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Executive Summary

This deliverable D2.1 “Dissemination Plan” describes the planned activities in Work Package 2 “Dissemination, outreach and training” of the EU DEEP-ER project.

The objectives, target groups and channels are defined for the three tasks in WP2

- Task 2.1: Dissemination activities
- Task 2.2: Industry and business cooperation
- Task 2.3: Education and training programme.

The most relevant activities

- the public website of the DEEP-ER project
- big events like the SC and ISC supercomputing conferences
- networking events for scientists and industrial users
- education and training for Exascale computing using the DEEP-ER platform

are described in detail.

1 Introduction

This document describes the planned activities for dissemination, outreach and training of the DEEP-ER project.

Disseminating the lessons learned from the DEEP-ER project and the hardware and software work on the DEEP-ER Prototype is a major objective of the project. This document describes the measures and ways to achieve this objective.

All material published by the DEEP-ER project partners and related to the DEEP-ER project will show the EU flag, the FP7 logo and the EC /e-Infrastructures logo and address the funding by the EC.

2 Objectives, targets and dissemination channels

The main objective of Work Package 2 is to bring the DEEP-ER project and its results to the awareness of the scientific, industrial, political, and general public and to train potential users to benefit from the Exascale computing technology developed within the DEEP-ER project.

2.1 Objectives

The major objectives for dissemination, outreach and training in the DEEP-ER project are the increased visibility of the results gained through the DEEP-ER Exascale prototype, to foster joint development partnership between industry and research and to implement an education and training programme focusing on Multi-Peta to Exascale programming by performing the following activities:

- Disseminate the achievements of the DEEP-ER project to major HPC stakeholders and the European scientific and research communities
- Liaise with European industry and research organisations
- Implement a targeted education and training programme to distribute the know-how gained in the DEEP-ER project.

Dissemination, outreach and training continue throughout the whole lifetime of the DEEP-ER project. Work Package 2 (WP2) is responsible for the success and coordination of these activities.

Providing input to relevant European Commission initiated dissemination activities (e.g. press releases, news bulletins, success stories, posters, web-based publications, events and training material etc.) is an important part of the activities of WP2.

The objectives of WP2 will be achieved within the three tasks

- Task 2.1: Dissemination activities (Task leader: BADW-LRZ)
- Task 2.2: Industry and business cooperation (Task leader: Eurotech)
- Task 2.3: Education and training programme (Task leader: BADW-LRZ)

2.2 Targets

The target groups for dissemination, outreach and training in the DEEP-ER project are

- Scientific communities
- Industry

- Policy makers
- General public.

2.2.1 *Scientific communities*

A main target for disseminating the results of the DEEP-ER project are the scientific communities in need of extreme compute resources, e.g.:

- Climate
- Fusion
- Astrophysics
- High-energy physics
- Material science
- Engineering
- Geophysics
- Bioinformatics
- Life sciences
- Financial modelling

2.2.2 *Industry*

Industry is the second main target to disseminate the DEEP-ER project's results. The most important group is the computer hardware and software industry. But potential users of Exascale computers will be addressed as well. The plans of Task 2.2 of this Work Package describe in more detail the target industries and the ways in which they will be addressed.

2.2.3 *Policy makers*

The DEEP-ER project contributes to paving the way to fill the needs of Europe's societies for Exascale compute power in the near future. A major aspect of the dissemination activities is to communicate to the European Commission, to the National Ministries and Funding agencies and to the policy makers in general.

The experiences gained by the development within the DEEP-ER project will be made available to the policy makers by publishing success stories about a powerful hardware and software development and by displaying successful research in the selected example applications of the DEEP-ER project. These target groups can be reached by publishing press releases, brochures and organised meetings and presentations at events.

2.2.4 *General public*

One of the DEEP-ER dissemination activities will be to let the general public understand the importance of European developmental efforts in the field of Exascale computing. As with policy makers, press releases, brochures and, of course, the DEEP-ER website will address the general public using the example applications of the DEEP-ER project.

2.3 **Dissemination channels**

The main dissemination channel of the DEEP-ER project is the DEEP-ER website <http://www.deep-er.eu>. The usual ways like press releases, news bulletins, success stories,

articles, brochures, posters etc. will be used. These are described in more detail in Task 2.1, Dissemination.

