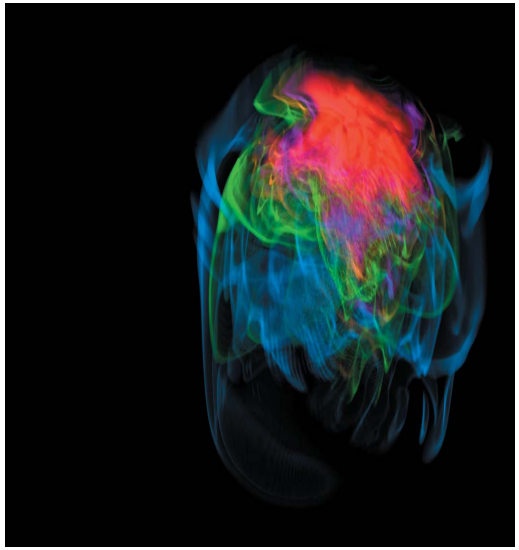
CSE 403
Software Engineering

Spring 2008

Pragmatic Programmer Tip: Care about Your Craft

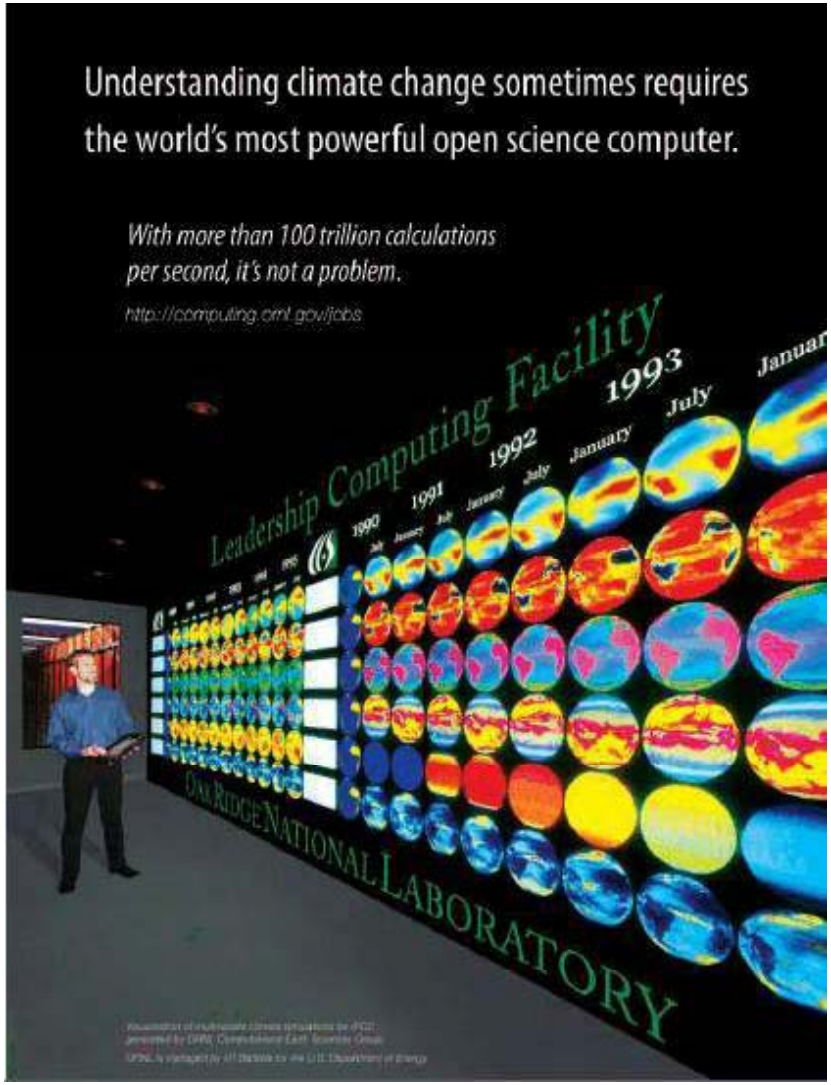
Why spend your life developing software unless you care about doing it well?

