



D2.3 Project Communication Kit (M6)

Project acronym: *MAPPER*

Project full title: Multiscale Applications on European e-Infrastructures

Grant agreement no.: 261507

| | |
|-----------------------------|---|
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1 Executive summary

In the first six project months, the MAPPER consortium achieved the following targets regarding the communication kit:

- A MAPPER fact sheet has been available since the beginning of the project.
- The project leaflet introducing the MAPPER corporate design has been created.
- Two MAPPER posters are available - the first providing a general project overview, the second giving more detailed information.
- A roll-up display for conferences and exhibition booths has been designed.
- The necessary steps for next project phase regarding dissemination material have been discussed and agreed on by the project partners.

The MAPPER consortium will continuously adapt its dissemination material as the project evolves. All dissemination material is available for printing from the document section of the MAPPER project website [1]. Additionally, high gloss leaflets can be ordered from the dissemination lead (LMU) by the individual partners.

2 Mapper Communication Kit

2.1 Introduction

Right from the beginning of the project, the MAPPER consortium started with the creation of dissemination material for the communication kit [2]. The current version of the communication kit consists of the following items:

- project leaflet
- project overview poster
- detailed project poster

The communication kit will be updated and extended through the course of the project. This document will introduce the aforementioned dissemination materials, provides information on how they can be accessed, and presents the plans related to the MAPPER communication kit for the next project phase.

2.2 Project Leaflet

The MAPPER fact sheet (Figure 1 & 2) has been available for download from the project website already before the official start of the project and has been distributed at various occasions since. This fact sheet, which contains the most important information on the MAPPER project, has recently been superseded by the official project leaflet.

The project leaflet (Figure 3 & 4) provides an overview of MAPPER and builds the base for the corporate design strategy of the MAPPER consortium - future dissemination materials will use a

similar design. In addition to PDF versions available for download and printing, high gloss printed project leaflets can be ordered from LMU, the leader of work package 2.

2.3 Poster

At the All Hands Meeting in Munich the project partners agreed to have two different posters for project promotion. The first poster (Figure 5) provides a general overview of the MAPPER project, the second one (Figure 6) is providing additional information for those interested in technical details. Both posters can be downloaded from the project website for printing.

2.4 Plans for Additional Material

Current plans, which were decided on during the first All Hands Meeting in Munich, include that the project leaflet will be complemented by an application brochure and a leaflet containing technical details as soon as all necessary information is available. Together with information on current MAPPER related events, like for instance information on MAPPER workshops and seasonal schools, the dissemination material will be distributed in a dedicated MAPPER project folder following the MAPPER corporate design.

3 Roll-up

To attract people to the MAPPER booth at conferences and exhibitions, a roll-up displayed (Figure 7 has been designed. Since project information material will be available at the booth, the roll-up itself contains only basic information and its design is kept simple. We plan to have a minimum of four roll-ups, one per country. A sample has already been ordered by the LMU, the dissemination lead, and after evaluation, additional roll-ups will be ordered.

4 Downloads

The PDF versions of presented dissemination material is available from the public document section (<http://www.mapper-project.eu/web/guest/documents/>) of the MAPPER website. The document sources are only available in the project internal section.

| Item | Download link |
|-------------------------|---|
| fact sheet | http://www.mapper-project.eu/documents/10155/22766/factsheet.pdf |
| project leaflet | http://www.mapper-project.eu/documents/10155/22766/leaflet.pdf |
| project overview poster | http://www.mapper-project.eu/documents/10155/22766/postero.pdf |
| detailed project poster | http://www.mapper-project.eu/documents/10155/22766/posterd.pdf |
| roll-up | http://www.mapper-project.eu/documents/10155/22766/rollup.pdf |

