MONT-BLANC

D1.3 6-Month Project Report
Version 2

Document Information

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Notices:
The research leading to these results has received funding from the European Community's Seventh Framework Programme [FP7/2007-2013] under grant agreement n° 288777.

Declaration by the scientific representative of the project coordinator

I, as scientific representative of the coordinator of this project and in line with the obligations as stated in Article II.2.3 of the Grant Agreement declare that:

- The attached periodic report represents an accurate description of the work carried out in this project for this reporting period;
- The project (tick as appropriate):
  - ■ has fully achieved its objectives and technical goals for the period;
  - ☐ has achieved most of its objectives and technical goals for the period with relatively minor deviations[1];
  - ☐ has failed to achieve critical objectives and/or is not at all on schedule[2].
- The public website is up to date, if applicable.
- To my best knowledge, the financial statements which are being submitted as part of this report are in line with the actual work carried out and are consistent with the report on the resources used for the project (section 6) and if applicable with the certificate on financial statement.
- All beneficiaries, in particular non-profit public bodies, secondary and higher education establishments, research organisations and SMEs, have declared to have verified their legal status. Any changes have been reported under section 5 (Project Management) in accordance with Article II.3.f of the Grant Agreement.

Name of scientific representative of the Coordinator: Alex Ramírez Bellido

Date: 15/03/2012

Signature of scientific representative of the Coordinator:

………………………………………………………

[1] If either of these boxes is ticked, the report should reflect these and any remedial actions taken.

[2] If either of these boxes is ticked, the report should reflect these and any remedial actions taken.

Change Log

Version	Description of Change
v0.1	Initial Draft released to the European Commission
v0.2	1st Contributions from the partners of the consortium
v0.3	Contribution from dissemination & management WP leader
v0.4	Version Reviewed by the internal reviewer
v0.5	Clarifications done by the author of the deliverable & approved by the internal reviewer
v1	Version to send to the WP leaders & the EC
v1.1	Version Reviewed by the internal reviewer
v2	Version to send to the EC

Table of Contents

Publishable summary

1 Motivation

There is a continued need for higher compute performance: scientific grand challenges, engineering, geophysics, bioinformatics, etc. However, energy is increasingly becoming one of the most expensive resources and the dominant cost item for running a large supercomputing facility. In fact the total energy cost summed over a few years of operation can almost equal the cost of the hardware infrastructure.

This trend is not limited to HPC, it also holds true for data centers in general. Energy efficiency is already a primary concern for the design of a computer system and it is unanimously recognized that Exascale systems will be strongly constrained by power. The energy efficiency of a system defines the maximum performance achievable.

In this project, we believe that HPC systems developed from today's energy-efficient solutions used in embedded and mobile devices are the most likely to achieve the required energy efficiency. However, embedded processors have not been designed for High Performance Computing (HPC), and embedded technology has never been used in HPC systems before, leading to a number of significant challenges.

1.1 Project Objectives

The Mont-Blanc project intends to deploy the first generation of HPC systems built from European energy-efficient embedded technologies, and to perform the required research and development to successfully achieve Exascale performance with the next generation of energy-efficient HPC systems.

Objective 1: To deploy a prototype HPC system based on currently available energy-efficient embedded technology.

This prototype system would be the first integrated system built from European embedded technology that targets high performance computing. We will survey the market in search of the most suitable components for integration in a new class of HPC compute node that achieves top-of-the-line energy efficiency.

Objective 2: To design a next-generation HPC system and new embedded technologies targeting HPC systems that would overcome most of the limitations encountered in the prototype system.

The next-generation system gathers all the research and development required to deploy an energy-efficient HPC system capable of achieving 200 PFLOPS peak performance on a power budget of 10 MW in the 2017 time-frame.

Objective 3: To port and optimize a small number of representative Exascale applications capable of exploiting this new generation of HPC systems.

The architecture changes introduced by the use of embedded technology and compute accelerators for HPC may represent a programming paradigm shift similar to what happened when moving from vector processors to multiprocessors and cluster systems. In order to fit into the characteristics of such upcoming Exascale systems (energy aware codes, massive thread scalability, support of heterogeneous many cores, resilience, improved data management, etc.) algorithms and scientific applications may need to be re-designed using new programming models able to hide the complexity of such underlying hardware to non-expert programmers.

