The Capstone Experience

09/07: Project Plan

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Project Plan

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

Functional Specifications

- What does it do?
  (Not "how" does it do it?)
- What's the problem?
- What's your solution?
- 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

- Comfortably House a Family of 5
- 4 Bedrooms
- 2.5 Bathrooms
- Study
- 2-Car Garage
- Walk-Out Basement
  (Note: Understandable by “User”)

Functionally, what else might you like to know?

Functional Specifications (Refined)

Building a House

- ~ 2,500 sq. ft.
- $275,000 - $325,000
- 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

- Derived With/From Client
- Documented For Client
- Presented to Client
- Agreed Upon With Client
- Your Job to Capture the Client’s Intent!
The Capstone Experience

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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

Design Specifications

Building a House

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

(Note: Understandable by “User”)

Screen Mockups

- 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 Mockups

- “Use” with Clients
  - Show to Clients
  - Go Through Use Cases with Clients
- “Cruder” may be better.
  - What?
  - Why?
Screen Mockup Example

Design Specifications Interactions With Your Client

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Technical Specification

- How does it do it?
- Identifies All the Parts and Their Interactions
- Everything a Developer Needs to Write the Code
- Includes Things Like...
  - Overall System Architecture
  - Machine Architectures
  - Software Technologies
  - Production Environments
  - Development Environments
  - SDK’s (Software Development Kits)
  - Network Topology
  - Database Schema
  - Continued...

Technical Specifications Building a House

- 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

Technical Specifications

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• Derived With/From Client  
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• Agreed Upon With Client  
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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 1st 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
    o Will Get You Organized and Focused
    o Include “Under Construction” Sections (Totally Empty)
  - Develop In Parallel When Possible But...
    o Complete Functional First
    o Complete Design Second
    o Complete Technical Third
  - Refine As Needed
  - Assign Sections to Team Members
  - Share with Client
    o Ask For (Specific) Feedback
    o Highlight What’s New
    o Tricky Balance
    o Not Enough?
    o Too Much?

- “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.)

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
  - Noon, Wednesday, September 21
  - Less Than 2 Weeks
  - In Class Formal Presentations
  - September 21 – October 3
  - PowerPoint Template Provided

How To’s (3 of 4)

- Schedule
  - Dictated by Course
  - See Major Milestones
    o 09/14: Status Reports
    o 09/21: Project Plan Presentations
    o 10/17: Alpha Presentations
    o 11/17: Beta Presentations
    o 12/05: Project Videos
    o 12/07: All Deliverables
    o 12/08: Design Day Setup
    o 12/09/10: Design Day
  - Other Milestones By Educated Guesses
  - Track To It At Least Weekly at Triage Meetings
  - Revisit Often and Revise If Necessary
  - Delivery Slippage => Graduation Slippage

Interactions With Client

- Client May Specify...
- Requirements
  - Functional
  - Design
  - Technical Requirements
    o Operating Systems
    o Programming Languages and Environments
    o Web Technologies
    o Etc...
  - Legacy
  - Milestones
  - Etc...

(You may explore and propose other ideas.)

Resources on the Web

- Other Links > Downloads
  - Boeing
  - Microsoft
  - Motorola
  - Union Pacific Railroad
- Other Links > Online Resources
  - W3 Schools
  - iPhone Programming
  - Apache Subversion
  - Etc...
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Next Meeting

What’s next?

- Team Photos
  - Informal: After Meeting Today
  - Formal: After Each Project Plan Presentation
- Setup
  - Team Machines
    - Server (Ask Meredith re Assignment)
    - Desktop Etc.
  - Team Software
    - Web Server
    - Code Repository
    - SDK’s
    - Etc.
- Think About Team Status Report

What’s next?

- Team Status Report
  - PowerPoint Template
  - Due Midnight, Tuesday, September 13
  - Email to Dr. D.
    - Subject: Team <Company Name>: Status Report
    - Attach: team<company-name>-status-report-presentation.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 5 Minutes (Rehearse Timing)
    - Single or Multiple Presenters (Your Choice)

09/12: Project Schedule and Risk