Course Overview

Course Logistics

- Client Projects

Course Logistics Continued

From Students…

…to Professionals

Course Goals

- Work in a Team Environment
- Build a Significant Software System
- Use (New) Tools and Environments
- Build and Administer Systems
- Develop Your Communication Skills
- Develop Interview Talking Points
- Etc…

Team Course Goal

- Build Large Software Project
  - Design
  - Architect
  - Develop
  - Test
  - Document
  - Deliver
- For Client
- From (Almost) Nothing
- In 15 (Short) Weeks

Project Deliverables

- Project Plan Document & Presentation
- Alpha Demonstration
- Beta Demonstration
- Project Software & Documentation
- Project Video
- Design Day
- Team Web Site
See Other Information, Major Milestones
All-Hands Meetings

Presentations By
• Professor
• Teams
  – Status Reports
  – Software Demonstrations
  – Formal Presentations
  – Project Videos
• Guest Speakers

CSE498 Lab

• 3352 EB
• Door Lock
  – Electronic Keypad
  – Code = ####
• Systems
  – Two PC’s per Team
  – Server
  – Development Machine
  – Team 100% Responsible
  – Building
  – Maintaining
  – Securing
  – Backing Up
• Books

Scheduled Lab Times

• No Formal Lab Sessions
• “Credit” for Scheduled Weekly Meetings
  – Team Meeting
  – Client Conference Call
  – Triage Meeting with Ken
• Meeting Times TBA With
  – Team
  – Client
  – Ken
• Students must be available to meet.

IP & NDA’s

• IP: Intellectual Property
  – By Default, Owned by You
  – Client May Request
  – Right to Use
  – Assignment of Ownership
  – Etc.
• NDA: Non-Disclosure Agreement
  – May Be Required by Client
  – You will...
    • ...respect/protect intellectual property.
    • ...respect/protect source code.
    • etc.
• Normally Not an Issue

Course Overview

Course Logistics

From Students... …to Professionals

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

Project Level of Difficulty
- Hard Enough
- But Not too Hard

Deliverable
- To the Client
- By the Due Date

Documentation
- System Administration Manual
- Users Manual

Team / Project Generalities

- Challenges
  - Very Short, Unforgiving Time Line
  - Client Contact
  - Team Dynamics
  - Architecture / Specifications (in Three Weeks)
  - Entirely New…
    - Languages
    - Environments
    - APIs
    - 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
    - Course Feature, Not Bug

Project Teams/Clients

- Team Auto-Owners Insurance
- Team Boeing
- Team Chrysler
- Team GE Aviation
- Team Medtronic
- Team Meijer
- Team Motorola
- Team Raytheon
- Team TechSmith
- Team Terex
- Team Urban Science

Dashboard and Weather Incident Verification System

- Dashboard
  - Weather Incidents
  - Statistical Reporting
  - Informational Reporting
- Weather Incident Verification System
  - Determine Weather Incidents
  - Based on Street Address
  - Using Weather Web Services
  - Used by Claims Associates
- Features
  - Policy Information
  - Emailing Reports
  - Mobile Device Support
- Technologies
  - ASP .NET
  - Visual Studio 2008
  - iPhone, BlackBerry
  - Web Services
  - Etc…
**Team Boeing**

**XML Texture Composition**
- OSG Plugin for Boeing Modeling & Simulation Applications
  - Enable Visual Replay of Simulation Activity
  - Enhance Special Effects and Realism
  - Use Sparse Virtual Texturing
- XML Texture Composition Capability
  - Extend Capstone Sparse Virtual Texturing, Fall 2009
  - Apply Multiple Textures to a Specific Geographic Location
  - Manage Exclusiveness, Inclusiveness, and Priority
- Runtime Capability
  - Add Inset (Image) to the Terrain
  - At Current Viewer Resolution
  - Inside Specified Bounding Box
- Technologies
  - Sparse Virtual Texturing
  - OpenSceneGraph
  - XML
  - Texture Composition
  - C++ and OpenGL Threads
  - Etc.

**Team Chrysler**

**Manufacturing Dashboard Migration**
- Existing Manufacturing Dashboard
  - Meets Current Business Partners' Requirements
  - Prior to Industry Standards and Software Packages
  - Difficult to Provide New Functionality
- New Manufacturing Dashboard
  - Executive Level to Plant Floor Personnel
  - 50 Real-time Charts and Graphs
  - News and Events
  - Focus on Warren Stamping Plant
  - SharePoint Portal
- Technologies
  - Microsoft SharePoint Services
  - SQL Reporting Services
  - RDBMS Technologies (UDB, Sybase, DB2)
  - Performance Point
  - Etc.

