



# 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
- Lecture  
MW, 3:00-3:50pm, UPLA 008
- Labs, 3352 EB  
TT, 3:00-4:50pm  
WF, 8:00-9:50am  
WF, 12:40-2:30pm

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## 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

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## 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...

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## S Team Course Goal

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

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## 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

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## 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

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## 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...

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## S Project Specifics (1 of 13)

- Vary
  - Type
  - Current State of Specificity
- Challenge
  - Connect with Client
  - “Nail Down” the Project
    - Hard Enough
    - Not too Hard
  - Course Feature, Not Bug

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## S Project Specifics (2 of 13)

1. Accident Fund
  - Service Oriented Architecture (SOA) Web Portal for a SmartPhone
    - Existing Infrastructure
      - Web Services API to a Variety of Internal Applications
      - SmartPhone Deployment to Management and Field Staff
    - Build SOA Web Portal for the SmartPhones
    - Phases
      - Deliver Existing Inquiry Application Information to SmartPhone
      - Send Service Request on SmartPhone to Backend Systems
      - Write Entirely New Application (TBD by Project Team and Mobile Employees)
    - SmartPhone with Data Plan Provided (SmartPhone == Treo with Palm OS?)
    - Etc...

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## S Project Specifics (3 of 13)

2. Auto-Owners Insurance
  - Education and Training Web Portal via Web Services
    - Registration Web Portal for Professional Insurance Exams
    - Interface with Existing SQL Database
    - Interface with Exam Givers
    - Invoke Web Services (to be Designed and Implemented)
    - Generate Reports
    - Provide E&T History Web Portal for Associates
    - Etc...

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## S Project Specifics (4 of 13)

3. Boeing (St. Louis)
  - Viz Sim Tool 2007
    - Extend and Enhance Viz Sim Tool 2006
    - Network-Based Flight Simulator (Distributed Interactive Simulation (DIS) Protocol)
    - Extend Sim Server to Create Master PDU Manager
    - Enhance Existing Graphics (Terrain and Sky)
    - Add New Graphics (People, Cars, Trees, ...)
    - Improve Aircraft Flight Performance
    - Augment the PDU Set
    - Optimize Overall Performance
    - Etc...

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## S Project Specifics (5 of 13)

### 4. DaimlerChrysler

GPS/Cellular-Based DaimlerChrysler Transport Driver Performance System

- DCTI (DaimlerChrysler Transport Inc.)
- Driver Performance Reporting System (Mandated by the Department of Transportation)
- Two Potential Data Tracking Alternatives
  - Engine Control Module (ECM)
  - Global Position System (GPS)
- Data Sent From Truck to DCTI via Cellular Network
- Generate Driver Log In Real Time in Truck
- Blackberry with Data Plan Provided
- Etc...

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## S Project Specifics (6 of 13)

### 5. Ford

Automotive Web Service On-the-Go

- Automotive Enthusiast Information and Resources
  - SMS-Based MPG Calculator
  - Find-a-Dealer
  - Find-a-?????
  - Mobile Service History and Reminders
  - Ford Racing Alerts
  - Etc...
- Design and Implement Mobile Web Services
  - Suite of Web Services
  - Portal(s)
- Support
  - Laptop
  - PDA
  - Mobile Phone
- Etc...

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## S Project Specifics (7 of 13)

### 6. General Motors

An OnStar Voice Portal for Customer Test Drives

- Web Portal: Before Test Drive
  - Enter Customer Information
  - Issue Customer (Test Drive) Number
- Voice Portal: During Test Drive
  - Press OnStar Button (Preprogrammed to Dial Voice Portal)
  - Greet Customer
  - Respond to Simple Voice Commands
    - Offer Descriptions of Features
    - Provide Help
- Voice Portal: After Test Drive
  - Customer in Car Alone
  - Answers Short (Voluntary) Voice Operated Questionnaire
- Etc...

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## S Project Specifics (8 of 13)

### 7. IBM

An Eclipse/RAD Plug-in for Generating Structure Validation Documents

- Systems Management Data Modeling Framework
- XML Data Store
- Enforce Framework
  - Use SVD - Structure Validation Document
  - Like DTD - Document Type Definition
- Write Eclipse and RAD Plug-in
  - Produce Correct SVD
  - Generate Java Beans to Access Data Store
- Etc...

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## S Project Specifics (9 of 13)

### 8. MSU College of Human Medicine

Tracking System for Biological Samples in Cold Storage

- Build Searchable Database
  - Name
  - Date
  - Family Medial History
  - Etc...
- Track Samples
  - Who Used?
  - How Many Times Defrosted?
  - Etc...
- Test Usability
  - Barcodes
  - RFIDs
  - PDAs (with Barcode Reader and RFID Scanner)
- Etc...

