The Capstone Experience

Dr. Wayne Dyksen
Department of Computer Science and Engineering
Michigan State University
Fall 2014
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, 2400 Engineering Building
• Presentations By
  ▪ Professor
  ▪ Teams
    o Status Reports
    o Formal Presentations
      ➢ Project Plan
      ➢ Alpha
      ➢ Beta
    o Project Videos
  ▪ Guest Speakers
## All-Hands Meetings

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>08/27</td>
<td>Capstone Overview</td>
</tr>
<tr>
<td>09/01</td>
<td>(Labor Day, No Meeting)</td>
</tr>
<tr>
<td>09/03</td>
<td>Project Plan</td>
</tr>
<tr>
<td>09/08</td>
<td>Risks and Prototypes</td>
</tr>
<tr>
<td>09/10</td>
<td>Team Status Report Presentations</td>
</tr>
<tr>
<td>09/15</td>
<td>Team Project Plan Presentations</td>
</tr>
<tr>
<td>09/17</td>
<td>Team Project Plan Presentations</td>
</tr>
<tr>
<td>09/22</td>
<td>Team Project Plan Presentations</td>
</tr>
<tr>
<td>09/24</td>
<td>Team Project Plan Presentations</td>
</tr>
<tr>
<td>09/29</td>
<td>Resume Writing and Interviewing</td>
</tr>
<tr>
<td>10/01</td>
<td>Career Gallery</td>
</tr>
<tr>
<td>10/06</td>
<td>Schedule and Teamwork</td>
</tr>
<tr>
<td>10/08</td>
<td>Creating and Giving Presentations</td>
</tr>
<tr>
<td>10/13</td>
<td>Team Alpha Presentations</td>
</tr>
<tr>
<td>10/15</td>
<td>Team Alpha Presentations</td>
</tr>
<tr>
<td>10/20</td>
<td>Team Alpha Presentations</td>
</tr>
<tr>
<td>10/22</td>
<td>Team Alpha Presentations</td>
</tr>
<tr>
<td>10/27</td>
<td>Design Day and the Project Videos</td>
</tr>
<tr>
<td>10/29</td>
<td>Camtasia Demo</td>
</tr>
<tr>
<td>11/03</td>
<td>Team Beta Presentations</td>
</tr>
<tr>
<td>11/05</td>
<td>Team Beta Presentations</td>
</tr>
<tr>
<td>11/10</td>
<td>Team Beta Presentations</td>
</tr>
<tr>
<td>11/12</td>
<td>Team Beta Presentations</td>
</tr>
<tr>
<td>11/17</td>
<td>Team Status Reports</td>
</tr>
<tr>
<td>11/19</td>
<td>Team Status Reports</td>
</tr>
<tr>
<td>11/24</td>
<td>Team Status Reports</td>
</tr>
<tr>
<td>11/26</td>
<td>Team Status Reports</td>
</tr>
<tr>
<td>12/01</td>
<td>Project Videos</td>
</tr>
<tr>
<td>12/03</td>
<td>Project Videos and All Deliverables</td>
</tr>
<tr>
<td>12/04</td>
<td>Design Day Setup</td>
</tr>
<tr>
<td>12/05</td>
<td>Design Day</td>
</tr>
<tr>
<td>12/09</td>
<td>Project Videos</td>
</tr>
</tbody>
</table>
The Capstone Experience

Team Amazon

Department of Computer Science and Engineering
Michigan State University
Fall 2014
Team Amazon
Project Overview

Twitter Trending Effects on Amazon Sellers

• Functionalities
  ▪ Alert Amazon Sellers Re
    ○ Brands Trending
    ○ Consumers’ Sentiments
  ▪ Based on Twitter Tweets

• Features
  ▪ Consume Real-Time Twitter Stream
  ▪ Provide Sentiment Analysis Model
  ▪ Utilize Amazon Web Services
    ○ Endpoint Twitter Consumer Service
    ○ Workers to Analyze Tweets via Kinesis
    ○ Store Tweet Information via Redshift
  ▪ Provide Graphical Web and Mobile Dashboards

• Technologies
  ▪ Twitter APIs
  ▪ Amazon Web Services (AWS)
    ○ Kinesis Client Library
    ○ Redshift Cloud Data Storage
  ▪ Web and Mobile User Interfaces

Seattle, Washington
Team Amazon
Paul Stanos, Caitlin McDonald, Michael Chouinard, Erin Hoffman, Justin Vrooman
Team Amazon
Project Plan Presentation
Screen Mockup
Team Amazon
Project Plan Presentation
Team Amazon
Project Plan Presentation

Architecture Diagram

- Twitter Streaming API
- Amazon Web Services (AWS)
  - Amazon Kinesis
  - Amazon Redshift
- Web Application
  - Ruby on Rails
  - Chart.js Plugin
  - Database Interface
  - Data
- Java Application
  - Kinesis Client Library
  - Load-Balancing
  - Fault-tolerance
  - Tweets (records)
  - Kinesis Client Library Interface
  - Tweets (records)
  - Tweet Analysis
  - Brand/Product Identification
  - Sentiment Analysis
  - Purchase Likeliness Scoring
- Database Connection
  - JDBC/ODBC driver
  - SQL Client
Team Amazon
Project Plan Presentation
Team Amazon
Project Plan Presentation