2 Project objectives for the period

The objective for the first six months of the Mont-Blanc Project can be summarized as to have a fully functional framework in all work packages. This objective involves setting up the necessary technical infrastructure and adequate methodology in each of the work packages. This global project objective is particularized for each of the work packages as follows:

- OWP 3.1: Analysis of target applications and selection of representative kernels. This is the very first step towards the overall goal of defining the work-loads driving the design of the next-generation architecture.
- OWP 3.2: Initial set-up of a methodology to port code to the OmpSs programming model. This methodology should provide a systematic way to extract tasks from a given code and introduce the necessary OmpSs pragmas and algorithmic changes to produce efficient OmpSs code.
- OWP 4.1: Initial port of target applications to the ARM architecture. Although most source code in the target applications should be architecture-independent, subtle details, such as the processor endianess, need to be worked out.OWP 5.1: Set-up a fully working ARM environment to be used by WP3 and WP4. This environment will include compilers, debuggers, and performance analysis tools.
- OWP 5.2: Provide an initial OmpSs compiler for the existing ARM prototype.
- OWP 5.3: Evaluate the system software (e.g., file system, MPI) stack in the existing ARM prototype to identify the critical parts of the software stack to be optimized for the final Mont-Blanc prototype.
- OWP 6.1: Evaluate state of the art components needed to build a next-generation HPC system. This study aims to identify current bottle-necks and technology limitations.
- OWP 6.2: Build the simulation infrastructure needed to create performance projections for the next-generation HPC system.
- OWP 6.3: Layout potential memory hierarchies for the compute accelerator in the next-generation HPC system.
- OWP 7.1: Perform a survey of MPSoC chips that will be available in the time-frame when the HPC prototype has to be deployed. Start contacting chips vendors to request information about the characteristics of the available MPSoC.
- OWP 7.2: Perform an study of available network switching chips to implement the intra-node communication
- OWP 7.3: Select the target chip to implement the node interposer to connect the ARM processors to the intra-node network.

3 Work progress and achievements during the period

During the first six months of the project, all tasks in the technical work packages were mainly focused on defining the technical requirements for the project. All Partners collaborated closely to agree on the requirement of the project.

3.1 WP3

3.1.1 Summary of Progress

An initial analysis and porting of candidates for kernels to drive the design of the next-generation architecture (OWP 3.1) has started.

An extensive analysis of the performance bottlenecks of some WP4 applications has been done (T 3.1). From this analysis, in conjunction with WP4, a set of kernels have been stemmed, and prioritized to be ported to OmpSs (T 3.2) and optimized (T 3.3) (OWP 3.1).

Some of the selected kernels are being ported from FORTRAN to C/C++ to produce a first set of OmpSs kernels (T 3.2). Preliminary tests on the kernels have been done to identify critical aspects and gather base-lines for the upcoming optimization task (OWP 3.2).

3.1.2 WP3 Person Effort Achieved

WP	Contract total	Total Accounted	% Achieved
WP3	114	7,37	6,46%

Units: pm (person month)

3.2 WP4

3.2.1 Summary of Progress

The porting of most target scientific applications to the ARM platform has started during this period (OWP 4.1). Although the target system is not available yet, the porting process is being done on systems that will resemble to the final prototype:

- The Tibidabo platform, a low power ARM based cluster composed by 32 nodes (ARM dual core A9 single socket) interconnected by a GbE network
- Small low power individual boards with one ARM A9 dual core socket
- X86 platforms with Intel or AMD processors for the porting of the applications using the OmpSs programming model

Some applications are already running on the ARM architecture (T 4.1). For these applications, the porting process has moved to the stage of identifying/extracting computation kernels (OWP 3.1), and porting these codes to the OmpSs programming model (T 4.3) (OWP 3.2).

As a result of the application porting effort, WP4 has started interacting with WP3 to extract kernels from the target applications.

3.2.2 Significant Results

The ongoing porting effort has produced initial experimental performance and power consumption results for some applications (T 4.2).

The work performed during this period of time has also served to identify a set of best practices when porting applications to both, ARM processors and the OmpSs programming model. WP4 team has collected these lessons in a dedicated WP4 wiki accessible for all project partners (T 4.3).

3.2.3 WP4 Person Effort Achieved

WP	Contract total	Total Accounted	% Achieved
WP4	148	14,42	2,60%

Units: pm (person month)

3.3 WP5

3.3.1 Summary of Progress

WP5 team has been able to provide a working cluster ARM environment (Tibidabo), which will serve us as base for fully optimize the different system software components necessary to deploy the project prototype (OWP 5.1).

The most common scientific open source libraries have been installed in the Tibidabo ARM prototype and are currently being used by the applications in WP4 (T 5.3) (OWP 5.1).

The EXTRAE tracing library has been fully ported to the ARM platform enabling thegathering execution traces in the Tibidabo prototype (OWP 5.1). Besides MPI, OmpSs and other run-time events, the porting of the EXTRAE library has also included adding support for performance counters using the PAPI Linux performance tracing framework (T 5.4).

In this period, the FOTRAN parser and sematic checker has been improve in in the Mercurium compiler. These improvements have been based on the feedback of different applications used in the project. The necessary code transformations to support OpenMP tasks in FORTRAN applications (OWP 5.2)have been developed too.). Furthermore, code transformations to support OmpSs extensions to OpenMP tasks have been developed, but not extensively tested yet (T 5.1).

Initial tests on the Lustre 1.x file-system on ARM has been carried out. These tests included compiling the Lustre client on ARM and an initial stand-alone installation (T 5.2). Finally, testing for the upcoming Lustre 2.x on ARM has started (OWP 5.3).

