Motivation

Simulation workflows are, in contrast to business workflows, executed less frequently. As a consequence the needed resources are utilized only for the duration of the simulation, leading to unevenly distributed load. Therefore we need means to:

- automatically allocate resources when they are needed
- automatically release resources when they are no longer needed
- automatically provision/de-provision the workflow infrastructure
- automatically deploy/undeploy the simulation services


Architecture

Modeling Time Phase

- Modeling tool runs locally on user’s machine
- Workflow middleware and simulation services are not needed at this time
- Bootware enables transition to next phase

Middleware Runtime Phase

- Start of simulation initiates middleware provisioning
- Two-step bootstrapping process
- Provisioning engine enables transition to next phase
- Workflow completion initiates middleware deprovisioning

Service Runtime Phase

- Service call initiates service provisioning
- Service response initiates service deprovisioning

Service Binding Strategies

- Classification of service binding strategies
- Definition of a new service binding strategy to enable on demand provisioning of workflow middleware and services including their underlying infrastructure

Future Work

- Detailed design and realization of Bootware, service registry and service repository
- Identify and evaluate different provisioning strategies to optimize e.g. cost, resource consumption, response time etc.
- Management layer to control non-functional properties of the provisioning and deprovisioning process

Cooperation

- Tanja Blaschek, Prof. Ertl, VIS
- Peter Reimann, Prof. Mitschang, IPVS, PN 6
- David Molnar, Prof. Schmauder, IMWF, PN 1

References