Cray Inc. – Supercomputer Performance



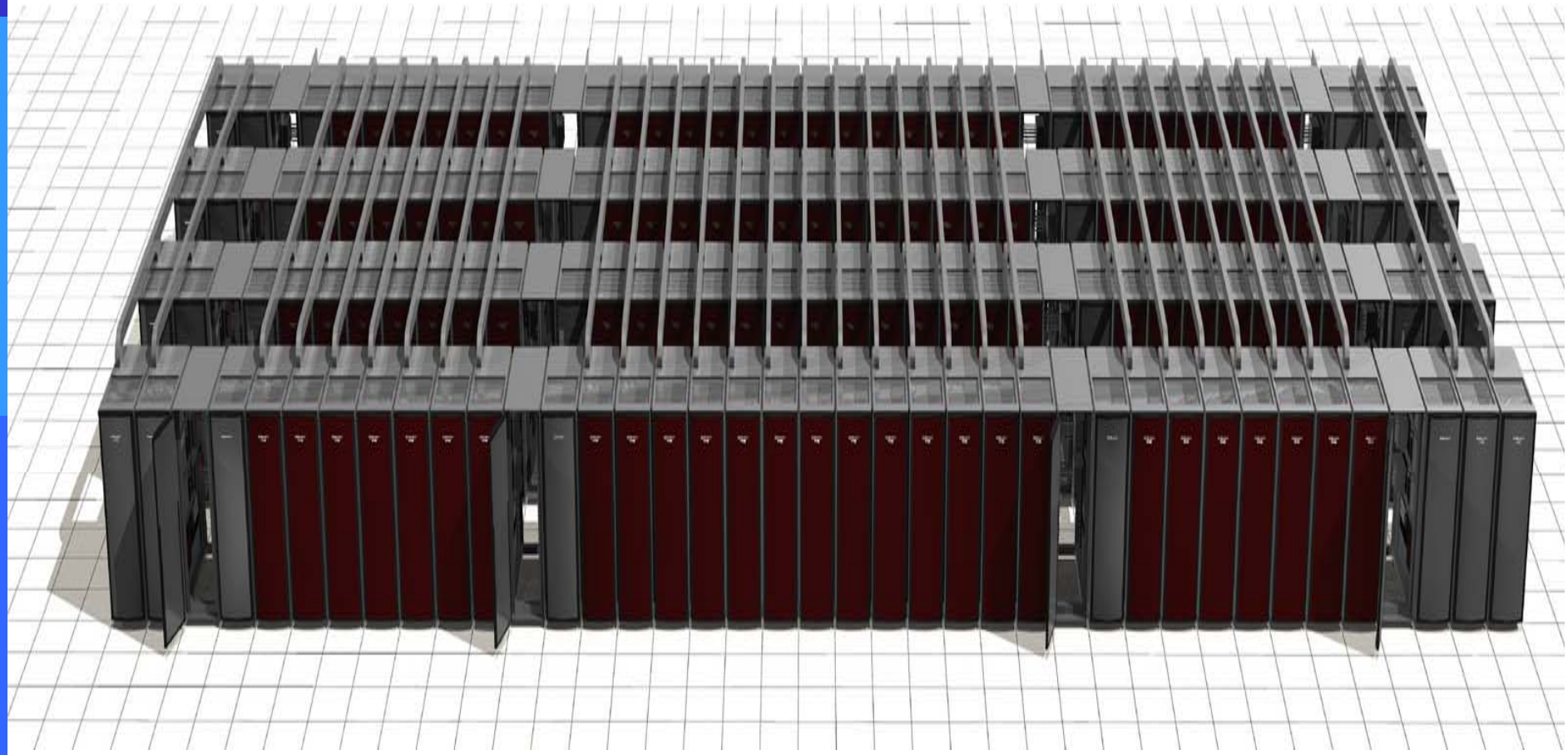
3D Seismic Earthquake models – PSC

Combustion Models – SNL



Red Storm system

- **Massively parallel processing supercomputer system used for analysis and stewardship of nuclear weapons - for Sandia National Lab $93M**



From XT3 to XT4

- **Red Storm was made into a product, Cray XT3**
- **Full delivery was 3 ½+ years, but got something to the customer in 3. It was a sprint the whole way, and the team felt it**
- **Software effort was much more complex than expected**
- **Rearchitected at least two major SW components after getting experience with them**

XT3 product was successful and evolved into a product line, the XT series. Yah!

