D-NA1.1.1: Management and progress intermediate report

01/10/2012

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Version	Author	Date	Comments
1	A. Tosi (CNRS)	20/09/2012	Initial draft for comments.
2	J.P. Vilotte (IPGP)	26/09/2012	Project's objectives, WPs' work progress, review.
3	G. Moguilny (CNRS)	28/09/2012	Final global review.

[1] Alphabetical order

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Executive Summary

WP1 is responsible for the technical and scientific management of the VERCE project. The CNRS leads the WP and, together with IPGP, runs the Project Management Office (PMO) that takes care of all administrative, financial and legal aspects, tracks and reports on project progress, coordinates the partnership's internal communication and informs on quality control requirements of outputs and deliverables. WP1 is also responsible for the coordination and harmonisation of VERCE with relevant external projects.

The project's boards, the Steering Committee (SC) and the Project's Executive Board (PEB), chaired by the Project Coordinator, direct the strategic orientation and the scientific management of the project and safeguard the interest of all participants.

This document provides an intermediate management and progress report on all WPs before the end of the second reporting period, March 2013. The VERCE Risk Management Plan has been actualised as requested by the project reviewers during the first Project Review, June 2012.

1. Project objectives for the period

VERCE is structured into a number of 9 work packages (WPs): Management activity (NA1/WP1), Networking activities (NA2/WP2 to NA4/WP4), Service activities (SA1/WP5 to SA3/WP7), and Research & Development activities (JRA1/WP8 and JRA2/WP9).

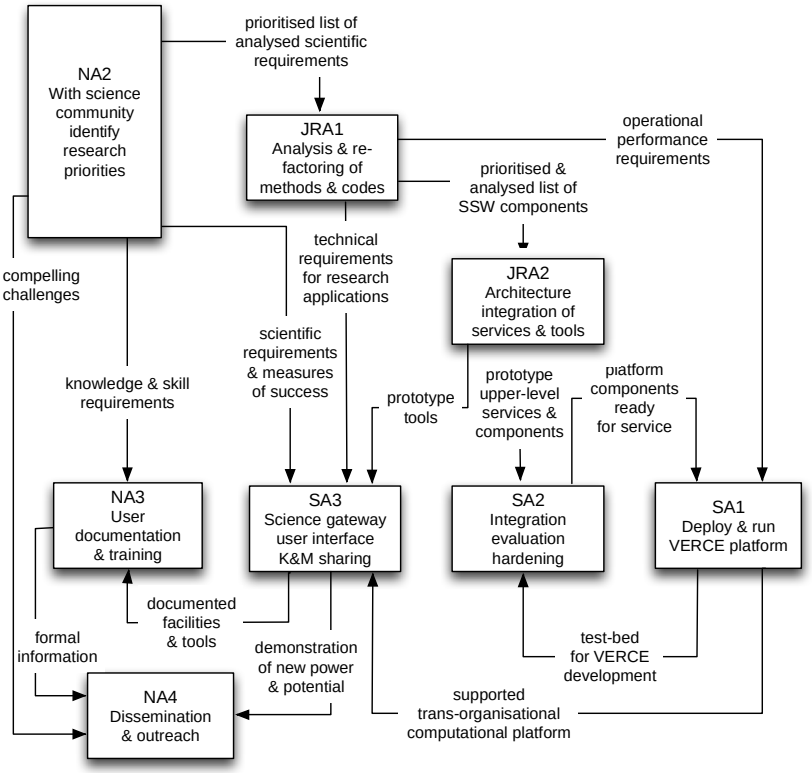

Figure 1 - Work packages in VERCE

1.1. Network activities

The main objectives during the period from month 7 to month 12 were:

⇒ Support and 'evaluate' the productivity transition of the science applications and use-case scenarios selected in the first 6 month-period of the project; identify metrics to assess applications and use-cases deployment and capabilities on the platform for users and developers of the seismology research community (NA2).
⇒ Set-up and organize a first internal training session to leverage awareness and knowledge across project partners on science application methods and the community of practice, and on first platform tools and the e-science environment (NA3).
⇒ Implement and improve internal and external dissemination channels and materials; set-up indicators and metrics to monitor and evaluate the dissemination activity (NA4).