Initial tests on the performance of OpenMPI have been done in the current Tibidabo prototype using Linpack (T 5.4). Initial testing of OpenMPI has shown some performance issues related to the interconnection network in the Tibidabo prototype, which are currently being investigated (OWP 5.3).

3.3.2 WP5 Person Effort Achieved

WP	Contract total	Total Accounted	% Achieved
WP5	272	16,01	5,89%

Units: pm (person month)

3.4 WP6

3.4.1 Summary of Progress

An initial analysis of already available energy-efficient embedded chips is in progress This study includes the two key components of the Tibidabo prototype. WP6 team has measured and collated state-of-the-art baseline latency data for competitive 10/40 Gb Ethernet switches.These analysis aim to ensure that WP6 partner maintains a key differential in terms of the development of the project and therefore maintain overall technical credibility (OWP 6.1). The team has also been looking at different underlying transport schemes (T 6.2).
The development of the project simulation infrastructure has been started, this will enable Mont-Blanc to produce performance projections of different memory architectures, interconnection networks and compute accelerators (T 6.1, T 6.2, and T 6.3) (OWP 6.2).

The WP team has also conducted initial explorations regarding the definition of scalable compute accelerators (T6.3). A distributed memory (processor-local memories) multiprocessor accelerator that supports run-time definition of NUMA memory coherent clusters has been proposed, and benchmarking is ongoing

3.4.2 Significant Results

Experimental data has been collected for :

- MPI communications, using commodity PCI-E Gen2 NICS. This provides comparative data on commercially available switch networks using iWarp.
- Message exchange using Kernel Communications (TCP/IP), RDMA (iWarp) and RoCE (ibverbs).

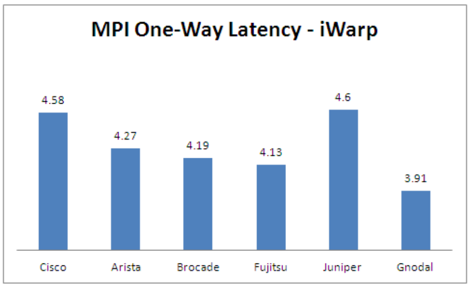

Figure 1 MPI latency in microseconds for competitive switch networks

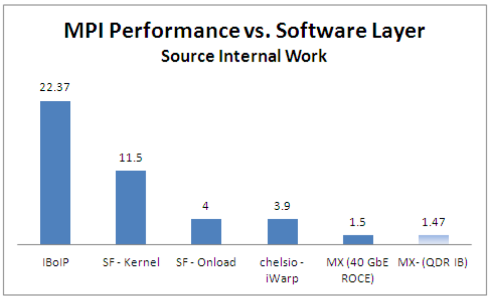

Figure 2 MPI Latency across a Gnodal network for a number of underlying communication mechanisms. For reference a comparative IB result is shown

The previous figures show that:

- Gnodal (Mont-Blanc partner) network provides the lowest latency network available on the market of approximately 200ns.

- The lowest latency will be achieved (moreover comparable to Infiniband) by using RDMA although this will require a loss-less network.

RDMA mechanism will provide the most significant gains in terms of latency. Supporting RDMA is therefore seen as an important aspect of the next generation system. Currently for commercially available systems RDMA is supported within a standard Ethernet framework by iWarp or RoCE (ibverbs) within standard OFED releases. Based on this, the Next-Generation System Architecture should investigate the use of this capability and be able to support and contribute to OFED. This could involve modeling of RDMA capability against the requirements of the application kernels through FPGA devices and assess the level of effort in porting OFED devices.

Concerning distributed-memory compute accelerator explorations (T6.3), the scalability of a remote memory access protocol was investigated by using multithreaded implementations (from 1 to 6 crunch tasks) of the Smith Waterman application with varying caches sizes (16 Kb, 1Kb and 512 bytes).

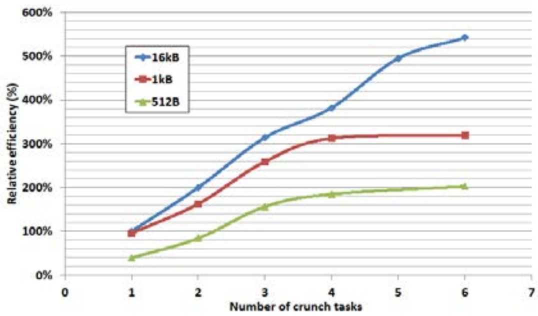

Figure 3 Processing efficiency for different number of tasks and cache sizes

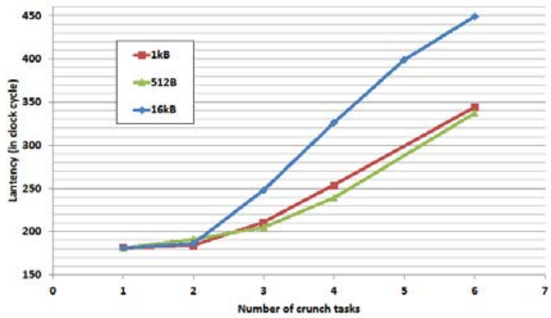

Figure 4 Average memory access latency for different number of tasks and cache sizes

Previous results suggest that efficient performance scaling depends on the cache sizes. Figure below shows the transient execution profile on a system with 3 crunching tasks, where it can be observed that fetch operations issued by remote processors tend to get desynchronized over execution iterations, resulting in better usage of the available memory / interconnect bandwidth.

