

Programming and Execution of Multiscale Applications on Distributed Infrastructures

Katarzyna Rycerz(1,2), Eryk Ciepiela(2), Tomasz Gubała(2,3), Daniel Harężlak(2), Joanna Kocot(2), Grzegorz Dyk(2), Jan Meizner(2) and Marian Bubak (1,2,3)

(1) AGH University of Science and Technology, Department of Computer Science, Krakow, Poland

(2) AGH University of Science and Technology, ACC CYFRONET AGH, Krakow, Poland

(3) Informatics Institute, University of Amsterdam, The Netherlands



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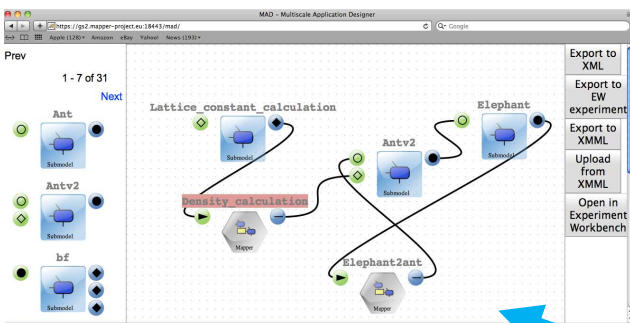
Goal

- the environment for composing multiscale applications
 - built from single scale models implemented as scientific software components
 - distributed in various European e-Infrastructures
- applications structure described in Multiscale Modelling Language (MML)
 - single scale sub-modules
 - scaleless converters
 - the coupling topology describing their connections

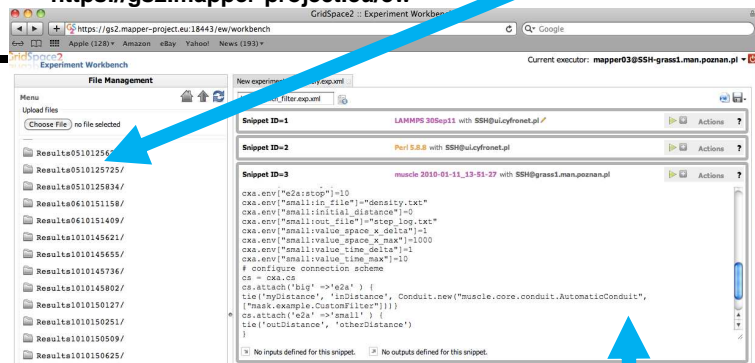
Tools features

- MaMe** is a **semantic-aware persistence store** to record metadata about models and scales
- MAD** is a user-friendly **visual composition** tool transforming high level MML description into executable GridSpace experiment
- GridSpace Experiment Workbench (EW)** supports **execution** and **result management** of generated experiments on e-infrastructures via interoperability layers using Interpreter-Executor model of computation

2 Compose Application in MAD <https://gs2.mapper-project.eu/mad>

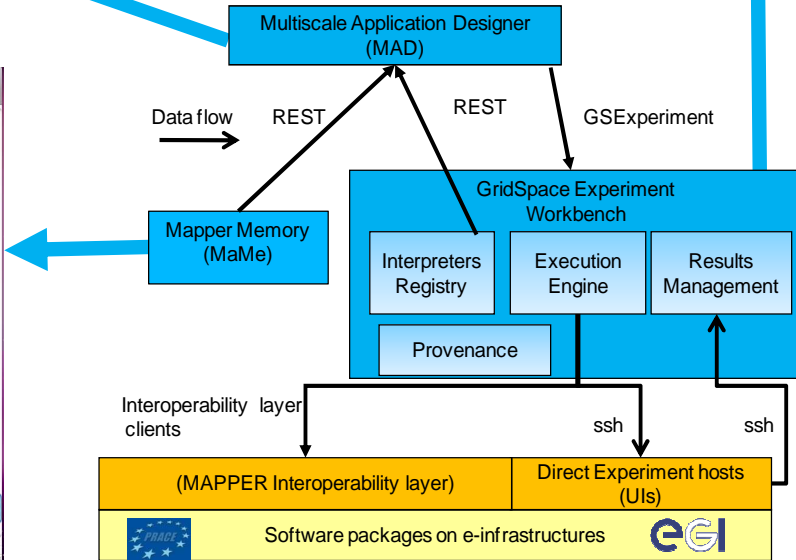
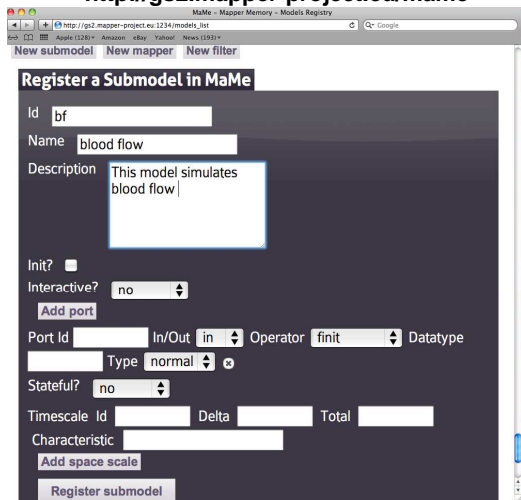


3 Execute experiment in GridSpace EW <https://gs2.mapper-project.eu/ew>



4. View results

1 Register modules in MaMe <http://gs2.mapper-project.eu/mame>



Interpreter – Executor model

Interpreter - a software package available on the infrastructure, e.g.:

- Multiscale Coupling Library and Environment (MUSCLE)
- Large-scale Atomic/Molecular Massively Parallel Simulator (LAMMPS)

Executor - a common entity for hosts, clusters, grid brokers, etc. capable of running software which is already installed (represented as Interpreters).

Support for collaborative work

- enabling sharing infrastructure-independent experiments
- supporting reusability of simulation models implementations

References

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Acknowledgements

This research was supported by the MAPPER project – grant agreement no 261507.MAPPER