Today's outline

- Course overview
- Assignment 1 – Product proposals
- Lifecycles

Week readings

- Proposal: Pragmatic Programmer p18-21, Survival Guide p36-43, 46-47
- Lifecycle: Computerworld article, SG54-59, Agile article

So what IS software engineering?

From Sp08 students:

- Creating a product that solves a problem, to the satisfaction of a customer
- Within a deadline/constraints (time, money, scope)
- Writing software with a constraint/requirements (ie. Performance)
- Using a repeatable, predictable process
- Requires breaking down the project into scheduleable pieces
- Considers upgrades during development
- Teamwork!

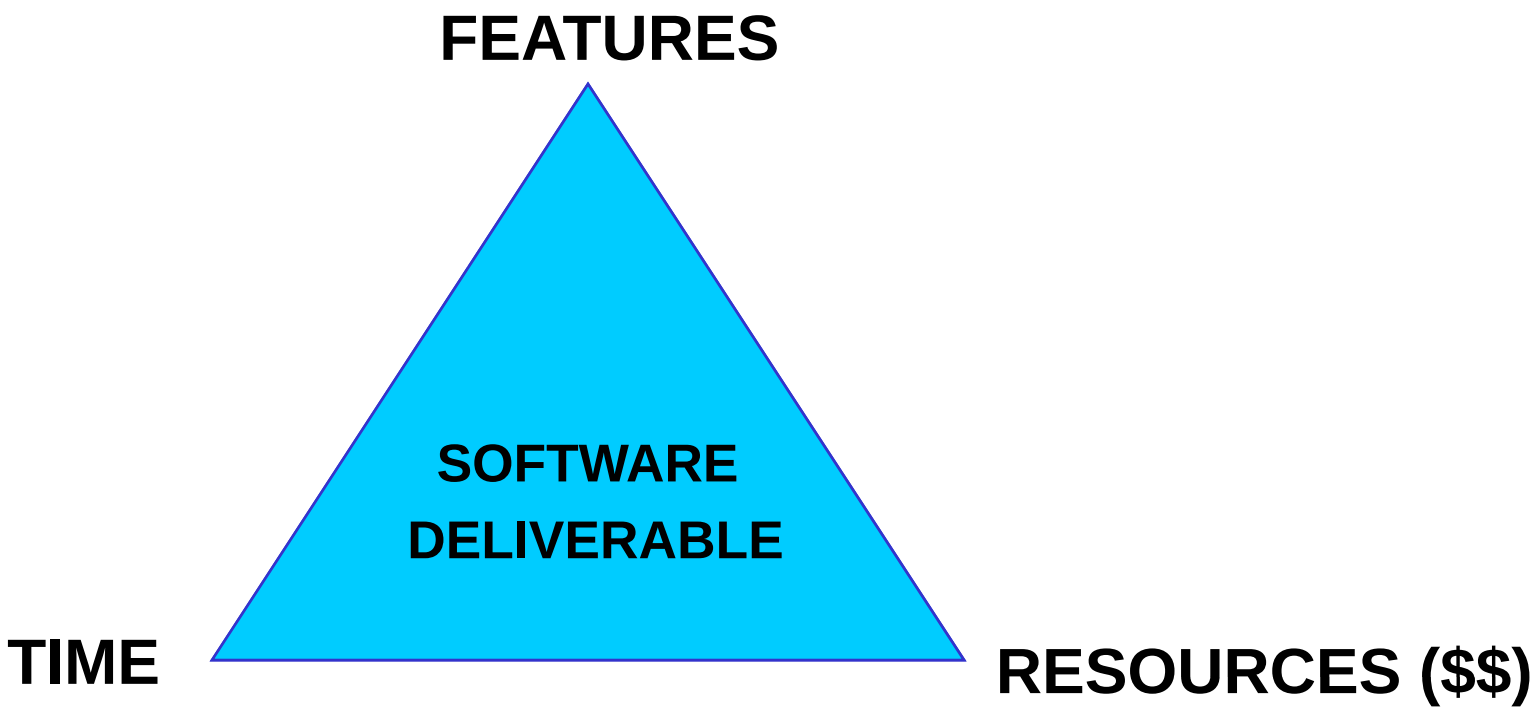
So what IS software engineering?

