

# ISSGC '08

8. July 2008

The Sixth International  
Summer School on Grid Computing

## Session 11: Workflow Practical

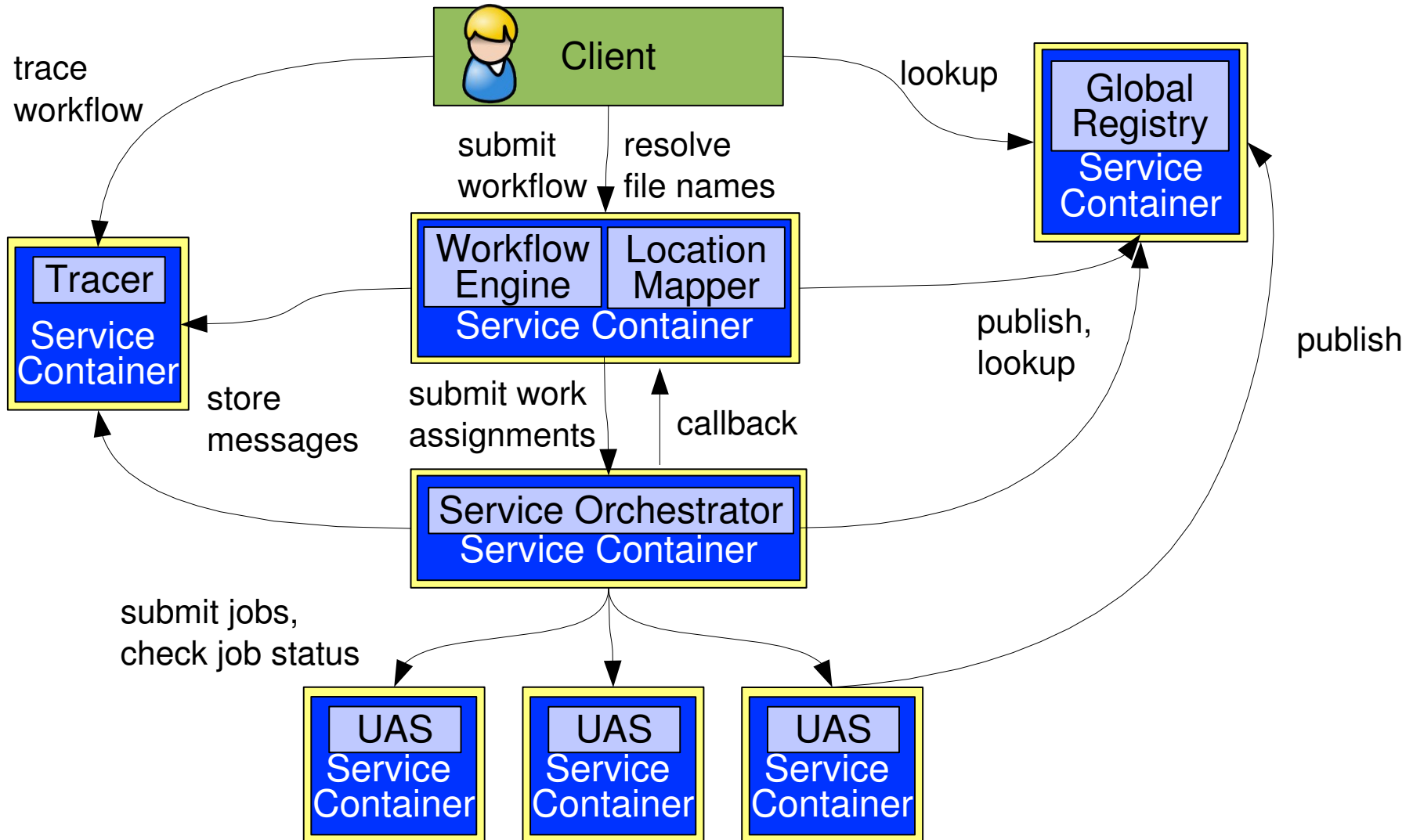
Author/Presenter: Bastian Demuth  
Jülich Supercomputing Centre (JSC)



