration="6000" />
      <Actions Type="CycleState" ID="2" Name="Wash" Duration="2000" />
      <Actions Type="CycleState" ID="3" Name="Spin" Duration="3000" />
      <Actions Type="CycleState" ID="4" Name="Drain" Duration="4000" />
      <Actions Type="CycleState" ID="1" Name="Fill" Duration="6000" />
      <Actions Type="CycleState" ID="2" Name="Wash" Duration="2000" />
      <Actions Type="CycleState" ID="3" Name="Spin" Duration="3000" />
      <Actions Type="CycleState" ID="4" Name="Drain" Duration="4000" />
    </ActionStates>
  </Device>
</root>
```



Team Whirlpool

Alpha Presentation

Slide Description

Spin	Sun	Feb	16	12:08:24	EST	2014	0x0000ED000FE62210D2000FF39001E
Drain	Sun	Feb	16	12:08:25	EST	2014	0x0000ED000FE62210E2000FF39001E
Drain	Sun	Feb	16	12:08:26	EST	2014	0x0000ED000FE62210E2000FF39001E
Drain	Sun	Feb	16	12:08:27	EST	2014	0x0000ED000FE62210E2000FF39001E
Drain	Sun	Feb	16	12:08:28	EST	2014	0x0000ED000FE62210E2000FF39001E
Fill	Sun	Feb	16	12:08:29	EST	2014	0x0000ED000FE62210B2000FF39001E
Fill	Sun	Feb	16	12:08:30	EST	2014	0x0000ED000FE62210B2000FF39001E
Fill	Sun	Feb	16	12:08:31	EST	2014	0x0000ED000FE62210B2000FF39001E
Fill	Sun	Feb	16	12:08:32	EST	2014	0x0000ED000FE62210B2000FF39001E
Fill	Sun	Feb	16	12:08:33	EST	2014	0x0000ED000FE62210B2000FF39001E
Fill	Sun	Feb	16	12:08:34	EST	2014	0x0000ED000FE62210B2000FF39001E
Wash	Sun	Feb	16	12:08:35	EST	2014	0x0000ED000FE62210C2000FF39001E
Wash	Sun	Feb	16	12:08:36	EST	2014	0x0000ED000FE62210C2000FF39001E
Spin	Sun	Feb	16	12:08:37	EST	2014	0x0000ED000FE62210D2000FF39001E
Spin	Sun	Feb	16	12:08:38	EST	2014	0x0000ED000FE62210D2000FF39001E
Spin	Sun	Feb	16	12:08:39	EST	2014	0x0000ED000FE62210D2000FF39001E
Drain	Sun	Feb	16	12:08:40	EST	2014	0x0000ED000FE62210E2000FF39001E
Drain	Sun	Feb	16	12:08:41	EST	2014	0x0000ED000FE62210E2000FF39001E
