Architecture Evaluation

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Agenda

- What is Architecture Evaluation
  - The process of determining if an architecture is fit for the purpose for which it is intended
- Evaluation Factors
- The Architecture Tradeoff Analysis Method (ATAM)
- Lightweight Architecture Evaluation

Evaluation Factors

- Evaluation by the designer within the design process
  - *The importance of the decision*
  - *The number of potential alternatives*
  - *Good enough as opposed to perfect*
- Evaluation by peers within the design process
  - *The reviewers determine a number of quality attribute scenarios*
  - *The architect presents the portion of the architecture to be evaluated*
  - *For each scenario, the designer walks through the architecture and explains how the scenario is satisfied*
  - *Potential problems are captured*

Evaluation Factors

- Analysis by outsiders once the architecture has been designed
- Other Factors (Contextual)
  - *What artifacts are available*
  - *Who sees the results*
  - *Who performs the evaluation*
  - *Which stakeholders will participate*
  - *What are the business goals*

The Architecture Tradeoff Analysis Method

- Different Participants at different phases:
  - Evaluation Team (3-5 Persons)
  - Project decision makers
  - Architecture stakeholders

The Architecture Tradeoff Analysis Method

- Output of ATAM Process
  - *Accurate presentation of the architecture*
  - *Articulation of the business goals*
  - Prioritized quality attribute requirements expressed as quality attribute scenarios
  - *A set of risks and non-risks.*
  - *A set of risk themes (Patterns)*
  - *Mapping of architectural decisions to quality requirements*
  - *A set of identified sensitivity and tradeoff points*

The Architecture Tradeoff Analysis Method

- Phases of the ATAM
  - Partnership and Preparation (Phase0)
  - Evaluation with Decision Makers (Phase 1)
  - Evaluation with Stakeholders (Phase2)
  - Follow up (Phase 3)

Steps of a typical ATAM evaluation

- Phase 1 : With decision makers presence
  - Present the ATAM
  - Present the Business Drivers
  - Present the Architecture
  - Identify Architectural Approaches
  - Generate Quality Attribute Utility Tree
  - Analyze Architectural Approaches

Steps of a typical ATAM evaluation

- Phase 2 : with the presence of the stakeholders
  - Summarize phase 1 results
  - Brainstorm and Prioritize Scenarios
  - Analyze Architectural Approaches
  - Present Results
    - The architectural approaches documented
    - The set of scenarios and their prioritization from the brainstorming
    - The utility tree
    - The risks discovered
    - The nonrisks documented
    - The sensitivity points and tradeoff points found
    - Risk themes and the business drivers threatened by each one

Lightweight Architecture Evaluation

- The same Steps as ATAM
- Suite small-medium projects
- Doesn't need review team
- Can be done in half a day

Discussion Questions

Suppose you've been asked to evaluate the architecture for a system in confidence. The architect isn't available. You aren't allowed to discuss the evaluation with any of the system's stakeholders. How would you proceed?

Discussion Questions

Under what circumstances would you want to employ a full-strength ATAM and under what circumstances would you want to employ a Lightweight Architecture Evaluation?

Thank you