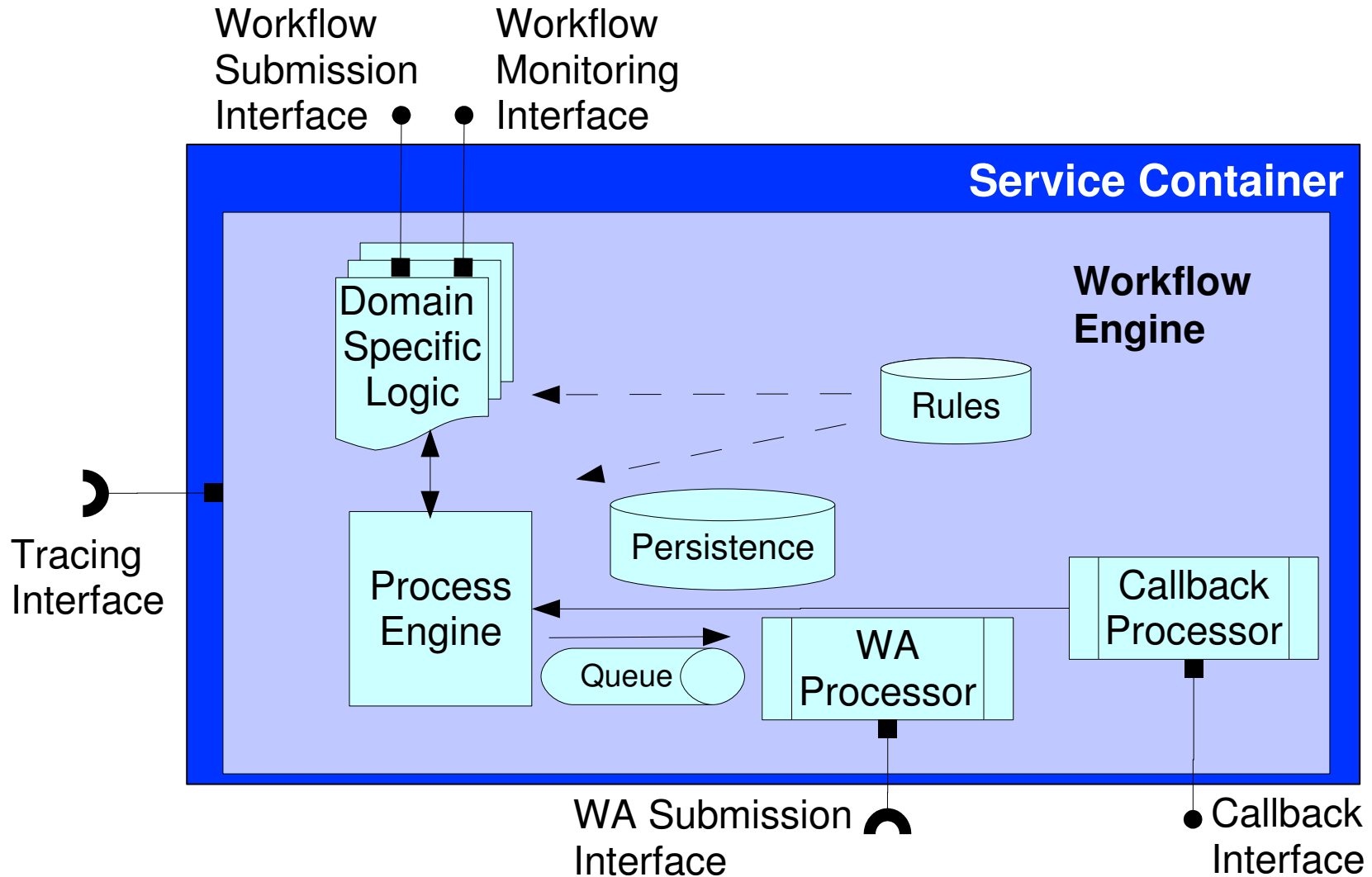
# Workflow System: Design Goals

- ▶ Performance and Scalability (users, resources, jobs)
- ▶ Reliability (redundancy, persistence, job resubmission)
- ▶ Security (SSL, trust delegation)
- ▶ User Friendliness (domain specific GUIs and languages)
- ▶ Flexibility (modifiable business rules, strategies, algorithms)
- ▶ Transparency (tracing, business rules)
- ▶ Maintainability and Extensibility

# Deployment Scenario: Workflow Services



# Detailed View: Workflow Engine



# Service Orchestrator

- ▶ Resource brokering
  - ▶ Flexible strategies
  - ▶ Gathers useful information about the state of the Grid
- ▶ Multiple instances: scalability
- ▶ Low-level orchestration logic separated from workflow processing

# Tracing

- ▶ All messages in the workflow System
- ▶ Timestamps
- ▶ Querying interface
- ▶ Different use cases
  - ▶ What happened to my workflow?
  - ▶ Analysis of usage and congestion
  - ▶ Performance benchmarks
  - ▶ Reproducibility of results

# Data Management

- ▶ Lightweight system: Location Mapper + global storage
  - ▶ “Flat” data
  - ▶ Not annotated
  - ▶ No semantic queries
- ▶ Chemomentum Data Management services
  - ▶ Metadata (automatically produced, given by users)
  - ▶ Relational databases
  - ▶ Hot-plugging of database schemas
  - ▶ Efficient and flexible querying
  - ▶ Provenance and reproducibility of results
  - ▶ Integration of external databases
  - ▶ Administration interface

# Online Documentation

<http://www.fz-juelich.de/jsc/unicore/ISSGC08>