01/12: Project Plan

The Capstone Experience

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Spring 2010

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

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

Functional Specifications 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!
Project Plan

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

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 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?

Design Specifications 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!
Project Plan

✓ Functional Specifications
✓ Design Specifications
➢ Technical Specifications
  • Schedule
  • Risks

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...
    ▪ 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

• 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

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

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!

Cannot be emphasized enough!
Project Plan Summary

• Specifications
  • Functional: What does it do?
  • Design: How does it look and feel?
  • Technical: How does it do it?
• Testing Plan
• Schedule

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.
    o Get agreement with client.
    o Include as first part of project plan.
  • Do design specifications.
    o Get agreement with client.
    o Include as 2nd part of project plan.
  • Do technical specifications.
    o Get agreement with client.
    o 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?
    “Is this what you had in mind?”

How To’s (3 of 4)

• Schedule
  • Dictated by Course
  • See Major Milestones
    o 01/24: Status Reports
    o 01/31: Project Plan Presentations
    o 02/21: Alpha Presentations
    o 03/21: Beta Presentations
    o 04/25: Project Videos
    o 04/27: All Deliverables
    o 04/28: Design Day Setup
    o 04/29: 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

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
    o Operating Systems
    o Programming Languages and Environments
    o Web Technologies
    o 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
  - Midnight, Sunday, January 30
  - Less Than 2 Weeks

- In Class Formal Presentations
  - January 31 – February 9
  - PowerPoint Template Provided

Other Links > Downloads
- Boeing
- Microsoft
- Motorola
- Union Pacific Railroad

Other Links > Online Resources
- W3 Schools
- iPhone Programming
- Apache Subversion
- Etc...

Resources on the Web

Project Plan

- ✓ Functional Specifications
- ✓ Design Specifications
- ✓ Technical Specifications

- Schedule
  - Next Meeting

- Risks

What’s next?

- Team Status Report
  - PowerPoint Template
  - Due Midnight, Sunday, January 23
  - Email to Dr. D.
    - Subject: Team <Company Name>: Status Report
    - Attach: team<company-name>-status-report.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)

- Team Photos
  - Informal: After Meeting Today
  - Formal: After Each Project Plan Presentation

- Setup
  - Team Machines
    - Server (Ask Stephen re Assignment)
    - Desktop Etc.
  - Team Software
    - Web Server
    - Code Repository
    - SDK’s
    - Etc.

- Think About Team Status Report

01/19: Project Schedule and Risk