Drain	Sun	Feb	16	12:08:42	EST	2014	0x0000ED000FE62210E2000FF39001E
Drain	Sun	Feb	16	12:08:43	EST	2014	0x0000ED000FE62210E2000FF39001E

Cycle Name

Time Stamp

Data packet (hexadecimal)

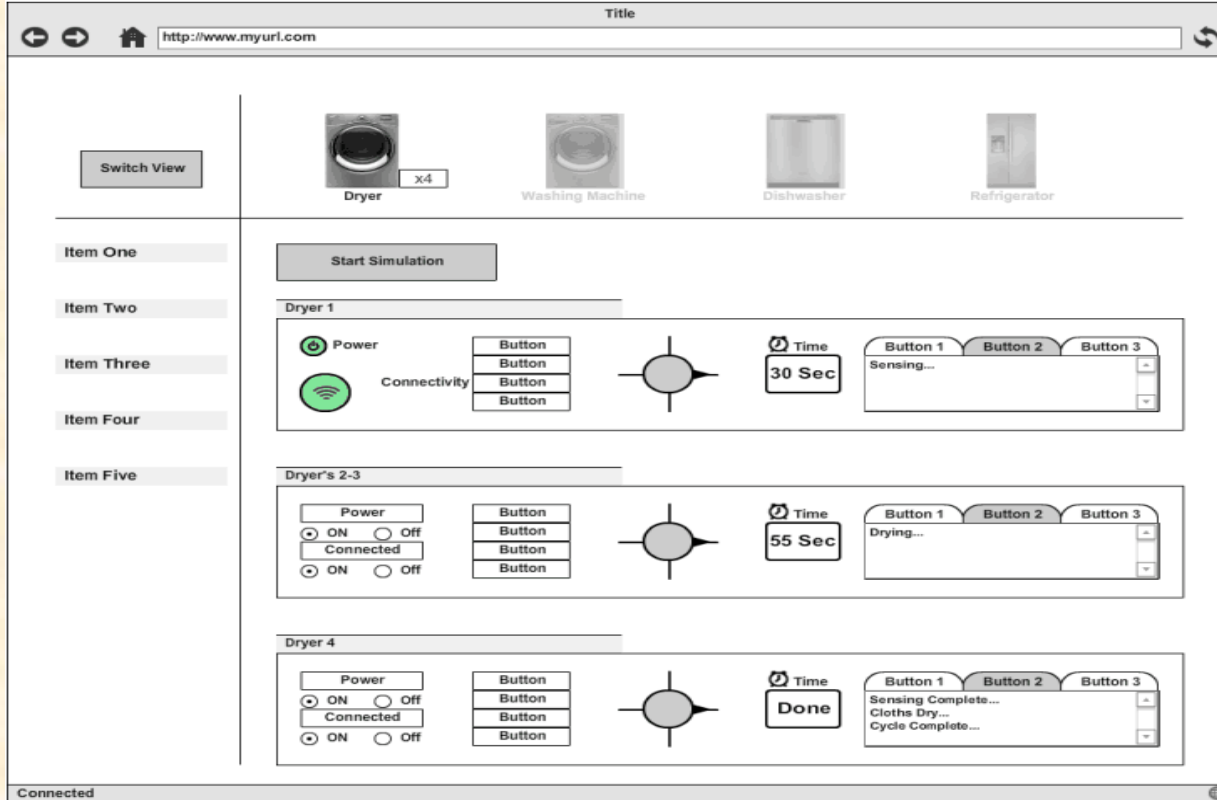




Team Whirlpool Alpha Presentation

Team Whirlpool Alpha Presentation

Front End Wire Frames

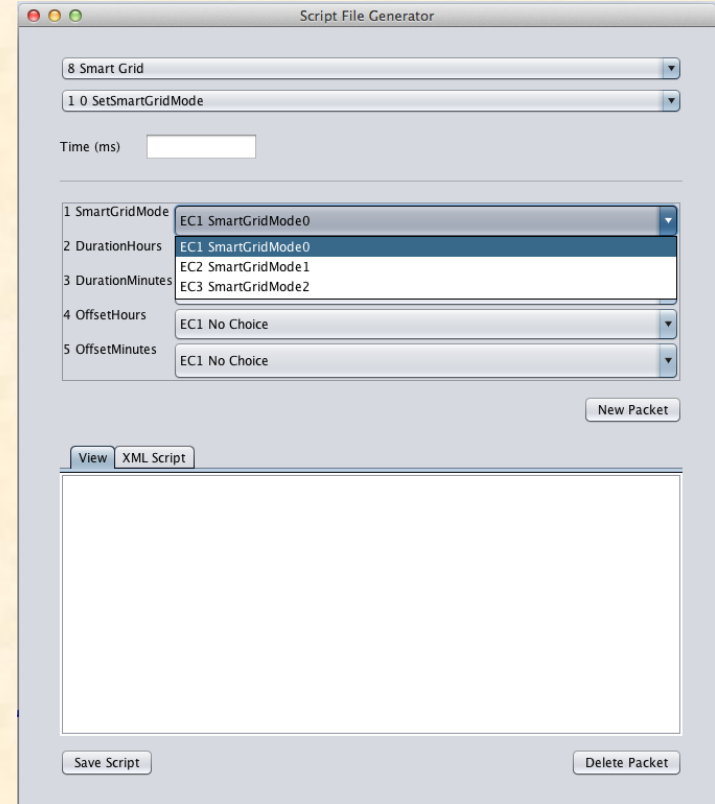




Team Whirlpool Beta Presentation

Team Whirlpool Beta Presentation

Script File Generator



Team Whirlpool Beta Presentation

Configuring a Simulation

Virtual Appliance System

Washing Machine

Information Select

☒

Dryer

Information Select

☒

Refrigerator

Information Select

☐

Dish Washer

Information Select

☐

Add Appliance (Filetype must be ".XML")

Configuration Files API Files

Filename: Choose File no file selected Filename: Choose File no file selected Upload

[Add another appliance](#)

Submit



Virtual Appliance System

Washing Machine

Scripts Units per script

Choose File script3.xml 1

Choose File script2.xml 1

[Add another Script](#) Upload Successful Upload

Dryer

Scripts Units per script

Choose File no file selected 1

[Add another Script](#) no file selected Upload

Smart Appliance Identification Upload

SAID List # of SAID's Needed

Choose File no file selected 3

Submit




Team Whirlpool Beta Presentation

Team Whirlpool Beta Presentation

Running a Simulation

Virtual Appliance System

Switch View




Subitem two

Subitem three


Subitem four

Subitem five


Subitem six




Washing Machine
x2



Dryer
x0



Refrigerator
x0



Dish Washer
x0

Start Simulation

Washing Machine - Washing Machine x 1

Receiving...
0000ED0007E60000000000
0000ED0007E60000000000
0000ED0003E600
0000ED0003E600
0000ED0003E600
0000ED0003E600
0000ED0003E600
0000ED0003E600

Washing Machine - Washing Machine x 1

Receiving...
0000ED0005E6000000
0000ED0005E6000000
<< Simulation has ended >>





