

# 08/30: Capstone Overview

## The Capstone Experience

Dr. Wayne Dyksen

Department of Computer Science and Engineering  
Michigan State University

Fall 2017



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

# Capstone Overview

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## ➤ Course Logistics

- Client Projects
- Course Logistics (Continued)

# CSE 498, Collaborative Design

- “The Capstone Experience”
- Instructors
  - Dr. Wayne Dyksen (“Dr. D.”)
  - Jonny Dowdall
  - James Mariani
- Class Meetings  
MW, 3:00-4:20pm, [1279 Anthony](#)
- [Syllabus](#)
- Web Site
  - [capstone.cse.msu.edu](http://capstone.cse.msu.edu)
  - Check it often.
- Email
  - Check it often.
  - Read it thoroughly and carefully!



# Course Goals

[1 of 3]

- Give You Experience In
  - Real World
  - Corporate Setting
- Start Your Transition
  - From Student...
  - ...To Professional



# Course Goals

[2 of 3]

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

# Course Goals

[3 of 3]

- Build a Significant Software System
- Work in a Team Environment
- Learn New Tools and Environments
- Build and Administer Systems
- Develop Your Communication Skills
- Develop Interview Talking Points
- Learn to Do Stuff on Your Own
- Etc...



# Project Deliverables

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

See [Major Milestones](#).



# All-Hands Meetings

## Presentations By

- Dr. D.
- TAs
- Teams
  - Status Reports
  - Formal Presentations
    - Project Plan
    - Alpha
    - Beta
  - Project Videos
- Guest Speaker(s)





# All-Hands Meetings Agendas

- 08/30: Capstone Overview
- 09/04: (Labor Day, No Meeting)
- 09/06: Project Plan
- 09/11: Risks and Prototypes
- 09/13: Team [Status Report Presentations](#)
- 09/18: Team [Project Plan Presentations](#)
- 09/20: Team [Project Plan Presentations](#)
- 09/25: Team [Project Plan Presentations](#)
- 09/27: Team [Project Plan Presentations](#)
- 10/02: Resume Writing and Interviewing
- 10/04: Career Gallery
- 10/09: Schedule and Teamwork
- 10/11: Creating and Giving Presentations
- 10/16: Team [Alpha Presentations](#)
- 10/18: Team [Alpha Presentations](#)
- 10/23: Team [Alpha Presentations](#)
- 10/25: Team [Alpha Presentations](#)
- 10/30: [Design Day](#) and the [Project Videos](#)
- 11/01: Camtasia Demo
- 11/06: Intellectual Property
- 11/08: Ethics and Professionalism
- 11/13: Team [Beta Presentations](#)
- 11/15: Team [Beta Presentations](#)
- 11/20: Team [Beta Presentations](#)
- 11/22: Team Status Reports  Nota Bene
- 11/27: Team [Beta Presentations](#)
- 11/29: Team Status Reports
- 12/04: [Project Videos](#)
- 12/06: [Project Videos](#) and All Deliverables
- 12/07: [Design Day Setup](#)
- 12/08: [Design Day](#)
- 12/11: [Project Videos](#)



# Urban Science Capstone Lab

- 3352 EB
- Door Lock
  - Electronic Keypad
  - Code = #####
  - Do Not Give Out to Other Students
- Systems
  - Up to Four per Team
    - Two 27" iMacs
    - One Dell Rack-Mounted Server (Optional)
    - One Mac Book Pro (Optional)
  - Team 100% Responsible
    - Building
    - Maintaining
    - Securing
    - Backing Up
- Books
- WiFi
  - SSID: CSE498, CSE498 5MHz
  - Key: ???????
- Conference Area
  - Team Meetings
  - Client Conference Calls
  - Google [Conference Calendar](#)
- Appliances
  - Water Cooler/Heater  
Nota Bene: The water cooler is not connected to a drain. Do not pour things into it, like rinsing out your water container.
  - Whirlpool Refrigerator
    - Cold Water From Bottled Water
    - Ice From Bottled Water
  - Microwave
  - Keurig Coffee Maker
- Lockable Storage
  - One Drawer Per Team
  - As Needed
  - Assigned by Dyksen and TAs
  - Obtain Keys from CSE Office



# Scheduled Lab Times

- No Formal Lab Sessions
- “Credit” for Scheduled Weekly Meetings
  - Team Meetings
  - Client Conference Calls
  - Triage Meetings with TAs
- Meeting Times TBA With
  - Team
  - Client
  - TAs
- Students must be available to meet in person.
  - Team Meetings
  - Triage Meetings
  - Client Conference Calls



# CSE498 Prerequisites

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Must Have Successfully Completed

- Tier I Writing Requirement
- CSE335
- CSE410
- Another 400-Level CSE Course Other Than CSE491



# Capstone Overview

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✓ Course Logistics

➤ Client Projects

- Course Logistics (Continued)

# Team / Project Generalities

[1 of 3]

- Clients
  - Vary in Size and Type
  - Client contacts/mentors are “volunteers.”
- Team Contact Person
  - Picked By Team
  - Main Point of Contact for Client



# Team / Project Generalities

[2 of 3]

- Project Types
  - All Significant Software Development
  - Vary in Specifics
- Project Level of Difficulty
  - Hard Enough
  - But Not too Hard
- Deliverable
  - To the Client
  - By the Due Date





# Team / Project Generalities

[3 of 3]

- Challenges
  - Very Short, Unforgiving Time Line
  - Client Contact
  - Team Dynamics
  - Project Plan (in Three Weeks)
  - Entirely New...
    - Languages
    - Environments
    - API's
    - SDK's
    - Processes
    - Protocols
    - Etc.
  - Project Management
  - Etc...





