



SSA Exercises – Architecture Drivers



TU Kaiserslautern, SS2018

**Lecture "Software and System
Architecture (SSA)"**

Dr. Pablo Oliveira Antonino
pablo.antonino@iese.fraunhofer.de

Jasmin Jahić
jasmin.jahic@iese.fraunhofer.de

Introduction and recap



- Architecture (what, why, how)
- Stakeholders (what, who, concerns)
 - Business goals
 - Quality attributes
 - Key functional requirements
 - Constraints
- Architectural drivers (why, what)
 - Expensive to change, high risks, and being new.



Architecture Driver Template

Categorization		Responsibilities	
Driver Name	<i>Concise short name</i>	Supporter	<i>Stakeholders supporting the driver</i>
Driver ID	<i>Unique identifier</i>	Sponsor	<i>Stakeholders paying for the driver</i>
Status	<i>[Open, Elicited, Under Design, Designed, Under Realization, Realized, Done]</i>	Author	<i>Responsible for filling this template</i>
Priority	<i>[High - Medium - Low]</i>	Inspector	<i>Stakeholders reviewing this driver</i>

Description		Quantification
Environment	<i>Context and/or initial situation applying to this driver</i>	<ul style="list-style-type: none"> ▪ <i>Measurable effects applying to the environment</i>
Stimulus	<i>The event, trigger or condition arising from this driver</i>	<ul style="list-style-type: none"> ▪ <i>Measurable effects applying to the stimulus</i>
Response	<i>The expected reaction of the system to the driver event (black box view putting no constraints on the design)</i>	<ul style="list-style-type: none"> ▪ <i>Measurable effects applying to the response</i> ▪ <i>Measurable indicators that the driver has been achieved by the architecture</i>

Architectural Drivers – Examples

- „A user wants to update the system. The update is triggered with a maximum of 3 clicks. “
- „During operation, a server fails. All ongoing operations are unaffected by the failure“
- „Each user input generates a visual response within 0.2 s“
- „A new feature is to be implemented. A team of 5 people is able to realize the feature within three days“
- „We are not allowed to use Open Source software at all“
- „We want to change our complete business model to SaaS“

AD3: „Under high system load due to background processing of computation-intensive operations, each user input in the GUI is processed within 0.2 s“

Architecture Driver Example

Most Important

Categorization		Responsibilities	
Driver Name	Application startup time	Supporter	
Driver ID	AD.01.PERFORMANCE	Sponsor	
Status	Realized	Author	
Priority	High	Inspector	

Description		Quantification
Environment	The application is installed on the system and has been started before at least once. The application is currently closed and the system is running on normal load.	<ul style="list-style-type: none"> Previous starts ≥ 1
Stimulus	A user starts the application from the Windows start menu.	
Response	The application starts and is ready for inputting search data in less than 1 second. The application is ready for fast answers to search queries after 5 seconds.	<ul style="list-style-type: none"> Initial startup time $< 1s$ Full startup time $< 5s$

Architecture Driver Example

Categorization		Responsibilities	
Driver Name	Application startup time	Supporter	Carla Customer
Driver ID	AD.01.PERFORMANCE	Sponsor	Mike Manager
Status	Realized	Author	Arnold Architect
Priority	High	Inspector	Alfred Architect

Description		Quantification
Environment	The application is installed on the system and has been started before at least once. The application is currently closed and the system is running on normal load.	<ul style="list-style-type: none"> Previous starts ≥ 1
Stimulus	A user starts the application from the Windows start menu.	
Response	The application starts and is ready for inputting search data in less than 1 second. The application is ready for fast answers to search queries after 5 seconds.	<ul style="list-style-type: none"> Initial startup time $< 1s$ Full startup time $< 5s$

Example System: Farm Management System (FMS)



FMS manages a multitude of mostly agriculture vehicles as well as farm workers that are part of a farms' business processes.

Exercise Tasks



■ Capture architecture drivers for the Farm Management System (FMS), documenting them using the scenarios template ~ 40 min.

- 3 drivers
- Use flipcharts

■ Presentation ~ 30 min

■ Q&A ~ 10 min

