Architecture Milestone

CSE 403, Winter 2006
Software Engineering

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

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/
    • 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?
  - 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

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 WWWWH 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?