### Architecture Milestone

CSE 403, Winter 2006 Software Engineering

http://www.cs.washington.edu/education/courses/403/06wi/

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# Readings and References

### References

- » Anchoring the Software Process, Barry Boehm, USC, 1995
  - citeseer.ist.psu.edu/boehm95anchoring.html
- » Software Architecture, David Garlan, CMU, 2001
  - http://www-2.cs.cmu.edu/~able/publications/encycSE2001/
- » A Practical Method for Documenting Software Architectures, Clements, et al, CMU, 2002
  - http://www-2.cs.cmu.edu/~able/publications/icse03-dsa/
- » I Have Abandoned My Search for Truth, and Am Now Looking for a Good Fantasy, Ashleigh Brilliant

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### Elements of Lifecycle Architecture (LCA)

• Operational Concepts

What is it?

• System Requirements

What does it do for us?

• System and software architecture

How?

• Lifecycle plan Who wants it? Who'll support it?

• Feasibility Rationale

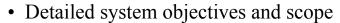
Is this really true?

### Sound Familiar?

- These are the same elements as for the Life Cycle Objectives milestone
- Now we are making the system real
  - » No longer just a public interface
  - » At least a public abstract class
- Definition of system and software architecture



# Elaboration of Operational Concept ...



- » User community?
  - business, personal, demographic
- » Environment this program works in?
  - device availability, networking fabric, ...
- » Major benefits?
  - Given the above, is the user still interested?
- » Establish what the system does and does not do
  - Now is the time for all the stakeholders to recognize what they are and are not getting - highlight changes



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## Elaboration of System Requirements

- All features of the system
  - » well defined now or can be defined later with low risk
  - » capabilities, interfaces, appearance
  - » include all out-of-band functions support, admin, update
- Features include
  - » performance and reliability of particular functions
  - » specifics of security requirements
- Prototypes are an appropriate tool for providing an interpretation of the requirements
  - » be careful that customer/marketing don't get confused about which is prototype and which is the real product

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### Elaboration of System Architecture

- Specific choices
  - » make some decisions you are headed for action
  - » document why you dropped previous options
- Identify specific existing packages that will be used in your product
  - » Commercial-off-the-shelf, in-house, open source, ...
- Identify evolutionary paths
  - » Which packages can be replaced or upgraded?
  - » Where do you anticipate change? Can you support it?

### Hand-Wave Reduction Act

- LCA review
  - » incorporates detailed requirements specification
    - shows that you really know what is being built
  - » incorporates detailed design
    - shows that you know how to build it
- Details
  - » "are the mark of a great con" Jonas Nightingale
  - » but also important to help you work through how this thing is actually going to work

### **Details**

- System and Software Components
  - » hardware, programs, data blocks
- Connectors
  - » mediate interactions among components
- Configurations
  - » combinations of components and connectors
- Constraints
  - » resource limitations, operating environment

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### Elaboration of the Life-Cycle plan

• "The WWWWHH principle"

» Why is the system being developed? Objectives

» What will be done When?
Schedules

» Who will do it? Where are they? Responsibilities

» How will the job be done? Approach

» How much of each resource? Resources

• This is now the detailed project development plan

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### Feasibility Rationale

- Establish the consistency and conceptual integrity of the other elements
  - » ie, Will it work?
- Get the stakeholders' concurrence that the LCA elements are compatible with their objectives for the system
  - » ie, Do the customers and deployers want it?

