MICHIGAN STATE UNIVERSITY

01/13: Project Plan

CSE 498, Collaborative Design

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Project Plan

- Professional Document
- Describes
  - The "Problem"
  - Your Proposed Solution
- Complete
  - Functionally
  - Design-Wise
  - Technically
  - Risks
  - Schedule
- "Only" Thing Left To Do Is "Programming"
- (Ideally) Could Be Used for Out-Sourcing

Project Plan

- ➢ Functional Specifications
- Design Specifications
- Technical Specifications
- Schedule
- Risks

Functional Specifications

- What does it do?
  (Not "how" does it do it?)
- Short List of Features
- Not Necessarily Complete
- Starting With
  - Shared Vision?
  - No Formal Documents?
  - Minimal Documents?
  - Incomplete Problem Statement?
- Understandable by End User
- Initial Problem Statement
- Usually Refined

Building a House (1 of 4)

Functional Specifications

- 4 Bedrooms
- 2.5 Bathrooms
- Study
- 2-Car Garage
- Walk-Out Basement

Functionally, what else might you like to know?

(Note: Understandable by "User")

Building a House (2 of 4)

Functional Specifications Refined

- ~ 2,500 sq. ft.
- $275,000 - $325,0000
- 4 Bedrooms
- 2.5 Bathrooms
- Formal Living Room and Family Room
- Study
- 2-Car Garage
- Walk-Out Basement

What do you need to know next?

Interactions With Your Client

Functional Specifications

- Derived With/From Client
- Documented For Client
- Presented to Client
- Agreed Upon With Client
- Your Job to Capture the Client's Intent!

Project Plan

- ✓ Functional Specifications
- ➢ Design Specifications
- Technical Specifications
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Design Specification

- How does it look and feel?
- Includes
  - "Business" Process Flow
  - Use Cases
  - Screen Mockups
  - Data Flow Diagrams
  - Data Organization
  - Etc…
- Identifies All the Parts and Their Interactions
- (Mostly) Understandable by End User
- Usually Refined

Building a House (3 of 4)

Design Specifications

- Mission Style, Stone Front
- Lots of Light
- Kitchen Connected to Family Room
- Master Bedroom on Main Floor
- Cathedral Ceilings
- Granite Counter Tops
- Etc…

What else will you need to know to build the house?

(Note: Understandable by "User")

Screen Mock-Ups

- User Interface Only
  - Shows Layout, Buttons, Pull-Downs, Etc…
  - Non-Functional
  - No Back End
- Helpful for Developing
  - Functional Specifications
  - Look-and-Feel
  - Use Cases
- Can Create with…
  - Pencil and Paper
  - PowerPoint (Developer View)
  - Etc…

Screen Mock-Ups

- "Use" with Clients
  - Show to Clients
  - Go Through Use Cases with Clients
- "Cruder" may be better.
  - What?
  - Why?

Interactions With Your Client

Design Specifications

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Project Plan

- ✓ Functional Specifications
- ✓ Design Specifications
- ➢ Technical Specifications
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Technical Specification (1 of 2)

- How does it do it?
- Identifies All the Parts and Their Interactions
- Everything a Developer Needs to Write the Code
- Includes Things Like…
  - Machine Architectures
  - Software Technologies
  - Production Environments
  - Development Environments
  - SDK's (Software Development Kits)
  - Network Topology
  - Database Schema
  - Object Models and Class Diagrams
  - Continued…

Technical Specification (2 of 2)

- Includes Things Like…
  - UML Diagrams
  - Pseudo Code
  - Function Prototypes
  - Schedule
  - Test Plan
  - Risk Analysis
  - Etc…
- Probably Not Understandable by End User
- Possibly Not Understandable by Client
- Usually Refined

Building a House (4 of 4)

Technical Specifications

- 20 lb Asphalt Roof Shingles
- 2" x 6" Outside Walls
- R48 Blown Attic Insulation
- Cat5E Wiring
- Pre-Made Roof Trusses
- 12" Poured Concrete Foundation
- Etc...

(Note: Probably Not Understandable by "User")

Approach

- Break Big Problems Into Smaller Problems
- Identify Constraints
- Identify "Risks"—Things You Don't…
  - …Know
  - …Understand
  - …Know How To Do
- Consider Tradeoffs
- Select Appropriate Technologies
- Identify Core Features for a Prototype

Interactions With Your Client

Technical Specifications

- Derived With/From Client
- Documented For Client
- Presented to Client
- Agreed Upon With Client
- Your Job to Capture the Client's Intent!

Cannot be emphasized enough!

How To's (1 of 4)

- Quickly identify…
  - what you don't know,
  - what you don't understand, and
  - what you don't know how to do.
- Conceptually…
  - Start with functional specifications.
    - Get agreement with client.
    - Include as first part of project plan.
  - Do design specifications.
    - Get agreement with client.
    - Include as 2nd part of project plan.
  - Do technical specifications.
    - Get agreement with client.
    - Include as 3rd part of project plan.
  - Do schedule.
  - Do development, testing, and deployment.
- In CSE498, must do all three in parallel (and iterate).