Table 1: Dissemination Material - Download Links

5 Appendix

5.1 Dissemination Material

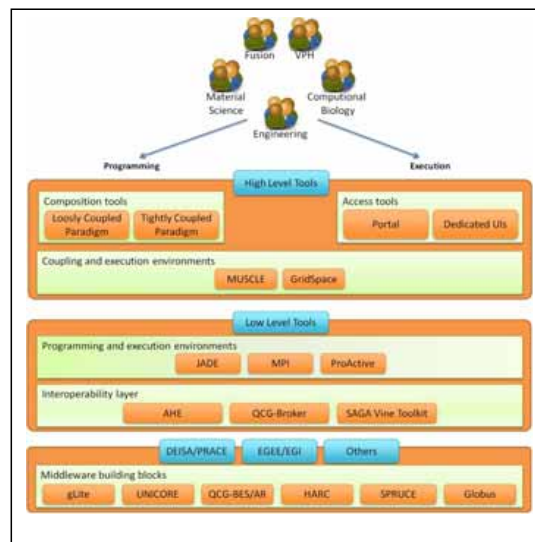
MAPPER

Multiscale APPLICATIONS on European e-infRAstructures

Summary: Today scientists and engineers are commonly faced with the challenge of modelling, predicting and controlling multiscale systems which cross scientific disciplines and where several processes acting at different scales coexist and interact. Such multidisciplinary multiscale models, when simulated in three dimensions, require large scale or even extreme scale computing capabilities. The MAPPER project develops computational strategies, software and services for distributed multiscale simulations across disciplines, exploiting existing and evolving European e-infrastructure.

Objectives: Driven by seven challenging applications from five representative scientific domains (fusion, clinical decision making, systems biology, nano science, engineering), MAPPER deploys a computational science environment for distributed multiscale computing on and across European e-infrastructures. By taking advantage of existing software and services, as delivered by EU and national projects, MAPPER will result in high quality components for today's e-infrastructures. We develop tools, software and services that permit loosely and tightly coupled multiscale computing in a user friendly and transparent way. We integrate our applications into the MAPPER environment, and demonstrate their enhanced capabilities.

Action plan: MAPPER integrates heterogeneous infrastructures for programming and execution of multiscale simulations. We reuse as much of the existing infrastructural and software solutions as possible. The MAPPER solutions is developed on top of existing e-infrastructures without the necessity to modify already deployed components. The functionality to be delivered is realized as extensions to existing e-infra-structures. The integration is done using well defined APIs and standard based interfaces, thus reducing potential impact of changes on middleware level components.



Networking activities: We create and maintain a stable management of the project, with strong internal and external communication and development of realistic plans for uptake and sustainability of MAPPER results during and after the lifetime of the project. We focus on targeted dissemination actions and a foresight study addressed to policy makers on the ICT concepts and technologies that facilitate multi-scale modelling approaches on large e-infrastructures.



Project acronym:
MAPPER

Contract n°: RI-261507

Project type: CP-CSA

Start date: 01.10.2010

Duration: 36 months

Total budget:
3 272 777 €

Funding from the EC:
2 400 000 €

Total funded effort in person-month:
347

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Project participants:
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UCL UK
UU UK
PSNC PL
CYFRONET PL
LMU DE
UNIGE CH
CHALMERS SE
MPG DE

Keywords:
Distributed Multiscale Computing

Collaboration with other EC funded projects:
EFDA
VPH-NoE
EUFORIA
MeDDiCa
PACE
EGI-InSPIRE



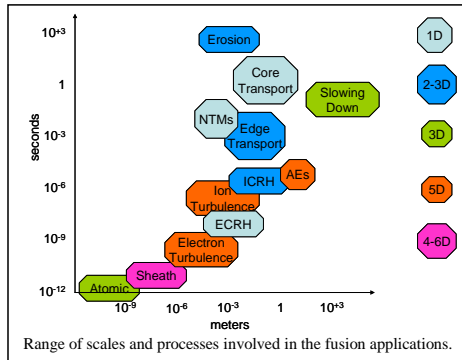
continued overleaf ➕

Figure 1: Fact Sheet (front)

Service activities: We distinguish two layers of services constituting the MAPPER environment. Users and applications communicate with services belonging to the interoperability layer, an abstract layer to grid resources managed by different middleware stacks. The interoperability services are responsible for providing concurrent access to resources controlled by different services synchronizing and orchestrating the execution of applications in the grid.

Multiscale loosely and tightly coupled simulations are controlled by a broker and underlying computing access services developed in the FP6-ICT QosCosGrid project (<http://www.qoscosgrid.org/>). The broker is integrated with underlying middleware and its scheduling and co-allocation algorithms are tuned for specific needs of multiscale applications. Many of the services that we wish to use have been developed individually and do not necessarily interoperate. We ensure that these services do talk to each other where appropriate. We start working on application deployment as early as possible in the project. We therefore adopt a twin track approach in our service development activities. The fast track adapts, integrates and deploys a minimal set of infrastructure components to enable coupling of multi-scale applications. The deep track will do so for the higher level services required to realise the full and integrated MAPPER infrastructure, which will enable the coupling and launching of multi-scale component codes. MAPPER services evolve on the basis of a regular cycle of top-down and bottom-up analysis of existing e-infrastructure, MAPPER building blocks as well as new requirements defined by our multiscale user communities.