# Project Specifics

- Vary
  - Type
  - Current State of Specificity
- Challenge
  - Connect with Client
  - “Nail Down” the Project
    - Hard Enough
    - Not too Hard
    - Avoid Feature Creep
  - Course Feature, Not Bug

# Intellectual Property and Non-Disclosure Agreements

- Intellectual Property Agreement
  - You agree to assign ownership of intellectual property that may be created as a result of your project to your client.
    - Copyrightable Program Code
    - Patentable “Ideas”
  - Most clients will require an IP agreement.
- Non-Disclosure Agreement
  - You agree not to disclose client confidential information.
  - Most clients will require an NDA.
- To date...
  - Most code has not gone directly into production.
  - No patents have resulted.
- Use agreements provided by MSU.
- Always Contact Dr. D. Before Signing Anything



# Project Teams

- Team Amazon
- Team Auto-Owners
- Team Avata
- Team Ford
- Team GM
- Team Humana
- Team Meijer
- Team Michigan State
- Team Microsoft
- Team Mozilla
- Team MSUFCU
- Team Phoenix
- Team Rook
- Team Spectrum Health
- Team Symantec
- Team TechSmith
- Team TWO MEN AND A TRUCK
- Team Union Pacific
- Team Urban Science
- Team Yello

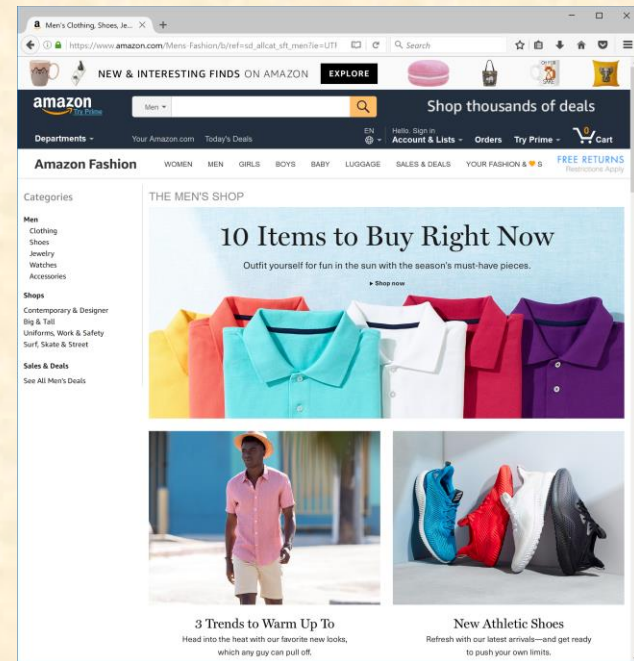


# Team Amazon

## Project Overview

### Faia: Fashion Artificial Intelligence Assistant

- Functionalities
  - Create Innovative Fashion Shopping Experience
  - With Virtual Personal Stylist
- Features
  - Create and Manage Shopper Profile
  - Interact with Faia via Texting
  - Give Personalized Fashion Recommendations
  - Leverage AI to Learn and Adapt to Shopper Preferences
  - Provide “Save for Later” and “Add to Cart”
  - Integrate with Prime Wardrobe
- Technologies
  - Amazon Web Services (AWS)
    - Compute Services
    - Database Services
    - Machine Learning
  - Amazon Lex
  - Amazon Product Advertising API
  - Amazon Simple Notification Services (SNS)
  - Twilio APIs



Seattle, Washington  
Detroit, Michigan

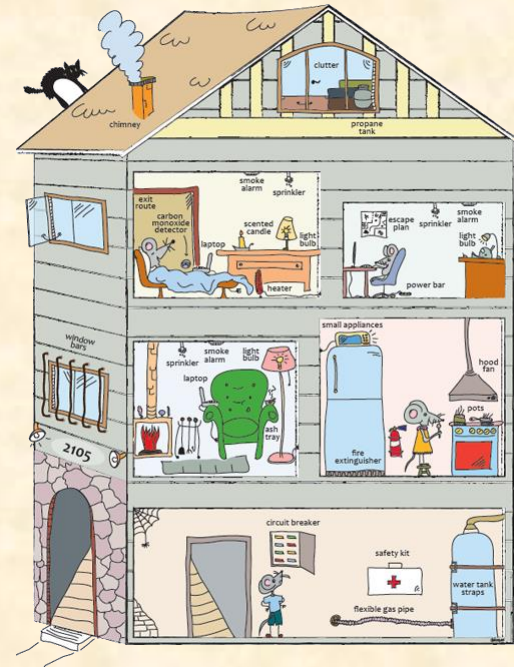


# Team Auto-Owners

## Project Overview

### House of Hazards

- Functionalities
  - Teach Homeowners About Home Safety
  - With a Virtual Reality Game
  - Using an Oculus Rift
- Features
  - Design and Build Time-Based Virtual Reality Game
  - Build Virtual Model of Single-Family Home
  - Display Various Scenarios Inside and Outside
    - Hazardous
    - Safe
    - Innocuous
  - Support Various Levels of Difficulty
  - Provide Limited Hints
  - Use Randomization for Varied Experiences
  - Show Review Panel At Game End
- Technologies
  - Unity Game Engine
  - Oculus Rift
  - Oculus Rift Touch Controllers
  - Oculus Rift Sensor



***Auto-Owners***  
INSURANCE

LIFE • HOME • CAR • BUSINESS

Lansing, Michigan



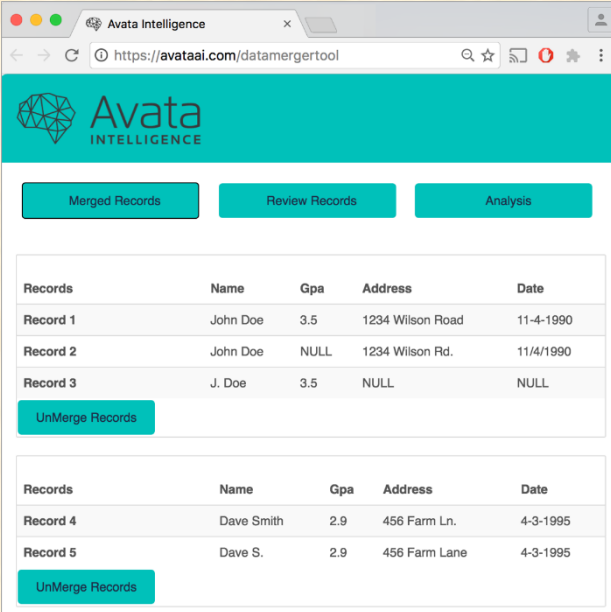


# Team Avata

## Project Overview

### Security Analytics Suite: Configuration Setup Tool

- Functionalities
  - Transform and Ingest Various Data Formats
  - Into Ava for Public Safety Solution
  - To Reduce Customer Acquisition Cost and Time
- Features
  - Design and Build Interactive User Interface
  - Provide Way to Map User's Taxonomy to Avata's Taxonomy
  - Use ReactJS for Mapping User Interface
    - Draw on Map
    - Capture Date and Time Ranges
    - Create Hierarchical Ontologies
  - Support JSON, SQL and MySQL Configurations
- Technologies
  - React JS
  - Java 8
  - Spring Boot framework
  - Hibernate Framework
  - JSON, SQL and MySQL
  - ArcGIS Mapping Tools
  - RESTful Web Services