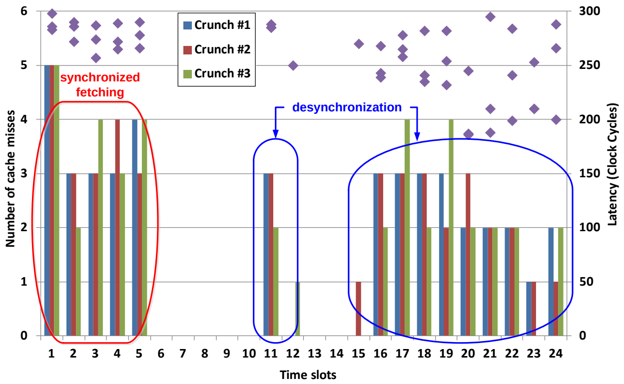

Figure 5 Timeline of the number of cache misses for an example application

3.4.3 WP6 Person Effort Achieved

WP	Contract total	Total Accounted	% Achieved
WP6	208	28,56	13,73%

Units: pm (person month)

3.5 WP7

3.5.1 Summary of Progress

The WP7 team is currently reviewing design environments for an initial FPGA based solution to provide low-latency inter-node communication (T 7.2). This initial study will enable the design of the intra-node communication design for the project prototype (OWP 7.2).

The current plan for the prototype architecture is to exploit commercially available 1GbE interfaces available within MPSoC ARM architectures and to create a bridge between these interfaces (nodes) and a Gnodal 10/40 GbE network (aggregation). The WP7 team has performed a review of commercially available switch 1GbE -> 10 GbE ASICs. In assessing the fitness of these ASICs, Performance, Capability and Power have been used as main metrics . Capability is measured based on the number of MAC addresses,, loss-less RDMA support, and flexibility in network topology.
The following ASICs (under NDA) have been reviewed:

- Fujitsu AXEL-X (MB8AA3020)
- The initial Marvell product is now discontinued. Next generation systems require significant power.
- Fulcrum. Risk on availability due to Change of Ownership. Moreover the required power budget is too high.

Regarding the MPSoC selection, Wp7 partners agreed that the only possible target in the current time frame is the CORTEX A15. However, the weight in terms of power consumption of the memory and other components could require addingsome accelerators, as for example GPUs. Available ARM-based chips from different vendors have analyzed and sorted in 3 categories: smartphone (without standard computer interfaces), Tablet and netbooks (with GPU, PCI express and Gb Ethernet interfaces), and Low power servers (without GPU, but with PCI express and Gb Ethernet interfaces). This analysis has studied the number of cores, memory technology, and network interfaces, the availability of embedded GPUs, estimated power consumption, and I/O interfaces (T 7.1). Chips from the following vendors have been included in this study: NVIDIA, Samsung, STe, Qualcomm, Calxeda, Marvel, Texas Instruments, and Freescale. Contacts with some of these chip providers have been established , NDAs have been signed with several chip providers and additional information from some other vendors (OWP 7.1) is still to come.

Regarding the node interposer (T 7.5) a decision has been taken to replace ARM chip with MAG3D chip (OWP 7.3). This existing chip embeds several 3D interfaces which emulate interconnects of the 3D-IC computation node:

- 4x channel WideIO interface

- 4x Network On Chip interfaces dedicated to 3D stacked interconnects

Work on 3D interconnect building block functional verification has already been started:

- Develop a WideIO memory model
- Develop a functional simulation test bench to generate and verify data traffics among dies in a 3D stacked IC:
- 3D-IC test benches developed: WideIO on processor with WideIO interface and processor on processor with 3D NoC interconnect

The WP7 team plan to re-use all these validated 3D sub-systems for compute node architecture exploration and interposer specification.

3.5.2 WP7 Person Effort Achieved

WP	Contract total	Total Accounted	% Achieved
WP7	296	39,07	13,20%

Units: pm (person month)

4 Deliverables and milestone tables

4.1 Deliverables

The project has successfully completed all Deliverables to date.