Screen Mockups
Team Amazon
Alpha Presentation

Sentiment Scoring

Enter a Tweet: my new #iphone is very awesome, I can't believe how cool it is!!!
Team Amazon
Alpha Presentation

Twitter Tweets Statistics

Database Statistics

<table>
<thead>
<tr>
<th>Amazon</th>
<th>Apple</th>
<th>Google</th>
<th>Microsoft</th>
</tr>
</thead>
</table>

Tweets about Google: 372405
Total tweets: 1662427
Percentage of total tweets: 22%

Google tweet rate: 0.863636 tweets per second

Happening Now
Google Glass is becoming fashionable technology according to Diane Von Furstenberg http://t.co/kxH7FyAnJV
System Architecture

Tweets about Amazon: 211656
Total tweets: 1700386
Percentage of total tweets: 12%
Amazon tweet rate: 0.880524 tweets per second

Happening Now
#4: Mummy on the Orient Express (HD) Mummy on the Orient Express (HD) Amazon Instant Video ~ Paul Wimshurst... http://t.co/uQPWAvLQ
“Just bought my new iPhone 6 Plus. Already in love! #Apple #fangirl”
- @applelove
Amazon Redshift
- Disk usage: 2.20% used
- Total tweets: 11615549

Amazon Kinesis
- Put rate: 38102.82 bytes / second
- Get rate: 34977.83 bytes / second

Active Shards
- shardId-00000000015 Usage: 0.08
Team Amazon

Beta Presentation

Web App
Team Amazon
Beta Presentation

Mobile App

The Capstone Experience
The Capstone Experience

Team Auto-Owners

Department of Computer Science and Engineering
Michigan State University
Fall 2014
Auto-Owners Insurance
Life Home Car Business
The "No Problem" People®
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.
Team Auto-Owners
Project Overview

Navigation Assistant and Accident History App

• Functionalities
  ▪ Provide Safest Navigation Routing for Drivers
  ▪ Analyze Driving Risk Patterns to Calculate Insurance Rates
  ▪ Based on Historical Accident Data

• Features
  ▪ Utilize Delays Based on Prior Driving Routes and Times
  ▪ Send Text or Email Notifications for Alternate Routes
  ▪ Synchronize with Owner’s Car via Bluetooth
  ▪ Provide Web App for Auto-Owners Administrators

• Technologies
  ▪ Apple (iOS) iPhone and iPad
  ▪ Objective-C
  ▪ Google Android
  ▪ Java
Team Auto-Owners
Isaac Vogler, Zach Ray, Tim Sloncz, Megan Frankel, Austin Huynh
Team Auto-Owners
Project Plan Presentation

Screen Mockups
Team Auto-Owners Project Plan Presentation
Team Auto-Owners
Project Plan Presentation  Architecture Diagram

Windows Server 8

SQL Server 2012

Web Server

Web App (Spring/Java)

Web Service (C#/.NET)

Michigan Accident DB

iOS App (Obj-C)
Team Auto-Owners
Project Plan Presentation

Screen Mockup

[Image of Auto-Owners Insurance website with a chart showing Safe Routes Taken from July 2007 to January 2010.]
Team Auto-Owners
Alpha Presentation

Android App

The Capstone Experience
Team Auto-Owners
Alpha Presentation

iPhone App
Team Auto-Owners
Alpha Presentation

Auto-Owners Insurance
Welcome to...

New Features
Profile
Acceleration & Braking

- Click the button to get your coordinates:
- View your profile details:
- View your acceleration & braking statistics:

Image of a map with marked locations.
Team Auto-Owners Beta Presentation
Team Auto-Owners
Beta Presentation

Android App
Team Auto-Owners
Beta Presentation

iPhone App
Team Auto-Owners
Beta Presentation

Web App
The Capstone Experience

Team Bosch

Department of Computer Science and Engineering
Michigan State University
Fall 2014
Bosch World Experience 2014
Around the world in 16 days

Six destinations, three continents, one unforgettable adventure. From the famous Tower Bridge in London to automated driving in San Francisco – Bosch technology is in places you may never have thought! Witness the diversity of Bosch’s innovative and beneficial solutions around the world with this exclusive chance to look behind the scenes!

Join the experience

Mobility At Home Industry and Trade Healthcare
Team Bosch
Project Overview

Mobile App for XCP Measurement and Calibration

• Functionalities
  ▪ Enable Measurement and Calibration
  ▪ Of Automobile Electronic Stability Control ECU
  ▪ Via Android App
  ▪ Using Vehicle Application Mobile Platform (VAMP)

• Features
  ▪ Support Android Tablets
  ▪ Communicate Wirelessly Via Bluetooth
  ▪ Interface with BlueCAN Dongle

• Technologies
  ▪ Google Android App Development
  ▪ Java
  ▪ Controller Area Network (CAN)
  ▪ Universal Measurement and Calibration Protocol (XCP)
  ▪ Vehicle Application Mobile Platform (VAMP)
  ▪ Bluetooth
Team Bosch
Project Plan Presentation

Screen Mockup
Team Bosch
Project Plan Presentation
Team Bosch

Project Plan Presentation  Architecture Diagram

ESC ECU

BlueCAN Dongle

CAN-H

CAN-L

Tablet

VAMP Application SW

Capstone App SW
Team Bosch
Project Plan Presentation
Team Bosch

Project Plan Presentation

Screen Mockups
Team Bosch
Alpha Presentation

Send XCP CONNECT
Team Bosch
Alpha Presentation

Send XCP GET_STATUS
Team Bosch
Beta Presentation
Updating Value
Team Bosch Design Day
The Capstone Experience

Team Ford

Department of Computer Science and Engineering
Michigan State University
Fall 2014
MPG savvy and tech smart.