3 Task 2.1: Dissemination

3.1 Dissemination team

Each of the DEEP-ER partners has already named at least one person responsible on their side as a contact for dissemination, outreach and training. These contact people are subscribed to the mailing list pub@deep-er.eu and will be responsible for reviewing and approving the dissemination material to avoid the publication of confidential information. The work is coordinated by the WP2 work package leader and the task leaders.

3.2 External website

The centre of the dissemination activities of the DEEP-ER project is the external DEEP-ER website www.deep-er.eu. The website will be updated constantly during the lifetime of the DEEP-ER project and referred to in all other materials (articles, press releases, brochures, presentations etc.).

3.2.1 Status

The external DEEP-ER website has been available since end of September 2013. It is accessible via the URLs www.deep-er.eu as well as www.deep-er-project.eu, although www.deep-er.eu is the preferred address, which is also communicated in all DEEP-ER publications. It is hosted at BADW-LRZ which also leads Task 2.1, Dissemination.

3.2.2 Implementation and design

The technical foundation of the DEEP-ER website builds on version 3.2.0 of the Open-Source content management system Joomla. It runs on top of a standard LAMP (Linux, Apache, MySQL, and PHP) installation within a VMware virtual machine provided by the IT Infrastructure Services group of BADW-LRZ. The virtualisation allows for easy and seamless management of compute resources depending on the website's load.

The design of the website is based on the Protostar template that ships with Joomla 3.2.0 and has been modified to reflect the DEEP-ER corporate design and to loosely resemble the design of the DEEP website www.deep-project.eu.

3.2.3 Structure and content

Each page of the website consists of a header, the main content container, footer and sidebar on the right. The header provides a navigation bar that links to the sub-categories of the website (see below), and a search bar. It also shows the DEEP-ER logo which links back to the main page. The main content container shows the actual content of the website such as project information and articles. The sidebar lists and links to latest project news and upcoming events. The footer shows the logos of the EC 7th Framework Programme (FP7), of the e-infrastructure, and of the European flag which link to the respective websites. Additionally, it contains links to the website's imprint, the contact information, and the login form for project partners.

3.2.3.1 The home page

In its current state, the main page shows a European map with the countries of origin of all project partners and gives a short overview over the project's background and its aims. However, the content of the main page is considered to be highly dynamical and subject to frequent updates to reflect project progress, news, and announcements.



Figure 1: DEEP-ER homepage.

3.2.3.2 Project

The “Project” section gives more detailed information on the project's goals and its funding. It also provides access to the sub-sections “Partners”, “Hardware”, “Software”, and “Applications”: The “Partners” sub-section lists the project partners and links to their websites. “Hardware” and “Software” provide information about the hardware of the DEEP-ER Prototype and its software stack, respectively. The “Applications” sub-section provides an overview of the pilot applications in the DEEP-ER project and links to individual sub-pages for each application with detailed information.

3.2.3.3 Publications

The section “Publications” lists all project-related publications, such as articles in scientific journals, presentations at workshops and conferences, and dissemination material. Links to PDFs of the respective documents will be given where possible and permissible.

3.2.3.4 Deliverables

This section will contain a list and PDFs of all public deliverables of the DEEP-ER project.

3.2.3.5 News

The section “News” provides an overview of all project-related news. Additionally, the website’s sidebar lists the three most-recent news articles.

3.2.3.6 Website editing

Joomla is a very powerful content management system which allows for a very fine-grained rights management. As of now, only master-user accounts for the members of the dissemination team have been created which have full access and modification rights to all website content. However, it is also possible to create user accounts that are only allowed to publish and modify articles in a sub-section of the website, e.g. for work package leaders who will only be allowed to edit articles related to their work package. It is even possible to restrict a user account such that it will only be able to edit articles which will not go online unless published by a user with higher privileges.

3.2.3.7 Website statistics

Website statistics are an important tool to monitor the usage of a website, optimise it, and emphasise its most popular content. While many websites rely on external services such as Google Analytics for this task, we decided to use the Open-Source tool AWStats. As its statistics are solely based on the analysis of local server logfiles, it will not forward any information on our website’s users to a third party and hence protect their privacy.

The statistics of the DEEP-ER website will be available to the dissemination team and additionally published in the periodic dissemination reports (D2.2 – D2.4).

