10/10: Capstone Overview

The Capstone Experience

Dr. Wayne Dyksen
Department of Computer Science and Engineering
Michigan State University
Spring 2017
Capstone Overview

Course Logistics

• Client Projects

• Course Logistics (Continued)
CSE 498, Collaborative Design

• “The Capstone Experience”
• Instructors
  ▪ Dr. Wayne Dyksen (“Dr. D.”)
  ▪ Spencer Ottarson
• Class Meetings
  TTh, 3:00-4:20pm, 1145 EB
• Syllabus
• Web Site
  ▪ capstone.cse.msu.edu
  ▪ Check it often.
• Email
Course Goals

• Give You Experience In
  - Real World
  - Corporate Setting

• Start Your Transition
  - From Student...
  - ...To Professional
Course Goals

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

• 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

• 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.
• Spencer
• Teams
  ▪ Status Reports
  ▪ Formal Presentations
    o Project Plan
    o Alpha
    o Beta
  ▪ Project Videos
• Guest Speaker(s)
All-Hands Meeting Agendas

- 01/10: Capstone Overview
- 01/12: Project Plan
- 01/17: Risks and Prototypes
- 01/19: Team Status Report Presentations
- 01/24: Schedule and Teamwork
- 01/26: Team Status Reports
- 01/31: Team Project Plan Presentations
- 02/02: Team Project Plan Presentations
- 02/07: Team Project Plan Presentations
- 02/09: Team Project Plan Presentations
- 02/14: Resume Writing and Interviewing
- 02/16: Creating and Giving Presentations
- 02/21: Team Alpha Presentations
- 02/23: Team Alpha Presentations
- 02/28: Team Alpha Presentations
- 03/02: Team Alpha Presentations
- 03/07: (Spring Break, No Meeting)
- 03/09: (Spring Break, No Meeting)
- 03/14: Team Status Reports
- 03/16: Team Status Reports
- 03/21: Design Day and the Project Videos
- 03/23: Camtasia Demo
- 03/28: Intellectual Property
- 03/30: Ethics and Professionalism
- 04/04: Team Beta Presentations
- 04/06: Team Beta Presentations
- 04/11: Team Beta Presentations
- 04/13: Team Beta Presentations
- 04/18: Status Reports
- 04/20: Status Reports
- 04/25: Project Videos
- 04/27: Project Videos and All Deliverables
- 04/27: Design Day Setup
- 04/28: Design Day
- 04/28: Design Day
- 05/04: 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
  - Assigned and Labeled
  - 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 Spencer
• Meeting Times TBA With
  ▪ Team
  ▪ Client
  ▪ Spencer
• Students must be available to meet.
Capstone Overview

✓ Course Logistics

➢ Client Projects

• Course Logistics (Continued)
Team / Project Generalities

• 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

• 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

- 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...

[3 of 3]
Project Specifics

• Vary
  ▪ Type
  ▪ Current State of Specificity

• Challenge
  ▪ Connect with Client
  ▪ “Nail Down” the Project
    o Hard Enough
    o Not too Hard
    o 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.
    o Copyrightable Program Code
    o 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 GE
• Team GM
• Team Humana
• Team Meijer
• Team Michigan State
• Team Microsoft
• Team Mozilla

• Team MSUFCU
• Team Rook
• Team Spectrum Health
• Team TechSmith
• Team TWO MEN AND A TRUCK
• Team Union Pacific
• Team Urban Science
• Team Whirlpool
• Team Yello
Team Amazon

Project Overview

ACRA: Amazon Customer Review Analyzer

• Functionalities
  ▪ Improve Amazon Customer Shopping Experience
  ▪ Enable More Informed Purchase Decisions
  ▪ Provide Automatic Analysis of Product Reviews

• Features
  ▪ Analyze and Categorize Product Reviews On
    o Product Quality
    o Shipping and Handling
    o Third-Party Seller
  ▪ Identify and Discard Irrelevant Reviews
  ▪ Review Similar Products
  ▪ Aggregate and Display Results

