Architecture Milestone

CSE 403, Spring 2004
Software Engineering

http://www.cs.washington.edu/education/courses/403/04sp/

Readings and References

- References
  - Anchoring the Software Process, Barry Boehm, USC, 1995
    - http://citeseer.nj.nec.com/boehm95anchoring.html
  - Software Architecture, David Garlan, CMU, 2001
    - 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

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

- Detailed system objectives and scope
  - User community?
    - business, personal, demographic
  - Environment this program works in?
    - device availability, networking fabric, ...
  - Major benefits?
    - Given the above, is the user still interested?

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

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

Elaboration of the Life-Cycle plan

• “The WWWWWHH 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

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?