From Inception to Elaboration

Chapter 8
Applying UML and Patterns
Craig Larman

NJIT

Objectives

- Elaboration is the initial series of iterations during which the team does the following
  - Serious investigation
  - Discover & stabilize major requirements
  - Mitigate/retire risks (business value)
  - Build core architecture elements
  - Estimate overall schedule and resources
  - Establish a supporting environment

Inception Checkpoint

- Brief & incomplete artifacts

- Quick phase

- Shallow investigation

- Determine basic feasibility, risk & scope

- Decide if project is worthwhile

Inception - Artifacts and Activities

- Requirements workshop

- Name actors, goals, use cases

- Keep use cases brief

- Identify most risky & influential quality requirements

- First version of Supplementary Specification and vision

Inception - Artifacts and Activities (2)

- Risk list

- Technical feasibility

- UI oriented prototypes

- Buy/build/reuse components

- High-level candidate architecture

- Plan first iteration

- Candidate tools list

Elaboration - Key Ideas

- Not a waterfall model !
- Two to six weeks for each iteration
- Timeboxed iterations
- Each iteration ends in a stable and tested release

Architecture Prototype/Baseline

- Not a partial system
- Evolutionary prototype
- Don't create throw-away prototypes
- Production subset of final system
- Also called Executable Architecture

Best Practices

- Start programming early

- Adapt based on feedback

- Design, implement and test adaptively

- Test early and realistically

- Requirements and use case details through series of workshops

Architecturally Significant Features

- Wide and shallow design
- Refine inter-module interfaces
- Integrate existing components
- Simple scenarios

Essential Activities

- Define, validate and baseline Architecture

- Refine Vision

- Create and baseline detailed iteration plans for Construction Phase

- Refine development case and proper development environment

- Refine Architecture and select components

Rank Criteria

- Risk
- Coverage
- Criticality

Ranking

- Rank work across iterations
- High ranking scenarios in early ranking
- Rank adaptively

UP Artifacts

- Iteration Plan

- Change Request

- Software Development Plan

Iteration 1 Requirements

- Implement basic key scenario
- Start-Up use case
- KISS
- No external collaboration

Incremental Development

- Handle requirements across iterations
- Varying features over iterations
- Complete short, simple use cases in single iteration

Artifacts starting in Elaboration

- Domain Model

- Design Model

- Software Architecture Document

- Data Model

- Test Model

- Implementation Model

- Use-Case Storyboards and UI Prototypes

Inception and Elaboration

- Main output is a stable software architecture, that enables quality planning of Construction and Deployment
- 15 to 25 percent of total project cost

Lifecycle Architecture Milestone

- Stable product vision and requirements
- Stable architecture
- Proven approaches for test and evaluation
- Major risks addressed
- Sufficient detail & feasibility for iteration plans of construction phase
- Stakeholders agree to current vision
- Actual Vs planned expenditure acceptable

You didn't Understand Elaboration When …

- No Timeboxed schedule
- Single Iteration
- Most requirements already defined
- No Risk mitigation/resolution
- No Executable Architecture
- Requirements Phase
- Attempt full and careful design

You didn't Understand Elaboration When (2)...

- Minimal feedback and adaptation
- No early and realistic testing
- Frozen Architecture
- No Proof-of-concept programming
- No multiple requirements workshops

References

- Applying UML and Patterns : An Introduction to Object-Oriented Analysis and Design and the Unified Process - Craig Larman

- http://www.arcorn.com/approach/approach_2_01.html

- http://www.yoopeedoo.com/upedu/index.htm?http%3A//www.yoopeedoo.com/upedu/process/itrwkfls/iwf_iwfs.htm

References (continued...)

- http://www.therationaledge.com/content/dec_01/ f_projectConsole_pw.html
- http://www.aw.com/samplechapter/0201742047. pdf