The Capstone Experience

Dr. Wayne Dyksen

Department of Computer Science and Engineering
Michigan State University
Spring 2011
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

01/10: Course Overview
01/12: Project Plan
01/17: (Martin Luther King Day, No Meeting)
01/19: Project Schedule and Risk
01/24: Team Status Reports
01/26: Prototyping
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: Design Day and the Project Videos
03/16: Camtasia Demo
03/21: Team Status Reports
03/23: Team Status Reports
03/28: Team Status Reports
03/30: Team Status Reports
03/14: Design Day and the Project Videos
03/16: Camtasia Demo
03/21: Team Status Reports
03/23: Team Status Reports
03/28: Team Status Reports
03/30: Team Status Reports
03/14: Design Day and the Project Videos
03/16: Camtasia Demo
03/21: Team Status Reports
03/23: Team Status Reports
03/28: Team Status Reports
03/30: Team Status Reports
04/04: Team Beta Presentations
04/06: Team Beta Presentations
04/11: Team Beta Presentations
04/13: Team Beta Presentations
04/18: Ethics and Professionalism
04/20: Intellectual Property and Copyright
04/25: Team Project Videos
04/27: Team Project Videos and All Deliverables
04/28: Design Day Setup
04/29: Design Day
05/03: Team Project Videos
The Capstone Experience

Team Auto-Owners

Department of Computer Science and Engineering
Michigan State University
Spring 2011
Team Auto-Owners
Project Overview

Agent Multimedia Advertisement Builder

• Build Auto-Owners Advertisements
  ▪ Customized by and for Independent Agents
  ▪ Utilize Corporate Templates

• User Features
  ▪ Upload Text, Photos, Images, Audio, and Video
  ▪ Save, Open, Edit, Produce, and Submit
  ▪ Shopping Cart

• Administrative Features
  ▪ Manage User Profiles
  ▪ Manage Ad Templates
  ▪ Review, Approve, and Track Ads

• Technologies
  ▪ Java / Eclipse
  ▪ Struts 2
  ▪ DB2 (Relational Database)
Team Auto-Owners
Screen Mockup
Screen Mockups

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

Internet

Auto-Owners Media Center:
Ad Builder Suite

Main Page

JSP / Servlets

Database Manager

User Login Database

Media Center Database

Independent Agent or Administrator
Team Auto-Owners
Project Plan Presentation
You're now authenticated in the Auto-Owners site!

Auto-Owners advertises through a generous co-op program with our independent agents, providing them with funds to be used for advertising. To view or download our radio, television or print ads click the appropriate button below.

Radio  Television  Print
Team Auto-Owners
Alpha Presentation

Custom Print Ad Generation

Headline...

Copy...........................................................
...........................................................
...........................................................

Call or visit us
Spartan Insurance
East Lansing • 517-955-6543
spartan@insurance.com

Auto-Owners Insurance
You're never too old...

To save money! Ask about retirement association member discounts for your home and auto.

Wolverine Insurance
Ann Arbor • 666-666-6666
joe.korolewicz@gmail.com

Auto-Owners Insurance
### Order Approval

<table>
<thead>
<tr>
<th>Order Number</th>
<th>Date Added</th>
<th>Agency</th>
<th>Ad Type</th>
<th>Ad Name</th>
<th>Approve</th>
<th>Reject</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>4/1/11</td>
<td>Spartan Insurance</td>
<td>Radio</td>
<td>AO10003JDA-T.mp3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>204</td>
<td>4/1/11</td>
<td>Spartan Insurance</td>
<td>Television</td>
<td>AOI_Reason.mp4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>203</td>
<td>4/1/11</td>
<td>Spartan Insurance</td>
<td>Radio</td>
<td>AO10003JDA-T.mp3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>201</td>
<td>4/1/11</td>
<td>Spartan Insurance</td>
<td>Print</td>
<td>Never too old...</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Logout*

Contact us: 1-800-346-0346

Home | Live Online Support | Terms of Use and Privacy Policy | Feedback & Comments
Team Auto-Owners Beta Presentation
Team Auto-Owners
Design Day
The Capstone Experience

Team Boeing

Department of Computer Science and Engineering
Michigan State University
Spring 2011
Team Boeing
Project Overview

BAPS: Battle Aircraft Position Share

• 3D Game
  ▪ Two Teams
  ▪ Destroy Targets of Opposing Team
  ▪ Use Aircraft with Various Capabilities

• Features
  ▪ Similar to Chess and Battleship
  ▪ Variety of Targets, Radars, and Weapons
  ▪ Weather
  ▪ Network-Based with Encryption