2014 ESCAPE
2015 FUSION + HYBRID
2014 FOCUS
2015 FIESTA
Vehicle Audit Analytics

• Functionalities
  ▪ Enable Ford Designers
  ▪ To Benchmark Ford and Lincoln Products
  ▪ Against Global Competitors
  ▪ Via Mobile Web App

• Features
  ▪ Target Tablet-Size Devices
  ▪ Maintain Audit Forms Questions and Responses
  ▪ Use Device Camera and Microphone
  ▪ Work With and Without Internet Connection
  ▪ Export Data and Reports
  ▪ Encrypt Data During Storage and Transport

• Technologies
  ▪ HTML5, CSS, JavaScript
  ▪ AJAX (Asynchronous JavaScript and XML)
  ▪ J2EE (Java 2 Platform Enterprise Edition)
  ▪ Microsoft SQL Server 2012

Dearborn, Michigan
Team Ford
Aaron Torres, Peng Zhang, Zachary Madejek, Jake Prickett, Tyler Olsen
Team Ford
Project Plan Presentation
Team Ford
Project Plan Presentation  Architecture Diagram

Vehicle Audit Analytics
Architecture

Server architecture designed with current Ford infrastructure in mind

HTTPS used for encrypted transport

Server-Side Architecture
- Apache PDFBox
- CSV Exporter
- Tomcat (running LWE)
- MS SQL Server 2012
- Structured Query Language (SQL)

Internet

Client-Side Web App
- Front End UI
  - HTML5 Tablet Interface
  - Bootstrap CSS
  - Input Forms
- JSON text objects
- Form Data Cache
  - SJCL
  - 128-bit AES
  - localStorage (html5)

The client-side application is capable of running both with and without an internet connection. All form data saved locally for submission at a later time.
System Architecture
# Team Ford

## Project Plan Presentation

### Screen Mockup

![Screen Mockup](image)

### Vehicle Survey

<table>
<thead>
<tr>
<th>Feature</th>
<th>Rating</th>
<th>Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speedometer</td>
<td>9</td>
<td>Choose File</td>
</tr>
<tr>
<td>Clock</td>
<td>4</td>
<td>Choose File</td>
</tr>
<tr>
<td>Radio</td>
<td>4</td>
<td>Choose File</td>
</tr>
<tr>
<td>Dashboard</td>
<td>6</td>
<td>Choose File</td>
</tr>
<tr>
<td>Steering Wheel</td>
<td>8</td>
<td>Choose File</td>
</tr>
</tbody>
</table>

| Update       |
Team Ford
Alpha Presentation Rating Dropdown & Front Survey
Team Ford
Alpha Presentation

Adding a Photo
Team Ford
Beta Presentation

View Media
Team Ford
Beta Presentation

Reports Tab

Vehicle Audit Analytics

Vehicle Make

Vehicle Model

Vehicle Series

Location

Search

Reports for Selection:

- 2015 Ford Mustang
- Username: test | 2000 Jeep Grand Cherokee
- 2015 Ford Mustang
- 2015 Ford Mustang
- Username: test | 2014 Jeep Grand Cherokee
- Username: test | 2014 Ford Mustang
- Username: o | 2002 Ford Mustang
- Username: o | 2002 Ford Mustang
- 2015 Ford Mustang

Create Report: Click Here for Excel File.
The Capstone Experience

Team GM

Department of Computer Science and Engineering
Michigan State University
Fall 2014
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

Fixed
Productivity Toolbar (aka Fast App Launcher)

- Functionalities
  - Organize and Launch Commonly Used Apps
  - Via
    - Web Browser
    - Windows Desktop App

- Features
  - Provide Individualized App Organization
    - Add and Delete
    - Configuration
    - Layout
  - Support Internet Explorer, Chrome and Firefox
  - Handle Apps Pushed by Corporate
  - Interface with Library of Available Apps
  - Base on User’s Authenticated Identity

- Technologies
  - CSS, HTML, JavaScript
  - Internet Explorer, Chrome and Firefox
  - Microsoft .NET, Visual Studio

Team GM
Project Overview

Detroit, Michigan
Team GM
Ruoqing Chen, David Barrie, Kevin Piotrowski, Kan Zhou, Justin Rucinski
Team GM
Project Plan Presentation

Screen Mockup

Exclamation point indicates the application is not installed on the device.

Add an application from the library.

Sort by:
- Admin Privileges
- Logout
- Recently Used
- Most Used
- Alphabetical

Add application to library.