• Technologies
  ▪ Google Android Tablets and Phones / Java
  ▪ Apple iPads and iPhones (iOS) / Swift
  ▪ Amazon Product Advertising API
  ▪ Amazon Web Services
    o Storage Solution
    o Machine Learning
    o Lambda
  ▪ Natural Language Processing
  ▪ RESTful Web Services
Team Auto-Owners

Project Overview

Location-Based Services Mobile App

• Functionalities
  ▪ Connect Auto-Owners Associates While Out in the Community
  ▪ Enable Innovative Customer Interactions
  ▪ Provide Mobile Access to Customer Information

• Features
  ▪ Support Role-Based Authentication and Authorization
  ▪ Handle Location Based on Address or GPS
  ▪ Enable Claims Submission
  ▪ Visualize Mapping of Customers Nearby
    o Policyholders
    o Claims
    o Proposals
  ▪ Provide Administrative Web Portal

• Technologies
  ▪ Google Android Tablets and Phones / Java
  ▪ Apple iPads and iPhones (iOS) / Swift
  ▪ Google Maps
  ▪ CSS / HTML / JavaScript / PHP
  ▪ Database Technologies

The Capstone Experience

Capstone Overview

Lansing, Michigan
Team GE

Project Overview

**PETT: Predix Enabled Toy Train**

- **Functionalities**
  - Visualize GE’s Digital Industrial Strategy and Transformation
  - Demonstrate GE’s Cloud-Base Predix Platform
  - Run N-Scale DCC Enabled Trains Autonomous

- **Features**
  - Run Multiple Trains Independently
  - Monitor Non-Train Based Events
    - Railroad Crossings
    - Items Falling on Tracks
  - Control Color of GE Logo Lights
  - Utilize GE’s Predix Platform
    - Create Predictive and Prescriptive Analytics
    - Keep System Running Issue Free
  - Provide Interactive Educational Display

- **Technologies**
  - Digital Command Control for Model Railroads
  - Sensor Enablement and Automation
  - Raspberry Pi’s, Arduinos, Intel Edison
  - GE’s Predix Platform
  - Apple iPads and iPhones (iOS) / Swift
  - Google Android Tablets and Phones / Java
  - RESTful Web Services

Detroit, Michigan
Employee Transportation Experience App

• Functionalities
  ▪ Show Employee Where to Park on GM Campus
  ▪ Determine Parking Space Characteristics
    o Garage
    o Metered
    o Badged
  ▪ Display Available Shuttle Services

• Features
  ▪ Interacts with Android Auto and Apple CarPlay
  ▪ Leverages Geofencing
  ▪ Provides Automatic Parking Management
  ▪ Calls or Cancels a Lyft
  ▪ Gives Directions to Buildings
  ▪ Shows Shuttle Schedules

• Technologies
  ▪ Android Auto
  ▪ Apple CarPlay
  ▪ Lyft API integration
  ▪ Natural Language Processing
  ▪ Google Maps API
Team Humana

Project Overview

Humana Kids

• Functionalities
  ▪ Reduce Obesity in Kids
  ▪ Teach Kids and Parents About Nutrition
  ▪ Encourage Healthy Behavior in Kids

• Features
  ▪ Usable by 6 – 12 Year Olds
  ▪ Implement as Android Launcher
  ▪ Handle Various Interactions
    o Surveys for Parents and Kids
    o Tips for Parents
    o Quizzes for Kids
  ▪ Include Coins and Badges as Awards
  ▪ Utilize Natural Language Processing and Machine Learning
  ▪ Provide Web App for Parents

• Technologies
  ▪ Google Android Tablets and Phones / Java
  ▪ Android Studio
  ▪ Natural Language Processing
  ▪ Machine Learning
  ▪ Web Application Frameworks (Django, Ruby)
Team Meijer

Project Overview

MyMeijer: Crowdsourced Shopping

• Functionalities
  ▪ Improve In-Store Shopping Experience Immediately
    o Feedback from Customers
    o Response by Store Team Members
  ▪ Provide Companion Mobile Apps
  ▪ Reward Users for Participation

• Features
  ▪ Link with mPerks Account
  ▪ Support Various Feedback
    o Item Out-of-Stock by Scanning UPC
    o Concern with Cleanliness via Location Tracking
    o Request for Assistance
  ▪ Provide Web App for Corporate Scoreboard