• Technologies
  ▪ C++ and Python
  ▪ OpenSceneGraph (OSG)
  ▪ Blender (3D Modeling)
  ▪ Internetworking
  ▪ Windows XP, Windows 7
Team Boeing
Project Plan Presentation
Team Boeing
Screen Mockup

<table>
<thead>
<tr>
<th>Player 1</th>
<th>Player 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P1 X+R</strong></td>
<td><strong>P2 X+R</strong></td>
</tr>
<tr>
<td><strong>P1 Hits on P2</strong></td>
<td><strong>P2 Hits on P1</strong></td>
</tr>
<tr>
<td><strong>P2 Targets</strong></td>
<td><strong>P1 Targets</strong></td>
</tr>
<tr>
<td><strong>P1 Scan Guesses</strong></td>
<td><strong>P2 Scan Guesses</strong></td>
</tr>
</tbody>
</table>

---

**Activity Log**
- Hit Guess: x, y, z
- (Fail/Succeed)
- Scan Guess: x, y, z
- (Fail/Succeed)
- Xmr Nav Cmd
- Rcvr Nav Cmd
- Checked In
- Checked In Confirmed
- Target T1 Pos: x, y, z
- Timeout Request
- Updated Timeout Positions

---

**Player 1**

<table>
<thead>
<tr>
<th>Total Components Hit</th>
<th>Player 1</th>
<th>Player 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>T.1</td>
<td>0/1</td>
<td>0/1</td>
</tr>
<tr>
<td>T.2</td>
<td>1/2</td>
<td>1/2</td>
</tr>
<tr>
<td>T.3</td>
<td>0/0</td>
<td>0/3</td>
</tr>
<tr>
<td>T.4</td>
<td>3/4</td>
<td>1/4</td>
</tr>
</tbody>
</table>

---

**Player 2**

- **Copyright © 2011 The Boeing Company**
- Image steward: Team MSU Boeing BAPS Spring 2011
- All rights reserved
Server Structure and Basic Communication

Server (Manager)

Game Display
- 3D view of game
- Overall/client A/client B views

Scoreboard
- Game logic
- Data manipulation
- Logging

Manager
- Network communication
- Comm between server components

Client A

Client B
System Architecture

Team Boeing
Project Plan Presentation
Team Boeing
Alpha Presentation
Team Boeing
Alpha Presentation

Game Board Highlighting

The Capstone Experience
Team Boeing
Beta Presentation

Highlight Window
Team Boeing
Beta Presentation

Player Hit
Fleet Auction Distribution and Sale Optimizer

• Fleet
  ▪ Vehicles
    o Group of Vehicles Cars, Trucks, Etc.
    o Owned by Company, Dealers, or Daily Rental Companies
  ▪ Marshaling Yards
    o Returned Fleet Vehicles
    o Assigned to Auction by Chrysler

• Optimize Fleet Auction Sales Net Revenue
  ▪ Distribute Vehicles Geographically
  ▪ Maximize Net Sales Revenue Based On
    o Current Vehicle Location
    o Historical Sales Data
    o Transportation Costs

• Features
  ▪ Web Application
  ▪ Form and Map Interface
  ▪ Drag-and-Drop Vehicle from Site to Site
  ▪ Revenue Models and Forecast Reports

• Technologies
  ▪ Java (or JavaScript)
  ▪ SQL (Database Structured Query Language)
  ▪ Google Maps
Kashif Khan

Jeff Yang

Dennis Cornwell

Zach Church

Team Chrysler

Team Photo
Team Chrysler

Screen Mockup
Team Chrysler
Screen Mockup

Auctions

Manheim Arena Illinois
Auto Auction (Chicago)

Town and Country
- Model Details
- Sold: 14
- Sold/Offered: 83.3%
- Avg Miles: 21,100
- Avg Gross: $20,932
- Avg Wholesale: $34,975
- Gross/Invoice: 57.3%
- MASP/Invoice: 57.5%
- Floor (+/-): -0.3%

Avenger
Jeep Liberty
Jeep Cherokee
Chrysler 300
Dodge Challenger
Dodge Ram
Team Chrysler
Architecture Diagram
Team Chrysler
Alpha Presentation

Distribution Statistics
Team Chrysler
Alpha Presentation
Team Chrysler
Alpha Presentation

Suggested Changes
Beta Presentation

Current Distribution Statistics

(team Chrysler)

(map of North America with pin locations)

(pie chart showing distribution: 42.3% and 57.7%)

(distribution statistics)

(suggested moves)
Team Chrysler
Beta Presentation

Suggested Transports/Bundles
The Capstone Experience

Team Dow

Department of Computer Science and Engineering
Michigan State University
Spring 2011
Dow helps rebuild damaged schools in earthquake ravaged China.
Team Dow
Project Overview