Avata Intelligence

https://avataai.com/datamergertool

Merged Records Review Records Analysis

Records	Name	Gpa	Address	Date
Record 1	John Doe	3.5	1234 Wilson Road	11-4-1990
Record 2	John Doe	NULL	1234 Wilson Rd.	11/4/1990
Record 3	J. Doe	3.5	NULL	NULL

UnMerge Records

Records	Name	Gpa	Address	Date
Record 4	Dave Smith	2.9	456 Farm Ln.	4-3-1995
Record 5	Dave S.	2.9	456 Farm Lane	4-3-1995

UnMerge Records



# Team Ford

## Project Overview

### Ford Smart Parking

- Functionalities
  - Notify Drivers of Nearby Available Parking Spaces
  - That Fit Their Model Vehicle
  - Using Ford's Sync 3
- Features
  - Create and Manage User Profiles
  - Enable User Flagging of Open Parking Spaces
    - Dimensions
    - GPS Location
    - Timestamp
  - Integrate with Google Tango
  - Send Notifications to Sync 3
    - Receives Notifications of Available Spaces
    - Notifies Remote Server When Space Taken
  - Design and Build Sync 3 App
- Technologies
  - Lenovo Phab 2 Pro
  - Google Android Tablets and Phones / Java
  - Google Tango
  - Java 2 Platform Enterprise Edition (J2EE)
  - Sync 3 Emulator and AppLink
  - Microsoft SQL Server 2016



Dearborn, Michigan



# Team GM

## Project Overview

### Automated Video Workplace Safety System

- Functionalities
  - Alert Employees of Safety Issues and Situations
  - Using Computer Analysis of Real-Time Camera Feeds
- Features
  - Design and Build Web and Mobile Apps
  - Utilize Camera to Watch Area of Concern
  - Leverage Image Recognition and Machine Learning (ML)
  - Identify People and Personal Protective Equipment (PPE)
    - Helmet
    - Eye Protection
    - Hearing Protection
    - Vest
  - Determine Safety Alerts
    - Send to Mobile App
    - Record in Centralized Database
  - Produce Summary Reports for Management
- Technologies
  - CSS / HTML / JavaScript / PHP
  - Google Android Tablets and Phones / Java
  - nVidia Deep Learning SDK
  - nVidia DGX-1 Deep Learning Hardware
  - Image Recognition
  - Machine Learning (ML)
  - Mobile Push Notifications



Detroit, Michigan  
Warren, Michigan





# Team Humana

## Project Overview

### MyHumanaBot

- Functionalities
  - Provide Instant Information to Customers
  - About Plans, Claims, Etc.
  - Via a Chatbot
- Features
  - Build and Design Two Web Apps
    - MyHumanaBot App
    - Humana Administrative App
  - Supports
    - Customer or Non-Customer
    - Logged In or Not Logged In
  - Handles Variety of Scenarios
    - Information About Plans
    - Claims Status
    - Humana Pharmacy Status
    - Finding a Doctor
    - Etc.
  - Incorporate Context
  - Maintain Conversation History
  - Account for Security
- Technologies
  - Microsoft C# / .NET
  - SQL / MySQL / Mongo Database
  - RESTful Web Services



**Humana**  
Louisville, Kentucky



# Team Meijer

## Project Overview

### Meijer Fresh-ipes

- Functionalities
  - Streamline and Simplify Shopping
  - By Providing Meal and Menu Planning
  - Intelligently and Interactively
- Features
  - Track Customer Shopping History
  - Determine Likely Existing Household Ingredients
  - Recommend Range of Recipes
    - Ingredient Availability
    - Food Preferences
  - Create Shopping List for Missing Ingredients
  - Integrate with mPerks
- Technologies
  - Amazon Echo Show
  - Microsoft .NET Framework, C#, ASP.NET
  - Microsoft Azure Mobile Services
  - Microsoft Visual Studio Team Server
  - Xamarin
  - Meijer Web Services
  - Application Insights
  - Hockey App
  - SQL Server



**meijer**<sup>®</sup>

Grand Rapids, Michigan

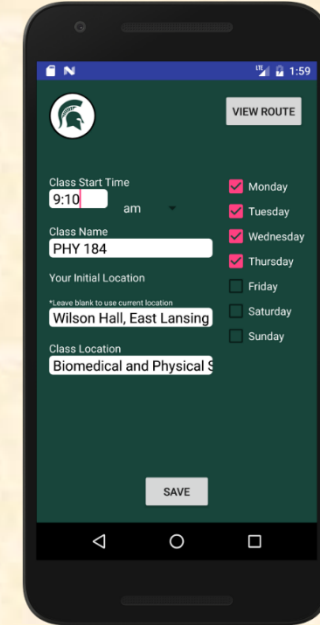
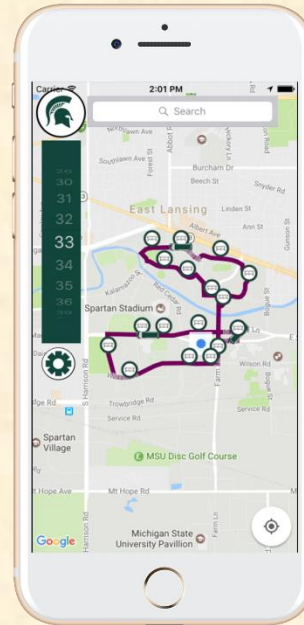