• Technologies
  ▪ Xamarin Mobile App Development
  ▪ Bluebird Mobile Device Development
  ▪ Microsoft .NET Framework
  ▪ Microsoft Visual Studio Team Server
  ▪ Microsoft Azure Services
  ▪ C#, ASP.NET MVC, ASP.NET Web API, HTML 5, .NET 5
  ▪ Hockey App for Deployment
  ▪ Meijer Web Services
  ▪ SQL Server / Mongo Database
  ▪ App Insights for Analytics
Team Michigan State University

Project Overview

CATAlyst: Mapping CATA Routes and Buses in Real-Time

• Functionalities
  ▪ Map CATA Bus Routes
  ▪ Show Location of Buses in Real-Time

• Features
  ▪ View Map of All Available Routes
  ▪ See Current Location of All Buses
  ▪ Predict Bus Arrival Time
  ▪ Filter by Route Number and/or Destination
  ▪ Display Bus Stops Nearest the User
  ▪ Enable Users to Upload Personal Schedules

• Technologies
  ▪ Apple iPads and iPhones (iOS) / Swift
  ▪ Google Android Tablets and Phones / Java
  ▪ Global Positioning Systems
  ▪ RESTful Web Services
Team Microsoft

Project Overview

Intune Company Portal Helper Bot

• Functionalities
  ▪ Provide Automated Help for Intune Users
  ▪ Walk Through Common Scenarios
  ▪ Use Natural Language Processing Bot

• Features
  ▪ Gather Text, Audio and Video Input from User
  ▪ Convert Natural Language to Search Terms
  ▪ Create Bot to Determine the Problem
  ▪ Present Resources for Problem Resolution
  ▪ Use Microsoft Bot Framework
  ▪ Support Android, iOS and Windows Devices

• Technologies
  ▪ Google Android Tablets and Phones / Java
  ▪ Apple iPads and iPhones (iOS) / Swift
  ▪ Microsoft Windows / C#
  ▪ Microsoft Bot Framework
  ▪ Natural Language Processing
  ▪ RESTful Web Services
Team Mozilla

Project Overview

Improvements to Firefox’s about:preferences

- Functionalities
  - Improve Firefox’s about:preferences
  - Make about:preferences Easier to Use
  - Ensure Changes Have Appropriate Impact

- Features
  - Implement User Experience Specifications
  - Make More Internally Consistent
  - Reorganize about:preferences Sections
  - Enable Measurement of Effects of Changes
  - Add Search Capability

- Technologies
  - XUL
  - XHTML
  - JavaScript / EcmaScript 2016 & 2017
  - CSS
  - IRC
  - Bugzilla
  - Mercurial
Team MSUFCU

Project Overview

Banking with Amazon’s Alexa and Apple’s Siri

• Functionalities
  ▪ Expand Digital Banking Offerings
  ▪ Build Amazon Alexa Service
  ▪ Develop Apple Watch App

• Features
  ▪ Handle Voice Input
    o Amazon Alexa
    o Apple Siri
  ▪ Support Amazon Echo and Apple Watch
  ▪ Provide Access to Various Information
    o User Accounts (Balances, Recent Transactions, ...)
    o MSUFCU Branches (Locations, Hours, ...)
    o MSUFCU Products (Mortgage Rates, Auto Loan Rates, ...)
  ▪ Create Middleware Layer
    o MSUFCU Databases
    o Alexa and Siri
  ▪ Build Administrative Web Portal

• Technologies
  ▪ Amazon Echo
  ▪ Amazon Skills Kit
  ▪ Apple iPads and iPhones (iOS) / Swift
  ▪ Apple WatchOS
  ▪ CSS / HTML / JavaScript / PHP
  ▪ MySQL

The Capstone Experience

Capstone Overview
Team Rook

Project Overview

Force Integration Tool with Alert Correlation

- Functionalities
  - Monitor, Detect and Eliminate Security Threats
  - Ingest Security Alerts into Rook’s Force Platform