Business Approval System

• Business Workflow Approval
  ▪ Sequence of Connected Steps
  ▪ Used to Approve Business Requests

• Spending Delegation of Authority
  ▪ Authorization to Spend Money
  ▪ Based On
    o Requester
    o Sequence of Authorized Approvers

• Features
  ▪ Administrative and User Interfaces
  ▪ Device Agnostic
    o Web Browsers
    o Mobile Devices
  ▪ Microsoft SharePoint Farm Solution

• Technologies
  ▪ Microsoft SharePoint 2010
  ▪ Web Application Programming
  ▪ Blackberry (Java)
  ▪ iPhone and iPad (Objective-C)
Team Dow
Screen Mockup

Team Dow\requestor

Team Dow Site::Workflow Initiation Form::Business Approval System

Documents

<table>
<thead>
<tr>
<th>Business Function</th>
<th>Category</th>
<th>Initial Approver</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Systems</td>
<td>Automotive Systems</td>
<td>Martin Brennan</td>
</tr>
</tbody>
</table>

Lists

Submit Request

Discussions

Sites

The Capstone Experience
Team Dow
Project Plan Presentation
Team Dow
Screen Mockup

Mobile Device
Team Dow
Architecture Diagram
<table>
<thead>
<tr>
<th>Username</th>
<th>business1</th>
<th>business2</th>
<th>business3</th>
<th>orderOf</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEAMDOW-SERVER\a maintains</td>
<td>Performance Systems</td>
<td>Automotive Systems</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>TEAMDOW-SERVER\dow</td>
<td>Performance Systems</td>
<td>Automotive Systems</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TEAMDOW-SERVER\longfor</td>
<td>Performance Systems</td>
<td>Automotive Systems</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>TEAMDOW-SERVER\pierce</td>
<td>Performance Systems</td>
<td>Automotive Systems</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>
Team Dow
Alpha Presentation

Adding Request Approver

**Approvers - New Item**

- **Username**: Houston, Sam
- **business1**: Performance Systems
- **business2**: Dow Wire & Cable
- **business3**: 
- **orderOf**: 1
Team Dow
Alpha Presentation
The Capstone Experience

Team Dow
Alpha Presentation

New Spending Request

Shared Documents - Spending Request

The document was uploaded successfully. Use this form to update the properties of the document.

Name *

Spending Request

Title

Request for $1000

Created at 2/20/2011 8:07 PM by Joe Amenta
Last modified at 2/20/2011 8:07 PM by Joe Amenta

Save
Cancel
Team Dow
Beta Presentation

Business Approval System

Admin Menu
Business Functions

Approval Menu
2 All Spending Requests
2 Pending Approval
0 Approved
0 Rejected

Request Menu
3 All Spending Requests
1 Pending Submission
2 Pending Approval
0 Approved
0 Rejected

Business Approval System

Main Menu

Please review Department PC Replacements

<table>
<thead>
<tr>
<th>Spending Request Title</th>
<th>Department PC Replacements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spending Request Amount</td>
<td>20000</td>
</tr>
</tbody>
</table>

Reason for Request
Our department is using 5 year old PCs. The computers are extremely slow and outdated. This is drastically affecting our work efficiency.

Comments
I approve this request!

Approve Request
Reject Request
Team Dow

Beta Presentation

New Request

Spending Requests - New Item

Spending Request Title *
Pizza Party

Spending Request Amount *
1000.00

Reason for Request *
Need $1000.00 for a pizza party on Friday.
The Capstone Experience

Team GE Aviation

Department of Computer Science and Engineering
Michigan State University
Spring 2011
12,405,144* hours
The GE90 reaches 10 million hours of flight
* Estimated based on fleet averages
Team GE Aviation
Project Overview

MSU Next Generation Flight Deck

- Pilot Tasks
  - Aviate
  - Navigate
  - Communicate
  - Manage Systems
- MSU Capstone Flight Deck, V1
  - Integrate Previous Capstone Projects
  - Add New Features and Functionality
  - Integrate with X-Plane
- Aviation Use Case
  - Real Life
  - Demonstrate Improved
    - Efficiency
    - Safety
- Technologies
  - X-Plane
  - Previous Capstone Projects
    - Synthetic Vision Display, Fall 2009
    - Lateral Map Display, Spring 2010
    - Super Synoptics, Fall 2010
  - Open GL, GL Studio, GLUT, GLEW
Bill Zajac
Steven Cornfield
Alex Delgado
Dan Alexander

Team GE Aviation
Team Photo
Team GE Aviation
Screen Mockup
Team GE Aviation
Architecture Diagram