Del. no.	Deliverable name	WP no.	Lead bene-ficiary	Owner	Reviewer	Estimated indicative person months	Nature [2]	Dissemi-nation Level	Delivery date [4]	Contractual Due Date	Sent to P.O.	Period
D1.1	Project Portal	1	1	Guadalupe Moreno	Thomas Fieseler (Jülich) / Eugene Griffiths (BSC)	5,20	O	CO	2	30-Nov-11	30-Nov-11	P1
D1.2	Project Management Handbook	1	1	Guadalupe Moreno	Thomas Fieseler (Jülich)	5,70	R	CO	4	31-Jan-12	31-Jan-12	P1
D1.3	6-Month Project Report	1	1	Guadalupe Moreno	Thomas Fieseler (Jülich)	4,00	R	PU	6	31-Mar-12	31-Mar-12	P1
D2.1	Dissemination Strategy Document	2	1	Renata Giménez	Chris Adeniyi-Jones (ARM)	2,70	R	PU	4	31-Jan-12	31-Jan-12	P1

D2.2	Initial Press Release	2	1	Renata Giménez	Pascale Bernier-Bruna (Bull)	2,70	R	PU	6	31-Mar-12	31-Mar-12	P1
D2.3	Project Public Website	2	1	Renata Gimenez	Pascale Bernier-Bruna (Bull)	6,20	O	PU	6	31-Mar-12	31-Mar-12	P1

4.2 Milestones

The project has not achieved Milestones yet.

The milestones to achieve during this first year of project are:

Milestone no.	Milestone name	WPs no.	Lead beneficiary	Delivery date from Annex I [1]
MS1	List of application kernels selected	WP3	8	8
MS6	Runtime libraries ported and tuned to ARM platform	WP5	1	12
MS7	Scientific libraries ported to ARM platform	WP5	1	12

5 Project management (WP1) and Dissemination (WP2)

Work Package 1, consisting in the Management of the consortium for Mont-blanc project, is the shared responsibility of the Project Manager (Guadalupe Moreno) and the Technical Manager (Alex Ramírez); however, it also includes the active participation of all project Partners through the General Assembly which is integral to the successful management of the project. For the dissemination of the Mont-Blanc project, the project counts with the Dissemination Project Manager (Renata Giménez).

In the first six months of the project, WP1 has been focused on further defining the management plan initially described in the Description of Work and executing on this plan in order to drive the project forward according to the plan of record. In terms of Dissemination, the main objective of WP2 during these 6 months has been to define the project Dissemination Strategy of the Project, to disseminate the start of the project via an Initial Press Release (D2.2) and to establish a strong web presence via the Mont.-Blanc Public Website.

This work largely consisted of setting up the organizational structure of the project, determining the most effective internal communication strategy for the project partners, establishing the appropriate quality assurance procedures and implementing the tools required for tracking project progress. Once these structures, strategies and procedures were well-defined, we documented them in detail in the D1.2 Project Hand Book.

5.1 Work performed during 6 first months of project.

5.1.1 Task 1.1 Internal consortium communication strategy definition

5.1.1.1 Task Objective

The objective of this task is to determine the appropriate strategy to ensure clear communication channels between all partners in order to facilitate the exchange of critical project documentation and news and to encourage participation in the decision-making process. This task also includes employing the necessary tools to realize this strategy. The task requires defining and maintaining internal collaborative tools for sharing documentation and communicating work status.
The direct outcome of this task is a Project Portal (shared workspace) and a series of Project Distribution Lists.

5.1.1.2 Performed Activity

At the outset of the project, WP1 implemented the management structure of the project. The partners have reviewed the general rules and procedures which had been detailed in the Consortium Agreement (CA) and have formalized basic requirements for internal communication summarized in the internal communication strategy described below.

WP1 employed an interactive internal communication strategy consisting of email lists, a secure intranet known as the Project Portal (D1.1), and regular teleconferences in addition to face-to-face meetings. This combination of management tools and regular interactions led to smooth communication between all Partners throughout the first six months of the project.

As the primary communication channel for the project is email, WP1 (BSC) set-up and now maintains Distribution Lists in order to facilitate the routing of information requests to the appropriate individuals and groups. These lists are updated on a regular basis by the Project Manager with the most up-to-date list always posted to the Project Portal.

The Project Portal is a wiki-based secure intranet that was created to facilitate the exchange of critical project documentation and news. It provides a structured central document repository for deliverables, meeting minutes, dissemination material, project-internal documentation and other relevant information.

The Project Portal is administered and largely maintained by the Project Manager; however, all Partners are provided with access to allow for ease of updating project progress and sharing documents.

In addition to the using the various tools implemented by WP1, the General Assembly & Work package leaders held regular monthly teleconferences to evaluate progress against project plans, identify major problems and co-ordinate project-related interactions among the WP Leaders. The Project Manager, working with the Technical Manager, called and prepared the General Assembly & Work Package leaders Meetings which were chaired by the Technical Manager. The Work Package Leaders provided technical status and were encouraged to hold additional meetings or open technical discussion forums on the Project Portal according to their respective needs for coordination.

In addition, the WP1 leader also sponsored 2 face-to-face meetings consisting of two days of technical discussions between the Work Package Leaders, during which one day all consortium meeting was held. These meetings assure the progress of the project according to the plan or detect the possible deviations to the plan of record.