View store page
Remove
Team GM
Project Plan Presentation
Team GM
Project Plan Presentation  Architecture Diagram

Diagram:
- Personal computer
- Web browser (firefox, IE, chrome, etc.)
- Launch apps through web browser or from windows local
- Application launcher Web version
- Application launcher Windows local version
- Database server
- Link launcher and GM account using database server
- GM account management system
- Manage launcher settings with GM account
System Architecture

- Personal computer
- Web browser (Prefers: IE, Chrome)
- Application launcher web service

- Windows OS
- Application launcher Windows local version

- Database server
- Manage launcher settings with GM account
- OID account management system

- Link launcher and GM account using database server

Team GM
Project Plan Presentation
Team GM
Project Plan Presentation

Screen Mockup

Application: application name
Version: version #
Description: description...

Download
Team GM
Alpha Presentation
Team GM

Alpha Presentation

Desktop User App Panel

USER'S APPLICATION PANEL

- Link Sink
- myTravel
- Socrates
- ERMS
- Books 24x7
- CAP
- getAbstract
- IT Support
- GM Overdrive
- e-Approval
- Webmail
- Peoplefinder

Applications
GM App Store
Settings
Login/Logout
Team GM
Alpha Presentation

Desktop Add App Panel

ADD APPLICATION PANEL

- e-Approval
- ERMS
- getAbstract
- IT Support
- Link Sink
- myTravel
- GM Overdrive
- Peoplefinder
- Webmail

Office 1
Social 2
Education 3
Learning 4
Team GM
Alpha Presentation
Team GM
Alpha Presentation

Web Launcher
Team GM
Beta Presentation
Team GM
Beta Presentation
Web Launcher
Team GM
Beta Presentation

Desktop Launcher
The Capstone Experience

Team Meijer

Department of Computer Science and Engineering
Michigan State University
Fall 2014
Mobile Location-Based Product Promotion

- **Functionalities**
  - Make Meijer Customer Aware of Sale Items
  - Based On Customer’s
    - Location in Store
    - Shopping Preferences
  - Via Customer’s Mobile Device

- **Features**
  - Support
    - Weekly Sale Items
    - Vendor Promotional Dollars
  - Generate and Present Analytics
  - Integrate with Customer’s mPerks Account
  - Provide System Administrator Interface

- **Technologies**
  - Xamarin or PhoneGap
  - iBeacon
  - Crashlytics
  - Mobile Development (Apple iOS or Google Android)
  - Microsoft .NET, Azure Mobile Service
  - Meijer Web Services
Team Meijer
Dan Leclerc, Jason Bull, Xavier Durand-Hollis, Kevin Pauly
Team Meijer
Project Plan Presentation

Screen Mockup

iBeacon

App detects user has entered a region where there is a product promotion

User receives push message about a product in their region of the store.

Slide to view Ad

User can view advertisement and add to shopping list.

Flurry

Azure

View is tracked and recorded

Add to list

Track add to shopping list.
The Capstone Experience

Team Meijer
Project Plan Presentation

Architecture Diagram

Systems Architecture
TEAM MEIJER - FALL 2014

- Flurry
- Location Tracking
- iBeacon
- LogApp Events
- API Calls
- Data Storage & Access
- Admin Web Interface
- Customer Analytics
- iBeacon Management

Mobile App

Windows Azure
.NET MVC 4.0

SQL Server
Database

Crash Reporting
Debugging & Crash Analysis

Crittercism
Team Meijer
Alpha Presentation  Product Promotion Notifications
Team Meijer
Alpha Presentation
Promotion Details and Settings

**Angry Orchard Hard Cider**
2 for $18.38 $25.98
Valid thru Oct 11th

Angry Orchard is a hard cider company owned by Boston Beer Company. The ciders are made at Boston Beer’s Cincinnati facility, with apples brought in from Europe. In its first year, the cider was only available in New England, Colorado, Maryland, and New York. In 2012 however, it was introduced nationwide and has done quite well since then, quickly becoming the #1 cider in America.

**Settings**

- **Blacklist Beacons**
- **Scan Interval**
  - 1
- **Delete Mem Interval**
  - 4
- **Current Server Address**: http://teammeijer201... /api/event
- **Allow Beacon Ranging**
  - Yes
  - No
Team Meijer
Alpha Presentation
Team Meijer
Alpha Presentation

Beacon Manager
Lucky Charms
$4.50
Aisle 3
scanned today at 2:27 PM

Tha Doggfather
$9.99
Aisle 13
scanned today at 2:27 PM

Lucky Charms is a cereal brand produced by the General Mills food company of Golden Valley, Minnesota, United States. It first appeared in stores in 1964. [1] The cereal consists of two main components: toasted oat pieces and multi-colored marshmallow shapes, the latter making up over 25 percent of the cereal's volume. [2] The label features a leprechaun mascot, Lucky, animated in
Team Meijer
Beta Presentation

Shopping Cart
Team Meijer
Beta Presentation

Beacon Manager
The Capstone Experience

Team MSUFCU

Department of Computer Science and Engineering
Michigan State University
Fall 2014
Refer A Friend Website and Mobile App

- **Functionalities**
  - Enable MSUFCU Members to Refer
    - Family and Friends
    - To Become MSUFCU Members
  - Via Website and Mobile App

- **Features**
  - Provide Incentives To
    - Referring Member
    - New Member
  - Gear Especially to MSU Students
  - Include Social Media Sharing Function
    - Facebook
    - Twitter
  - Reflect MSUFCU Look-and-Feel and Branding

- **Technologies**
  - CSS, HTML, PHP, JavaScript
  - Apple iPhone and iPad (iOS) Development
  - Google Android Development
  - Microsoft SQL Server
Team MSUFCU
Chris Benoit, Sahil Tandon, Josh Shadik, Yaxing Li
You earn $50. Your friend earns $50.