- TCP
- UDP
- Undecided

- X-Plane Flight
  - Synoptics Data Plug-in
- PFD Flight Data Plug-in
- PFD Terrain Plug-in
- LMD Flight Data Plug-in
- LMD Terrain Plug-in

- Super Synoptics
- Primary Flight Display
- Lateral Map Display

Cross Functionality
Team GE Aviation

Hardware Setup

[Diagram showing hardware setup with labels for Projector for X-Plane, X-Plane, Lateral Map Display, Super Synoptics, Primary Flight Display]
Team GE Aviation
Project Plan Presentation
Team GE Aviation
Alpha Presentation

Weather Avoidance (PFD)
Weather Avoidance (LMD)
Team GE Aviation
Alpha Presentation
Team GE Aviation
Alpha Presentation

Super Synoptics
Team GE Aviation
Alpha Presentation
Team GE Aviation
Beta Presentation
Super Synoptics
Team GE Aviation
Beta Presentation
Team GE Aviation
Design Day
The Capstone Experience

Team Medtronic

Department of Computer Science and Engineering
Michigan State University
Spring 2011
Team Medtronic
Project Overview

Cloud-Based Athletics Operations Center

• University Athletics Information Portal
  ▪ Resources
    o People (Coaches, Athletes, Managers, Trainers, Etc.)
    o Facilities (Practice, Training, Meeting, Etc.)
    o Etc.
  ▪ Information
    o Schedules (People, Facilities, Teams, Etc.)
    o Athlete Health Records
    o Videos (Scouting, Training, Etc.)
    o News Feeds
    o Weather and Travel Conditions
    o Etc.

• User Features
  ▪ People Presence
  ▪ Calendaring, Emailing, Instant Messaging
  ▪ Video Conferencing
  ▪ Etc.

• Technologies
  ▪ ASP.net, C#.net
  ▪ Microsoft Office 365 Cloud Services
  ▪ Microsoft Azure Cloud Services
  ▪ Microsoft HealthVault
Team Medtronic
Screen Mockup

Central Viewport/Whiteboard

RSS Feed

Calendar
E-mail
Messaging
Videos
HealthVault

My Calendar
Facility Calendar
E-mail
Instant Message

Training Videos
Health Record
Video Conference
System Components

- Hardware Platforms
  - Azure Cloud Platform
  - Windows 7 Professional 64-bit
- Software Platforms / Technologies
  - ASP.NET / C#
  - jQuery
  - Microsoft SQL Azure
  - Microsoft Azure Storage
  - Microsoft Office 365
  - Microsoft Health Vault

Team Medtronic
Project Plan Presentation
Team Medtronic
Architecture Diagram
Team Medtronic Beta Presentation

Main Interface

Cloud-Based Athletics Operations Center

- My Calendar
- Facility Calendar
- School Calendar
- HealthVault
- Video Library

Connecticut edges Kentucky to reach title game

Facility Calendar

School Calendar

Your Health Information

- Type: 4/2/2011, 7:24:07 PM
- Value: 3.20

The Capstone Experience
Team Medtronic
Beta Presentation
Communicate with instant messaging and video conferencing
Team Medtronic Design Day
The Capstone Experience

Team Meijer

Department of Computer Science and Engineering
Michigan State University
Spring 2011
Team Meijer
Project Overview

Consumer Payroll Check Cashing Analytics

• Consumer Payroll Check Cashing Service
  ▪ In Store At Service Desk
  ▪ Users Must Enroll 7 Days in Advance
  ▪ Uses Third Party Authentication Service (Certegy)

• Design and Implement Reporting Features
  ▪ Ad Hoc Reports by Customer, Store, Date, Etc.
  ▪ Fraud Analysis
    o Reports by Store, Groups of Stores, and All Stores
    o Upload and Store Images of Returned Checks
    o Print Automated Prosecution Package for Law Enforcement
  ▪ Predictive Alerts Engine
  ▪ Transaction Trending

• Technologies
  ▪ Microsoft Visual Studio 2010
  ▪ Microsoft Office 2007, 2010
  ▪ Microsoft SQL Server 2008
  ▪ Microsoft SQL Server Reporting Services (SSRS)
Team Meijer
Screen Mockup
Team Meijer
Screen Mockup
Team Meijer
Project Plan Presentation
Dashboard Screen
Team Meijer
Alpha Presentation
Activity Search Screen
Team Meijer
Beta Presentation

Customer Info Screen
Team Meijer
Beta Presentation

Dashboard Screen

Consumer Payroll Check Cashing System

Activity

Threat Level

Predictive Metrics

Account Status
Team Meijer
Design Day
The Capstone Experience

Team Motorola Mobility

Department of Computer Science and Engineering
Michigan State University
Spring 2011
Team Motorola Mobility

