
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/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

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
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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

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?