# Team Michigan State University

## Project Overview

### SEA: Spartan Experience App

- Functionalities
  - Enhance Student Experience
  - By Providing Information to Students
  - With Easy-to-Use Mobile App
- Features
  - Support Android and iPhone Natively
  - Utilize Amazon Web Services (AWS)
  - Any and All Of...
    - Provide Directions to Parking and Buildings
    - Show Cafeteria Menus
    - Display Campus Activities and Events
    - Show Emergency Phone Numbers
    - Provide News Feed and Twitter Feed
    - Create and Manage a Student Planner
    - Handle Course Search and Schedule Planner
    - Implement a Degree Navigator
  - Incorporate Existing CATA Bus Tracker
- Technologies
  - Apple iPads and iPhones (iOS) / Swift
  - Google Android Tablets and Phones / Java
  - RSS News Feeds



Information Technology Services  
East Lansing, Michigan



# Team Microsoft

## Project Overview

### Enhanced Company Portal with Graph

- Functionalities
  - Enhance Android Company App
  - By Leveraging Microsoft Graph API
  - Making Customers More Productive
- Features
  - Use Only Microsoft Graph
    - For All Data
    - To Add Functionality Beyond Device Management
  - Provide Social Interaction
    - Organize Team Documents
    - Create Team Channels
    - Track Recently Used Files
  - Increase Usefulness Beyond Existing Portal
  - Refresh User Interface
- Technologies
  - Microsoft Intune
  - Microsoft Graph
  - Microsoft Windows / C#
  - Google Android Tablets and Phones / Java
  - Apple iPads and iPhones (iOS) / Swift
  - RESTful Web Services



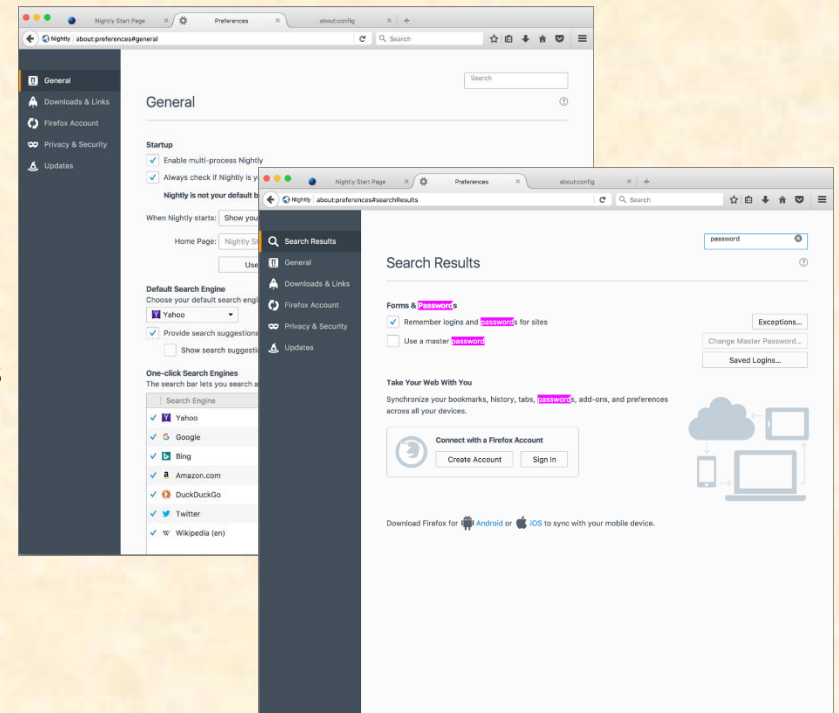


# Team Mozilla

## Project Overview

### Taking Firefox Screenshots Testing Suite to 11

- Functionalities
  - Improve Firefox Screenshots Testing Suit
  - So Results Are More Readily Available
  - For Firefox Development Community at Large
- Features
  - Move Testing Suite from Tier 2 to Tier 3
  - Support Cropping Rules
  - Reduce Intermittent Failures and Difference Alerts
  - Produce Easily Consumable and Interpretable Test Results
  - Add New Testing States
- Technologies
  - CSS
  - JavaScript
  - Python
  - XUL / XBL
  - Mercurial
  - IRCCloud
  - Bugzilla
  - Review Board
  - Windows
  - OS X
  - Linux