Project Overview

Enhance Programming Guide Authoring System

- **Enhanced Program Guides for Mobile Devices**, Fall 2010
  - Provide Enhanced Information
    - Actor Biographies
    - Merchandise Seen on Show
    - Etc.
  - Pushed to Mobile Devices
    - While Consumer Watches Content
    - Non-Intrusive Manner

- **Project Extensions**
  - Life Cycle Management System
    - Network Operators (e.g., Comcast)
    - Content Providers (e.g., NBC Universal, Disney)
  - Secondary Metadata
    - Triggers
    - Synchronization
    - Display in Selectable Layers
  - Consumer Interactivity with Metadata

- **Technologies**
  - Java (Servlets, JEE, JSE)
  - Web Services (RESTful)
  - Web Development (XML, JSON, JavaScript, GWT)
  - iPhone, iPad Development (Objective-C)
  - Android Development (Java)
Team Motorola Mobility

Team Photo

Rory Hool

Chris Goad

Haohan Lin

Alex Boyd

Team Motorola Mobility
Team Photo
Team Motorola Mobility
Screen Mockup
Team Motorola Mobility
Project Plan Presentation
Association Management - Table View, Searching Secondary Content with filters
Team Motorola Mobility
Architecture Diagram

User -> Set Top Box & TV -> Video on Demand Service

User -> Mobile Device

Application Service -> Media Service

Application Service -> Content Authoring Tool

Content Provider
System Architecture

Team Motorola Mobility
Project Plan Presentation
Adam Savage
From Wikipedia, the free encyclopedia

Adam Whitney Savage (born July 15, 1967) is an American industrial designer and special effects designer/fabricator, actor, educator, and co-host of the Discovery Channel television series MythBusters. Adam Savage began acting as a child, and has had five years of acting school. His early credits include voicing animated characters that his father produced for Sesame Street. Whole Milk's stock hero "Shelly" is a Chamelon ornamental artist in.

Early life and education
Born in New York City, Savage was raised in Sleepy Hollow, Westchester County. His father, W. Lee Savage, was a painter, filmmaker, and animator known for his work on Sesame Street. His mother is a psychotherapist. His sister Kate Savage is also an artist.
Team Motorola Mobility
Alpha Presentation
Association Management
Team Motorola Mobility
Alpha Presentation
Team Motorola Mobility
Beta Presentation

“CompleteTV” Mobile App
Team Motorola Mobility

Beta Presentation

Content Authoring Tool
Team Motorola Mobility
Beta Presentation
The Capstone Experience

Team Raytheon

Department of Computer Science and Engineering
Michigan State University
Spring 2011
The Capstone Experience

Team Raytheon
Project Overview

Radio Spectrum Analyzer for Mobile Platforms

• Optimize Use of Radio Frequency Spectrum
  ▪ Identify and Analyze Used Frequency Ranges
  ▪ Recommend Frequency Range to Use
    o To Maximize Bandwidth and Minimize Noise
    o For Tuning and Controlling Military Radios
    o Based on Spectrum Allocation Policies

• Design Features
  ▪ User Interface
    o Manage Spectrum Allocation Policies
    o Display Frequency Usage and Assignments
  ▪ Platform Independent
    o Embedded Platforms (e.g., Radios)
    o Android Smartphones
    o Laptops and iPad-Like Devices
  ▪ Web Service to Manage Spectrum
    o Usage and Assignments
    o Allocation Policies
  ▪ Interoperable with C

• Technologies
  ▪ C, C++
  ▪ Web Application Programming
  ▪ Web Services
  ▪ Raytheon TacLink® EZConnect™
Team Raytheon
Screen Mockup

DroidDraw
Currently Selected Policy: Name

Policy 1
Policy 2
Policy 3

DroidDraw
Name:
Number of Segments:
Power Delta:
Etc:

Create Policy
Discard Policy
Team Raytheon
Screen Mockup

DroidDraw

GridView

Currently Active Policy: Current recommendation

Rec 1  Rec 2  Rec 3

Change Policy  Pick from Recommendations

View the first recommendation
View the second recommendation
View the third recommendation
Team Raytheon
Project Plan Presentation
Policy Selection

- Secondary Radio
- Primary Radio
- Create a New Policy

Team Raytheon
Alpha Presentation
<table>
<thead>
<tr>
<th>Policy</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Policy</td>
<td>20</td>
</tr>
<tr>
<td>Random Seed (in 5/10)</td>
<td>2</td>
</tr>
<tr>
<td>Power Delta (in 5/10)</td>
<td>2</td>
</tr>
<tr>
<td>Power (in 10)</td>
<td>3</td>
</tr>
<tr>
<td>Power (in 10)</td>
<td>3</td>
</tr>
<tr>
<td>Power (in 10)</td>
<td>3</td>
</tr>
<tr>
<td>Create/Update Policy</td>
<td>5</td>
</tr>
<tr>
<td>Saved Policy</td>
<td>5</td>
</tr>
</tbody>
</table>