Refer a friend to create an account at MSUFCU. For any friend that creates an account after being referred, both you and your friend earn $50.

Referrals Completed: 3  
Amount Earned: $150

Share with one of these options:

Facebook  
Twitter  
Email
Team MSUFCU
Project Plan Presentation
Team MSUFCU
Project Plan Presentation

Architecture Diagram
System Architecture
Team MSUFCU
Project Plan Presentation

Screen Mockups

Earn $50 with John Smith.
Sign up for a bank account at MSUFCU and both you and John Smith earn $50.

Open a bank account at MSUFCU and we each $50! Check it out:
http://refermsufcu.org/anxqQkE6uY29f
Team MSUFCU
Alpha Presentation
Information for User John Smith:

Your Refer Code: #ref000004

You have referred: 1 person

Click the buttons below to choose how you want to share this code with friends and family.
Team MSUFCU
Alpha Presentation

Share Dialogs
Information For User 1:

Your Refer Code:

#ref000006

You have referred:

1 person

Click the buttons below to choose how you want to share this code with friends and family.
Team MSUFCU
Beta Presentation

Landing Page

Referral Code: refA4F8K2
Completed Referrals: 2
Total Reward Earned: $200

Share your referral with friends and family:
Facebook
Twitter
Email
Team MSUFCU
Beta Presentation

Mobile App

Refer your friends to MSUFCU and when they open an account, you each get $100

Login with your MSUFCU credentials to get started:

Username
Password
Sign In

Refer Code
ref000004
People Referred
3
Amount Earned
$300

Click the buttons below to choose how you want to share this code with friends and family.
The Capstone Experience

Team Quicken Loans

Department of Computer Science and Engineering
Michigan State University
Fall 2014
Quicken Loans
Engineered to Amaze℠
You Could Close Your Loan IN 30 DAYS!

Get started, and get saving

Refinance  Buy a Home
Enterprise Architecture Visualizer

• Functionalities
  ▪ Model and Display Visual Dependency Map
  ▪ Of Quicken Loans’ Enterprise Architecture
  ▪ Including All Major Applications

• Features
  ▪ Provide
    □ Web-Based App
    □ Drag-and-Drop Capabilities for All Assets
  ▪ Include
    □ Server Names
    □ Database Names
    □ Teams that Support Applications
  ▪ Support Future States

• Technologies
  ▪ CSS, HTML, JavaScript
  ▪ Microsoft Internet Information Services (IIS)
  ▪ Microsoft C#
  ▪ SQL Server 2005 and Higher
Team Quicken Loans
Ari Polavarapu, Jeff Johnson, Minh Pham, Garret Smith, Steve Choo
Team Quicken Loans
Project Plan Presentation

Screen Mockup
Team Quicken Loans
Project Plan Presentation

Architecture Diagram

VIEW (CSS, HTML, JavaScript, jQuery)

BUSINESS LAYER (C#)

DATA ACCESS LAYER (C#)

DATABASE (SQL)

PRESENTATION
(VIEW)

LOGIC
(CONTROLLER)

DATA
(MODEL)

The Capstone Experience
Team Quicken Loans
Alpha Presentation
Team Quicken Loans
Alpha Presentation

Initial App Screen
Team Quicken Loans
Alpha Presentation

Editing Entities

Add Entity

Entity Name: 

Entity Category: Core app

Effective Date: 10/12/2014

End Date: 10/12/2014

Save changes

Delete Entity

Entity Name: LOLA

Delete Entity
What's left to do?

- User Interface Enhancements
- Drag And Drop Feature
- Search Bar
- Displaying Past And Future States
- Potential Active Directory Connection
Team Quicken Loans
Alpha Presentation

Editing Dependencies

Add Dependency

Entity:
LCLA

Dependency Entity:
LCLA

Effective Date:
10/12/2014

End Date:
10/12/2014

Close  Save changes

API

API1
API2

Close  Save changes
Team Quicken Loans
Beta Presentation

Expanded Dependencies
Team Quicken Loans
Beta Presentation

After Typing “L” in the Search Bar
Team Quicken Loans
Beta Presentation

Snapshots by Date
The Capstone Experience

Team Spectrum Health

Department of Computer Science and Engineering
Michigan State University
Fall 2014
Employee Discount Mobile App

• Functionalities
  ▪ Provide Access to Employee Discounts
  ▪ For Spectrum Health Employees
  ▪ Via Mobile App