Likewise, the WP leaders have suggested parallel WP conferences to threat the progress of the WP.

The following table lists all General Assembly, Work Package leaders and Technical meetings in this reporting period:

Consortium, General Assembly & WP leader Meetings		
Date	Meeting	Location
15 Oct 2011	Project Kick-off Meeting: All consortium /General Assembly / Technical Meeting	Barcelona, Spain (BSC)
12 Dec 2011	First WP2 Teleconference	Teleconference

19 Jan 2012	General Assembly / Technical Meeting	Teleconference
26 Jan 2012	First WP4 Teleconference	Teleconference
27 Jan 2012	Second WP2 Teleconference	Teleconference
17 Feb 2012	First WP3 Teleconference	Teleconference
23 Feb 2012	Third WP2 Teleconference	Teleconference
01 Mar 2012	General Assembly / Technical Meeting	Teleconference
27 Mar 2012	Fourth WP2 Teleconference	Teleconference
29 Mar 2012	General Assembly / Technical Meeting	Teleconference

Next meetings

12 April 2011	Face-to-Face Meeting: All consortium /General Assembly / Technical Meeting	Barcelona, Spain (BSC)

The regular General Assembly / Work Package leaders / Technical Meetings described previously are an important part of the reporting process established in order to monitor project progress.

The General Assembly / Work Package leader meets via teleconference once a month in order to review progress of the project. In the meetings critical project deliverables and milestones are discussed. All minutes of these teleconferences can be found on the Project Portal. At a more fine-grain level, each Partner delivers a quarterly effort report, which includes a summary of the effort dedicated to each Work Package, as well as a brief explanation for any deviations from the Description of Work. This information is compiled by the Project Manager and it has been documented in the D1.2 Project Hand book.

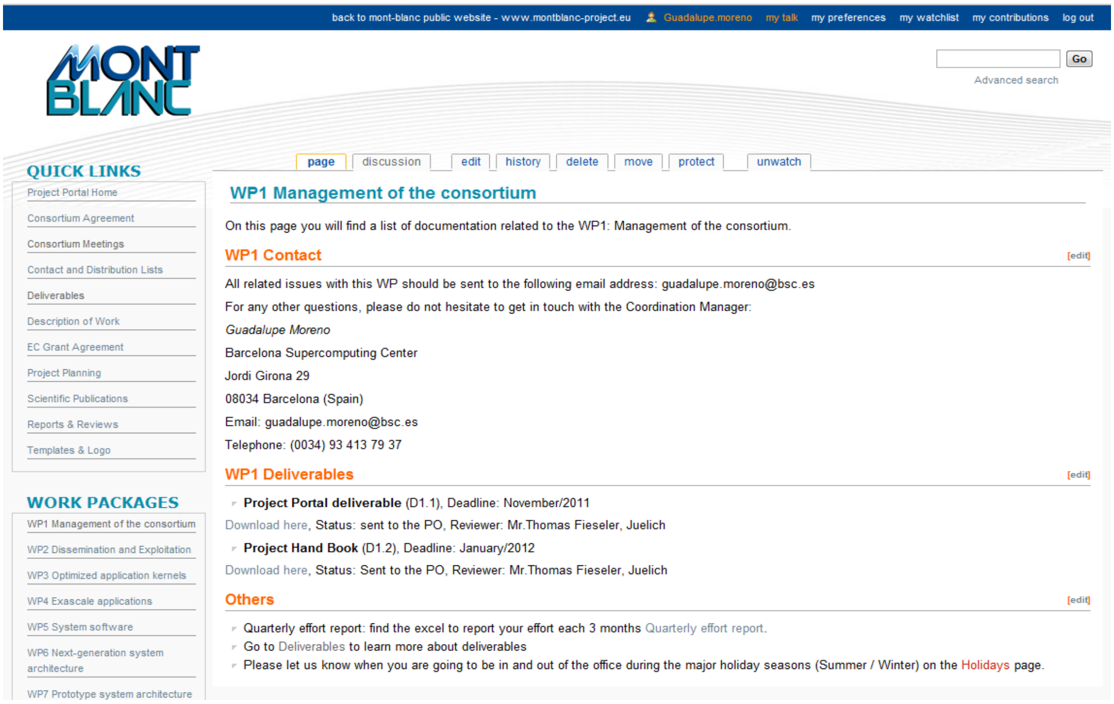

Figure 6. Mont-Blanc WP1 Management of the consortium page

5.1.2 Task 1.2 Establishing project management and quality assurance procedures

5.1.2.1 Task Objective

In this task, WP1 have defined and implemented the appropriate administrative project management processes that ensure accurate documentation, reporting and justification of the work being carried out. The team developed a process (to ensure that the deliverables are reviewed by a broad spectrum of individuals. Moreover, the team has determined the minimum level of quality required for presentation to the European Commission as official outcomes of the project.