Team Whirlpool
Design Day

The Capstone Experience

Dr. Wayne Dyksen

Department of Computer Science and Engineering
Michigan State University
Spring 2014



From Students...
...to Professionals



Capstone Lab
View of Spartan Stadium



Capstone Lab
View of Spartan Stadium sans Smokestack



Capstone Lab
Winter View of Spartan Stadium

MICHIGAN STATE
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The Capstone Experience

Design Day Award Winners

April 25, 2014



*From Students...
...to Professionals*



Auto-Owners Exhibition Award

Team Urban Science, Spring 2014

Dealer Improvement Recommender System

Ty Jones, Saranac, Collin Myers, Ben Mastay

Scott Lake and Bob Buchanan of Auto-Owners Insurance

MICHIGAN STATE
UNIVERSITY

COLLEGE OF ENGINEERING

innovation
excellence
leadership
vision
globalization
teamwork

COLLEGE OF
ENGINEERING

General Motors Praxis Award

Team Boeing, Spring 2014

Flight Simulator Suite

Mike Marinetti, Stephi Stumpos, Chris Ek

Presented by Fred Killeen and Christian Stier of General Motors

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ENGINEERING

MICHIGAN STATE
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innovation
excellence
leadership
vision
globalization
teamwork

COLLEGE OF
ENGINEERING

TechSmith Screencast Award

Team GM, Spring 2014

<http://www.capstone.cse.msu.edu/2014-01/projects/gm/>

Duncan Young, Sam Moore, Matt Wein
Presented by Dean Craven of TechSmith



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COLLEGE OF ENGINEERING

Urban Science Sigma Award

Team Quicken Loans, Spring 2014

Mobile RFID Inventory Tracking System

Jacob Riesser, Josh Rasor, K.P. Patel

Presented by Mike DeRiso, Steven Kansa and Kathy Krauskopf of Urban Science

The Capstone Experience

Design Day Award Winners

December 6, 2013



*From Students...