• Features
  ▪ Support Apple iPhone and Google Android
  ▪ Handle Frequent Changes and Updates
  ▪ Include Additional Discounts for Priority Health Employees

• Technologies
  ▪ CSS, HTML5, JavaScript
  ▪ AngularJS
  ▪ ASP.net MVC
  ▪ Microsoft Internet Information Services (IIS) 7.0
  ▪ RESTful Web Service Layer
Team Spectrum Health
Aries Xue, Ruchira Ramani, Marco Botros, Emily Van Norman, Josh Pelcher
Team Spectrum Health
Project Plan Presentation

Screen Mockup
Team Spectrum Health Project Plan Presentation
Team Spectrum Health Project Plan Presentation
Team Spectrum Health
Project Plan Presentation

Screen Mockup
Team Spectrum Health
Alpha Presentation

Employee Discounts

See what you can get.

Cedar Point
Discounted tickets available online with promo code: optix2014a

State Farm
Free insurance and financial review

View Details
Team Spectrum Health
Alpha Presentation

Category Selection
Team Spectrum Health
Beta Presentation

Phone View of App

SPECTRUM HEALTH
Member Discounts

Search

afendoulis cleaners & tuxedos
10-20% off
select cleaning service.
$25

LaBelle
50% off
all regular priced items

Bridal Elegance
5% off
entire purchase, undefined

Curtis Cleaners - Laundry
Free pickup
and delivery plus 10%

SPECTRUM HEALTH
Member Discounts

Home
Near Me

Bridal Elegance
5% off entire purchase.

Address:
6865 Cascade Rd SE Grand Rapids, MI 49546
http://www.bridalelegancegr.com
Bridal Elegance
Team Spectrum Health
Beta Presentation

Tablet View of App

![Spectrum Health App](image-url)
Team Spectrum Health
Beta Presentation

Near Me and Map Features
The Capstone Experience

Team TechSmith

Department of Computer Science and Engineering
Michigan State University
Fall 2014
Helping you work, wherever you are

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
Groupwork for Google Chrome

- Functionalities
  - Facilitate Group Activities and Projects
  - Using Content Created or Collected with Snagit for Chrome
  - Via a Google Chrome App
- Features
  - Create and Maintain Groups
  - Maintain Activities and Projects
    - Create
    - Assign Tasks and Roles
    - Facilitate Parts
    - Track Progress
  - Provide Various Views
    - My Groups
    - My Projects
    - A Project
  - Support Several Project Types
  - Integrate Seamlessly
    - With Snagit for Chrome
    - With Google Docs and Google Drive
  - Instrument with Google Analytics
- Technologies
  - HTML5, CSS, JavaScript
  - Google App APIs
  - Google Drive SDK
  - Google Analytics
Team TechSmith
Ryan Chen, Gerald Kizer, Justin Fila, Spencer Yi, Christian Fincher
Create App

Description: Really important app that needs to be finished

Steps
- Design
  - Assigned to Jeff
- Implement
  - Assigned to Joe

Comment:

Joe Jeff, if you could finish the design by Monday that would be...
Design Step

Description: blah blah
Time Estimate: 7 days
Time Remaining: 6 days
Assigned to: Jeff

Comment...

Joe, Jeff, if you could finish the design by Monday that would be great
Welcome to GroupWork!

Hi Justin Fila!
Team TechSmith
Beta Presentation

Group View

![Group View Image]

- **Capstone Group**: View Group
  - **Edit group here**: Click here to edit the group.
  - **Click to add more members**: Add new members to the group.
  - **Current members**: List of members currently in the group.

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The Capstone Experience
Team TechSmith
Beta Presentation

Project View

GroupWork For Chrome

Assigned Groups

Capstone Group

Assign group to this project

Steps

Start
- UML Diagram
- Architecture

Beta Tasks
- Presentation

Video
- Create Script
- Record Video

Add another step

Click to view the state of this group's project

Add/remove tasks here
The Capstone Experience

Team Urban Science

Department of Computer Science and Engineering
Michigan State University
Fall 2014
URBAN SCIENCE
Team Urban Science
Project Overview

HR Matters

• Functionalities
  ▪ Enable Assessment of Behavioral Competencies
  ▪ Of Automobile Dealership Employees
  ▪ By Dealership Managers

• Features
  ▪ Provide Evaluation Tool Based on Standards
  ▪ Model Behavioral Competencies
    ○ For Use During Interviews
    ○ Assess Candidate’s Ability to Perform a Role
  ▪ Track Historical Employee Performance
  ▪ Correlate Behavioral Competencies with Actual Results
  ▪ Display Metrics for Original Equipment Manufacturers (OEMs)

• Technologies
  ▪ CSS, HTML, JavaScript
  ▪ Apple iPad (iOS) Development
  ▪ SQL Server 2012
  ▪ Model-View-Controller Architecture
  ▪ Responsive Design
Team Urban Science
Jenna Cyrocki, Brandon Sartele, Kenny Massie, Michael Nelson
Screen Mockup: HR Matters
Team Urban Science
Project Plan Presentation
Architecture Diagram
Team Urban Science
Project Plan Presentation