These administrative project management and quality assurance processes have been documented in the Project Handbook.

5.1.2.2 Performed Activity

During this first 6 months, WP1 proposed a Quality Assurance process to ensure that each deliverable should be reviewed. The Quality Assurance process has been approved by the rest of the partners.

A list of Deliverable Lead beneficiary and Reviewers for each WP has been established. The Deliverable Lead beneficiary generates the Deliverable using a standard Deliverable template to ensure a homogeneous structure and appearance. According to the Project Hand Book and good practice, the Deliverable Lead beneficiary passes the Deliverable to the internal Reviewer, fulfilling the times. The Reviewer provides the comments in a tack changed document.

The Deliverable Lead beneficiary revises the Deliverable and sends again to the Reviewer; once this accepts the Deliverable, the Coordinator sends to the European Commission. This process is described in detail in the D1.2 Project Handbook, (4.Deliverables Generation).

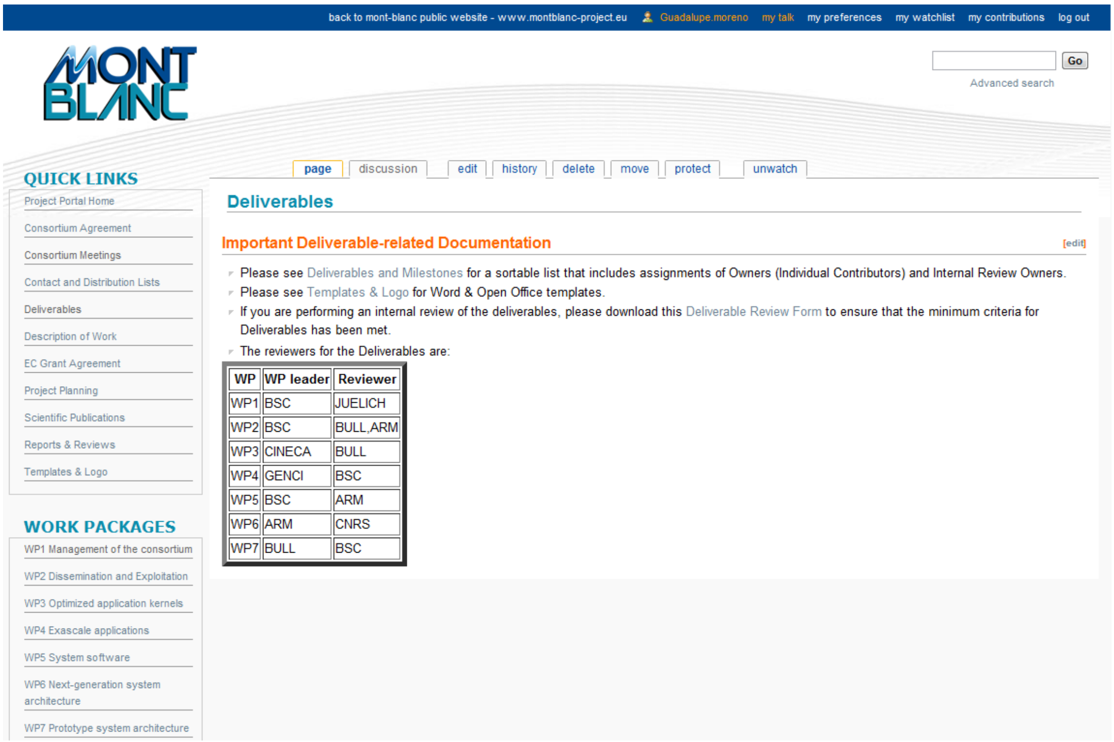

Figure 7. Mont-Blanc Deliverables

5.1.3 Changes in the consortium

During the first six months of the project, there were no changes to the consortium or to the legal status of the Partners that required any modification to the EC Grant Agreement, and subsequently no related changes were required to the Consortium Agreement.

5.1.4 Project Administration

The administration issues of the project is under the responsibility of this task, which includes all the contractual, administrative and financial matters acting as an interface between the partners and the Commission ensuring the implementation of the Consortium Agreement throughout the project duration.

The financial and overall coordinator ensures that the annual budget plan is closely followed based on the information received every six months from the partners through the activity reports.

Amongst other things, the Coordinator received the pre-financing and forwarded it to the other beneficiaries in compliance with the provisions of the Grant Agreement and the Consortium Agreement.

5.1.5 WP1 Person Effort Planned vs. Actual

WP	Contract total	Total planned M1-M6	Total Accounted*
WP1	39	16	14,20

Units: pm (person month)

*Note: The achieved percentage of PM has been substituted by the Total Accounted PM in this section. The reason is that WP1 has completed tasks.

5.2 Dissemination (WP2)

During the first six months the project, the main objectives of WP2 were to define the project Dissemination Strategy (D2.1) of the Project, to disseminate the start of the project via the Initial Press Release (D2.2) and to establish a strong web presence via the Mont.-Blanc Public Website (D2.3).