- Features
  - Normalize Disparate Inputs to JSON
    - Firewalls
    - Intrusion Detection Systems
    - Endpoint Detection and Response Systems
  - Store Credentials and Contexts Securely
  - Correlate Alerts During Ingestion
    - Leverage Machine Learning
    - Pre-screen for Additional Human Analysis
  - Provide Administrative Web App
    - Configure API Connectors
    - Schedule Resources
    - Query API Endpoint to Request Alerts

- Technologies
  - CSS / HTML / JavaScript / React / Redux
  - Python / Python Django
  - Ubuntu Linux
  - MySQL / DynamoDB / Elasticsearch
  - RESTful Web Services
  - Machine Learning
Team Spectrum Health

Project Overview

Resident Physician Tracking

• Functionalities
  ▪ Assist Resident Physicians Becoming Doctors
  ▪ Enable Residents to Track Their Shift Times

• Features
  ▪ Create Native Mobile Apps for Residents
  ▪ Send Notifications When Approaching Time Limits
  ▪ Allow for Automatic and Manual Input of Times
  ▪ Ensure Adheres to Federal Time Limit Mandates
  ▪ Provide Administrative Portal for Resident Coordinator
  ▪ Support Both Google Android and Apple iOS

• Technologies
  ▪ Apple iPads and iPhones (iOS) / Swift
  ▪ Google Android Tablets and Phones / Java
  ▪ CSS3 / HTML5 / Angular 2 / TypeScript
  ▪ Microsoft .NET Core / C#
  ▪ Microsoft Framework Core
  ▪ Microsoft SQL Server
  ▪ GitHub

Grand Rapids, Michigan
Team TechSmith

Project Overview

Teacher’s Virtual Toolbelt

• Functionalities
  ▪ Improve the Teaching of Classical Mechanics
  ▪ Use Augmented Reality with Microsoft’s HoloLens

• Features
  ▪ Create HoloLens App and Website and Web Service
  ▪ Stream HoloLens Experience to Website
  ▪ Support Hand Gestures and Voice Commands
  ▪ Enable Lesson Planning and Delivery Using Website
  ▪ Provide Various Holograms
    ▪ 2D/3D Shapes Like Arrows, Lines Squares and Circles
    ▪ Text
    ▪ Reference Materials Like Wikipedia Articles
  ▪ Implement Data Store as Web Service

• Technologies
  ▪ Microsoft HoloLens App Development
  ▪ Unity Game Engine
  ▪ Microsoft Azure Cloud Computing
  ▪ ASP.NET MVC
  ▪ CSS / HTML / JavaScript / PHP
Team TWO MEN AND A TRUCK

Project Overview

Mobile Mini Movers Who Care

• Functionalities
  ▪ Entertain Kids During a Move
  ▪ Provide Moving/Racing Game

• Features
  ▪ Design Fun Moving/Racing Game
    ▪ Like Hill-Climb Racing and Bad Piggy’s
    ▪ Start with Flatbed Truck Loaded with Boxes
    ▪ Boxes May Fall Off
      ▪ Stops and Starts
      ▪ Bumps
      ▪ Hills
    ▪ Goal: Finish Race Quickly without Losing Boxes
  ▪ Include Various Components
    ▪ 2-Dimensional
    ▪ Side Scrolling
    ▪ Multiple Levels
    ▪ Physics Based
  ▪ Use Unity Game Engine
  ▪ Support Both Google Android and Apple iOS

• Technologies
  ▪ Mobile Game Design
  ▪ Apple iPads and iPhones (iOS) / Swift
  ▪ Google Android Tablets and Phones / Java
  ▪ Unity Game Engine / C#
Team Union Pacific

Project Overview

Learning New Train Routes

• Functionalities
  ▪ Familiarize Conductors and Engineers with New Routes
  ▪ Use Augmented Reality (Rather Than “Actual Reality”)
  ▪ Save Railroads Millions of Dollars

• Features
  ▪ Combine Indexed Locomotive Video with Track Data
  ▪ Create AR-Like Overlay of Routes for Mobile Devices
  ▪ Include Various Overlay Data
    o Track Labels
    o Switch Information
    o Gradients
    o Compass Directions
    o Speed Limits
  ▪ Target Apple iOS, Google Android and Microsoft Windows