Mountain View, California

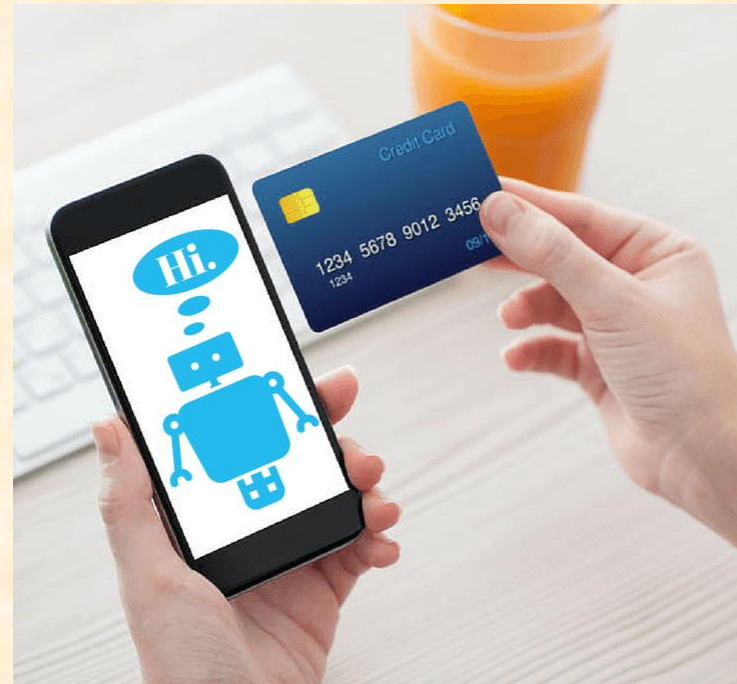


# Team MSUFCU

## Project Overview

### Digital Banking with Chatbots

- Functionalities
  - Provide Virtual Banking Assistance
  - Using a Chatbot
- Features
  - Handles Same Services As Live Chat Service
  - Leverage Natural Language Processing
    - Emulate Human-to-Human Interaction
    - Redirect Complex Requests to Customer Service Reps
  - Support Short Message Service (SMS) and iMessage
  - Integrate with Other MSUFCU Services
    - Website
    - Mobile App
    - Amazon's Alexa
  - Provide Web-Based Content Management System
- Technologies
  - Amazon Echo
  - Alexa Skills Kit
  - CSS / HTML5 / PHP / JavaScript
  - Google Android Tablets and Phones / Java
  - Apple iPads and iPhones (iOS) / Swift or Objective-C
  - MySQL
  - Short Message Service (SMS) and Apple's iMessage
  - Encryption based on SQL standards
  - Natural Language Processing (NLP)



# Team Phoenix Group

## Project Overview

### OPEN v2.0: Smart Order Picking

- Functionalities
  - Enhance Warehouse Order Picking Process
  - Using Bluetooth Low-Energy Devices
- Features
  - Create Windows Tablet-Based Pick Ticket
  - Display Geolocation-Based Warehouse Map
  - Provide Bin Locations and Route Planning
  - Support Real-Time Shelf Counts
  - Handle Bar Codes
- Technologies
  - Microsoft Windows Presentation Foundation (WPF)
  - Microsoft .NET Framework
  - Microsoft C#
  - Microsoft Visual Studio 2015
  - Bluetooth Low Energy Devices
  - MySQL Server
  - Bar Code Scanning Technologies



O'Fallon, Missouri



# Team Rook

## Project Overview

### Cloud Security Event Processing and Alerting Platform

- Functionalities
  - Analyze Cyber Security Events
  - Using a Serverless Architecture
  - That Scales to Millions of Events Per Day
- Features
  - Design and Build a Web App
  - Support Management of Correlation Rules
    - Edit Existing Rules
    - Examine Performance of New Rules
  - Detect and Notify When Alerts or Rules Triggered
  - Accommodate Increasing Scale Using Amazon Cloud
  - Integrate with Rook's Force Platform
- Technologies
  - Amazon Athena
  - Amazon Simple Email Services (SES)
  - Amazon Lambda
  - Amazon S3
  - Elasticsearch
  - Ubuntu 16.04
  - Python / Django
  - CSS / HTML / JavaScript / JSON
  - RESTful Web Services



**ROOK<sup>®</sup>**  
**SECURITY**  
Indianapolis, Indiana



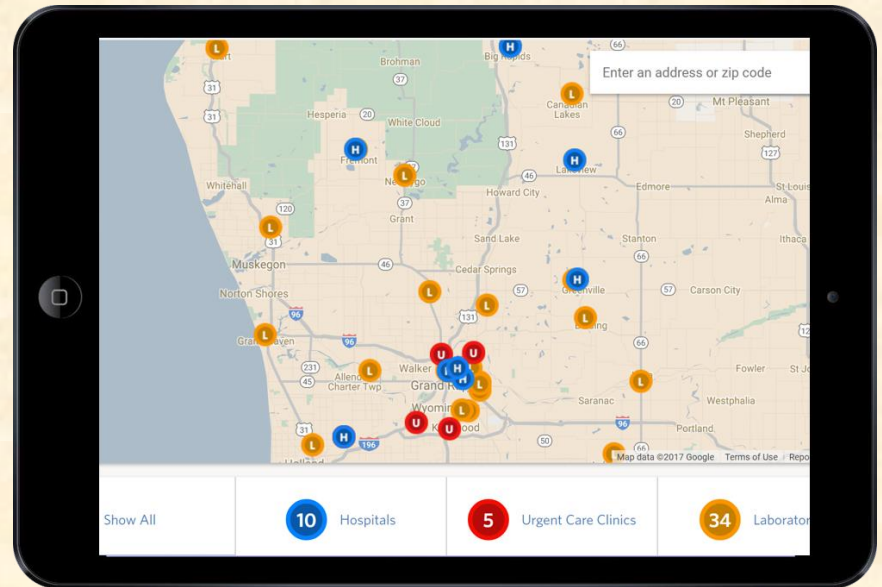


# Team Spectrum Health

## Project Overview

### Spectrum Health Symptom Checker

- Functionalities
  - Recommend Spectrum Health Services to Patients
  - Based on Symptoms They Provide
- Features
  - Design and Build Web and Mobile Apps
  - Match Keywords with Symptoms
  - Recommend Health Service
    - eVisit
    - Urgent Care
    - Emergency Room
  - Enable Urgent Care Visit
    - Give Nearest Location
    - Reserve Place in Line
  - Leverage Machine Learning
  - Provide Administrative App
- Technologies
  - CSS / HTML / JavaScript / PHP
  - Apple iPads and iPhones (iOS) / Swift
  - Google Android Tablets and Phones / Java
  - Microsoft C# / .NET
  - Entity Framework Core
  - Microsoft SQL Server



