


1. Course Overview

CSE 498, Collaborative Design



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S CSE 498

- Collaborative Design
“Senior Capstone”
- Dr. Wayne Dyksen (“Dr. D.”)
Matthew Luciw (Pronounced “Lew Chee”)
- Lecture
MW, 3:00-3:50pm, 2243 EB
- Labs, 3352 EB
TT, 3:00-4:50pm
WF, 8:00-9:50am
WF, 12:40-2:30pm

S Web Site

- Details
 - URL: www.cse.msu.edu/~cse498
 - User name: cse498
 - Password: TBD
- Check it Often for
 - What’s new?
 - Meeting Notes
 - Client Projects
 - Resources

S Course Objectives

- Build A Software System (From Scratch)
- Use (New) Tools And Environments
- Build And Administer Systems
- Integrate Your Computer Science Knowledge
- Work In A Team Environment
- Develop Your Communication Skills
- Develop Some Interview Talking Points
- Etc...

S Team Course Goal

- Complete Large Software Project
 - Architect
 - Implement
 - Test
 - Document
 - Deliver
- For Client
- From “Scratch”
- In 15 (Short) Weeks

S Team / Project Generalities

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

S Team / Project Generalities

- Project Level of Difficulty
 - Hard Enough
 - But Not too Hard
- Deliverable
 - To the Client
 - By the Due Date
- Documentation
 - System Administration Manual
 - Users Manual

S Team / Project Generalities

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

S 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

S Project Teams/Clients

- Team 01: Auto-Owners Insurance
- Team 02: Boeing
- Team 03: Ford
- Team 04: IBM
- Team 05: MATRIX
- Team 06: Microsoft
- Team 07: Motorola
- Team 08: Sircon
- Team 09: TechSmith
- Team 10: Toro

S Team 1 Auto-Owners Insurance Project Overview

Vendor Tracking System

- Security System to Track Vendors Visiting Auto-Owners
 - Application Runs on Lobby Desktop
 - Vendor Signs In
 - Vendor Name
 - Vendor Company
 - Auto-Owners Person Visiting
 - Etc
 - System Prints Badge with Barcode
 - Visitor Signs Out by Scanning Badge Barcode
- Technologies
 - .NET
 - C#
 - SQL Server
 - Etc...

S Team 2 Boeing Project Overview

Poseidon Executor 2008

- Visualize Flight of P-8A Poseidon Submarine Hunter
- Poseidon Aircraft CIGI Integration (PACI)
 - Create Graphical Models
 - P-8A Poseidon Aircraft
 - Submarines
 - Display Aircraft In Flight
 - Automated: Input from Data File
 - Operator: Input from User (Keyboard or Joystick)
- IOS Execution Tool (IOSET)
 - Process Management
 - Isolated Process Launcher
 - Visual Studio Solution Builder
- Technologies
 - C/C++
 - CIGI (Common Image Generator Interface)
 - DIS (Distributed Interactive Simulation)
 - Etc...

1-10

Team 3 Ford Project Overview

Ford Sensor Showroom

- Automatically Measure Interest in Vehicles
 - Auto Shows
 - Car Dealerships
- Use Wireless Sensors
 - Count
 - Door Opened
 - Hood Popped
 - Trunk Unlatched
 - Etc...
 - Time
 - Standing by Vehicle
 - Sitting in Seat
 - Looking at Engine
 - Etc...
- Technologies
 - Crossbow iMote2 Wireless Sensors
 - Temperature, Humidity, Light
 - Motion (By 3-Axis Accelerometer)
 - .NET Micro Framework
 - Etc...

Team 4 IBM Project Overview

POWER Hypervisor hcall Testing Tools

- IBM POWER Hypervisor
 - Virtual Machine Environment
 - Supports Multiple Processors
 - Partition Processors
 - Assign Particular Processor to Particular Virtual Machine
- hcall Testing Tools
 - 100's of Hypervisor hcall System Calls
 - Testing Tools
 - Make hcall Calls
 - Test Return Values Against Known Return Values
 - Automate
- Technologies
 - Hypervisor
 - Linux Kernel
 - C/C++
 - Perl Scripting
 - X Window System

Team 5 MATRIX Project Overview

Event Logging System for KORA

- KORA
 - Digital Archiving Platform
 - Content Management Capabilities
- Provide Archival Data Integrity via Event Logging
 - On Ingestion Computes and Stores Checksum
 - Intermittently
 - Checks Checksum
 - Add Record to Datastore
 - Provide Searching Over Logs
- Scale Challenges
 - Hundreds of Thousands of Files
 - Hundreds of Gigabytes of Information
- Technologies
 - Open Source
 - Platform Independent
 - Handle Multiple Database Backends Including MySQL
 - Standard Messaging Protocol
 - Support Multiple Checksum Methodologies
 - Etc...

