

# Introducing Scenario-based Architecture Reviews

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## Overview

- Project and Team Background
- Defining the review method
- Activities and Results
- Challenges and Lesson Learned
- Future Plans



## Project Background



- Multi-year large scale development effort in the financial services industry
  - Emphasis on increasing market share and efficiency gains
  - Critical compliance and regulatory drivers/requirements
- Highly integrated set of enterprise applications to support lending business processes
  - Some components vendor-developed or acquired as COTS
  - In-house development and integration
- Implementation and rollout plan
  - Initial release with basic end to end functionality applied to small user base, limited financial products and geographies
  - Multi-year schedule of follow-on releases with near-exponential increase in user base and transaction volumes, accompanied by additional functionality

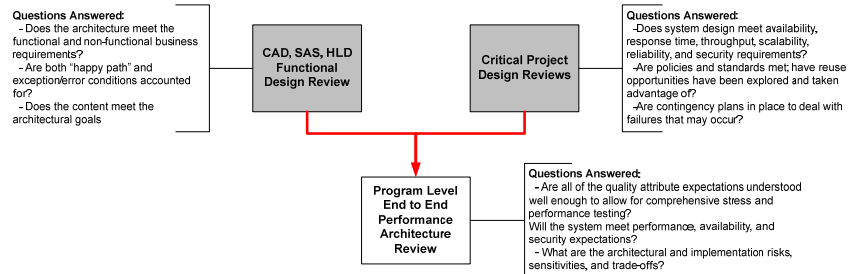
## Integrated Production Delivery



- Cross functional team chartered to ensure smooth delivery into production, and effective ongoing support for the production system
  - Comprised of team members matrixed from all key stakeholder teams involved in initial system delivery
  - Identified major activities and criteria to confirm production readiness
- Our sub-team was assembled to define, and create plans for, Major Sign-offs and Reviews – including Architecture and Design
- Approach: Defining the evaluation process:
  - Identify existing enterprise review processes and corporate/regulatory requirements
  - Research industry best practices for reviewing and evaluating architecture, design, and other aspects of production readiness
  - Tailor approach to fit culture and project goals

## Review Context

- Existing review methods were focused on evaluating the architecture and functional design of component systems
- Our goal was to conduct an “end to end” evaluation of the integrated systems architecture



## Survey of Review Methods

- ATAM
  - Pros: Structured method to identify risks, sensitivities and tradeoffs in the context of business goals
  - Cons: Perceived as overly involved and resource intensive
- ARID - Active Reviews for Intermediate Designs (2000 Paul Clements)
  - Pros: Customers interpret quality attribute meaning for designers vs. designers telling customers
  - Cons: Focus on early stage and partial system architecture
- ADR – Active Design Reviews (Parnas & Weiss)
  - Pros: Designed to make it easy for reviewers to find errors
  - Cons: Uncertain how to scale to large program effort, reviewer prep time
- DOD PDR (Preliminary Design Review) and CDR (Critical Design Review)
  - Pros: Phased approach for evaluating design against customer expectations
  - Cons: Large number of participants can make it difficult to reach specific conclusions
- In-House Critical Project Design and Pre-Implementation Review Process
  - Pros: Familiarity, support from internal sponsors
  - Cons: Variability in implementation, little formality in capturing and categorizing findings

# Defining the PAR (Performance Architecture Review) Process



Scenario- based approach modified from the ATAM

Phase 1: Preparatory Work	Step 1 : Identify participants
	Step 2: Identify, refine, and prioritize quality attributes by creating a Utility Tree
	Step 3: Identify and Prepare Scenarios
	Step 4: Identify relevant architectural documents to reference
	Step 5: Logistical meeting preparations (set a date, send invitations, reserve location and resources)
Phase 2: Review Sessions	Step 6: Introduce the approach to the participants
	Step 7: Present the architecture and its descriptions
	Step 8: Review and analyze each scenario and the architectural approaches which address the scenario
	Step 9: Document key points and decisions
Phase 3: Document findings and develop action plans	Step 10: The review team presents a high level out-brief at the end of the Phase 2 review meeting
	Step 11: The findings are fully documented in an evaluation report
	Step 12: Action items are identified, prioritized, assigned, and entered into the appropriate tracking system for monitoring

## PAR Pre-Work Sessions



- Participant Identification
  - Worked with key sponsors who identified representative stakeholders for each phase of review
- Utility Tree Definition
  - Created initial tree based on program objectives and past review findings
  - Worked with lead architect to refine each branch
- Scenario Brainstorming
  - Crafted seed scenarios from past review materials and real life experience with legacy systems
  - Identified additional scenarios with small group of stakeholders based on knowledge of business requirements for availability and transaction response time performance
  - Reviewed scenarios with systems architects – some scenarios eliminated or consolidated, others refined and prioritized

## PAR Review Sessions



- Session 1
  - Started with highest priority scenarios
  - Architects from component systems walked through logical and physical views and described availability and performance approaches/tactics
  - Areas of concern and action items documented for follow-on
- Session 2
  - Recap of session 1 and scenario list
  - Further walkthrough of major systems, architectural drivers, tactics, tradeoffs, and risks
- Risk Themes
  - Categorized as architectural and non-architectural
  - 4 Architectural Risk Themes – related to coordination of key attributes and responses
  - 6 Non-Architectural Risk Themes

## Challenges and Lessons Learned



- Challenges
  - Lack of familiarity with scenario based methods
  - Date-driven project culture
    - Challenges in making time to conduct evaluation
    - Must have ongoing sponsorship to ensure identified risks are actively managed
  - Organizational separation between business and technology – presented barriers to conducting joint reviews
- Lessons Learned
  - Ongoing education and advocacy are critical
  - Change takes time – focus on incremental gains

## Future Plans



- Conduct PAR session prior to each release that contains architecturally significant changes
  - Engage a wider range of stakeholders from all areas
  - Drive PAR scheduling to occur earlier in development cycle
- Apply QAW method to develop scenarios earlier in development lifecycle
- Conduct Production Readiness Reviews which will leverage scenarios to confirm risks have been addressed and monitoring and support procedures have been developed to support scenario response
- Ensure visibility and follow up on risks and risk themes
- Continue to educate team members on benefits of architecture evaluation methods

## Questions?