• Technologies
  ▪ Apple iPads and iPhones (iOS) / Swift or Objective-C
  ▪ Google Android Tablets and Phones / Java
  ▪ Microsoft Windows / C#
  ▪ Unity Game Engine
  ▪ OpenCV
  ▪ WebGL
Team Urban Science
Project Overview

Real Time Ad Campaign Management

• Functionalities
  ▪ Optimize Dealership Marketing Campaigns in Real Time
  ▪ Make Modification Recommendations
  ▪ Enable Tactical Decisions and Actions

• Features
  ▪ Analyze Real-Time In-Flight Digital Marketing Data
    o Consumer Engagement
    o Demographic Inclusion
    o Delivery Effectiveness
    o Overall Performance
    o Return on Investment
  ▪ Leverage Machine Learning to Recommend Actions
  ▪ Enable Changes to Active Campaign Variables

• Technologies
  ▪ Microsoft .NET Core 1.0
  ▪ Docker
  ▪ Machine Learning
  ▪ Real Time Recommendation Engine
    o Microsoft Cognitive Services
    o Neo4J

The Capstone Experience
Team Whirlpool

Project Overview

Commercial Laundry Dashboard

• Functionalities
  ▪ Enable Commercial Laundry Teams to Monitor Equipment
  ▪ Show How Whirlpool Products are Functioning
  ▪ Send Alerts for Equipment Issues

• Features
  ▪ Provide Dynamic and Intuitive Interface
  ▪ Login via Whirlpool Google Accounts
  ▪ Implement Backend using Google App Engine
  ▪ Create Responsive Frontend for Cross-Platform Use
  ▪ Support Apple iOS, Google Android and Web Browsers

• Technologies
  ▪ Apple iPads and iPhones (iOS) / Swift
  ▪ Google Android Tablets and Phones / Java
  ▪ CSS / HTML / JavaScript / PHP
  ▪ Google App Engine
  ▪ Apache Cordova
  ▪ RESTful Web Services
Team Yello

Project Overview

YelloVision: Career Fair Augmented Reality Experience

- **Functionalities**
  - Improve Career Fair Experience for Recruiters and Candidates
  - Preview Information about Companies and Open Positions
  - Search by Company Logo Using Phone Camera

- **Features**
  - Design like Pokemon Go for Career Fairs
  - Identify Companies by Logo Image
  - Display Various Information
    - Company Name
    - Majors Desired
    - Locations
    - “More Details”
  - Pan Information by Moving Phone
  - Support both iPhones and Android Phones

- **Technologies**
  - Apple iPads and iPhones (iOS)
  - Swift or Objective-C / Apple Xcode
  - Google Android Tablets and Phones
  - Java / Android Studio
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.
  ▪ Client
  ▪ 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
    o Thursday, 01/12, After All-Hands Meeting
    o Dress Casual (But Appropriate)
    o 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

✓ 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 OS X Sierra
  ▪ Install VMware Fusion (from here)
  ▪ Create Virtual Machines As Needed
    ○ Windows Vista, 7, 8, 10 (!Windows XP)
    ○ Linux
  ▪ Don’t use Bootcamp
Capstone Lab Miscellany

• 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
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.

Be careful with cabinet drawers; don’t “maniac” them.
Mobile Devices Available

• For Capstone Project Use
• By Team for the Semester
• iOS
  ▪ 5 iPads
  ▪ 1 iTouch
• Android
  ▪ 1 Tablet
  ▪ 1 Phone
• Surface Pro 3
Expectations & Workload

- 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**
  - 01/19: Status Report Presentations
  - 01/31: Project Plan Presentations
  - 02/21: Alpha Presentations
  - 04/04: Beta Presentations
  - 04/25: Project Videos
  - 04/27: All Deliverables
  - 04/27: Design Day Setup
  - 04/28: 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
• 5% of Final Grade
• Late == Absent
• Almost No Excuses Accepted
  ▪ One or Two Excused Possible for Interviews
  ▪ Must Provide Information
    o Date, Company, Recruiter Name & Contact Info
    o In Advance
    o To Both Dr. D. and Spencer
• Must Attend (No Excuses Accepted)
  ▪ Your Team Presentations
  ▪ All Project Video Viewing
  ▪ Design Day

Do NOT schedule interviews. Do NOT schedule ANYTHING. Do NOT buy plane tickets.
Team Organization

- Up to Each Team
- Organize into Roles
  - Client Contact
  - Program Manager
  - Developer
  - Tester
  - Systems Administrator
  - Etc...