Joint Research activities: The application portfolio is adapted to the MAPPER infrastructure. Our approach is that applications are up and running from the start of the project, with existing, easily adaptable and deployable tools in the fast track; the deeper track then produces enhancements which are fed into the user level fast track as and when ready. A number of programming and execution tools, dedicated to distributed multiscale computing, are developed. In the first phase of the project, the applications will have to rely on explicit coding of their multiscale simulations, but gradually programming tools are delivered that assist in this task. JRA tools allow interaction between software components from different e-infrastructures in a hybrid way.



User communities: MAPPER is driven by seven exemplar applications from five user communities (virtual physiological human, computational biology, fusion, hydrological engineering, nano material science), and these communities are specifically targeted. However, our solutions are generic and will enable distributed multiscale computing for any multiscale model fitting into our paradigm, and MAPPER therefore opens up to other user communities as well.

International aspects: MAPPER partners have significant trans-Atlantic grid and HPC experience, and have been involved very actively in TeraGrid and with the US Department of Energy laboratories. We collaborate with the US TeraGrid to integrate infrastructures across the globe.

MAPPER - RI



Figure 2: Fact Sheet (back)

Fusion Hydrology Physiology Nanomaterials Computational Biology

Multiscale *AP*PLICATIONS on European e-*inf*RASTRUCTURES

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.

Contract number: 261507

Figure 3: Project Leaflet (front)

Multiscale *AP*PLICATIONS on European e-inf*RA*STRUCTURES



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.

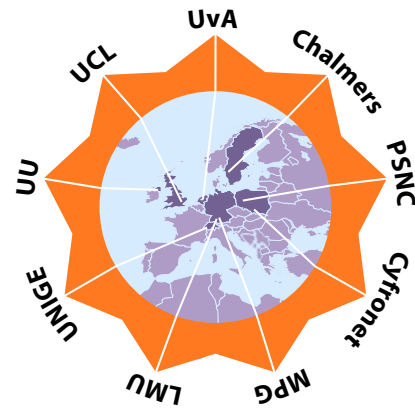
Technical Aspects

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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Figure 4: Project Leaflet (back)