**SPECTRUM HEALTH** 

Grand Rapids, Michigan

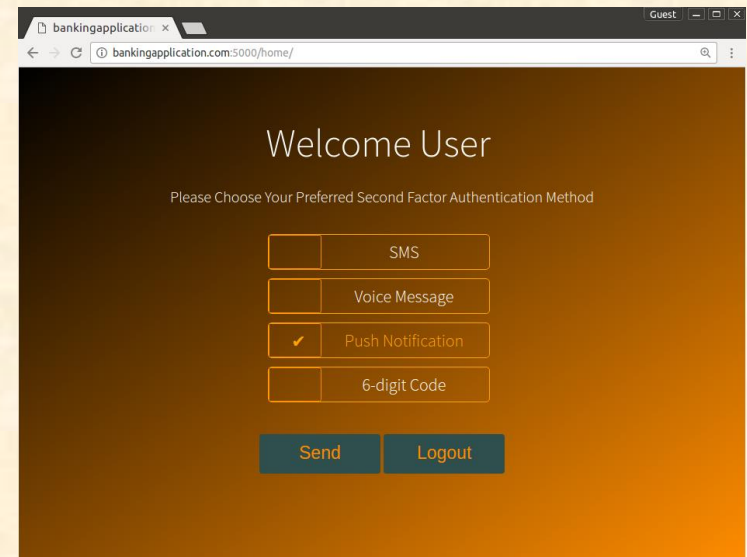


# Team Symantec

## Project Overview

### Secure Application Layer API Proxy

- Functionalities
  - Provide RESTful API to Symantec's Multi-Factor System VIP
  - Via a Proxy Layer in Front of Native SOAP Layer
  - So Any RESTful Framework Can Integrate with VIP
- Features
  - Focus on User Centric Services
    - Management APIs
    - Authentication APIs
    - Query APIs
  - Preserve Parity Between SOAP and REST APIs
  - Implement a Versioning Scheme
  - Include "Jurisdiction Hash" (JHASH) as Path Parameter
  - Deliver Integration Tests
- Technologies
  - Symantec VIP and VIP Access Manager.
  - Simple Object Access Protocol (SOAP) Web Services
  - Representational State Transfer (REST) Web Services
  - StrongLoop / Node.js



# Team TechSmith

## Project Overview

### TechSmith Director

- Functionalities
  - Explore Creating Video Scenes
  - With a User Friendly Voice Input Interface
  - Using Newer Cloud-Bases APIs
- Features
  - Design and Build a Web App
  - Support Natural Language Voice Input
    - "I'd like a beach background for my video."
    - "Let's place a man on the beach."
    - "I'd like the man to walk along the beach."
  - Leverage Microsoft Azure Cloud Computing
    - Store User and Project Information
    - Process Utterances (Voice Input)
    - Implement Speech to Text
    - Apply Natural Language Processing
  - Send Projects to Other Users for Feedback
- Technologies
  - Microsoft Azure Cloud Computing
  - Bing Image Search
  - SoundCloud API (For Music)
  - CSS / HTML / JavaScript
  - ASP.Net MVC or Node.js
  - Natural Language Processing (NLP)
  - SQL Database

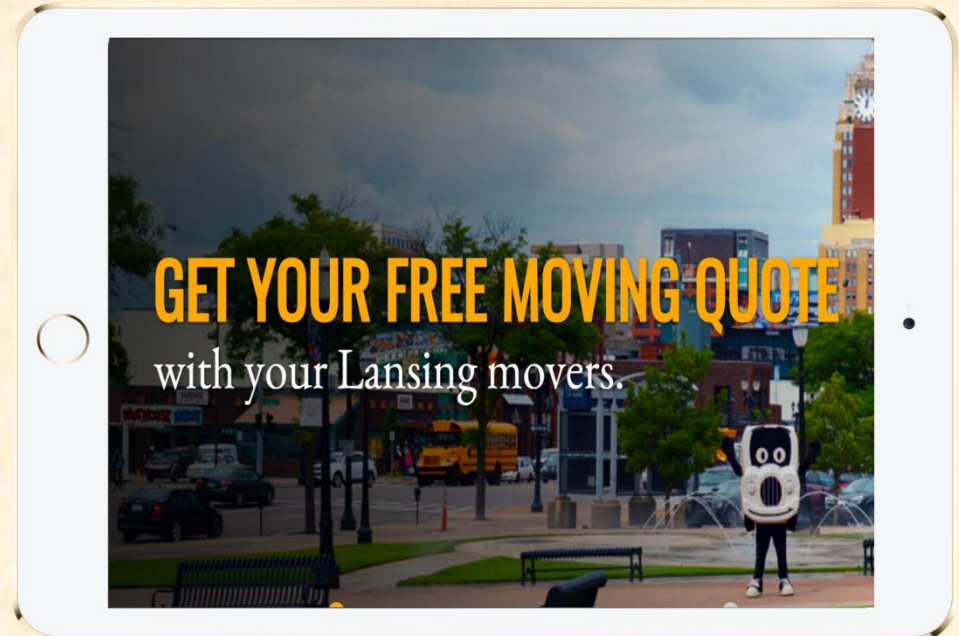


# Team TWO MEN AND A TRUCK

## Project Overview

### Online Moving Estimator

- Functionalities
  - Provide In-Home Moving Estimate
  - Online Using Web App
- Features
  - Design and Build Web App
  - Provide Chat and Video Conference
  - Determine Room Inventory
    - From Video
    - Automatically
  - Estimate Moving Cost
    - Compute Load / Weight / Space on Truck
    - Use TMaaT Existing Algorithm
  - Integrate with Existing Quick Estimate Module
- Technologies
  - CSS / HTML / JavaScript / PHP
  - Video Conferencing
  - Image Processing and Pattern Recognition





# Team Union Pacific

## Project Overview

### RailBuilder: The Great Race to Promontory

- Functionalities
  - Create Railroad Building Game
  - In 3D Representation of the World
- Features
  - Support Creation of Game Levels
    - Deploy as Microsoft Windows App
    - Include Topology and Land Classification
    - Place Scenery in Realistic Fashion
    - Use Terrain Grade and Elevation
  - Create Railroad Building Game
    - Between Two Locations in 3D
    - Using Limited Budget
    - Factoring Topology and Land Classification
    - Removing Scenery Where Rail is Laid
- Technologies
  - Unity Game Engine
  - Microsoft Windows
  - Microsoft C# / .NET
  - Apple iPads and iPhones (iOS) / Swift
  - Google Android Tablets and Phones / Java
  - ArcGIS Mapping Tools



**BUILDING AMERICA®**

Omaha, Nebraska  
Okemos, Michigan



# Team Urban Science

## Project Overview

### KPI Recommendation and Action Application

- Functionalities
  - Answer User Free-Form Speech Input Question
  - By Correlating Question with Key Performance Indicators (KPIs)
- Features
  - Design and Build Mobile App
  - Visualize Selected KPIs
  - Show Actions Associated with Each KPI
  - Evaluate All Possible KPIs and Actions
  - Determine Best Answer to Question
- Technologies
  - Apple iPads and iPhones (iOS) / Swift
  - Google Android Tablets and Phones / Java
  - Microsoft .NET Core 1.0
  - Microsoft Cognitive Services
    - Speech
    - Language
    - Knowledge
    - Search



URBAN SCIENCE.