...to Professionals*



All-Hands
Design Day, December 6, 2013



Auto-Owners Exhibition Award

Team MSUFCU, Fall 2013

Smart Start Savers

Allen Koppman, Mairin Chesney, Adam Proschek, Phil Getzen

Bob Buchanan and Scott Lake of Auto-Owners Insurance

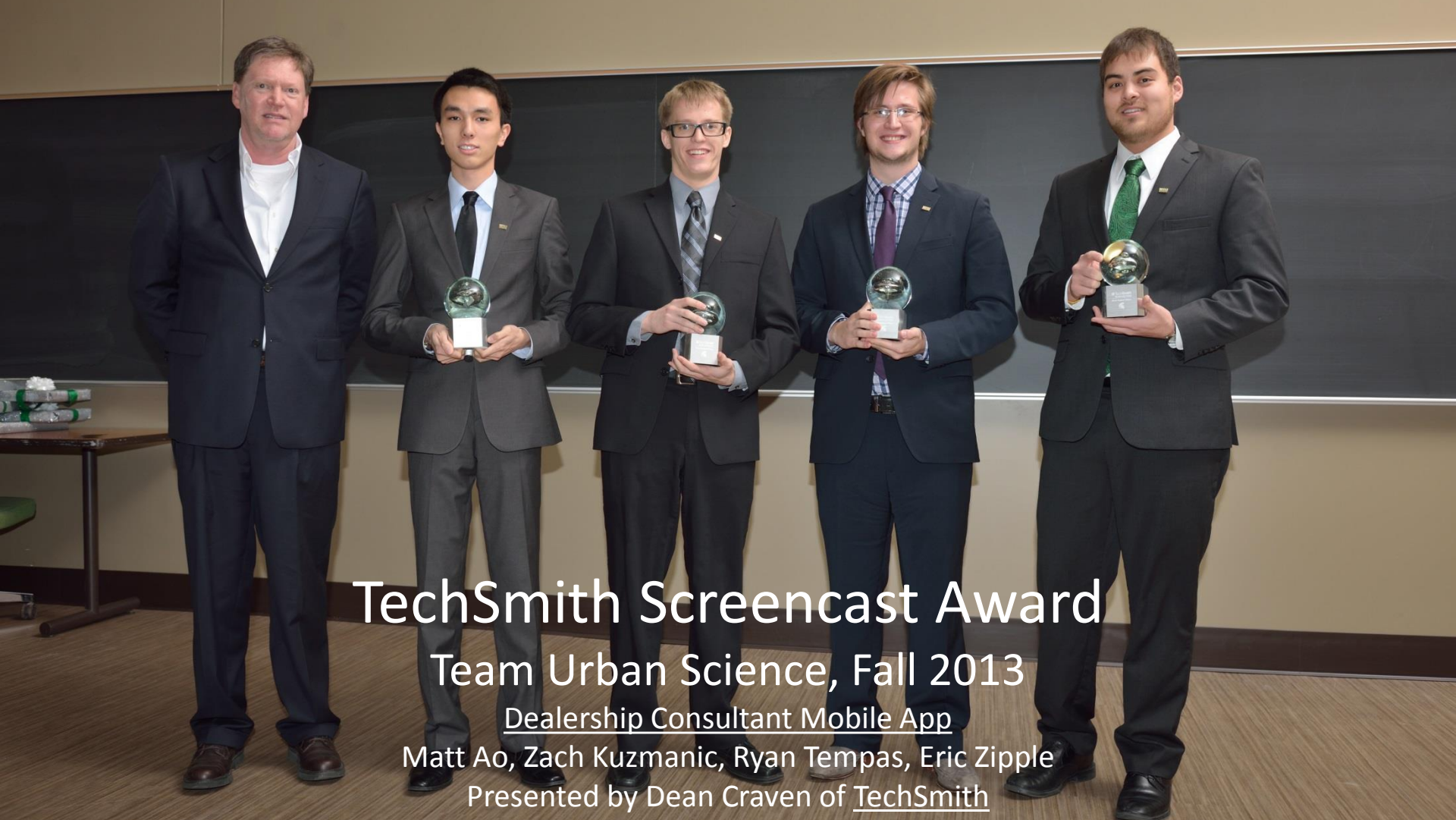


General Motors Praxis Award

Team IBM, Fall 2013

Information Technology Assessment Toolkit

Connor Gilbert, Adam Koshorek, Eunbong Yang, Alex Hanlon
Presented by Fred Killeen and Christian Stier of General Motors



TechSmith Screencast Award