Team 6 Microsoft Project Overview

LiveSketch

- Whiteboard
 - Web-Based
 - Users
 - Multiple
 - Simultaneous
- Client/Server
 - Client
 - Runs on Local Machine
 - User Drawing Surface
 - Silverlight/C# Based
 - Server
 - Runs on Remote Machine
 - Maintains State of the Whiteboard
 - Resolves Potential Conflicts from Multiple, Simultaneous Use
 - C# Based
- Technologies
 - .NET
 - C#
 - Silverlight
 - Etc...

Team 7 Motorola Project Overview

Advanced Network Fault Management

- Network Fault Management
 - Devices Report Faults
 - Manage Network Based on Faults
- Motorola INFM System
 - Manages Faults
 - Records
 - Correlates
 - Reports
 - Stand-Alone Application
- Create Distributed INFM System
 - Migrate Stand-Alone Tool to Distributed
 - Reuse Existing Code
 - Create Deployable Services
 - Communicate via Services Infrastructure
 - AJAX User Interface
- Technologies
 - Java
 - XML
 - JBoss
 - Etc...
 - Javascript
 - AJAX
 - Eclipse
 - Etc...

Team 8 Siron Project Overview

Workflow Editor for AutoPilot

- Siron's AutoPilot
 - Automated Workflow Technology
 - Based On Open Source OSWorkflow Project
- Workflow Editor
 - Create and Edit AutoPilot Workflows
 - Represent Workflows as Flowcharts
 - Reduce Time and Training Required to Use AutoPilot
- Technologies
 - Java
 - Swing
 - Etc...

Team 9 TechSmith Project Overview

S Screen Recorder for Linux

- Camtasia Relay Server
 - Beta 1, 1.0.0 Release
 - Video Recording Server
 - Receives
 - Transcodes
 - Publishes to Remote Locations for Viewing
- Linux Relay Recorder
 - X Window System Based
 - Records Screen Activity Plus Audio
 - Uploads to Camtasia Relay Server
 - Must Have Look-and-Feel of Existing Windows and Mac Relay Recorders
- Three Components
 - Recorder
 - Uploader
 - Screen Recording SDK
- Technologies
 - C++
 - Open Source Tools
 - QT Cross Platform GUI Toolkit
 - Etc...

Team 10 Toro Project Overview

S WPF-Based User Interface for Irritrol

- Toro Wireless Sprinkler System
 - Partitioned Into Zones
 - Wireless Controller
 - Connected Via Wires to Zones
 - Turns Zones On and Off
 - Programmed with Watering Schedule
 - Uploaded From PC
 - Through Wireless Hand-Held Remote
- Existing Irritrol
 - PC-Based Controller Watering Schedule Software
 - Create, Edit, & Upload
 - Front-End Written in Macromedia Flash
- Proposed Irritrol
 - Re-write Front-End in Windows Presentation Foundation
 - Re-Use as Much of Backend as Possible
- Technologies
 - C++
 - Windows Presentation Foundation
 - Etc...

S Course Environment

- Business-Like
- Team = Startup Company
- Dyksen & Luciu
 - Your
 - Venture Capitalists
 - Board of Directors
 - Expect
 - ROI
 - Results

S Team Dynamics

- Organize as See Fit
 - Really Hard Stuff
 - Really Important Stuff
- Board of Directors...
 - Hires
 - Fires
- (Be Ready to Discuss During Interviews)

S Project Deliverables

- Technical Specification & Presentation
- Alpha Demonstration
- Beta Demonstration
- Project Video
- Project Software & Documentation
- Design Day
- Team Web Site

S Design Day

- College of Engineering Event
 - MSU Union
 - Friday Morning, April 25
- Displays (Booths) of Design Projects
 - CSE Capstone
 - ECE Capstone
 - ME Capstone
 - Etc...
- Presentations and Awards
 - ECE and ME Capstone Team Talks
 - CSE Team Project Videos

S All Hands Meetings

Presentations By

- Professor
- Teams
 - Status Reports
 - Demonstrations
 - Formal Presentations
 - Project Videos
- Guest Speakers

