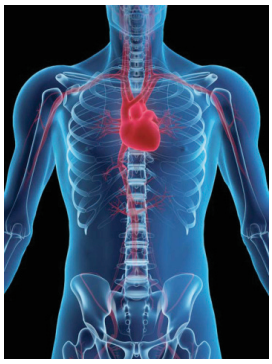
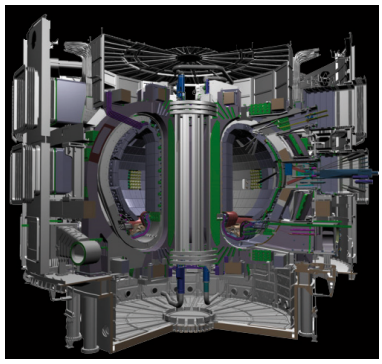
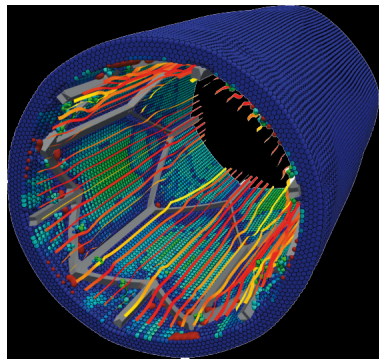
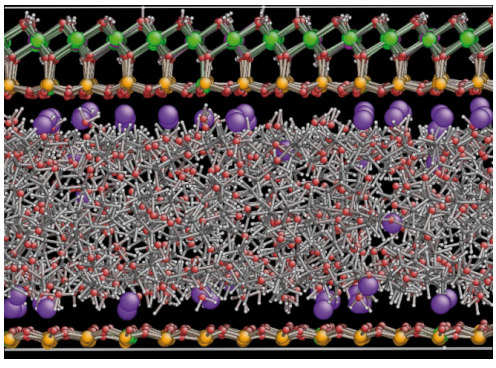
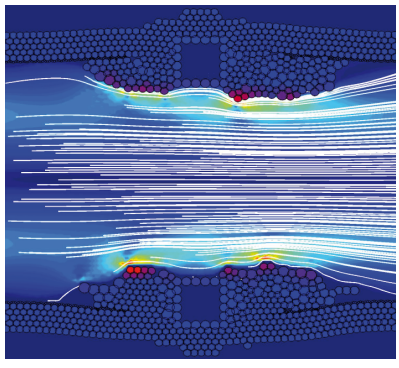



Fusion *Hydrology* *Physiology* *Nanomaterials* *Computational Biology*

Multiscale APPlications on European e-infRastructures

Today, scientists and engineers are commonly faced with the challenge of modelling, predicting and controlling multiscale systems that cross scientific disciplines and involve several interacting processes at different scales. Such multidisciplinary, multiscale models, when simulated in three dimensions, require large-scale or even extreme-scale computing capabilities. Driven by seven challenging applications from five representative scientific domains, the MAPPER project is developing computational strategies, software and services for distributed multiscale simulations across disciplines, exploiting existing and evolving European e-infrastructure.

University of Amsterdam · UCL · University of Ulster · Poznan Supercomputing and Networking · Cyfronet · LMU Munich MNM Team · Université de Genève · Chalmers · Max-Planck-Gesellschaft

e-infrastructure · Contract number: 261507 · Capacities

Multiscale APPlications on European e-infRastructures

Objectives

MAPPER is developing strategies and will provide tools, software and services that permit loosely and tightly coupled multiscale computing in a user friendly and transparent way. This will be accomplished by deploying a computational science environment across European e-infrastructures.

User communities

MAPPER is driven by seven exemplar applications from five user communities:

- physiology
- computational biology
- fusion
- hydrology
- nano-material science

However, our solutions are generic and will enable distributed multiscale computing for any multiscale models fitting into our paradigm. In this way, MAPPER will be relevant to other user communities.

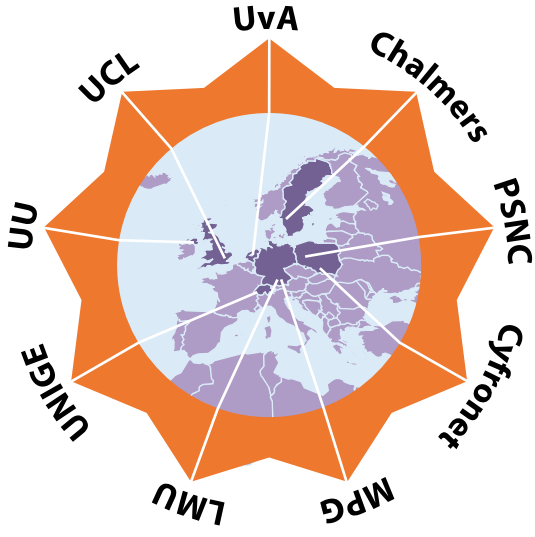
Technical Aspects

MAPPER integrates heterogeneous infrastructures for programming and execution of multiscale simulations. We reuse much of the functionality provided by existing software solutions - MAPPER is developed on top of existing e-infrastructures without the necessity to modify already deployed components. This is done by creating extensions using well defined and standardized interfaces, which reduce the potential impact of changes in middleware level components.

International Aspects

Multidisciplinary and multiscale models require extreme-scale computing capabilities. We have significant trans-Atlantic Grid and HPC experience and will work together closely with European resource providers and user communities.

Consortium



Project Information

Project acronym:	MAPPER
Contract number:	RI-261507
Project type:	CP-CSA
Start date:	01.10.2010
Duration:	36 months
Keywords:	Distributed Multiscale Computing

Related Projects

EFDA
VPH-NoE
EUFORIA
MeDDiCa
PRACE
EGI-InSPIRE

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