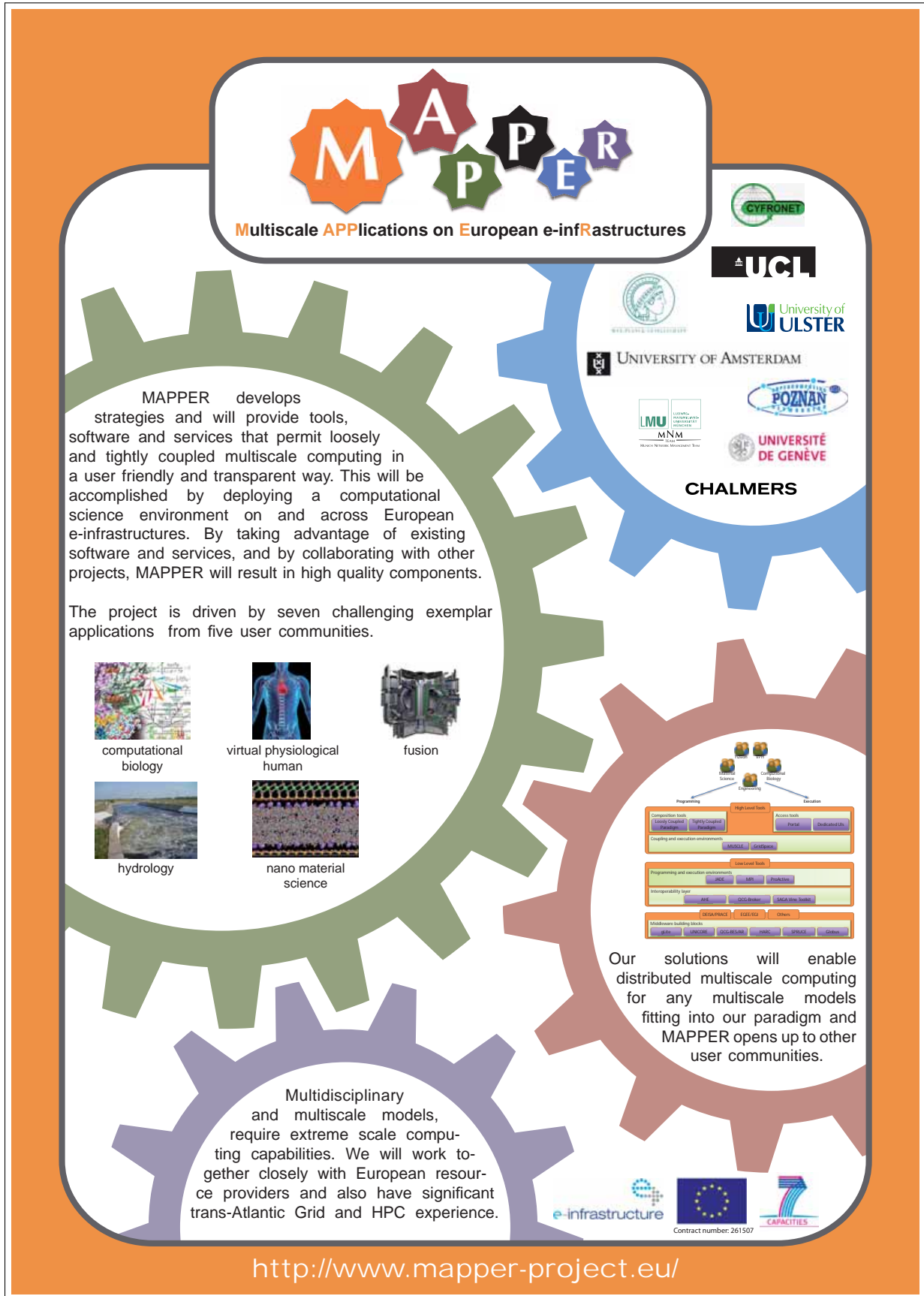


Figure 5: Project Overview Poster

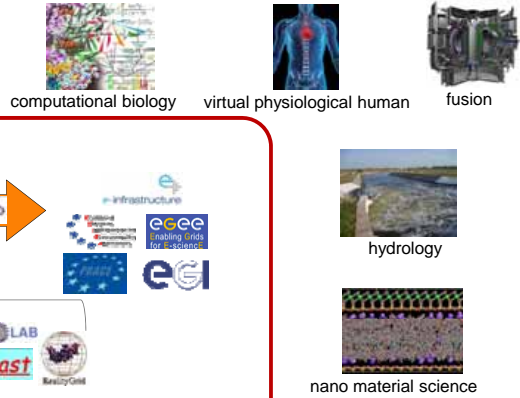


Multiscale **AP**PLICATIONS on European e-inf**R**ASTRUCTURES

Motivation

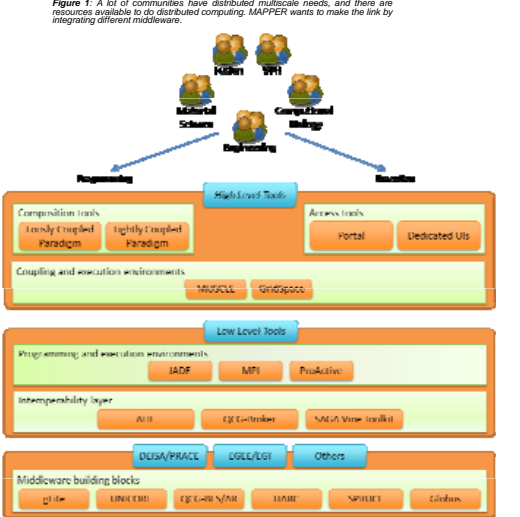
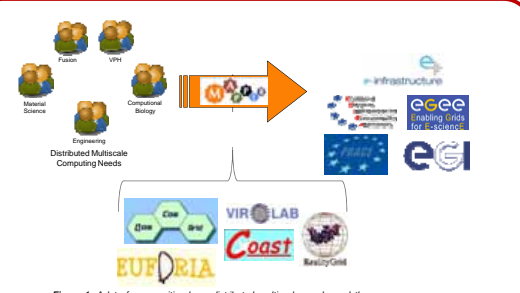
- Scientists are often faced with modelling **multiscale, multi discipline** systems
- Simulating such models in three dimensions requires large scale computing capabilities
- Existing modelling frameworks and middleware for distributed simulations do often not suffice

Applications



Ambition

- Develop computational strategies, software and services
- for distributed multiscale simulations across disciplines
- exploiting existing and evolving European e-infrastructure
- Deploy a computational science infrastructure
- Deliver high quality components
- aiming at large-scale, heterogeneous, high performance multi-disciplinary multiscale computing
- Advance state-of-the-art in high performance computing on e-infrastructures
- enable distributed execution of multiscale models across e-Infrastructures



Services

- Interoperability services:
 - can be accessed by users and applications
 - form an abstraction layer to grid resources and middleware
 - are responsible for providing access to resources and for synchronizing and distributing applications.
- For example: multiscale simulations can be controlled by a broker developed in the QosCosGrid project