### Team Raytheon
#### Alpha Presentation
Team Raytheon
Alpha Presentation

Spectrum View

Radio Spectrum Analyzer

Selected Policy: New Policy

Rec 1850.75  Rec 1870.75  Rec 1880.75  Rec 1890

Refresh  Other Options  Change Policy
Team Raytheon
Beta Presentation

Edit and Create Radio Policies

Radio Spectrum Analyzer
Updating Policy: MIPS radio
Policy Name:
MIPS radio

Minimum Sampling Frequency (500 - 3000 MHz):
1750

Maximum Sampling Frequency (500 - 3000 MHz):
1850

Tuning Bandwidth (10 - 100 MHz):
20

Create/Update Policy
Discard Policy

Radio Spectrum Analyzer
Updating Policy: MIPS radio
Number of Segments (1 - 12):
6

Power Level (1 - 50 dbm):
20

Segment Bandwidth (0.5-5.0):
1.2

Power Delta (0.01-0.99):
0.2

Base Power (-100.0-40):
Create/Update Policy
Discard Policy
System Architecture

- RF Sampling Hardware
  - TCP data
- DCS Software
  - Pick Policy
  - Algorithm
  - Display
- Army Radio
  - TCP rec

Team Raytheon
Beta Presentation
Team Raytheon
Beta Presentation
View Radio Recommendation
Team Raytheon
Beta Presentation
The Capstone Experience

Team Sparrow

Department of Computer Science and Engineering
Michigan State University
Spring 2011
You inspire us

Our bold vision to be a national leader in quality and patient experience is inspired by our families, neighbors and the people of mid-Michigan.

See our latest advertising campaign

Latest news

Lansing woman looks forward to Christmas at home after Sparrow surgeons save hand | December 16, 2010
Team Sparrow
Project Overview

iSupport Center

• Medical Informatics at Sparrow
  ▪ 400+ Applications and Systems
    o Patient Medical Information
    o Schedules (Doctors, Patients, Operating Rooms)
    o Etc.
  ▪ Delivery Critical (Matter of Life and Death)
    o Accurately, Timely, and Securely
    o Anytime and Anywhere

• iSupport Center
  ▪ Manage IT Systems and Services
  ▪ Improve Reliability and Response Time
  ▪ Features
    o Catalogue
    o Maintain Licensing and Updates
    o Report, Assign, Track, and Resolve Problems
    o Etc.

• Technologies
  ▪ Microsoft .NET
  ▪ Microsoft SharePoint
  ▪ Microsoft SQL Server
  ▪ Symantec Altris Management Suites
  ▪ Under Construction
Team Sparrow
Screen Mockup
Functional Specifications

- Application Search
  - Problem
    - Information overload
  - Solution
    - Simple user interface
    - jQuery auto complete
    - Extended search
    - Alternate search suggestions
Team Sparrow
Architecture Diagram
Team Sparrow
Project Plan Presentation
The Capstone Experience

Team Sparrow
Alpha Presentation

iSupport Dashboard

Donny says the backup generators are failing and we are losing power to the hospital.
The SPARROWdata.net system is infected with worm, blast, and trojan.
The phone is down on the terrace floor, fix it also.
Help with putting Windows XP sp3 on my desktop workstation computer.
Help me with my password; this machine is broken. Computers are so confusing!
Need two extra sticks of PC3-5200 8-8-8-4 timed ram!
Team Sparrow
Alpha Presentation
Team Sparrow
Alpha Presentation

iSupport Dashboard

Donnys says the backup generators are failing and we are losing power to the hospital!
The SPARROWdata.net system is infected with wormblaster32 trojan
The phone is down on the terrace floor, fix it asap
Help with putting Windows XP sp3 on my desktop workstation computer.
Help me with my password, this machine is broken. Computers are so confusing!
Need two extra sticks of PC3-5200 8-8-8-4 timed ram!