3.3 Internal website, dissemination material

DEEP-ER uses the BSCW server at JUELICH as a repository for internal documents. On the BSCW server (folder *DEEP-ER/Dissemination and Training/Materials*), among other, the following documents will be available:

- Logos of the EU and the DEEP-ER project in different formats and resolutions
- A double-sided information sheet in A4 in PDF format that all partners can easily print and use instantaneously
- Templates for PowerPoint presentations
- Templates for posters

3.4 Logo, language

A DEEP-ER logo has been designed and accepted by the partners. It can be found on the internal BSCW server together with the EU related logos.



Figure 2: DEEP-ER logo.

The language of the DEEP-ER project is British English. All partners shall translate the most important dissemination material, especially press releases, into the partners’ languages.

3.5 Events, publications

One of the most important aspects of spreading the word about the DEEP-ER project is to contribute to the international high-performance computing events, conferences, workshops etc.

The DEEP-ER project will be presented at the Supercomputing Conferences (SC) and at the International Supercomputing Conferences (ISC) during the lifetime of the project. Attending these conferences, presenting the DEEP-ER project and its results with flyers, presentations etc., and participating in Birds-of-a-Feather sessions on Exascale computing is a major objective of DEEP-ER Work Package 2. These efforts will be coordinated with other related EU projects like PRACE, CRESTA, Mont-Blanc and Mont-Blanc 2 and DEEP.

The DEEP-ER project will be presented at further scientific events related to Exascale computing and the results of the DEEP-ER project and the pilot applications will be published in scientific journals.

4 Task 2.2: Industry and business cooperation

The main activity of Task 2.2 is the organisation of an effective liaison programme between the DEEP-ER project and relevant industrial and business partners. As such, this task will heavily rely on and collaborate with already existing organisations such as the European Technology Platform for High Performance Computing (ETP4HPC) as a vehicle to promote the use of multi-Petascale to Exascale systems to industrial and academic users.

The activities are based on the promotion of the project results through the:

- creation of a network of links involving European industry and high-tech companies,
- dissemination in industry-oriented public events and publications,
- use of the test installation by potential industrial and business users.

4.1 Initiation of links with European industry and high-tech companies

The first promotional activity of project concepts and results towards the industrial and business world is the initiation of links with European industrial HPC users and European ICT high-tech companies. This action will be supported by the creation of a contact database for dissemination and cooperation activities.

Contacts with the industry will be developed through collaboration, outreach and dissemination. The goal is to foster cooperation activities with European industry and European R&D organisations. Task 2.2 will closely collaborate with the project “Partnership for Advanced Computing in Europe” (PRACE), the “Promotion of Supercomputing Partnerships for Economic Competitiveness and Technology” (PROSPECT e.V.) and the “European Technology Platform for High Performance Computing” (ETP4HPC) to gather links with European industrial HPC users. These contacts will be used as a starting point and will be periodically updated with information from the following activities:

- PRACE industrial user seminars,
- Intel round table meetings,
- PROSPECT e.V. General Assembly meetings,
- ETP4HPC meetings,

- EESI and IESP meetings.

Industries to be targeted include, but are not limited to:

- Aerospace, car manufacturing and other industries applying computational fluid dynamics,
- Industries developing new materials,
- Metal industry,
- Chemical industry,
- Pulp and paper industry,
- Drug design and medical industries,
- Industries related to new energy sources and energy supply management,
- Bioinformatics,
- Telecommunication,
- Finance and risk management.

4.2 Dissemination activities focused on industry

HPC industrial users can be divided in two broad categories: “traditional” users and “emerging users”. “Traditional users” operate in industries that have made use of HPC for a long time or they are fast adopting HPC technologies in a large scale like climate and weather, oil and gas, and computational chemistry or biology. “Emerging” new users belong to industries which are progressively adopting more HPC, like for instance manufacturing, aerospace, automotive, rendering and media, finance, pharmaceuticals, or cyber security. In the last few years, we have also noticed the exponential surge of big data technology, which brings HPC virtually everywhere, including also traditional large IT buyers like telecommunication companies and banks.

This distinction is essential because, although there is a high degree of convergence, these groups of users often operate in different areas and contexts and, for this reason, they need to be reached in different ways.