Team Urban Science, Fall 2013

Dealership Consultant Mobile App

Matt Ao, Zach Kuzmanic, Ryan Tempas, Eric Zipple

Presented by Dean Craven of TechSmith



Urban Science Sigma Award

Team Spectrum Health, Fall 2013

Talent Connections Careers Mobile Site

Hayden Boroski, Max Sweet, Nate Langolf, Chris Cheaney

Presented by Mike DeRiso and Matt Bejin of Urban Science

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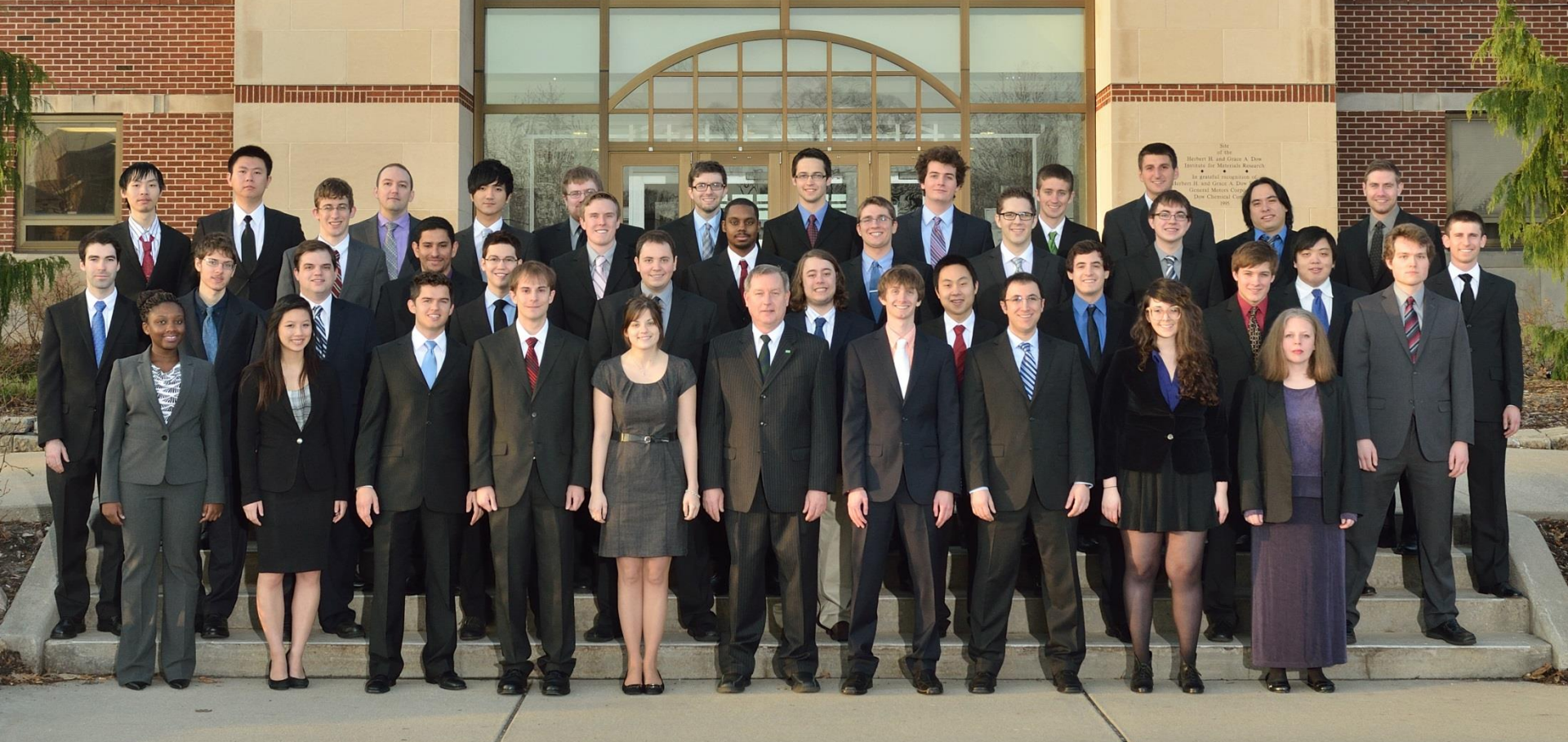
The Capstone Experience

Design Day Award Winners

April 26, 2013



From Students...