Incident Information

ID: 1337
Source: unicocontrol
Category: Break-Fix
Assigned To Worker ID: 1337
Created By Worker ID: 1337
Modified By Worker ID: 1337
Created On: 2/10/2011 11:34:12 AM
Minutes Spent: 1
Action: Edit
Title: Donnys says the backup generators are failing and we are losing power to the hospital!
Comment: Terribly important, need to be addressed immediately. People need our services!
Owned By Worker ID: 1337
Impact Lookup ID: 100
View Ticket Log
Team Sparrow
Alpha Presentation

On-Call Calendar

[Calendar Image]

View Calendar
Help Desk Reports
Number of Tickets/Level Reported
Team Sparrow
Alpha Presentation
Team Sparrow Beta Presentation

iSupport Dashboard

My Incidents

- [55556] The SPARROW data.net system is infected with wormblaster/32 trojan
- [60380] Ebola virus escaped our quarantine facilities, head for evacuation chambers.
- [56123] The phone is down on the terrace floor, fix it ASAP
- [97807] Breakout of the flu, need all personnel machine sanitized on floors 3 and 4.
- [95859] Zone3110Bldg31PHS-EC2000/CA: This is just a test to see how long I can ...
Team Sparrow
Beta Presentation
Team Sparrow
Beta Presentation

My Incidents

[55556] | The SPARROWdata.net system is infected with wormblaster32 trojan

[60000] | Ebola virus escaped our quarantine facilities, head for evacuation chambers.

[56123] | The phone is down on the terrace floor, fix it asap

[87087] | Breakout of the flu, need all personnel machine sanitized on floors 3 and 4.

[95959] | Zone31100bldg3flPFS-EC2000/CA: This is just a test to see how long i can ...

Previous | Next ->
View Group Members' Incidents
Last Updated: Sun Apr 3 21:24:34 PDT 2011
Team Sparrow
Beta Presentation
Team Sparrow
Design Day
The Capstone Experience

Team TechSmith

Department of Computer Science and Engineering
Michigan State University
Spring 2011
Team TechSmith

Project Overview

WhiteCaps: Mobile Whiteboard Capture Solution

- TechSmith Screen Capture Solutions
  - Jing
  - Snagit
  - Camtasia

- Whiteboard Capture Solution
  - Capture, Annotate, and Share
  - Via Mobile Phone and the Cloud

- Features
  - User Accounts
  - Upload, Share, Annotate, and View
  - Contextual Metadata
    - Location, Date, and Time
    - QR (Quick Response) Codes
  - Content History and Notifications
  - Photo Deskewing and Stitching

- Technologies
  - Apple iOS iPhone SDK, C, Objective-C
  - Google Android SDK, Java
  - Microsoft .NET, C#, WPF
  - Microsoft Azure Cloud Computing and Web Services
Team TechSmith
Screen Mockups

WhiteCaps Logo

Capture Whiteboard

Recent Captures

Add Capture to Workflow

Location: Conference Room

Group: Capstone

Add Notes

Cancel Done

WhiteCaps Mobile

My Caps

My Groups

Preferences
Team TechSmith
Screen Mockups

Team TechSmith
White Caps

Application Navigation Bar
Group Selection Area

Team TechSmith
White Caps

Application Navigation Bar
Toolbar for image editing

Large board capture here
The Capstone Experience

Architecture Diagram

Team TechSmith

Azure server serves up images, and allows users to create and modify groups to view varying levels of content.

Web Browser Application

Send Image and Whiteboard meta-data to the cloud

Android Application

IOS Application

The Azure server will also serve data and images to the mobile devices as well.
Team TechSmith
Project Plan Presentation
Project Overview

- WhiteCaps
- Mobile devices that capture whiteboards and other information
- Cloud to hold whiteboard images and metadata
- Web client to manage user profiles and whiteboard captures as they are captured in the cloud
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Alpha Presentation

WhiteCaps Use Case

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Team TechSmith
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Team TechSmith
Alpha Presentation
Team TechSmith
Beta Presentation

iPhone App

WhiteCaps

Settings

Capstone lab whiteboard.

Location:
Capstone Lab West

Group:
capstone

Cancel
Upload

Main Menu
View Captures
Create Group
Invite to Group
My Profile

TechSmith Corporation
Team TechSmith
Beta Presentation
Android App
Team TechSmith
Design Day
The Capstone Experience

Team Urban Science

Department of Computer Science and Engineering
Michigan State University
Spring 2011
To achieve extraordinary results, you need to look beyond the obvious. Urban Science can help.

At Urban Science we live and breathe the simple concept that successful retail operations are all about location, performance and satisfied customers. To bring this idea to life, we create and analyze market and consumer data like no one else.

