Designing Software Architecture

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Housekeeping

- The proposals will be handed back
  - Average = 15.64
  - Std Dev = 1.62

- Strengths
  - Good coverage of important points
  - Good ideas and writing

- Common problems
  - Lack of differentiation from existing products
  - Did not think through customer interactions
  - Lack of user interface mockup (for those projects that emphasized UI)
  - No architecture diagram
  - No timeline
Why software architecture matters

- If you are a developer:
  - You need to understand where your software works in the system
  - You need to be able to work with others under one framework
- If you are a designer or manager:
  - You need to understand other peoples’ systems
  - You need to create a system that works
- If you are in an unrelated field
  - Designs used in computer science show up elsewhere
Why define modules?

- Does it help us to keep these separate?
  - The client from the server?
  - The server from the application?
  - The application from the data storage?
  - The entire system from external inputs?
- Separating “data” logic from “user” logic
- The ability to use multiple inputs
- The ability to have multiple clients
- Making data available to multiple sources
- Keeping available parts up if failures occur elsewhere
Let's look at some you guys came up with (about half of you had one)
Admin. Backend → User/Page Database → Front End

Front End:
- Version Control
- Page Editor

Client Side Web Site
What should be in a network software architecture?

- Well defined modules
  - Data storage
  - Server side applications
  - Client side applications
- Well defined interactions
  - These become the specifications for each module
  - These flow directly from use cases
LAMP

LAMP - One popular framework for organizing client-server software

- L – Linux based
- A – Apache Web Server
- M – MySQL, PostgreSQL, etc…
- P – Perl, PHP, Python, etc…

A question for you:

- Where does your java application fit in this mess?
- Where does your HTML fit in this mess?

Note: You will need your Cubist and MySQL accounts to be enabled to use LAMP
.Net architecture

- Windows Environment + IIS + MS SQL + ASP.NET
- A good environment for development: Visual Studio
- Integrated permissions handling for SQL Server
Exercise: Requirements

- Split into groups of 3-4 and choose one of the following to design
  - A new drink for Starbucks
  - A new steering wheel
  - An educational toy for third world children
  - A coat to be sold at REI
  - An oven for a 75+ year old person

- Keep track of requirements for your product
  - Show a mockup of your design and explain how you got there
Things to consider

- Who is your customer?
- What do they want / what are they trying to accomplish?
- What is your main driver?
- Remember, companies judge capabilities through VRIS
  - V – Valuable
  - R – Rare
  - I – Hard to Imitate
  - S – Hard to substitute for