**Team GE Aviation**

**Flight Deck Lateral Map Display**
- Lateral Map Display
  - Top Down View of Aircraft's Situation
  - Features
    - Present Position
    - Heading
    - Ground Speed
    - Terrain
    - Weather
    - Flight Plan Line
    - Waypoints
    - Selectable Navigation Aids
    - Geopolitical Features
    - Interactivity
    - Etc.
- Integrate With XPan
- Technologies
  - Map and Terrain Databases
  - OpenGL, GL Studio
  - XPan
  - Capstone Synthetic Vision Display, Fall 2009
  - Etc.

**Team Medtronic**

**Mobile Health Management System**
- Manage Chronic Disease
  - Improve Quality of Life
  - Reduce Costs (Currently 80% of All Health Care Costs)
- Web App
  - Create and Track Goals
  - Provide Feedback on Health and Wellness
- iPhone
  - Track Calorie Intake and Expenditure
  - Suggest Exercise and/or Food Consumption
  - Accept Input from Monitoring Devices
    - Blood Glucose
    - Heart
    - Etc.
- Technologies
  - iPhone
  - Java based web development
  - Microsoft HealthVault
  - Google Health
  - Etc.

**Team Meijer**

**CIO Dashboard**
- Dashboard of ITS (Information Technology Services) KPI's
  - Target for CIO and ITS Leadership
  - Build Capstone ITS Scorecard Dashboard, Fall 2009
- Features
  - Spotting of Actual vs. Goal
  - Drill-down
  - Trending (UpDown and Rolling)
  - Alerts/Notification
- Consistency of Delivery and Format
- Extensible Architecture
  - Frameworks
  - Templates
  - Standards
- Technologies
  - Microsoft SharePoint 2007
  - Visual Studio 2005
  - Microsoft SQL Server 2008
  - Etc.

**Team Motorola**

**Mobile User Generated Video Service**
- User Videos from Mobile Phone to Home TV
  - Users Generate Videos
    - Capture with Mobile Phone
    - Family and Friends View Videos
      - Samsung TV
      - Using Open Set Top Box (STB)
  - Support Apple iPhone and Motorola Droid
- Software Components and Features
  - RESTful Video Services
  - Video On Demand (VOD)
  - Social Networking
  - Other Cable TV Services and Interfaces
  - Cable TV Set Top Box (STB) Interface
  - Technologies
    - iPhone (Objective C) Development
    - Advanced Java and JEE
    - AJAX
    - Advanced JavaScript and Other Cable Services
    - Multimedia Development

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CSE 498, Collaborative Design

Course Overview

Prof. Wayne Dyksen

Department of Computer Science and Engineering
Michigan State University
Team Raytheon
Project Overview
Common Interface Adaptors for Command Assurance

- Command Assurance
  - Situational Awareness (SA) Tools
  - Provides 2D and 3D Visualizations of Wide Variety of Sensors
  - Broad Spectrum of Data Representations and Transport Mediums
  - Exploits Multiple Map Engines
- Design and Implement Flexible Isolation Layer
  - Between SA Tools and Sensors
  - Design and Implement Standards
- Technologies
  - Command Assurance SDK
  - Various Sensors
  - Serial and Parallel Input
  - TCP/IP
  - Windows
  - Linux
  - Etc...

Team TechSmith
Project Overview
Facebook Study Group Application

- Portal for Social Networking Study Group
  - Online Version of Face-to-Face Study Groups
  - Collaborate Using Rich Media Content Created with TechSmith Products
  - Leverage Features of Facebook Platform
- Students Should be Able to...
  - ...Find Other Students Interested in Same Course
  - ...Ask and Answer Questions
  - ...Share Notes
  - ...Create Study Guides
  - ...Promote a Weekly Agenda
  - ...Rotate a Leader/Moderator
  - ...Etc.
- Technologies
  - Facebook Application Development (PHP, JavaScript, ActionScript 3.0)
  - Web Development (HTML, XML, AJAX, .NET)
  - Etc...

Team Terex
Project Overview
Advanced Search for eCommerce

- Existing Terex eCommerce Site
  - Based on Oracle ERP iStore
  - Enhanced to Handle a Variety of Business Requirements
  - User Friendly User Interface
  - Bill of Materials
  - Display of CGM Images via Arbortext Isoviewer
- Advanced Search
  - Across XML, pdf, and CGM
  - Stored in Content Management Server
  - Generates and Uploads pdf Documents
  - Based on User Selections
  - Sections of XML Documents
  - Include Table of Contents and Page Numbers
- Technologies
  - JSP/Java Development
  - Content Management Systems
  - XML
  - Arbortext Isoviewer
  - PDF Generator Plug-ins
  - Etc...