- Everyone must make technical contributions.
Team Dynamics

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

• Team (70%)
  ▪ Project Plan Document & Presentation 10
  ▪ Alpha Presentation 10
  ▪ Beta Presentation 10
  ▪ Project Video 10
  ▪ Project Software & Documentation 25
  ▪ Design Day 05
  ▪ Total 70

• Individual (30%)
  ▪ Technical Contribution 10
  ▪ Team Contribution 10
  ▪ Team Evaluation 05
  ▪ Meeting Attendance 05
  ▪ Total 30
Grading

• Final Grade Sum Of...
  - Individual Total
  - % of Team Total Based on Team Contribution

• Grand Total =
  (Individual Total)
  +
  (Team Total) * (Team Contribution) / 10.0

• Nota Bene: Your Team Contribution will have a very significant effect on your final grade.
## Grading

### Effect of Team Contribution

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**Nota Bene:** Assumes Perfect Score In Every Other Category
## Grading

### Fall 2016 Grade Distribution

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<td>1.5</td>
<td>2</td>
</tr>
<tr>
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<td>4</td>
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<td>0.5</td>
<td>0</td>
</tr>
<tr>
<td>0.0</td>
<td>1</td>
</tr>
</tbody>
</table>
Grading

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 18 out of 18.
• I did a lot of research of stuff we never used.
• Etc…
Grading

• 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

• 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
    o Past Capstone Teams
    o Other Capstone Teams
    o Faculty Members
  ▪ Articles
  ▪ Sample Code
  ▪ Etc...

• Not Ok For “Entire” Project
• If Unsure, Ask Dr. D. and/or Spencer
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 Spencer and/or Your Client
Design Day

• College of Engineering Event
  ▪ Engineering Building
  ▪ Friday, April 28, 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)
  ▪ Benton Harbor
  ▪ 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

• Verified Individualized Services and Accommodations

• Let us know immediately.

• We will work with you.
Office Hours

• Any Time...
  ▪ Visit: 3149 EB
  ▪ Call: 353-5573
  ▪ Email: (dyksen@cse.msu.edu)

• Make Appointment
Capstone Overview

✓ Course Logistics

✓ Client Projects

✓ Course Logistics (Continued)

Questions?
What’s ahead?

• Team Photos
  ▪ Informal: After Meeting Today
  ▪ Formal: After Each Project Plan Presentation

• Setup
  ▪ Team Machines
    o Dell Server (Ask Spencer)
    o Apple iMacs
  ▪ Team Software
    o Microsoft Office
      ❖ Word and PowerPoint
      ❖ Microsoft Windows Version
    o Web Server
    o Code Repository
    o SDK’s
    o Etc.

The Capstone Experience Capstone Overview
What’s ahead?

- All-Hands Meetings
- 01/10: Capstone Overview
- 01/12: Project Plan
- 01/17: Risks and Prototypes
- 01/19: Team Status Report Presentations
- 01/24: Schedule and Teamwork
- 01/26: Team Status Reports
- 01/31: Team Project Plan Presentations
- 02/02: Team Project Plan Presentations
- 02/07: Team Project Plan Presentations
- 02/09: Team Project Plan Presentations
What’s ahead?

• Team Status Report Presentations
  ▪ PowerPoint Template
  ▪ Due 4:00 a.m., Thursday, January 19
  ▪ 1.5 Weeks
  ▪ Email to Dr. D.
    o Subject: Team <Company Name>: Status Report
    Subject: Team Auto-Owners: Status Report
    o 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 5 Minutes (Rehearse Timing)
  ▪ Single or Multiple Presenters (Your Choice)