Screen Mockup

Competency Assessment Full Results

29/60

SELF-CONTROL
LAST SCORE: 3

SELF-CONFIDENCE
LAST SCORE: 4

FLEXIBILITY / ADAPTABILITY
LAST SCORE: 5

RELATIONSHIP BUILDING
LAST SCORE: 2

ASSERTIVENESS
LAST SCORE: 3

DEVELOPING OTHERS
LAST SCORE: 1

NEGOTIATION
LAST SCORE: 3

Conduct a preliminary assessment to determine if the sales manager is capable of effectively coaching sales staff. In the event of ineffective coaching tactics used, if the capability does not exist, demotion and/or termination should occur immediately as it is a poor job fit. If the capability to exhibit customer service orientation does exist, immediately place on a performance improvement plan targeting the behaviors for improvement. Immediate improvement within 30 days would need to be observed. If no immediate improvement after 30 days, termination would occur.

Conduct a preliminary assessment to determine if the sales manager is capable of effectively coaching sales staff. In the event of ineffective coaching tactics used, if the capability does not exist, demotion and/or termination should occur immediately as it is a poor job fit. If the capability to exhibit customer service orientation does exist, immediately place on a performance improvement plan targeting the behaviors for improvement. Immediate improvement within 30 days would need to be observed. If no immediate improvement after 30 days, termination would occur.
Team Urban Science
Alpha Presentation

Dashboard

District Competency Evaluation

- Michael Nelson
  - Manager
  - Capstone Lab
  - Score: 6 Last Score
- Brandon Sarteke
  - Sales
  - Capstone Lab
  - Score: 1 Last Score
- Angelina Jolie
  - Manager
  - Dallas
  - Score: 14 Last Score
- Jennifer Aniston
  - Manager
  - Denver
  - Score: 11 Last Score
- Bob Smith
  - Manager
  - Detroit
  - Score: 0 Last Score
- Brad Pitt
  - Manager
  - Detroit
  - Score: 13 Last Score
- Ben Affleck
  - Manager
  - Hollywood
  - Score: 10 Last Score
- Ben Kingsley
  - Manager
  - India
  - Score: 4 Last Score
Team Urban Science
Alpha Presentation

Competency Assessment Chart
Team Urban Science
Alpha Presentation
Full Assessment Results

Competency Assessment Full Results

- CUSTOMER SERVICE ORIENTATION: Last Score: 7
  Conduct a preliminary assessment to determine if the sales manager is capable of having a genuine desire to help customers (internal and external). If this capability does not exist, termination should occur immediately as it is a poor job fit. If the capability to exhibit customer service orientation does exist, immediately place on a performance improvement plan targeting the behaviors for improvement. Immediate improvement within 30 days would need to be observed. If no immediate improvement after 30 days, termination would occur.

- VERBAL COMMUNICATION: Last Score: 7

- RESULTS ORIENTATION: Last Score: 7

- CONCERN FOR QUALITY: Last Score: 7

- INTERPERSONAL UNDERSTANDING: Last Score: 7

- SELF-CONTROL: Last Score: 7

- SELF-CONFIDENCE: Last Score: 7

- FLEXIBILITY / ADAPTABILITY: Last Score: 7

- RELATIONSHIP BUILDING: Last Score: 7

- ASSERTIVENESS: Last Score: 7

- DEVELOPING OTHERS: Last Score: 7

- NEGOTIATION: Last Score: 7
Team Urban Science
Beta Presentation
Team Urban Science
Beta Presentation

Assessment Chart
HRMatters System Administration

Add / Delete Franchise Here

Franchise: [Field]
Number Users: [Field]

Current keys

<table>
<thead>
<tr>
<th>Serial</th>
<th>Remaining</th>
</tr>
</thead>
<tbody>
<tr>
<td>123456</td>
<td>3</td>
</tr>
<tr>
<td>654321</td>
<td>2</td>
</tr>
<tr>
<td>987654</td>
<td>1</td>
</tr>
</tbody>
</table>

Team Urban Science
Beta Presentation
Competency Assessment Full Results

- CUSTOMER SERVICE ORIENTATION
  Last Score: 2

- ORAL COMMUNICATION
  Last Score: 2

- RESULTS ORIENTATION
  Last Score: 3

An individual's concern with working well to achieve optimal results and/or for competing against a standard of excellence. This includes an individual's responsibility for timeliness, commitment to task and adherence to performance standards.

- CONCERN FOR ORDER, QUALITY & ACCURACY
  Last Score: 3

- INTERPERSONAL UNDERSTANDING
  Last Score: 3

- SELF-CONTROL
  Last Score: 3

- SELF-CONFIDENCE
  Last Score: 2

- FLEXIBILITY / ADAPTABILITY
  Last Score: 3

- RELATIONSHIP BUILDING
  Last Score: 4

- DIRECTIVENESS/ASSERTIVENESS
  Last Score: 3

- DEVELOPING OTHERS/COACHING OTHERS
  Last Score: 3
Team Urban Science
Design Day
The Capstone Experience

Team Whirlpool

Department of Computer Science and Engineering
Michigan State University
Fall 2014
True innovation takes the complexity out.

