



## 1. Course Overview

CSE 498, Collaborative Design



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Fall 2007

## S CSE 498

- Collaborative Design  
“Senior Capstone”
- Dr. Wayne Dyksen (“Dr. D.”)  
Matthew Luciw
- Lecture  
MW, 3:00-3:50pm, CAS 175
- 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](http://www.cse.msu.edu/~cse498)
  - User name: cse498
  - Password: TBD
- Check it Often for
  - What’s new?
  - Meeting Notes
  - Team Projects
  - Useful Links

## 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 (1 of 3)

- 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 (2 of 3)

- 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 (3 of 3)

- 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 (1 of 9)

- 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 Specifics (2 of 9)

1. Auto-Owners Insurance Vendor Management System (VMS)
  - A-O Utilizes Third-Party Business Partners (BPs)
    - Software
    - Services
    - Technical Assistance
  - Build VMS to Manage BPs
  - Functionalities
    - Add, Delete, Modify
    - Merge (When One BP Buys Another)
    - Access and Display Related Documents (From Image Right Repository)
    - Track Renewals and Reviews
    - Etc...
  - Technologies
    - C#
    - .NET
    - SQL

## S Project Specifics (3 of 9)

2. Ford
  - Ford Safety Index: Automotive Warning System
  - Enable Driver to Avoid/Prepare For "Travel Troubles" by Leveraging In Vehicle Internet Connectivity
  - Monitor Alerts Of Vehicle Safety Features
    - Traction Control
    - Roll Stability
    - Air Bag Deployment
    - Excessive Braking
    - Etc.
  - Match Alert Patterns to Internet Information
    - Bad Weather
    - Traffic
    - Accidents
    - Etc.
  - Possible Scenarios
    - Issue Patterns
    - Central Driver Alert Service
    - Visual Mapping
    - Notify Authorities
    - Instrument Panel Simulation
    - Etc.

## S Project Specifics (4 of 9)

3. IBM
  - Enable Linux Kernel for Dedicated Processor Sharing and Processor Folding
  - Processor Partitioning
    - Partition Physical Processors into Logical Processor
    - Includes Dedicated Processors and Shared Processors
  - Dedicated Processor Sharing
    - Intended to Make Use of Idle Dedicated Processors
    - Idle Dedicated Processor "Donated" to Shared Processor Pool (SPP)
    - Enabled by Turning on Flag in the Virtual Processor Area
  - Processor Folding
    - Intended to Maximize Dedicated Processor Donation
    - Physical Processor Must Be Idle Before Logical Processors Donated
    - Pack Work Onto Minimal Number of Physical Processors
    - Must Tweak Kernel Dispatching Policies
  - Requires
    - Linux Kernel "Hacking"
    - Running on IBM Multi-Processor Hardware

## S Project Specifics (5 of 9)

### 4. Motorola AJAX Based Management Console for the Agent Framework

- Remote Management of Entities
  - Complex, Heterogeneous
  - Routers, Switches, Etc.
- Agent Framework (Existing)
  - Agents Do Remote Management
  - Framework for Rapid Development of Agents
- Management Console (Proposed)
  - Interacts with Components Generated by the Framework
  - Manage Components
    - Query
    - Configure
    - Deploy
  - Graphical Interface via Web Browser

## S Project Specifics (6 of 9)

### 5. Sircon GUI Configuration Tool for Dynamic Interview

- Dynamic Interview
  - Interview in Which Subsequent Questions Depend on Answers
  - Similar to TurboTax
  - Currently Programmed "By Hand"
    - Time Consuming and Error Prone
    - Must Be Done by a Programmer
- Graphical Tool
  - Allows User to
    - Enter Questions with Answer Choices
    - Represent Question Dependencies
  - Generates XML Code Auto-Magically
  - Useable by Interview Designers (Rather Than Just Programmers)
- Technologies
  - Java
  - XML
  - Swing

## S Project Specifics (7 of 9)

### 6. TechSmith

- Rich Media Collaboration
- Rich Interaction and Conversation About Audio and Video Clips
  - More Than Playback, Text Commenting and Social Network Tagging
  - Like [motionbox.com](http://motionbox.com), [veotag.com](http://veotag.com), or [viddler.com](http://viddler.com)
  - "Deep-Tagging"
- Solution Based on Microsoft's Silverlight Technology
  - Screen Recording Tool
  - Content Hosting and Delivery Server
  - Silverlight Application and Web Site
    - For Both Content Author and Content Audience
    - Provide Rich Collaboration
- Requirements
  - Windows and Mac OS X Support
  - Browsers that Support Silverlight v1.1
- Technologies
 

• C++ or C#/NET or Both	• Microsoft Windows Presentation Foundation
• TechSmith Screen Recorder SDK	• Microsoft Windows Media Format SDK
• Microsoft Silverlight v1.1	• Microsoft IIS
• XAML, ASP.NET, HTML, CSS, Javascript, AJAX, Etc...	