Software engineering involves:

- Processes necessary to turn a concept into a robust deliverable that can evolve over time
- Working with limited time and resources
- Satisfying a customer
- Managing risk
- Teamwork and communication

What is a software project?

Projects are a balance of three dimensions, with the goal of producing a successful deliverable



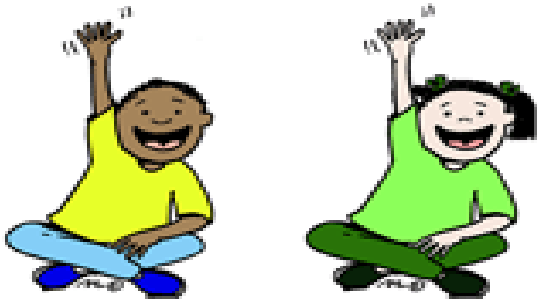
A typical 403 week

1. Class sessions to discuss best practices
2. Sections to dig deeper and/or discuss pragmatics and tools
3. Readings and assignments to reinforce the information
4. Group project to enable you to have direct experience with the material we're covering
   - You'll meet *technical challenges* given the larger project
   - You'll meet *social challenges* given the team effort

A typical 403 week

Interaction and discussion is encouraged!

A typical 403 week



Interaction and discussion is encouraged!

Please, no laptops unless for a class exercise.

Readings and summaries

Each week:

- Will have a set of required readings associated with it
- Will have a reading summary of one topic assigned

  Computerworld article + SG54-59 due Fri in class

Reading summary assignments:

1. Paragraph containing the main idea/main points
2. Paragraph about how this material relates to 403
3. Paragraph of your own analysis of the paper

1/2 - 2/3 page total

The Project

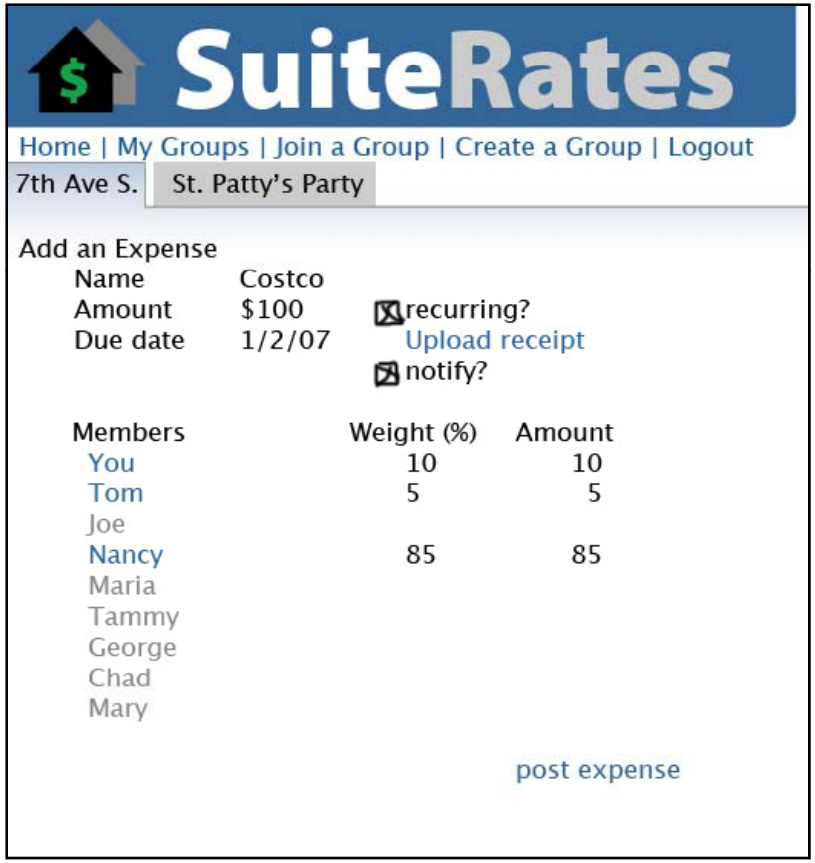
- You make product proposals - this Thurs/Fri
  - And then vote on which products to "fund"
- You're divided into project teams of 6-8 students
  - We choose the teams, to mimic the real world
  - Larger teams, larger projects, like industry
- You develop your deliverable in stages
  - Reflects modern methodologies for effective software project development
- Another team will act as your customer
  - Ultimately, a project will survive only if it satisfies its customer