Detroit, Michigan



# Team Yello

## Project Overview

### Automatic Resume Verification

- Functionalities
  - Verify Resume Information
  - Automatically and Instantly
- Features
  - Design and Build Two Web Apps
    - For Universities and Workplaces to Upload Credentials
    - For Candidates to Upload Resumes
  - Ensure Security and Privacy
    - Proof of Source
    - Proof of Existence / Timestamp
    - Proof of Work / Education / Military Service
  - Store and Access Credentials Using a Blockchain
  - Notify Candidates When Credentials Uploaded
  - Verify Resume Information Upon Uploading
  - Inform Recruiters re Resume Accuracy
- Technologies
  - Ruby on Rails
  - Blockchain
  - Transactional APIs



*yello*  
Chicago, Illinois



# First Assignments

---

- Read the Syllabus.
- Check out the Lab (3352 EB).
  - See if you can find it.
  - See if you can get in.
- Check out the Web Site.
- Research your Project.
  - Sponsor
  - Technologies





# What's Next?

- Teams
  - Assignments by Email Tonight
  - Meet Initially by Tomorrow Afternoon
  - Lab Machine Assignments in Lab
  - Start Researching Technologies
  - Start Configuring Lab Machines
  - Team Photos
    - Wednesday, 09/07, After All-Hands Meeting
    - Dress Casual (But Appropriate)
    - Schedule for it.
- Client
  - Contact by Email by Tomorrow COB (Close of Business)
  - Conference Call or On-Site Meeting by Friday
  - Review Project Proposal



# Capstone Overview

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✓ Course Logistics

✓ Client Projects

➤ Course Logistics (Continued)



# Urban Science Capstone Lab Machines

- Up to Four per Team
  - Two 27" iMacs
  - One Dell Rack-Mounted Server (Optional)
    - Connect to Outside World
    - Keep Secure
  - One Mac Book Pro (Optional)
- Operating Systems on iMacs and MBPs
  - Run macOS Sierra (High Sierra in ~ 2 Weeks?)
  - Install VMware Fusion (from [here](#))
  - Create Virtual Machines
    - Windows 10 VM from TAs
    - Others as Needed
  - Don't use Apple Boot Camp



# Capstone Lab Miscellany

[1 of 2]

- Security
  - Keep lab doors closed.
  - Do not open doors for strangers
  - Do not give out door key code to others.
  - Do not invite non-capstone students to work in the lab with you.
  - Email Dr. D. if door becomes unlocked.
- Wireless
  - SSID: CSE498
  - Key: ??????
- Coffee
  - Some Provided by Dr. D.
  - Bed, Bath & Beyond (Get 20% Off Coupon)
- Game Playing / Video Watching
  - Not On Monitors Facing Hallway
  - Not If Other Team Members Need Machine



# Capstone Lab Miscellany

[2 of 2]

- Do not “maniac” the wires and cables.
- Keep the lab neat and clean.
  - Lived In, Okay.
  - Messy, Not Okay.
- Respect other teams’ spaces.
- Garbage Containers
  - Empty the small one by the coffee maker into a larger one.
  - Put larger ones out in the hall at night if near full.
  - Put back in the lab in the morning if empty.
- Turn the lights out if you’re the last one out.
- Close the windows if you open them.
- Be careful with cabinet drawers; don’t “maniac” them.





# Mobile Devices Available

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- For Capstone Project Use
- By Team for the Semester
- iOS
  - 5 iPads
  - 1 iTouch
- Android
  - 1 Tablet
  - 1 Phone
- Surface Pro 3

# Expectations & Workload

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- Extremely High For Both
- Your MSU Career Capstone
- Addition to Your Personal Portfolio
- Experience Viewed Like an Internship
- Interview Talking Points
- Leverage Into a Job Offer



# Schedules

- Schedules > All-Hands Meeting

- Schedules > Major Milestones

- 09/13: Status Report Presentations
- 09/18: Project Plan Presentations
- 10/16: Alpha Presentations
- 11/13: Beta Presentations
- 12/04: Project Videos
- 12/06: All Deliverables
- 12/07: Design Day Setup
- 12/08: Design Day

- Attendance is required.
- No excuses are accepted.
- Do not schedule anything including during these times interviews, travel home, etc.
- Will coordinate with your interviews.



# Meeting Attendance

- Required
    - All-Hands (Class) Meetings
    - Team Triage Meetings
    - Team Meetings
    - Team Conference Call Meetings
  - 5% of Final Grade
  - Late == Absent
    - 1% of Final Grade for Each Unexcused Absence
    - Attendance Grade Can Be Negative (See Syllabus)
    - If > 5 Absences Team Contribution Grade May Be Affected
  - Almost No Excuses Accepted
    - One or Two Excused Possible for Interviews
    - Must Provide Information
      - Date, Company, Recruiter Name & Contact Info
      - In Advance
      - To Both Dr. D. and TAs
  - Must Attend (No Excuses Accepted)
    - Your Team Presentations
    - All Project Video Viewing
    - Design Day
- ← Note change in syllabus.
- Do NOT schedule interviews.  
Do NOT schedule ANYTHING.  
Do NOT buy plane tickets.



# Team Organization

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- Up to Each Team
- Organize into Roles
  - Client Contact
  - Program Manager
  - Developer
  - Tester
  - Systems Administrator
  - Etc...
- Everyone must make technical contributions.