In order to reach the “traditional users” it is possible to leverage events, publication and web:

- SC and ISC trade shows with BoF participation or booth presence.
- Speeches and booth presence in workshops and minor events with high degree of industrial participation like Ter@tec, HPC advisory councils meetings, MEW, etc....
- Articles in magazines and web sites like Scientific Computing, HPC Wire, Inside HPC...
- Webinars and internet forums.
- Inbound marketing leveraging DEEP-ER web site and DEEP-ER members web sites.
- Vertical events like RICE Oil&Gas workshop, HPC Saudi Arabia conference, Oil&Gas Journal.

“Emerging” new users are approaching more and more “traditional” points of contact like SC and ISC trade shows. But, they are still very much tied to attend, read, and consult vertical events and media. It is fundamental to understand the vertical priority of the dissemination, in accordance of the suitability of the DEEP-ER results to the vertical needs.

For instance, the Fluid Dynamics (CAE) area of DEEP-ER application may resonate with manufacturing, aerospace and automotive users making suitable to use the following means to reach HPC users in those sectors:

- CAE conferences and other vertical conferences (International CAE Conference, EATC, Ansys events...),
- CAE publications, magazines and web sites,
- Industry focused webinars and inbound marketing activities using DEEP-ER web site and the partners' ones.

A cross industry horizontal message can be built over some peculiarities of DEEP and DEEP-ER projects, making it possible to leverage a wide range of means to support dissemination activities. One of these peculiarities above all is green computing that opens the door to the following activities:

- GREEN 500 listing,
- Green articles in industrial magazines and web sites, horizontal (HPC Wire) and vertical (Oil&Gas publications above all).
- Green Computing industry forums

Finally, as regards Big Data it is first necessary to understand applicability of DEEP-ER to Big Data problems before considering the most appropriate dissemination approach.

4.3 Test activities

The promotion of project results can be supported also using guest accounts on test installations. This activity is intended to provide a concrete testing environment to potential industrial and business users. The possibility to practically experience the potentiality of DEEP-ER solution represents an important action that complements the previous dissemination activities.

The test support will be based on the prototypes developed during the project.

5 Task 2.3: Education and training programmes

Building on the experience gained in the DEEP projects, Task 2.3 will enable and support a systematic education and training programme within DEEP-ER.

Education and training in DEEP-ER is twofold:

- Between the partners in the DEEP-ER project, training ensures the exchange of knowledge and background relevant to the R&D activities of the consortium.
- Outside the project, interested groups will receive targeted programmes specific to their interests and needs.

In the past, co-organisation of training courses and workshops with other related projects has proven to be of mutual benefit to the participants. Therefore, DEEP-ER will seek for collaboration with projects like DEEP, Mont-Blanc, Mont-Blanc 2, CRESTA, the PRACE Advanced Training Centres (PATC), and external entities like the Virtual Institute for High Productivity Supercomputing (VI-HPS) for its education and training programmes.

5.1 Training topics

Training in DEEP-ER will cover at least the following topics:

- **OmpSs:** The programming model developed by BSC is now well known to application developers that have already participated in the DEEP project. Yet, the DEEP-ER consortium was augmented with new project partners bringing new scientific application domains to the project. Introducing those partners to OmpSs and its specific extensions for Cluster-Booster systems will be necessary, and keeping the partners that are already familiar with OmpSs updated on the latest OmpSs features and developments will be beneficial.
- **Intel® Xeon Phi™:** Being based on the general x86 architecture, Xeon Phi™ coprocessors and future products of the Intel® Many Integrated Core (MIC) architecture are expected to provide significantly improved compute performance when specific best practice guidelines are followed. Hands-on trainings guided by Intel support engineers and experts at the DEEP partner sites as well as Xeon Phi™ related workshops will help the DEEP-ER developers understand the novelties of the next generation Xeon Phi™ hardware and achieve higher performance for their codes.
- **Performance Tools:** While performance analysis tools are not in the focus of the DEEP-ER project itself, thorough application analysis is a key step in optimising scientific applications for DEEP-ER. Thus, trainings on the tools that were developed as part of the DEEP project will enable the new partners in WP6 to find the right optimisation spots.
- **I/O Libraries and checkpointing Features:** DEEP-ER introduces novel I/O concepts and improved checkpoint-restart features exploiting the advancements of the memory hierarchy in the DEEP-ER hardware. As of now, the exact implementation of these features is still subject to discussion. Yet, towards the end of the project it will be necessary to provide application developers in WP6 with hands-on trainings to enable the use of the new features.