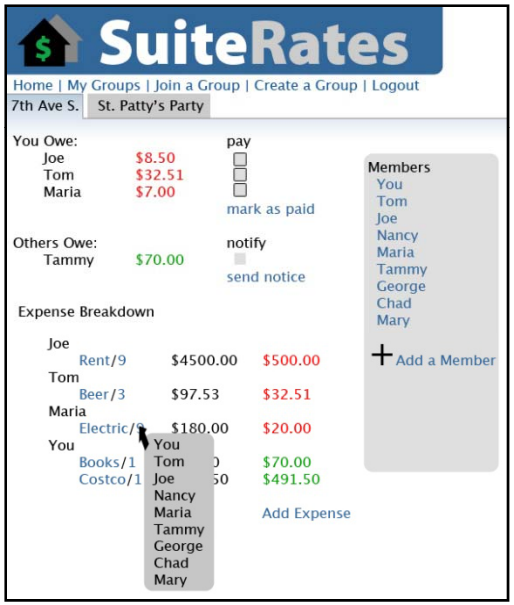
Project culture

- This is a real project
  - We expect you to work to build a real system
  - To be used by real people

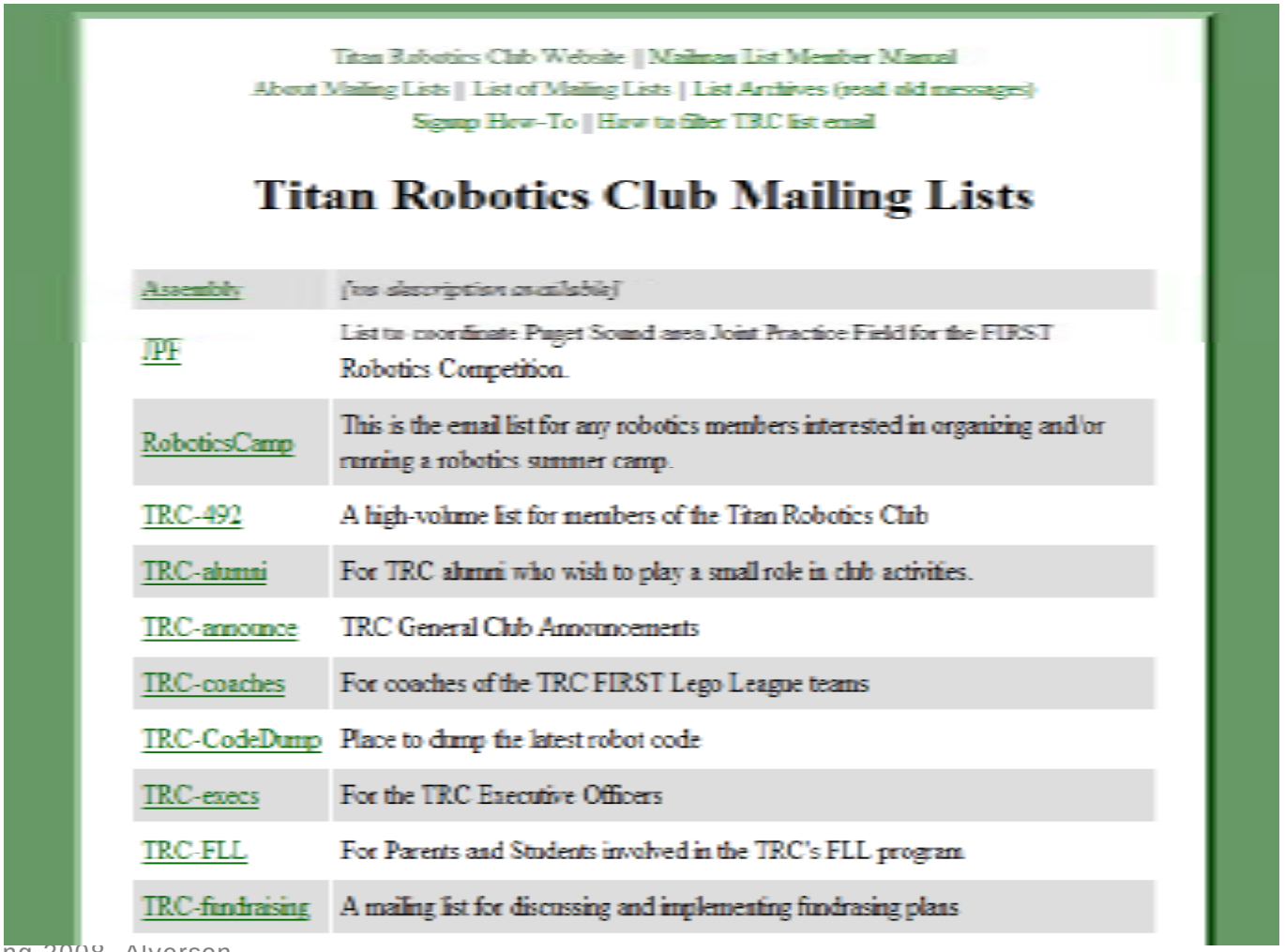
- Take responsibility
  - Take initiative
  - Find and solve problems yourselves
  - Coding is only part of the job
  - Good planning and design, hitting your market, and working well with your team, are all needed for success

