



## 2. Technical Specifications



CSE 498, Collaborative Design

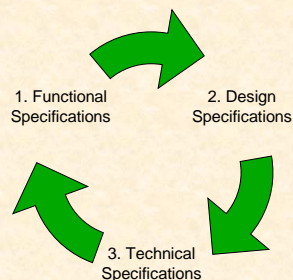
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## S Technical Specification

- Written Document
- Describes
  - The “Problem”
  - Your Proposed Solution
- Complete
  - Functionally
  - Design-Wise
  - Technically
- “Only” Thing Left To Do Is “Programming”
- (Ideally) Could Be Used for Out-Sourcing
- (AKA, Architecture Document,...)

2.2

## S Design Process Overview



2.3

## S Technical Specifications

- Functional Specifications
- Design Specifications
- Technical Specifications

2.4

## S Functional Specifications

- What it's supposed to do?  
(Not “how” is it supposed to 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

2.5

## S Building a House (1 of 4)

### Functional Specifications

- 4 Bedrooms
  - 2.5 Bathrooms
  - Study
  - 2-Car Garage
  - Walk-Out Basement
- (Note: Understandable by “User”)
- Functionally, what else might you like to know?

2.6

## S Building a House (2 of 4)

### Functional Specifications Refined

- ~ 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?

2-7

## S 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!

2-8

## S Technical Specifications

- Functional Specifications
- Design Specifications
- Technical Specifications

2-9

## S Design Specification

- Written Document
- 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

2-10

## S 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”)

2-11

## S Screen Mock-Ups

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

2-12

## S Screen Mock-Ups

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

2-13

**Register**

Please enter all the information requested below.

First Name:

Last Name:

Email address:

Password:

Confirm Password:

Check here to see password characters.

Check to receive emails about products and latest news

2-14

Registration Complete

2-15

## S Interactions With Your Client

### Design Specifications

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

2-16

## S Technical Specifications

- Functional Specifications
- Design Specifications
- Technical Specifications

2-17

## S Technical Specification (1 of 2)

- Written Document
- Identifies All the Parts and Their Interactions
- Everything a Developer Needs to Write the Code
- Includes Things Like...
  - Functional Specifications
  - Design Specifications
  - Machine Architectures
  - Software Technologies
  - Production Environments
  - Development Environments
  - SDK's (Software Development Kits)
  - Network Topology
  - Continued...

2-18

## S Technical Specification (2 of 2)

- Includes Things Like...
  - Database Schema
  - Object Models and Class Diagrams
  - 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

2-19

## S 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")

2-20

## S 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

2-21

## S 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!

2-22

## S 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 spec.
    - Get agreement with client.
    - Include as first part of technical spec.
  - Do design spec.
    - Get agreement with client.
    - Include as 2<sup>nd</sup> part of technical spec.
  - Do technical spec.
    - Get agreement with client.
    - Finish technical spec.
  - Do schedule.
  - Do development, testing, and deployment.
- In CSE498, must do all three in parallel (and iterate).

2-23

## S 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
  - Revise As Needed
- Refine As Needed
- Assign Sections to Team Members
- Share with Client
  - Ask For (Specific) Feedback
  - Highlight What's New
  - Tricky Balance
    - Not Enough?
    - Too Much?

Is this what you had in mind?

2-24

## S How To's (3 of 4)

- Schedule
  - Dictated by Course
  - See [Meeting Agendas](#)
    - 09/08 Team Status Report
    - 09/15 Technical Specifications / Schedule
    - 10/06 Alpha Demos
    - 11/03 Beta Demos
    - 12/01 Project Video
    - 12/03 All Deliverables
  - Other Milestone By Educated Guesses
  - Track To It At Least Weekly at Triage Meetings
  - Revisit Often and Revise If Necessary
  - Delivery Slippage = Graduation Slippage

2-25

## S How To's (4 of 4)

- “Living Document”
- Make Sure Your Tech Spec Has...
  - Cover Page
  - Title
  - Table of Content
  - Page Numbers
  - Headers and Footers
  - Etc...
 (That is, make sure your spec looks professional.)

2-26

## S 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.)

2-27

## S Nota Bene: Tech Spec

- 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
  - September 15
  - Less Than 4 Weeks
- In Class Formal Presentations
  - September 15 – September 22
  - PowerPoint Template Provided

2-28

## S Resources on the Web (1 of 2)

- By Peter Surna
  - [How to Write Specifications Part 1](#)
  - [How to Write Specifications Part 2](#)
  - [Joke-A-Day Web Site – A Sample Design Specification](#)
- CSE498 Web Site [Downloads](#)
  - [Motorola](#)
  - [Union Pacific](#)

2-29

## S Resources on the Web (2 of 2)

- [W3 Schools](#)
  - Web Developer Resources
    - Tutorials
      - HTML
      - XML
      - Browser Scripting
      - Server Scripting
    - References
    - Examples
    - Quizzes
    - Quick Starters
  - Good
  - Free
- CSE498 Web Site [Resources](#)
  - .NET
  - Multimedia
  - Web Building

2-30



## S Technical Specifications

- ☑ Functional Specifications
- ☑ Design Specifications
- ☑ Technical Specifications

2-31

## S What's next?

- Meet Team Members After Class
- Schedule
  - First Meeting ASAP
  - Schedule Weekly Team Meeting
  - Schedule Weekly Triage Meeting with Ken
- Select Client Contact Person
- Contact Client
- Setup
  - Team Machines
  - Team Website ([www.cse498t01s.cse.msu.edu](http://www.cse498t01s.cse.msu.edu))
- Think About [Team Status Report](#)

2-32

## S Client Contact

- Pick a Team Client Contact Today
- Send Email Immediately
- Send Contact Info for All Team Members
  - Email
  - Cell Phones
- Request
  - Contact Info for All Client Contacts
  - Time (in Next Day or So) for Meeting and/or Call
- On-Site Visit(s)
  - Do If Possible
  - Do Not Wait for On-Site to Get Started

## S Team <#> Status Report (1 of 4)

Team <#>: <team\_name>

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

- September 8
- Less than Two Weeks
- All Teams

0-34

## S Team <#> Status Report (2 of 4)

Team <#>: <team\_name>

- 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

0-35

## S Team <#> Status Report (3 of 4)

Team <#>: <team\_name>

- Project Definition
  - Description Point 1
  - Description Point 2
  - Description Point 3
  - Description Point 4
- Technical Specification Document
  - Status Point 1
  - Status Point 2
  - Status Point 3
  - Status Point 4

0-36

## S Team <#> Status Report (4 of 4)

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

Team <#>: <team\_name>

0-37