S Meeting Attendance

- Required
 - All Hands (Class)
 - Team Triage
- 5% of Final Grade
- 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 } Do NOT Schedule Interviews
 - Design Day

S All-Hands Meeting Agendas

01/07: Course Overview / Skills Inventory	03/10: Ethics
01/09: Technical Specifications / Team Assignments	03/12: Intellectual Property and Copyright
01/14: Project Schedule & Risk	03/17: Teams: Beta Demonstrations
01/16: Teams: Status Reports	03/19: Teams: Beta Demonstrations
01/21: Martin Luther King Day, No Meeting	03/24: Teams: Beta Demonstrations
01/23: Prototyping	03/26: Teams: Beta Demonstrations
01/28: Teams: Technical Specifications / Schedule	03/31: The Project Video
01/30: Teams: Technical Specifications / Schedule	04/02: Camtasia Demo
02/04: Teams: Technical Specifications / Schedule	04/07: Teams: Progress Reports &/Or Demos
02/06: Teams: Technical Specifications / Schedule	04/09: Teams: Progress Reports &/Or Demos
02/11: Resume Writing & Interviewing	04/14: Teams: Progress Reports &/Or Demos
02/13: Creating & Giving Presentations	04/16: Teams: Progress Reports &/Or Demos
02/18: Teams: Alpha Demonstrations	04/21: Teams: Project Videos
02/20: Teams: Alpha Demonstrations	04/23: Teams: Project Videos
02/25: Teams: Alpha Demonstrations	04/24: Design Day Setup
02/27: Teams: Alpha Demonstrations	04/25: Design Day
03/03: Spring Break, No Meeting	04/30: Teams: Project Videos
03/05: Spring Break, No Meeting	

S CSE498 Lab

- 3352 EB
- Door Lock
 - Electronic Keypad
 - Code = ##### Bell
- Systems
 - Two PC's per Team
 - Server
 - Development Machine
 - Team 100% Responsible
 - Building
 - Maintaining
 - Securing
 - Backing Up
- Books
- Conference Area
 - Team Meetings
 - Client Conference Calls
 - Google Calendar
- Appliances
 - Refrigerator
 - Microwave
 - Coffee Maker
- Lockable Storage (If Needed)

S Schedule Lab Times

- No Formal Lab Sessions
- Placeholders for Team Meetings
- Teams may meet at any time.
- Students must be available during their scheduled lab time.

S 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

S 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

S NDA: Motorola Example

- To not use, retain or disclose Motorola Software or other Motorola confidential information, except in the course of participating in this class and for other University educational purposes approved in writing by Motorola. You may identify and describe your participation in your curriculum vitae or to prospective employers.
- To consult with Motorola, through the undersigned Motorola representative, before using any confidential information of Motorola outside of your coursework, so we can take steps to protect any Motorola confidential and other proprietary rights.
- That the Motorola Software is being provided on a temporary basis for Motorola's benefit and your educational use for this class only, and may not be used in any other context. This software must not be installed on a shared drive accessible by individuals not involved in the class. You must delete this software when your participation in the class has ended unless you obtain further written permission from Motorola. All derivative works to Motorola Software are created on a work-for-hire basis, and will be retained by Motorola.
- That by this Agreement you grant Motorola a perpetual and irrevocable right, on a nonexclusive basis, to use and otherwise commercially exploit independent code and related documentation that you develop in the course of this program.

S Grading (1 of 2)

- Team (70%)

– Technical Specification & Presentation	10
– Alpha Demonstration	10
– Beta Demonstration	10
– Project Video	15
– Project Software & Documentation	15
– Design Day	5
– Team Web Site	5
	70
- Individual (30%)

– Technical Contribution	10
– Team Contribution	10
– Team Evaluation	5
– Class Meeting Attendance	5
	30

S Grading (2 of 2)

- 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.

S 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.

S 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 Matt

S 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 Matt

S VISA →

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

S Office Hours →

- Your Choice
- Either
 - Any Time...
 - Visit
 - Call
 - Send Email
 - Make Appointment If Necessary
 - Or
 - Two Hours Per Week, Period
 - Make Appointment If Necessary

S 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
 - See if you can log in.
 - Check out the links.
- Research Clients

S What's Next? [Wednesday](#) →

- Teams
 - Assignments
 - Meeting
 - Organization
 - Pictures
- Client
 - Contact
 - Project Review
- Technical Specification
 - Examples on Course Site