## S Project Specifics (7 of 9)

### ECE 4. DaimlerChrysler and UNESCO

- Production Prototyping of Remote Medical Diagnostic System
- Successor Project to ECE 480 Spring 2007 Project
- Joint with Huazhong University of Science and Technology  
Wuhan, China
- System for Remote Medical Diagnosis (For Use in Rural China)
- Features to Be Completed or Refined
  - Re-design graphical user interface to include support for all available modules and medical data storage to local or remote database. Also, port to x86 architecture using Qt or GTK+ container sets.
  - Testing and improvement of blood pressure, temperature and glucometer modules
  - Redesign functional connection method for all devices, i.e. serial hub/harness and/or data acquisition card.
  - Design web-based application capable of accessing stored medical data from device GUI. Secure transmission is optimal but adherence to U.S. export laws must be observed.
  - Other design objectives to be determined in conjunction with HUST partner team.

## S Project Specifics (7 of 9)

### ECE 8. NASA Goddard Space Flight Center

- Vision-Guided Control of Simple Bots from a "Mother Ship"
- Simulate "Mother Ship"
  - Laptop
  - Attached Ladar (Laser Detection and Ranging) Scanner (Provided by NASA)
- Bots
  - Modified TRAXXAS E-MAXX Trucks or Other Small Robots
  - Inertial Navigation Units Added by Team
  - Communication (via Bluetooth) Handled by Team
- Goal
  - Mother Ship Guides Bots to Specified Targets
  - Avoid Obstacles of Specified Maximum Size
  - Complete Navigation in a Minimal Time

## S Course Environment

- Business-Like
- Team = Startup Company
- Dyksen & Luciw
  - 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
- Beta Demonstration
- Status Reports & Demonstrations
- Project Video
- Project Software & Documentation
- Design Day
- Team Web Site

## S Design Day

- College of Engineering Event
  - MSU Union
  - Friday Morning, December 7
- Displays (Booths) of Design Projects
  - CSE Capstone
  - ECE Capstone
  - ME Capstone
  - Etc...
- Presentations (and Prizes?)
  - 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
  - Design Day

} Do NOT Schedule Interviews

## S Meeting Agendas

1. 08-27: Course Overview / Skills Inventory	16. 10-22: Ethics
2. 08-29: Technical Specifications / Team Assignments	17. 10-24: Intellectual Property and Copyright
09-03: (Labor Day, No Meeting)	18. 10-29: Teams: Status Reports &/or Demos
3. 09-05: Project Schedule & Risk	19. 10-31: Teams: Status Reports &/or Demos
4. 09-10: Teams: Status Reports	20. 11-05: Teams: Status Reports &/or Demos
5. 09-12: Prototyping	21. 11-07: Teams: Status Reports &/or Demos
6. 09-17: Teams: Technical Specifications / Schedule	22. 11-12: The Project Video
7. 09-19: Teams: Technical Specifications / Schedule	23. 11-14: Camtasia Demo
8. 09-24: Teams: Technical Specifications / Schedule	24. 11-19: Teams: Status Reports &/or Demos
9. 09-26: .NET Framework / C#	25. 11-21: Teams: Status Reports &/or Demos
10. 10-01: Resume Writing & Interviewing	26. 11-26: Teams: Status Reports &/or Demos
11. 10-03: Comm Sci-Tech Exchange	27. 11-28: Teams: Status Reports &/or Demos
12. 10-08: Teams: Beta Demonstrations	28. 12-03: Teams: Project Videos
13. 10-10: Teams: Beta Demonstrations	29. 12-05: Teams: Project Videos
14. 10-15: Teams: Beta Demonstrations	12-07: Design Day
15. 10-17: Teams: Beta Demonstrations	30. 12-11: Teams: Project Videos

## 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
– Beta Demonstration	10
– Status Reports & Demonstrations	5
– Project Video	15
– Project Software & Documentation	15
– Design Day	10
– 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
- Client [2. Technical Specifications](#)
  - Contact
  - Project Review
- Technical Specification
  - Examples on Course Site