5.2.1 Work performed during 6 first months of project

5.2.2 Definition of the Dissemination Strategy

5.2.2.1 Task Objective

The objective of this task is to determine the appropriate strategy to ensure dissemination channels, targets and activities for the complete project. All these activities should be accurately defined at the beginning of the project in order to define the dissemination plan (D 2.1). It should be a life document that can be completed all times.

5.2.2.2 Performed Activity

The first order of business for WP2 was to lay down the overall dissemination strategy in the Dissemination and Strategy Document (D2.1). The aim of this document was to define the strategy for disseminating the project results taking into account the big social impact that this project will have on society.

After having defined the WP2 team, WP2 team has monthly teleconferences. All minutes are being included onto the project portal. During this 6 month period, WP2 team has been working actively on the corporate image for the project, website update, shirts, defining the publication acknowledgement sentence, project templates, generic poster for the project, poster template in A0 format and will also work on a general power point presentation. For internal communication, the WP2 team has created a calendar of events that should be regularly updated by all members where all events should be included where the project will be disseminated. A newsletter calendar has also been suggested on the project portal in order to suggest possible articles for the newsletter that will be launched in July 2012.

5.2.3 Definition of the Press Strategy

5.2.3.1 Task Objective

The objective of this task is to determine the appropriate strategy for the external communication, specially the one focused on media and press. It should include the approval of press releases as well as the functionalities of its release to different media. The direct outcome of this task is the press releases launched during the project.

5.2.3.2 Performed Activity

Having created the initial strategy for dissemination, WP2's next order of business was to define the press strategy and procedure, and create initial project buzz. WP2 team launched the initial technical press release (D2.2) on 26th October 2011. The objective of the Initial Press Release Deliverable was to 1) define a general strategy for creating and publishing press releases as well as to 2) report on the outcome of the initial and follow-up press releases for the Mont-Blanc Project. This press release was sent out by all partners to all press contacts locally as well as translated to some local languages (German and Spanish). In general, this first press release was a great success because it was picked up by both international and local IT-specialized media outlets.
A second non-technical Press Release was launched on 29th October 2011 addressed for generic media. After its launch, the Mont-Blanc project highlighted by Eric Schmidt, Google Executive Chairman, at the EC's Innovation Convention (see link on page http://webcast.ec.europa.eu/eutv/portal/res/_v_fl_300_es/player/index_player.html?id=13645&pId=13631&userlocale=es). This demonstrates that Mont-Blanc has raised the interest of key stakeholders such as Google and HPC-related vendors and institutions. Moreover, it proves that the dissemination and release timing were extremely effective, especially considering that the project only started in October 2011.

The Mont-Blanc project is also mentioned in Wikipedia, in the Exascale computing article. As stated in the Dissemination Strategy Document (D 2.1), there will be a planning for future press releases during the project.

However, Mont-Blanc Disseminations in the first six months of the project were not limited to the Press Release. WP2 also published articles in the following media: Scientific Computing World
- HiPEAC and PRACE Newsletter

All articles can be found on page http://www.montblanc-project.eu/press-corner/in-the-media

5.2.4 Definition of the Project Website

5.2.4.1 Task Objective

The objective of this task is to define the functionalities and contents for the projects' website. The task requires defining the hierarchy of contents, as well as the content management system or tools to realize this website. The direct outcome of this task is the Project Website (www.montblanc-project.eu) and website analytics.

5.2.4.2 Performed Activity

Finally, WP2 team focused our efforts on establishing a strong web presence via the Mont-Blanc Public Website (D2.3). The website became publically available in October 2011. This document described the structure, content and updates process of the Mont-Blanc web site (www.montblanc-project.eu). The Barcelona Supercomputing Center, as coordinator of the project, hosts and maintains the website.

Figure 8 Mont-Blanc Project Website

5.2.5 WP2 Person Effort Planned vs. Actual

WP	Contract total	Total planned M1-M6	Total Accounted*
WP2	18	11,8	8,93

Units: pm (person month)

*Note: The achieved percentage of PM has been substituted by the Total Accounted PM in this section. The reason is that WP2 has completed tasks.

6 Explanation of the use of the resources

This information will be included in the P1 Report.

7 Financial statements – Form C and Summary financial report

This information will be included in the P1 Report.

8 Certificates

This information will be included in the P1 Report.

Acronyms and Abbreviations

- CA: Consortium Agreement
- HPC : High Performance Computing
- OWP: Objective for Work Package
- pm: person month
- T: Task
- WP: Work Package
- NDA: Non-Disclosure Agreement
- GPU :Graphics Processing Unit
- MPSoC: Multiprocessor System on Chip.
- PCI: Peripheral Control Interface

References

- Grant agreement for Mont-Blanc Project
- DoW for Mont-Blanc Project
- Consortium Agreement for Mont-Blanc Project
- Mont-Blanc Project Hand Book