Team Urban Science
Project Overview
Applications for Mobile Devices

- Urban Science Product Suite
  - Automobile Manufacturers and Dealers
  - Business Analysis Tools
  - Registrations
  - Demographics
- Registrations
- Sales
- Designed for Internet Explorer on Desktops or Laptops
  - Provide Mobile Access
  - Automated Migration from IE to Mobile Device
  - Handle Personal Access Point via Login
  - Display Text, Tables, Charts, and Maps
  - Target BlackBerry, iPhone
- Technologies
  - Microsoft .NET
  - SQL Databases
  - BlackBerry, iPhone
  - Etc...

First Assignments

- Read the Syllabus
- Check out the Lab
  - See if you can find it.
  - See if you can get in.
- Check out the Web Site
- Research Clients

What’s Next?

- Teams
  - Assignments by Email Tonight
  - Meet Initially by Tuesday Afternoon
  - Lab Machine Assignments in Lab
  - Start Configuring Lab Machines
  - Pictures Wednesday After All-Hands Meeting
- Client
  - Contact by Email by Tuesday Afternoon
  - Contact by Phone Tuesday or Wednesday
  - Review Project Proposal
Course Overview

- Course Logistics
- Client Projects

Course Logistics Continued

- Course Environment
  - Business-Like
  - Team
    - External Software Development Company
    - Internal Software Development Team
  - Dyksen & Horne
    - Are Your
      - External Paying Clients
      - Internal Managers
    - Expect Results
      - On Time
      - No Excuses

Expectations & Workload

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

Major Milestones

- 01/25: Teams: Status Reports
- 02/01: Teams: Project Plans
- 02/22: Teams: Alpha Demonstrations
- 04/05: Teams: Beta Demonstrations
- 04/26: Teams: Project Videos
- 04/28: Teams: Project Videos, All Deliverables
- 04/30: Teams: Design Day
- 05/04: Teams: Project Videos

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 In Advance
    (Date, Company, Recruiter Name & Contact Info)
- Must Attend (No Excuses Accepted)
  - Your Team Presentations
  - All Final Project Video Viewing
  - Design Day

Team Organization

- Up to Each Team
- Organize into Roles
  - Client Contact
  - Program Manager
  - Developer
  - Tester
  - Systems Administrator
  - Web Master
  - 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 Ken
- Be Ready to Discuss During Interviews

Grading

- Team (70%)
  - Project Plan Document & Presentation 10
  - Alpha Demonstration 10
  - Beta Demonstration 10
  - Project Video 15
  - Project Software & Documentation 15
  - Design Day 5
  - Team Web Site 5
- Individual (30%)
  - Technical Contribution 10
  - Team Contribution 10
  - Team Evaluation 5
  - Class Meeting Attendance 5

Grading

- Final Grade Sum Of...
  - Individual Grade
  - Percentage of Team Grade Based on Team Contribution
  - Grand Total = (Individual Total) + (Team Total) * (Team Contribution) / 10.0
  - N.B. Nota Bene: Your Team Contribution will have a very significant effect on your final grade.

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,
  - graduation,
  - mortgage,
  - wedding, or
  - visa status.

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
    - Past Capstone Teams
    - Other Capstone Teams
    - Faculty Members
  - Articles
  - Sample Code
  - Etc…
- Not Ok For “Entire” Project
- If Unsure, Ask Dr. D. and/or Ken
Using Existing Code
- Ok
  - Examples
  - Prototypes
  - Open Source Code
    - Fragments
    - Libraries
    - Utilities
- Not Ok
  - Vast Amounts of Your Project
  - Not Open Source
- Document and Report All Existing Code Used
- Be Careful!
- If Unsure, Ask Dr. D. and/or Ken

Design Day
- College of Engineering Event
  - MSU Union
  - Friday Morning, April 30
- Displays (Booths) of Design Projects
  - CSE Capstone
  - ECE Capstone
  - ME Capstone
  - Etc…
- Presentations and Awards
  - Panel of Judges
  - CSE Team Project Videos

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

Office Hours
- Any Time…
  - Visit
  - Call
  - Send Email
- Make Appointment

Course Overview
- Course Logistics
- Client Projects
- Course Logistics Continued