SuiteRates project example





Mailman ++

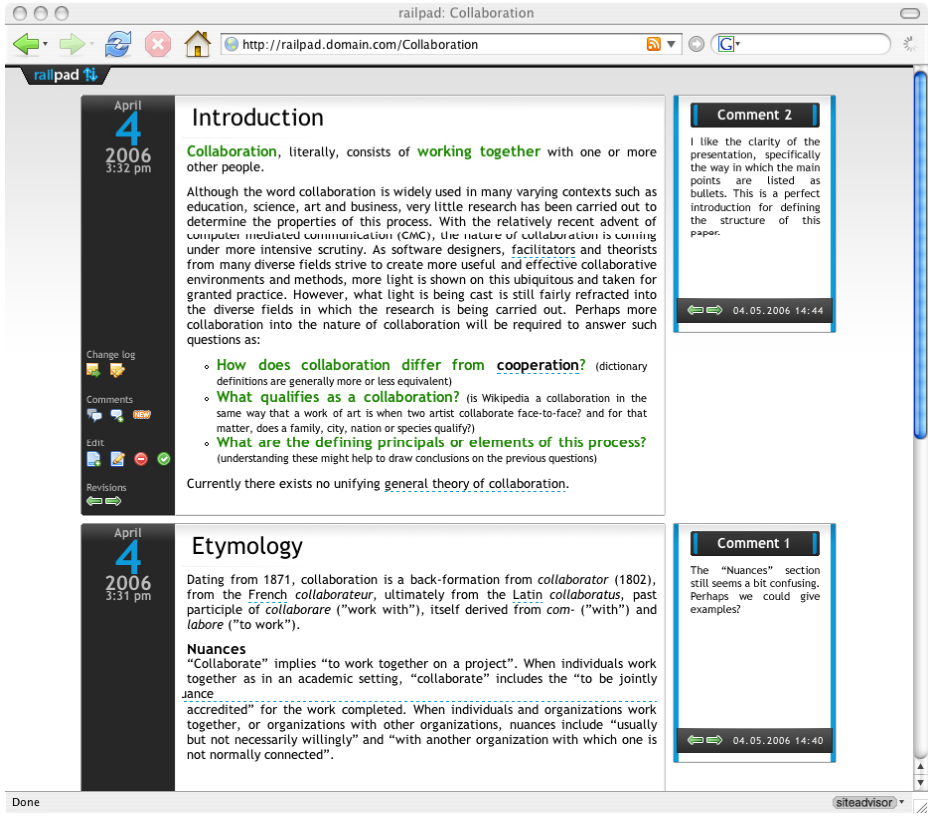


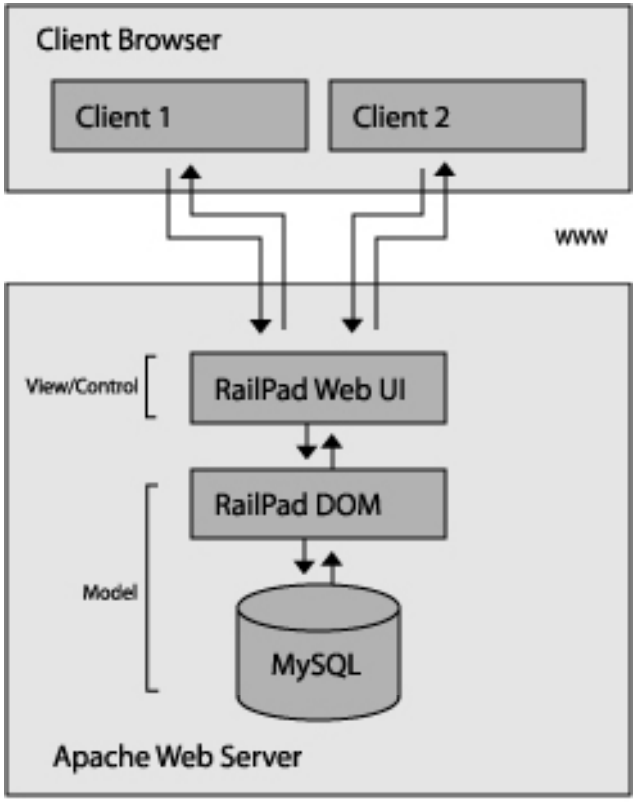
Titan Robotics Club Website || Mailman List Member Manual
About Mailing Lists || List of Mailing Lists | List Archives (read old messages)
Signup How-To || How to filter TRC list email

Titan Robotics Club Mailing Lists

Assembly	[no description available]
JPF	List to coordinate Puget Sound area Joint Practice Field for the FIRST Robotics Competition.
RoboticsCamp	This is the email list for any robotics members interested in organizing and/or running a robotics summer camp.
TRC-492	A high-volume list for members of the Titan Robotics Club
TRC-alumni	For TRC alumni who wish to play a small role in club activities.
TRC-announce	TRC General Club Announcements
TRC-coaches	For coaches of the TRC FIRST Lego League teams
TRC-CodeDump	Place to dump the latest robot code
TRC-execs	For the TRC Executive Officers
TRC-FLL	For Parents and Students involved in the TRC's FLL program
TRC-fundraising	A mailing list for discussing and implementing fundrasing plans

Railpad





railpad | Technology Overview

Assignment 1 - Proposals

Your chance to turn a great idea into a product!

- Constraints
  - Client/server networked architecture
  - Installable/runnable on lab machines
  - Not a game

Assignment 1 - Proposals

- Prepare a 3 slide, 3 min pitch with 1-2 others
  - Operational concepts
  - Software architecture
  - Challenges and risks
- Turn in Thurs 4/3, noon and present on 4/3, 4/4