Using a unique combination of analytics, proprietary software and experience, we help our automotive and retail clients plan effectively, define and measure performance, and develop sales and marketing programs that deliver results.
Bringing LeadVision to the Web

- **LeadTV**
  - Visualization of Automotive Sales Leads
  - “TV” Model
    - Client-Based Application
    - Displayed on Dedicated Monitor
    - Little or No Interaction
- **Web LeadTV**
  - Browser-Based
  - Enhanced Capabilities and Usability
- **Features**
  - Customize Leads Visualized
    - By Brands and/or Models
    - By Top 5
    - Etc.
  - Zoom and Pan
  - Time Shifting
  - Etc.
- **Technologies**
  - Web Application Programming
  - Java and/or Silverlight
  - SQL Databases
Team Urban Science
Screen Mockup
Project Overview

- Creating an interactive version of LeadVision
- Audience: customers walking into a dealership/corporate office
- “Lead” – request sent by customer
- No user input needed
- Daily lead data shown
Team Urban Science
Screen Mockup
Risks

- Geographical Data
  - How do we get it? How can we make use of it?
  - Panning and zooming
- Learning Silverlight
  - Displaying map/showing data
- Ticker
  - What kinds of statistics/how to store & load them
- Flexibility/Testing
  - Making it work on different browsers
Team Urban Science
Alpha Presentation

Car Buttons and Ticker

---

Last Car Sold: Audi A4
Time Of Day: 1:34 EST
Leads Received To
Map With Borders And Zoom In Feature
Team Urban Science
Beta Presentation

LeadVision Default View

Monthly Lead Average: 30,000
06:11 PM

URBAN SCIENCE
LeadVision™

VOLKSWAGEN
Team Urban Science
Beta Presentation

LeadVision Mouse-Over
Team Urban Science
Beta Presentation
Team Urban Science
Design Day
The Capstone Experience

Dr. Wayne Dyksen
Department of Computer Science and Engineering
Michigan State University
Spring 2011
Capstone Lab
View of Spartan Stadium
The Capstone Experience

Design Day Award Winners

April 30, 2010
Auto-Owners Exhibition Award
Team GE Aviation, Spring 2010
Flight Deck Lateral Map Display
Jason Ridgon, Jordan Clare, Cory Sites, Adam Dupler
Presented by Ron Simon of Auto-Owners Insurance
Chrysler Praxis Award
Team Boeing, Spring 2010

XML Texture Composition
Jeremiah Cunningham, Jessica Parks, Marc Coleman, Jonathan Harris
Presented by Rick Rose of Chrysler
TechSmith Screencast Award
Team Medtronic, Spring 2010
Mobile Health Management System
Michael Keesey, Kevin Chen, Karthik Chokkaram, Meghan McNeil
Presented by Dean Craven of TechSmith
Urban Science Sigma Award
Team Motorola, Spring 2010
Mobile User Generated Video Service
Kurt Seippel, Robert Gaul, Jonathan Szynkowski, Brandon Malicoat
Presented by Mark Colosimo and Randy Berlin of Urban Science
The Capstone Experience

Design Day Award Winners

December 10, 2010
Auto-Owners Exhibition Award
Team Meijer, Fall 2010

ITS Products and Services Request System
Matt Packowski, Austin McCarty, Andrew Thielking
Presented by Scott Lake and Bob Buchanan of Auto-Owners Insurance
Chrysler Praxis Award
Team Motorola, Fall 2010
Enhanced Program Guide for Mobile Devices
Andrew Rossow, Drew Hanlon, Tim Aubel, Brian Cripe
Presented by Karen Wrobel of Chrysler
TechSmith Screencast Award
Team Medtronic, Fall 2010
Medtronic Wellness Portal
Zach Riggle, Joe Heldt, Chris Van Wiemeersch, Vu Bui
Presented by Dean Craven of TechSmith
Urban Science Sigma Award
Team GE Aviation, Fall 2010
Super Synoptics
Adam Breece, Shawn Henry Adams, Nick Rafalski
Presented by Randy Berlin of Urban Science
The Capstone Experience

Design Day Award Winners

April 29, 2011
Auto-Owners Exhibition Award
Raytheon, Spring 2011

Dynamic Spectrum Access for Network Radios
James Voss, William Bonner, Matt Bowser, Srinivasa Settaluri
Presented by Scott Lake and Bob Buchanan of Auto-Owners Insurance
Chrysler Praxis Award
Team Boeing, Spring 2011

BAPS: Battle Aircraft Position Share
Steven Garske, Eric Muller, Adam Cook, Andrew Kos
Presented by Karen Wrobel of Chrysler
TechSmith Screencast Award
Team Medtronic, Spring 2011
Cloud-Based Athletics Operations Center
Caitlin Russ, Evan Francis, Michael Holp, Christopher Paterson
Presented by Dean Craven of TechSmith
Urban Science Sigma Award
Team Sparrow, Spring 2011

iSupport Center
Brett McMillen, Dianna Kay, Maurice Wong, Ryan Hewitt
Presented by Randy Berlin of Urban Science
The Capstone Experience

Dr. Wayne Dyksen
Department of Computer Science and Engineering
Michigan State University
Spring 2011