

SAPERE Methodology

A first sketch

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Frankfurt, 27 February 2012



- 1 Work package 1 - Task 1.3
- 2 SAPERE Meta-model
- 3 SAPERE Process
- 4 Methodology Documentation



Outline

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WP1

T1.3 from DoW

The focus of this task is on the development of a methodology for the design of the SAPERE services, namely methodological guidelines for the proposed computational models coupled with tools to support the development process



Methodology

Methodology [Ghezzi et al., 2002]

- A methodology is a collection of methods covering and connecting different stages in a process
- The purpose of a methodology is to prescribe a certain coherent approach to solving a problem in the context of a software process by preselecting and putting in relation a number of methods
- A methodology has two important components
 - one that describe the process elements of the approach: the **abstractions**
 - one that focuses on the steps that have to be done, the work products that have to be produced – and their documentation – ...: the **process**



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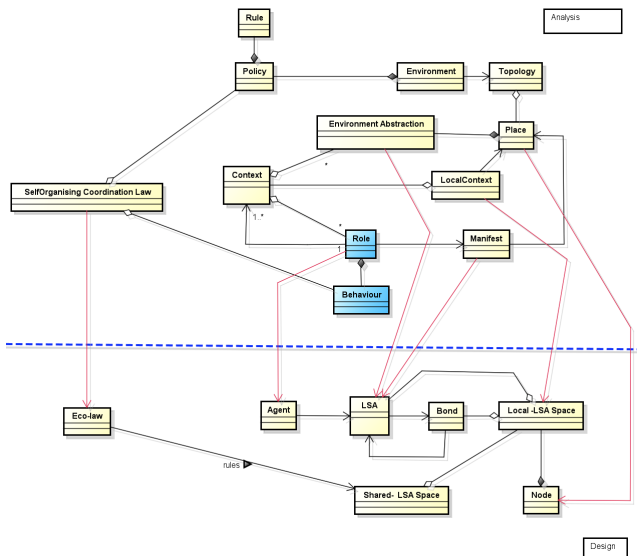


Preliminary Meta-model Abstractions

- From our experience the starting point in the construction of a new methodology is the definition of the abstractions meta-model
- Here we propose a preliminary abstractions meta-model where:
 - the greater number of abstractions coming from the model defined in D1.1—we added two new abstractions (blu entities in the diagram)
 - the abstractions are logically located in two different domains: analysis and design
 - the preliminary mappings from analysis's abstractions and design's abstractions are sketched (red arrow)



Preliminary Abstractions Meta-model



Preliminary Meta-model Abstractions

- There is the need of new other abstractions for the Requirements Analysis—this phase is totally uncovered.
 - What kind of Requirements Analysis?
 - traditional or agent-oriented?
 - goal-oriented or task oriented?
- Any ideas or suggestions?



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Process Construction

- Before starting the creation of a new design process we have to define the process requirements:
 - what kind of process model?
 - how many phases?
 - what kind of phases?
 - what kind of notation language?



SAPERE Process's Requirements

- Process model: iterative incremental
- Phases: traditional design phases such as Requirements Analysis, Analysis and Design
- Phases: specific SAPERE phases such as Simulation, Verification, Prediction, Quantitative Measures— any other suggestions?
- Notation Language:
 - new ad hoc language?
 - creation of a new UML Profile?
 - ...



SAPERE Process's Requirements

- Another important question: what kind of construction we will adopt?
 - building from the scratch
 - assembling of existing process fragments coming from other methodologies and eventually creation of ad hoc fragments



Supporting Tools

- A CASE tool for supporting the analysis and design
- A simulation tool
- A verification tool
- ...



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Methodology Documentation

- A new standard for the processes documentation [FIPA-DPDF, 2012] [Cossentino, 2009] [Molesini and Omicini, 2012] has been recently approved by IEEE-FIPA with number SC00097B.
- The Process Documentation Template:
 - has been conceived without considering any particular process or methodology → all processes can be documented using it
 - is neutral regarding the (MAS) meta-model and/or the modelling notation adopted in describing the process
 - has a simple structure resembling a tree, so documentation is made in a natural and progressive way:
 - addressing in first place the general description and meta-model definition which constitute the root elements of the process
 - detailing in a second step the branches which are the phases
 - is easy to use for a software engineer as it relies on few previous assumptions
 - suggests as notation the use of the OMG's standard SPEM [Object Management Group, 2008] with few extensions [Seidita et al., 2009]



Methodology Documentation in SAPERE

- Adoption of the Process Documentation Template for documenting the SAPERE methodology
 - documented in a standard way
 - comparable with other methodologies



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