5.2 Training schedule

In the beginning, a major focus of the training activities in DEEP-ER is on familiarising the new application partners in WP6 with the OmpSs programming model. Planning has therefore started to organise a 2-days workshop on OmpSs in February 2014 in conjunction with a workshop on performance analysis tools at BSC in Barcelona.

In addition, a PATC course on Intel® Xeon Phi™ programming open to DEEP-ER members will take place in April 2014 at BADW-LRZ in Garching.

As the need for additional training is also dependent on decisions that are still pending in the project (e.g. the networking technology, the predominant I/O libraries to be used, etc.), Task 2.3 will track the developments and needs of the participants throughout the project. Whenever necessary, prior trainings can be repeated or new courses can be arranged on short notice. The overall planning will take place in the open during the Work Package meetings in WP6 and during the bi-annual DEEP-ER Face-to-Face meetings.

Beyond courses and trainings on OmpSs, Xeon Phi™, and tools, DEEP-ER will participate in organising workshops with a strong focus on application co-design. In March 2014, a joint workshop of DEEP, DEEP-ER, Mont-Blanc, Mont-Blanc 2, and CRESTA will take place in

Edinburgh fostering the exchange between the projects and seeking for common ground. At a later point in time, DEEP-ER plans to organise a co-design workshop on I/O technologies bringing together application developers with I/O library experts to optimise the usage of the new I/O features within the DEEP-ER applications on the DEEP-ER Prototype.

5.3 Course material

All course material will be made available to DEEP-ER partners through the BSCW document sharing platform (in the directory: */DEEP-ER/Dissemination and Training/Training*). Where legally possible, the material will also be made publicly available on the DEEP-ER website.

References and applicable documents

- [1] <http://www.deep-er.eu>
- [2] <http://www.deep-project.eu>

List of Acronyms and Abbreviations

A

B

BADW-LRZ: Leibniz-Rechenzentrum der Bayerischen Akademie der Wissenschaften.
Computing Centre, Garching, Germany

BSC: Barcelona Supercomputing Centre, Spain

BSCW: Basic Support for Cooperative Work, Software package developed by the Fraunhofer Society used to create a collaborative workspace for collaboration over the web

C

CAE: Computer Aided Engineering

CRESTA: Collaborative Research into Exascale Systemware Tools & Applications: EU-funded Exascale project.

D

DEEP: Dynamical Exascale Entry Platform

DEEP-ER: DEEP Extended Reach: this project

E

EATC: European Altair Technology Conference

EC: European Commission

EESI: European Exascale Software Initiative (FP7)

EU: *European Union*

Eurotech: Eurotech S.p.A., Amaro, Italy

EPT4HPC: European Technology Platform for High Performance Computing.

Exascale: Computer systems or applications, which are able to run with a performance above 10^{18} floating point operations per second.

F

FP7: European Commission 7th Framework Programme.

G

H

HPC: High Performance Computing

I

- ICT:** Information and Communication Technologies
IESP: International Exascale Software Project
ISC: International Supercomputing Conference, Yearly conference on supercomputing which has been held in Europe since 1986

J

JUELICH: Forschungszentrum Jülich GmbH, Jülich, Germany

K**L****M**

- MEW:** Machine Evaluation Workshop
MIC: Intel Many Integrated Core architecture
Mont-Blanc: European scalable and power efficient HPC platform based on low-power embedded technology
Mont-Blanc 2: Follow-up project of Mont-Blanc

N**O**

OmpSs: BSC's Superscalar (Ss) for OpenMP

P

- PATC:** PRACE Advanced Training Centers
PMT: Project Management Team of the DEEP-ER project
PRACE: Partnership for Advanced Computing in Europe (EU project, European HPC infrastructure)
PROSPECT: Promotion of Supercomputing Partnerships for European Competitiveness and Technology (registered association, Germany)

Q**R**

R&D: Research and Development

S

SC: International Conference for High Performance Computing, Networking, Storage, and Analysis, organised in the USA by the Association for Computing Machinery (ACM) and the IEEE Computer Society

T

U

V

VI-HPS: Virtual Institute for High Productivity Supercomputing

W

WP: Work Package

X

Y

Z