

Architecture Documentation for Agile Development

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Agenda

- Problem Statement
- Proposed solution
 - ✦ Architecture Abstract Specification (AAS)
 - ✦ AAS Tool
- Demonstration
- Conclusion

Problem statement

- Historic approaches to product architecture do not adapt well to the agile development model
- It is necessary to fundamentally change the approach, artifacts and processes to meet business goals

Agile development

- The main characteristics of agile development:
 - Flexibility
 - Minimalism
 - Collaboration
- Emphasizes rapid and flexible development
- Transforms the development process from being process-centric to human-centric
- Favors operating software over documentation

Tension between architecture & agile development

- **Architecture** historically requires **extensive documentation**
- **Agile** development expects **minimalistic documentation**
- This documentation needs to be reviewed and maintained throughout the development lifecycle

How should architecture be documented in agile development methodologies?

Causes for the tension between architecture & agile development

- **Misuse** of agile methods by users, who believe that agility is about **ignoring architecture** and jumping onto refactoring.

Abrahamsson et al. 2010

- Being flexible to changes and focusing on small releases, agile methodologies support **minimum documentation**

Ambler, 2002

- The values of agile development may be interpreted in many ways, some of which are problematic because they **ignore architectural features** that do not support the current version.

Boehm (2002)

The proposed solution

Abstract Architecture Specification (AAS)

- A short document aligned with Agile's expectation for minimalistic documentation
 - Encourages collaboration
 - Easier to review
 - Easier to maintain
- Includes the most relevant and updated information regarding the proposed architecture
- Kept short by employing elevator speech concepts

Abstract Architecture Specification (AAS)

Four major sections

- **Product overview:**
 - 100 word description of the project goals & business value
- **Product goals for the release:**
 - 100 word description of the product objectives for release
- **Product Architecture Overview**
 - General representation of the system architecture
 - ✦ Current release
 - ✦ Changes anticipated for this upcoming release
 - Uses standard blueprinting methodology to illustrate the architecture
 - Limited to 1000 words of description
- **Non-Functional Requirement (NFR)**
 - A table that describes the project goals & architecture impacts of the NFR
 - ✦ Current Coverage and
 - ✦ Next Release Coverage

Plus Acronyms & Relevant Links

Abstract Architecture Specification (AAS)

Creation

- Kept short and focused

- template-oriented

- ✦ Predefined fields not free form text

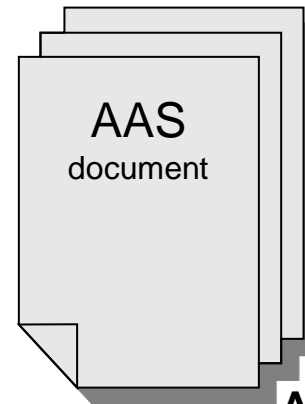
- word count limitations

Users of the AAS have a high level of product knowledge & market context

**“Minimalistic Documentation”
does not mean sloppy**



Architecture described
in average 60-80 pages
document



Architecture described
in 4-6 pages

AAS document benefits

- Streamlines information so that reviewers can concentrate on the content and the design decisions captured in the blueprint and text within the document
- Facilitates a common language for architects
 - Consistent style and representations
- Simplifies and assists the communication between architects

AAS Automation

An automated AAS Tool

DEMO

AAS tool: Benefits

- Helps the architect organize relevant architectural information while creating architecture blueprints
 - Is bundled with an architecture modeling tool
 - Form or GUI driven
- Provides an integrated Checklist to guide the architects throughout their use of the tool
 - Evolution of the checklist accumulates knowledge through ongoing experience
- Shares the database with the Architecture Modeling Tool

AAS tool: Benefits cont'

- A generated AAS report ready to be submitted for review and product development
- Reduces the information the architect is required to insert within the tool
- Captures the knowledge and architecture decisions
- Facilitates the reuse or restructuring of the information

Agile development is based on

Flexibility

Minimalism

Collaboration

AAS and AAS tool supports:

AAS is nimble and flexible for changes,
bundled and integrated with a modeling tool

AAS is template for short and focused document
assisted by an automatic tool

It is facilitating common language, supporting
collaboration between stakeholders

Architecture Documentation for Agile Development

Backup

The Debate

- *The question about the co-existence of architecture and agility has been discussed:*
 - OOPSLA 2009 – Workshop and Panel both entitled *Architecture in an Agile World*
 - IEEE Software special issue on *Agility and Architecture* (March/April 2010),

All these are aimed at understanding and resolving the tension between agility and architecture