Networking

- Create and maintain a stable management of the project
- Realize strong internal and external communication
- Perform targeted **dissemination** actions
- Development of plans for **sustainability** of MAPPER
- Perform foresight study addressing policy makers

Development

In complementing twin tracks:

- Developments in the **deep track** will feed into the already usable **fast track**

- Many middleware services do not yet interoperate.
- where appropriate, this should change

- the **fast track**
 - will start working on application deployment **as early as possible**
 - manually adapts, integrates and deploys a minimal set of infrastructure components to enable multiscale applications

- the **deep track**
 - will work on higher level services and full integration
 - realises the full and integrated MAPPER infrastructure, enabling the coupling of multiscale components

Internationally

- MAPPER partners have significant experience with the **trans-Atlantic grid** and HPC
- Collaborate with the US **TeraGrid** to integrate infrastructures across the globe.



Figure 6: Detailed Project Poster

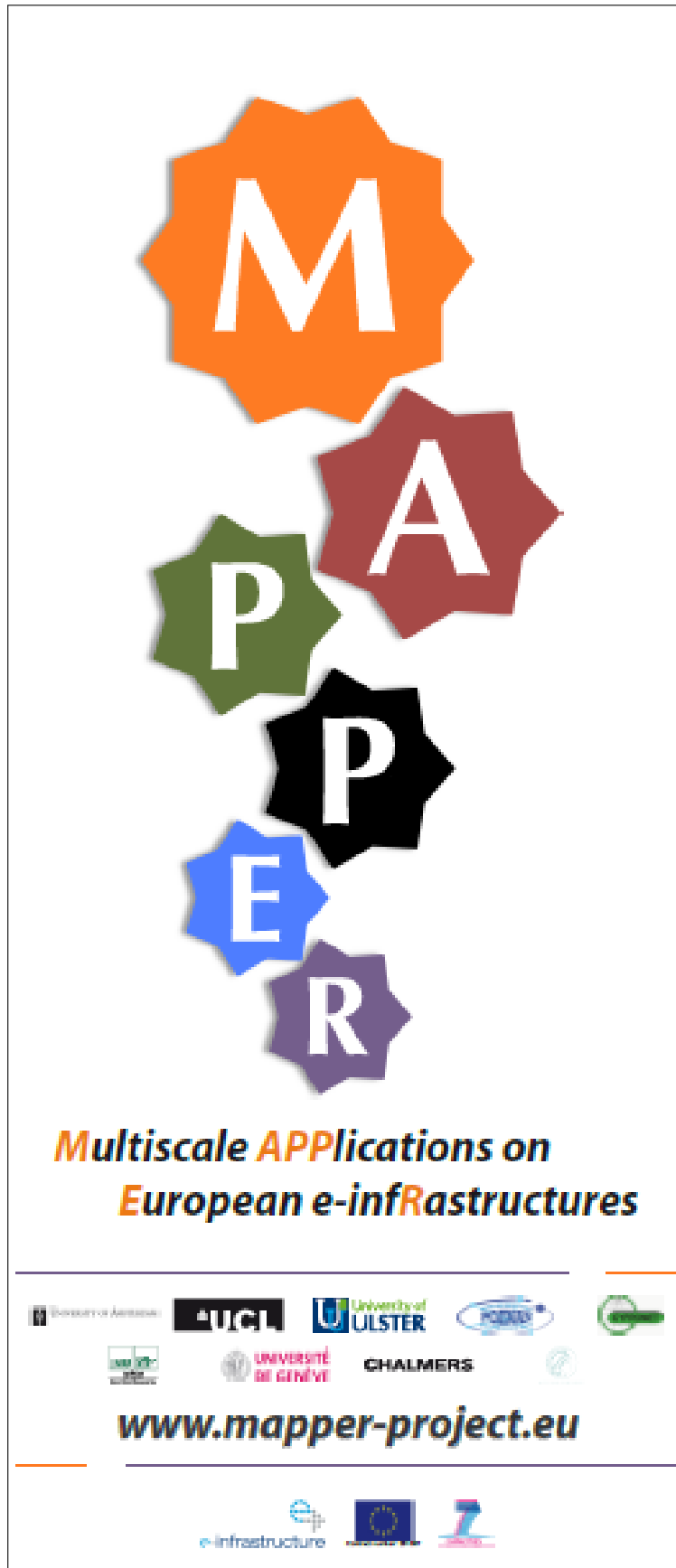


Figure 7: Roll-up Display

References

- [1] Deliverable D2.1 MAPPER Home Page and mailing lists
- [2] Deliverable D2.2 Dissemination Plan