How To's (2 of 4)

- Approach
  - Make Skeleton Document Immediately
    - Will Get You Organized and Focused
    - Include "Under Construction" Sections (Totally Empty)
  - Develop In Parallel When Possible But…
    - Complete Functional First
    - Complete Design Second
    - Complete Technical Third
  - Refine As Needed
  - Assign Sections to Team Members
  - Share with Client
    - Ask For (Specific) Feedback
    - Highlight What's New ← Is this what you had in mind?
    - Tricky Balance
      - Not Enough?
      - Too Much?

How To's (3 of 4)

- Schedule
  - Dictated by Course
  - See Other Information, 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
  - Other Milestones By Educated Guesses
  - Track To It At Least Weekly at Triage Meetings
  - Revisit Often and Revise If Necessary
  - Delivery Slippage == Graduation Slippage

How To's (4 of 4)

- "Living Document"
- Make Sure Your Project Plan Has…
  - Cover Page
  - Title
  - Table of Content
  - Page Numbers
  - Headers and Footers
  - Etc…

  (That is, make sure your plan looks professional.)

Interactions With Client

Client May Specify…

- Requirements
  - Functional
  - Design
  - Technical Requirements
    - Operating Systems
    - Programming Languages and Environments
    - Web Technologies
    - Etc…
  - Legacy
- Milestones
- Etc…

(You may explore and propose other ideas.)

Nota Bene: Project Plan

- How many…
  - …drafts will you write? Many.
  - …drafts will you share with your client? A Couple.
  - …final documents will you submit for CSE498? One
- Due Date
  - February 1
  - About 2.5 Weeks
- In Class Formal Presentations
  - February 1 – February 10
  - PowerPoint Template Provided

Resources on the Web

- Downloads
  - Boeing
  - Microsoft
  - Motorola
  - Union Pacific Railroad
- Other Information, Resources
  - W3 Schools
  - SourceForge
  - Etc…

Project Plan

✓ Functional Specifications

✓ Design Specifications

✓ Technical Specifications

- Schedule
- Risks

} Next Meeting

What's next?

- Team Photos
  - Informal: After Meeting Today
  - Formal: After Project Plan Presentation
- Setup
  - Team Machines
  - Team Website (www.TeamName.cse498.cse.msu.edu)
- Think About Team Status Report

What's next?

- Submit Status Report
  - Email to Dr. D.
  - Due Midnight EST, Sunday, January 24
  - Subject: Status Report Team <TeamName>
  - Attach: team_<TeamName>_tsr.ppt
- Dr. D. Will Combine into Single PowerPoint
  - To Speed Things Up During Meeting
  - Do NOT Modify Master Slide Page
- Each Team Presents
  - Using Dr. D.'s Laptop
  - At Most 4 Minutes (Rehearse Timing)
  - Single or Multiple Presenters (Your Choice)

What's up? (Delete this slide.)

1. What follows is the required skeleton for your presentation.
2. Do not change the organization or number of slides. Make your presentation fit within these four slides.
3. Replace items between angle-brackets, <…>, with the appropriate information **without** the angle-brackets.
4. The time limit for your presentation is 5 minutes (which will be strictly enforced). Practice your presentation to ensure that you finish within the allotted time.
5. All presentations are due via email to me by midnight on Sunday, January 24. Email me the PowerPoint source file named as team_<TeamName>_tsr.ppt as in team_AutoOwners_tsr.ppt. For subject, use "Status Report: Team <TeamName>".
6. All presentations will be posted on the course web site so do not include company confidential information or anything that your client would not want posted.
7. The order of the presentations will team numerical order.
8. Do **NOT** include this slide in your presentation.
9. **Delete** this slide from the presentation.

Team <TeamName>

Status Report (1 of 4)

- Project Definition
  - Description Point 1
  - Description Point 2
  - Description Point 3
  - Description Point 4
- Project Plan Document
  - Status Point 1
  - Status Point 2
  - Status Point 3
  - Status Point 4

- Due January 25
- Less than Two Weeks
- All Teams

Team <TeamName>

Team <TeamName>

Status Report (2 of 4)

- Server Systems / Software
  - Description &/or Status Point 1
  - Description &/or Status Point 2
- Development Systems / Software
  - Description &/or Status Point 1
  - Description &/or Status Point 2
- Web Site
  - Status Point 1
  - Status Point 2

Team <TeamName>

Status Report (3 of 4)

- Client Contact
  - Status Point 1
  - Status Point 2
- Team Meetings
  - Status Point 1
  - Status Point 2
- Team Organization
  - Description Point 1
  - Description Point 2

Team <TeamName>

Status Report (4 of 4)

- Risks
  - Risk 1
    - Description
    - Mitigation
  - Risk 2
    - Description
    - Mitigation
  - Risk 3
    - Description
    - Mitigation
  - Risk 4
    - Description
    - Mitigation