- Vote by Friday 4/4 by 10pm

Assignment 1 - Proposals

- Prepare a 3 slide, 3 min pitch with 1-2 others
  - Operational concepts

Pragmatic Programmer Tip:
It's Both What You Say and the Way You Say It

There's no point in having great ideas if you don't communicate them effectively

- Vote by Friday 4/4 by 10pm

Back to the overview … grading

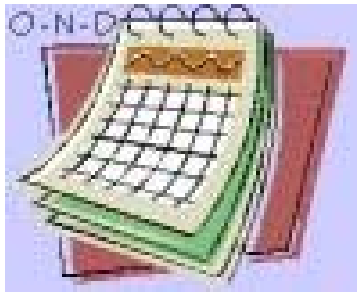
60% Project	Proposal (3) Requirements (7) Software Design and Planning (10) Zero Feature Release (5) Beta Release (15) Final Release (20)
10%	Project feedback: Design Review, Use and Test Report
10%	Reading Summaries and Assignments
20%	Final Exam

Your scores on group related work may be adjusted, based on your contribution. Peer evaluations will occur ~3 times in the quarter.

Class website

www.cs.washington.edu/education/courses/403/08sp/index.html

The “Calendar” link will be especially useful to you



Goals of 403

From students:

Goals of 403

- Be exposed to some of the best software development practices in use today
- Learn how to more effectively collaborate with others toward a common goal
- Understand how software is produced – from conception to shipping and subsequent maintenance
- Develop skills to articulate your ideas and progress
- Understand the issues and tradeoffs involved in making decisions as software engineers and project managers

Input break

- What do you believe will be the biggest challenge of the course?
- How might you (we) address it?