The Whirlpool Dishwasher uses Sensor Cycle to automatically select the right wash and dry settings.
Windows 8 Apps for Smart Appliances

- Functionalities
  - Enable Whirlpool Customers to Manage Smart Appliances
  - Via *My Smart Appliance* App
  - For Windows 8 and Windows 8 Mobile

- Features
  - Support Windows 8 Family of Devices
    - Phones
    - Tablets
    - Laptops
  - Interface with Existing Whirlpool Cloud
  - Utilize Universal Windows Application Framework
  - Support Existing Features of iOS and Android Apps

- Technologies
  - Windows 8.1
  - Windows Phone 8.1
  - Visual Studio 2013
  - Whirlpool Smart Appliances
  - RESTful Web Service Layer

Team Whirlpool
Project Overview

Benton Harbor, Michigan
Team Whirlpool
Kathy Cummings, Chris Thomas, A. J. Sundheimer, Zachary Pauley, Robert Carpenter
Team Whirlpool
Project Plan Presentation
Screen Mockups
Team Whirlpool
Project Plan Presentation

Architecture Diagram

Whirlpool Backend Systems ("Cloud")
- Machine to Machine (M2M)
  - Device Management
  - Parser
  - Data
- Middleware
  - API Suite (Rest APIs)
  - Business Rules
  - Data

The Capstone Experience
Team Whirlpool
Project Plan Presentation
Team Whirlpool
Project Plan Presentation

Screen Mockups
Team Whirlpool
Alpha Presentation

Desktop Live Tiles

Start

kathy  

Deskop

OneDrive
Microsoft Access
2010

kindle

Netflix

Google Chrome
Tiles &

54°
East Lansing
Clear

Today
'68"/50" Mostly Clear

Tomorrow
'77"/50" Cloudy

Weather

The Capstone Experience
Team Whirlpool
Alpha Presentation Refrigerator, Energy and Options

Refrigerator

Energy Report

<table>
<thead>
<tr>
<th>Date</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/12/2014</td>
<td>840 Wh</td>
</tr>
<tr>
<td>10/11/2014</td>
<td>860 Wh</td>
</tr>
<tr>
<td>10/10/2014</td>
<td>810 Wh</td>
</tr>
</tbody>
</table>

Options

- Appliance Name
- Notification Preferences
  - Push
  - Email
  - SMS
- Door Ajar
- Filter Bad
- Error Messages
- Smart Appliance ID: 33333333
- Appliance Serial Number: 2310000660
Team Whirlpool
Beta Presentation
Team Whirlpool
Beta Presentation

Account Appliances and Settings

**Account**
- Name: Team Whirlpool
- Account Email: teamwhirlpool498@gmail.com
- Change Password:
  - New Password
  - Confirm New Password
- Energy Advisor: On
- Your Utility Company

**Appliances**
- Clothes Dryer
  - Dryer
  - Idle
  - Wrinkle Shield: False
- Dishwasher
  - Dishwasher
  - Idle
  - Control Lock: False
- Refrigerator
  - Refrigerator
  - Refrigerator temp: 37°
  - Freezer temp: 0°

**About**
Team Whirlpool
Beta Presentation
Team Whirlpool
Beta Presentation
Refrigerator Specific Page

**Refrigerator Energy Report**

- **Average Daily Usage**: 1022 Wh
- **Energy History**:
  - 11/3/2014: 1293 Wh
  - 11/2/2014: 1391 Wh
  - 11/1/2014: 1388 Wh
  - 10/31/2014: 1439 Wh

**Options**

- **Notification Preferences**:
  - Door Ajar: [ ]
  - Filter Bad: [ ]
  - Power Off: [ ]
  - Power On: [ ]

- **Smart Appliance ID**: 333336NMB5
- **Appliance Serial Number**: R31004960
The Capstone Experience

Dr. Wayne Dyksen
Department of Computer Science and Engineering
Michigan State University
Fall 2014
Capstone Lab
View of Spartan Stadium sans Smokestack
The Capstone Experience

Design Day Award Winners

December 5, 2014
Auto-Owners Exhibition Award
Team Spectrum Health, Fall 2014
Employee Discount Mobile App
Ruchira Ramani, Josh Pelcher, Emily Van Norman, Marco Botros, Aries Xue
Scott Lake of Auto-Owners Insurance
General Motors Praxis Award
Team Auto-Owners, Fall 2014
Navigation Assistant and Accident History App
Austin Huynh, Isaac Vogler, Zach Ray, Megan Frankel, Tim Sloncz
Presented by Christian Stier and Mike Adelson of General Motors
TechSmith Screencast Award
Team TechSmith, Fall 2014
GroupWork for Google Chrome
Gerald Kizer, Spencer Yi, Christian Fincher, Ryan Chen, Justin Fila
Presented by Dean Craven of TechSmith
Urban Science Sigma Award
Team Meijer, Fall 2014
Mobile Location-Based Product Promotion
Dan Leclerc, Jason Bull, Kevin Pauly, Xavier Durand-Hollis
Presented by Kathy Krauskopf, Matt Bejin and Mike DeRiso of Urban Science
The Capstone Experience

Dr. Wayne Dyksen
Department of Computer Science and Engineering
Michigan State University
Fall 2014
BOSCH
Invented for life