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Software Architecture in Practice

Quality Attributes Scenario exercise

Requirements

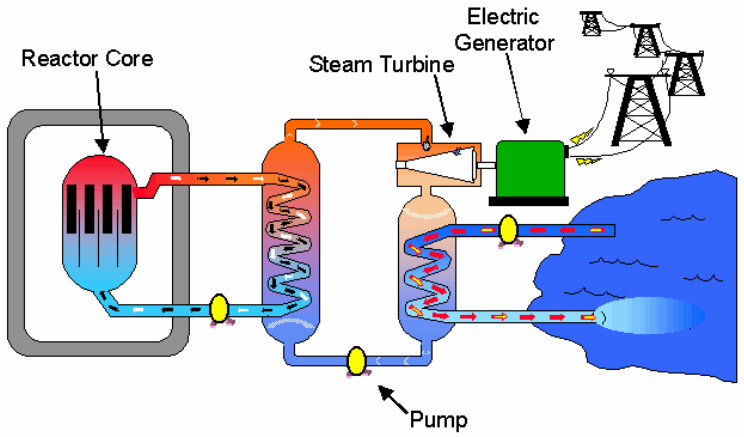
Create quality attribute scenarios for TS-05

Stakeholder roles

- Developers, owners, neighbours, users

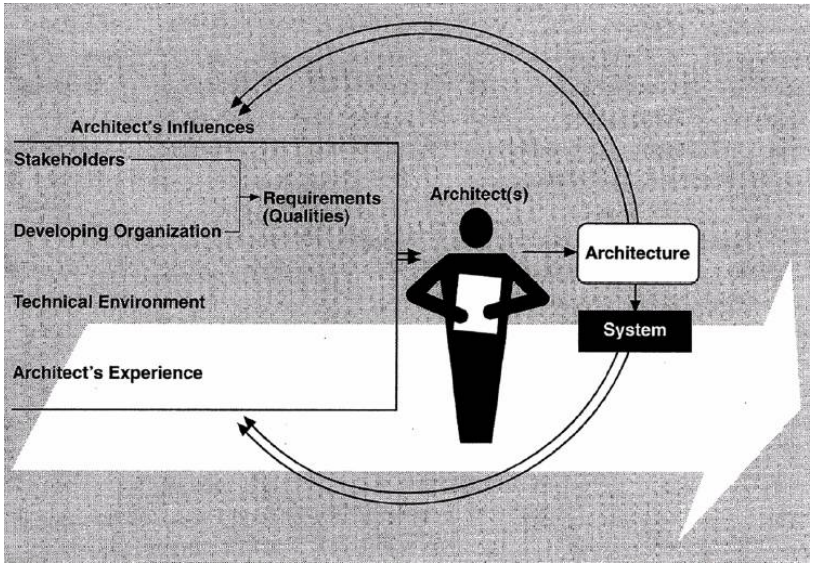
Following a specified proces

- (Part of the Quality Attribute Workshops technique from SEI)



Steps

1. Identification of Architectural Drivers
   - = most critical software architecture quality requirements
   - Will be a given in this exercise
2. Scenario Brainstorming
   - Find quality attribute scenarios in a brainstorming process
3. Scenario Prioritization
   - Vote on scenarios
4. Scenario Refinement
   - Refine most important scenarios to be on the quality attribute scenario format of [Bass et al, 2003]



1. Architectural Drivers

Safety

- The system should not in any circumstances harm its environment, the safe option is always to shut down the plant

Availability

- The system should be continuously available

Performance

- It is essential that temperature measurements are transmitted from temperature sensors to monitors in real-time and with minimum latency

Others?