# Team Dynamics

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- Key to Success
- Significant Component of Course Grade
- Address Problems Immediately
  - Within Team
  - With Dr. D. and/or TAs
- Be Ready to Discuss During Interviews



# Grading

[1 of 6]

• Team (70%)	
▪ Project Plan Document & Presentation	10
▪ Alpha Presentation	10
▪ Beta Presentation	10
▪ Project Video	10
▪ Project Software & Documentation	25
▪ Design Day	<u>05</u>
▪ Total	70
• Individual (30%)	
▪ Technical Contribution	10
▪ Team Contribution	10
▪ Team Evaluation	05
▪ Meeting Attendance	<u>05</u>
▪ Total	30



- Final Grade Sum Of...
  - Individual Total
  - % of Team Total Based on Team Contribution
- Grand Total =  
$$\begin{aligned} &(\text{Individual Total}) \\ &+ \\ &(\text{Team Total}) * (\text{Team Contribution}) / 10.0 \end{aligned}$$
- *Nota Bene*: Your Team Contribution will have a very significant effect on your final grade.



# Grading

[3 of 6]

Effect of Team Contribution					
Technical Contribution	Team Contribution	Team Evaluation	Meeting Attendance	Team Total	Grand Total
10	10	5	5	70	100
10	9	5	5	70	92
10	8	5	5	70	84
10	7	5	5	70	76
10	6	5	5	70	68
10	5	5	5	70	60
10	4	5	5	70	52
10	3	5	5	70	44
10	2	5	5	70	36
10	1	5	5	70	28
10	0	5	5	70	20
Nota Bene: Assumes Perfect Score In Every Other Category					



# Grading

[4 of 6]

Fall 2016 Grade Distribution	
Grade	Number
4.0 – 2.5	54
2.0	3
1.5	2
1.0	4
0.5	0
0.0	1





## Unacceptable Excuses for Not Contributing

- They never asked me to do anything.
- They never let me do anything.
- I wrote 1000's of lines of code but they weren't included in the project.
- My features were not included in the project.
- I work 40 hours per week at my job.
- I live 60 minutes from MSU.
- I didn't want to work on this project team.
- I ranked this project 20 out of 20.
- I did a lot of research about stuff we never used.
- Etc...



# Grading

[6 of 6]

- We reserve the right to make changes with sufficient notice.
- No special consideration will be given for final grades including but not limited to
  - status in any academic program including CSE,
  - financial aid,
  - rank in the armed forces,
  - job while a student at MSU,
  - job after anticipated graduation from MSU,
  - commute to MSU,
  - graduation,
  - mortgage,
  - wedding,
  - visa status,
  - ability to enroll in CSE498 next semester,
  - or anything else.



# Integrity of Scholarship

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- MSU's policies will be enforced.
- Individual and team work must be original.
- Violators...
  - ...will be referred to the appropriate deans.
  - ...may receive a grade of F in the course.



# Using Resources

- Ok For “Help”
  - People
    - Past Capstone Teams
    - Other Capstone Teams
    - Faculty Members
  - Articles
  - Sample Code
  - Etc...
- Not Ok For “Entire” Project
- If Unsure, Ask Dr. D. and/or TAs



# Using Existing Code

- Ok
  - Examples
  - Prototypes
  - Open Source Code
    - Fragments
    - Libraries
    - Utilities
- Not Ok
  - Vast Amounts of Your Project
  - Not Open Source
- Ask Client in Advance
- Document and Report All Existing Code Used
- Be Careful!
- If Unsure, Ask Dr. D. and/or TAs and/or Your Client





# Design Day

- College of Engineering Event
  - Engineering Building
  - Friday, December 8, 2017
- Displays (Booths) of Design Projects
  - CSE Capstone
  - ECE Capstone
  - ME Capstone
  - Etc...
- Presentations and Awards
  - Panel of Judges
  - CSE Team Project Videos



# Travel to Client

- Reimburse for Mileage for Personal Car
- Travel Within Michigan (Outside of Lansing)
  - Grand Rapids
  - Metro Detroit
- From East Lansing to Client and Back
- One Car Per Team Per Trip
- See Brenda in the CSE office in advance.

# VISA

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- Verified Individualized Services and Accommodations
- Let us know immediately.
- We will work with you.



# Office Hours

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- Any Time...
  - Visit: 3149 EB
  - Call: 353-5573
  - Email: ([dyksen@msu.edu](mailto:dyksen@msu.edu))
- Make Appointment



# Capstone Overview

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✓ Course Logistics

✓ Client Projects

Questions?

✓ Course Logistics (Continued)





# What's ahead?

[1 of 3]

- Team Photos
    - Informal
      - After Meeting Today: Teams Amazon through Mozilla
      - After Meeting Wednesday: Teams MSUFCU through Yello
    - Formal
      - Dress code for presenting teams is business casual.
      - After Each Project Plan Presentation
  - Setup
    - Team Machines
      - Dell Server If Needed (Ask TAs)
      - Apple iMacs
    - Team Software
      - Microsoft Office
        - ❖ Word and PowerPoint
        - ❖ Microsoft Windows Version
      - Web Server
      - Code Repository
      - SDK's
      - Etc.
- Required.  
Use Windows 10 VM.
- 



# What's ahead?

[2 of 3]

## All-Hands Meetings

- ~~08/30: Capstone Overview~~
- ~~09/04: (Labor Day, No Meeting)~~
- 09/06: Project Plan
- 09/11: Risks and Prototypes
- 09/13: Team Status Report Presentations
- 09/18: Team Project Plan Presentations
- 09/20: Team Project Plan Presentations
- 09/25: Team Project Plan Presentations
- 09/27: Team Project Plan Presentations



# What's ahead?

[3 of 3]

- Team Status Report Presentations
  - [PowerPoint Template](#)
  - Due 4:00 a.m., Wednesday, September 13
  - 1 Week  Get on it, now!
  - Email to Dr. D.
    - Subject: Team <Company Name>: Status Report  
Subject: Team Auto-Owners: Status Report
    - Attachment: team-<company-name>-status-report-presentation.ppt  
Attachment: team-urban-science-status-report-presentation.ppt
- Dr. D. Will Combine Into Single PowerPoint
  - To Speed Things Up During Meeting
  - Do NOT Modify Master Slide
  - Must Use Windows Version of Microsoft Office
- Each Team Presents
  - Using Dr. D.'s Laptop
  - At Most 4 Minutes (Rehearse Timing)
  - Single or Multiple Presenters (Your Choice)