...to Professionals



All-Hands
Design Day, April 26, 2013



Auto-Owners Exhibition Award

Team GM, Spring 2014

My Conference Room

Tom Smale, Matt Tarnowsky, Jeff Girbach, Daniel Bachelis

Presented by Sue Snodgrass, Erin McLaughlin, Bob Buchanan and Scott Lake of Auto-Owners Insurance



Chrysler Praxis Award

Team Mozilla, Spring 2014

Multi-Touch Gestures for Firefox

Bill de Araujo, Ray Heldt, Brandon Waterloo

Presented by Karen Wrobel of Chrysler



TechSmith Screencast Award

Team Whirlpool, Spring 2014

Guided Cooking and Recipe App

Zach Jones, Nick Kecskes, Duncan Finney, Josh Marti

Presented by Dean Craven of TechSmith



Urban Science Sigma Award

Team TechSmith, Spring 2014

American Sign Language Learning App

Malcolm Doering, Cadillac, Michelle Truong, Adam Crane

Presented by Greg Davidson of Urban Science

The Capstone Experience

Design Day Award Winners

December 7, 2012



From Students...
...to Professionals



All-Hands
Design Day, December 7, 2012



Auto-Owners Exhibition Award

Team Mozilla, Fall 2012

Reader Mode for Desktop Firefox

Kevin Woodward, Michael Anderson, Matt Vorce, Chelsea Carr
Presented by Bob Buchanan and Scott Lake of Auto-Owners Insurance



Chrysler Praxis Award

Team Boeing, Fall 2012

Design, Fly and Compete Sim Suite V2.0

Jake Newsted, Kevin Lining, Dan Sosnowski, Max Ellison

Presented by Karen Wrobel of Chrysler



TechSmith Screencast Award

Team Ford, Fall 2012

MyKey Report Card

Alex Conklin, Kevin Klemmer, Andrew Crouch, Brandon D'Orazio

Presented by Dean Craven of TechSmith



Urban Science Sigma Award

Team Spectrum Health, Fall 2012

Medication Shortages Dashboard

Ramata Koumare, Aaron Cosentino, Grayson Wright, Eric Dostie
Presented by Greg Davidson and Matt Bejin of Urban Science

The Capstone Experience

Dr. Wayne Dyksen

Department of Computer Science and Engineering
Michigan State University
Spring 2014



*From Students...
...to Professionals*



Auto-Owners Insurance

Life Home Car Business

The "No Problem" People®







Google™

meijer[®]



F E D E R A L C R E D I T U N I O N

Building Dreams *Together*

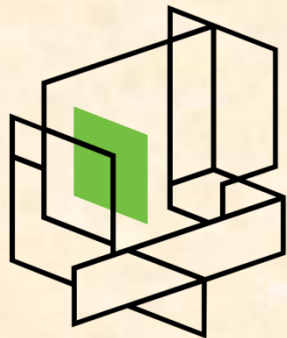
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Engineered to **AmazeSM**

SPECTRUM HEALTH





TechSmith®



URBAN SCIENCE™



Whirlpool

CORPORATION