2. Scenario Brainstorm

Goal
- Come up with as many well-formed quality attribute scenarios as possible
- Stimulus, environment, response

Participants
- Come up with quality attribute scenarios
- No critique as such, only clarification questions

Facilitator
- Write scenarios on whiteboard
- Ensure that scenarios are usable
  - "The system shall be modifiable" vs. "The user interface of … is changed to different look & fell in two person days"
- Make sure architectural drivers are covered

Either fixed time period or whenever participants run out of good ideas
- Usually easy to create 20+ scenarios

3. Scenario Priorization

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Each stakeholder has 30%*number of scenarios votes

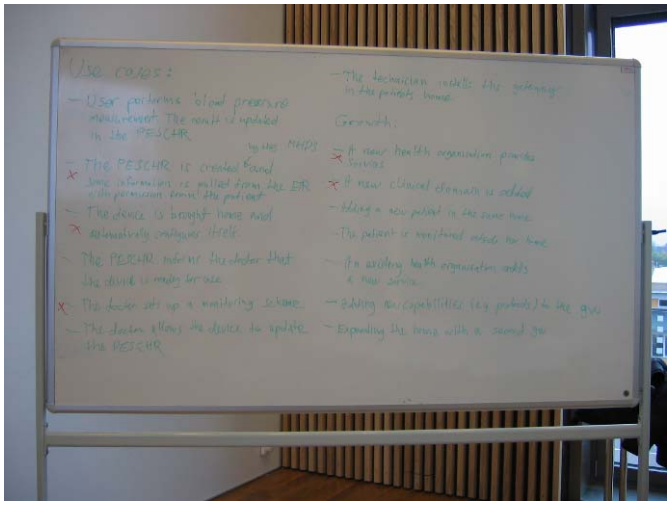
- Standard brainstorming stuff

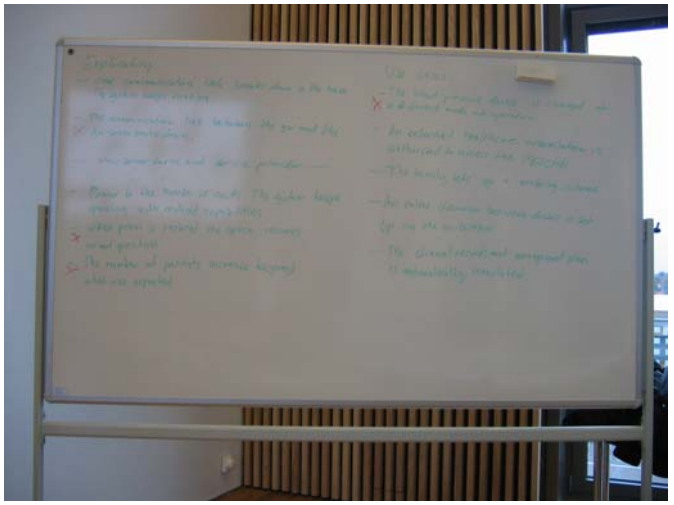
Round-robin voting

- Two passes
- Each pass: allocate half of votes

Resulting count = prioritization

- High
- Medium
- Low priority

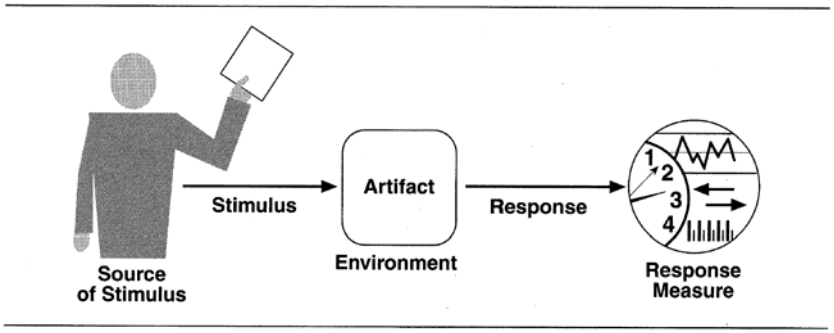




4. Scenario Refinement

Develop high priority scenarios according to scheme of [Bass et al., 2003]

- Describe relevant quality attributes
- Find questions and issues



POS – Quality Attribute Scenario 1

Scenario(s):		The barcode scanner fails; failure is detected, signalled to user at terminal; continue in degraded mode
Relevant Quality Attributes:		Availability
Scenario Components	*Stimulus Source:*	Internal to system
	Stimulus:	Fails
	Environment:	Normal operation
	Artefact (If Known):	Barcode scanner
	Response:	Failure detected, shown to user, continue to operate
	Response Measure:	No downtime React in 2 seconds