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## S Project Specifics (10 of 13)

### 9. Microsoft

Two PowerToys for Peer-to-Peer Applications

- Vista
  - Includes Rich Peer-to-Peer (P2P) Platform
  - Two Existing Applications
    - Windows Meeting Space
    - Windows Internet Computer Names
- Create Two PowerToys
  - Details Provided During First Conference Call
  - Built on Managed APIs Across Various Microsoft Technologies
  - If Successful, Posted on Microsoft P2P Portal
- Vista will be provided.
- Etc...

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## S Project Specifics (11 of 13)

### 10. Motorola

Agent Framework for Remote Management of Devices

- Enable Remote Management of Devices
  - Many
  - Heterogeneous
  - E.g., Routers, Servers, etc.
- Provide Life Cycle Support of Agents
  - In Real Time
  - Download, Compile and Add Agent to Running Application
- Use Cisco Network Management (I.E., SNMP and CLI for Demonstration Purposes)
- Etc...

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## S Project Specifics (12 of 13)

### 11. TechSmith

Screen Capture Multi-Image Output Accessory for SnagIt

- SnagIt: Screen Capture Application
- Create Plug-in to Allow Users
  - Collect Number of Screen Captures/Images
  - Annotate the Screen Capture/Images
  - Output Sequence of Images in a Variety of Formats
- Use Windows Presentation Foundation (WPF)
- Must Be Production Quality Software
- Work With TechSmith's
  - User Experience Group
  - Quality Assurance Group
- Etc...

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## S Project Specifics (13 of 13)

### 12. Whirlpool Corporation

Ice Imaging for Automatic Control of Ice makers

- Joint ECE / CSE Team
- Mentored by
  - Prof. Stockman, CSE
  - Prof. Goodman, ECE
- Apply Imaging Technologies to Ice
  - Evaluating Ice "Quality"
  - Explore Deployment in Household Refrigerator/Freezer
- Build Prototype Systems
  - Define Metrics
  - Evaluate Technologies
- Etc...
- Looking for Two "Volunteers": See me after class.

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## S Course Environment

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

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## S Team Dynamics

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

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## S Project Deliverables

- Technical Specification Document
- Prototype Demonstration
- Progress Reports & Demonstrations
- Final Demonstration & Project Video
- Administrator & User Manuals
- Project Management
- Project Web Site

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## S All Hands Meetings

### Presentations By

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

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## 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

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## S Meeting Agendas

1. 01-08: Course Overview / Skills Inventory	16. 03-12: Ethics
2. 01-10: Technical Specifications / Team Assignments	17. 03-14: Intellectual Property and Copyright
3. 01-17: Project Schedule & Risk	18. 03-19: Teams: Prototypes
4. 01-22: Teams: Progress Reports	19. 03-21: Teams: Prototypes
5. 01-24: Prototyping	20. 03-26: Teams: Prototypes
6. 01-29: Teams: Technical Specifications / Schedule	21. 03-28: Teams: Prototypes
7. 01-31: Teams: Technical Specifications / Schedule	22. 04-02: The Project Video
8. 02-05: Teams: Technical Specifications / Schedule	23. 04-04: Camtasia Demo
9. 02-07: Teams: Technical Specifications / Schedule	24. 04-09: Teams: Progress Reports & Demos
10. 02-12: Project Management	25. 04-11: Teams: Progress Reports & Demos
11. 02-14: Resume Writing & Interviewing	26. 04-16: Teams: Progress Reports & Demos
12. 02-19: Teams: Prototypes	27. 04-18: Teams: Progress Reports & Demos
13. 02-21: Teams: Prototypes	28. 04-23: Teams: Project Videos
14. 02-26: Teams: Prototypes	29. 04-25: Teams: Project Videos
15. 02-28: Teams: Prototypes	30. 05-02: Teams: Project Videos

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## 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
- Appliances
  - Refrigerator
  - Microwave
  - Coffee Maker?
- Lockable Storage (If Needed)

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## 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.

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## 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

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## 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

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## 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.

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## S Grading (1 of 2)

- Team (70%)
 

– Technical Specification Document	10
– Prototype Demonstration	10
– Progress Reports & Demonstrations	15
– Final Demonstration & Project Video	15
– Administrator & User Manuals	10
– Project Management	5
– Project Web Site	<u>5</u>
	70
- Individual (30%)
 

– Technical Contribution	10
– Team Contribution	10
– Team Evaluation	5
– Class Meeting Attendance	<u>5</u>
	30

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## 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,
  - marriage, or
  - visa status.

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## 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.

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## 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.

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## S Using Existing Code

- Ok
  - Examples
  - Prototypes
  - Open Source Code
    - Fragments
    - Libraries
    - Utilities
- Not Ok
  - Vast Amounts of Your Project
  - Not Open Source
- Be Careful!
- If Unsure, Ask Dr. D.

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## S VISA

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

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## 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

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## S First Assignments

- 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

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## S What's Next? Wednesday

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

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