1.2. Service activities

The main objectives during the period from month 7 to month 12 were:

⇒ Provide a catalogue of the public and private resources provided by the partners of the consortium, and integrate first testbed for evaluation (SA1 & SA2).
⇒ Integrate and evaluate first requested services and tools components in support to the science applications and use-cases (SA2).
⇒ Set-up and operate a Virtual Organization at project level (SA1).
⇒ Define and deploy a first set of monitoring tools at the user-level and at the application-level (SA1 & SA2).
⇒ Support deployment and evaluation of first selected scientific applications and tools (SA2 & SA1).
⇒ Implement and deploy an initial working demonstrator of the scientific gateway (SA3).

1.3. Research and Development activities

The main objectives during the period from month 7 to month 12 were:

⇒ Refine the analysis of the prioritized Data and CPU intensive science application use-case workflows, and provide first partial prototype implementation (JRA1);
⇒ Provide a performance analysis scheme for the CPU-intensive applications; analyse and evaluate the implementation software of the prioritized science applications (JRA1);
⇒ Identify and assess software components, external libraries and components, and platform components to be integrated in the new platform release (JRA2);
⇒ Define the core components for the design and the prototyping of the scientific gateway (JRA2).

2. Work progress and achievements

The VERCE project is traditionally structured by the networking (NAs), services (SAs) and research & development (JRAs) activities. To reinforce the coordination across the different activities, two application-driven task forces have been created: a CPU-intensive and a Data-intensive use-cases task force. The aim of the task forces is to leverage awareness and knowledge on the different issues related to these different science use-cases, and to foster more direct interactions and personal contacts between seismologists, software engineers and IT researchers around the use-cases. This informal transversal structure helped to leverage traditional ontology barriers and stimulated more interactive collaboration.

In this intermediate report, progress made within each Work Package is briefly outlined, and structured around some core points. Significant progress has been achieved during this short period since the last first project review, held June 8th 2012 in Brussels, considering the traditional summer holidays period and the intense work associated with the preparation of the first internal training session held in Liverpool early September, that has been actually a great success.

2.1. WP2 – NA2: Pilot applications and use-cases

WP leader: INGV

Status: On time

Documents: D-NA2.2: First Report on validation and evaluation of application deployment and use-cases

D-NA2.2.1: Report on the metrics for the assessment of the VERCE platform based on the selected applications

Progress: During this period, science applications and use-case scenarios have been detailed and refined based upon the user community of practice. CPU-intensive use-case scenario workflows have been intensively analysed in collaboration with JRA1 and SA2, together with their initial implementation phase. An initial prototypal core has been extracted from the complex Data-intensive use-case scenario workflow, and implemented by SA3/JRA2 using DISPEL language, ObsPy external modules library and OGSA-DAI enactment mechanisms. On-going evaluation analysis of this first implementation is now conducted by NA2. Training material, introducing the methodology and the community of practice behind the selected science applications and use-case scenarios, has been prepared for the first internal training session organized by NA3. Finally, an initial set of user-driven metrics for the evaluation of the enabled science applications has been defined and reported.

Achievements: The main achievements during this period are: (1) refined CPU-intensive use-case scenario workflow; (2) refined Data-intensive workflow case scenario, extraction of an initial prototypal core for implementation and first evaluation of the enabled workflow using the DISPEL language; (3) Training material on the methodology and community of practice behind the science application; initial definition of user-driven metrics for evaluating the enabled science applications and use-case scenarios.

Deviations: No significant deviation has been actually observed.

In progress: Attention will be focused in the next months on prioritizing possible external data processing and analysis libraries based upon their availability to VERCE and the community of practice and on a careful evaluation of the licensing issue of the wave simulation codes included in the CPU-intensive use-case scenarios.

2.2. WP3 – NA3: Training and user documentation

WP leader: ULIV

Status: On time

Document: D-NA3.2: Training and user documentation – first report

Progress: During this period, a first internal training session has been organized and held in Liverpool, 3-5 September. The aim of this session was to leverage awareness and knowledge among participants on the methodologies and the community of practice behind the selected pilot science applications, and on the

DISPEL-based workflow environment. The training session was organized in two parts: presentations and hands-on sessions. Seismology, use-cases, and data-intensive methodologies were presented with the contribution of NA2. Hands-on sessions exposed the user community to HPC resources access and to usage of the DISPEL-based workflow environment. A workshop feedback form was designed and the returns were analysed for improving next training event. Selected training materials are being prepared and will be released in the next months. On Redmine, an issue tracker NA3 trainer has been created. The NA3 wiki and repository sections have been continuously kept up-to-date as well. The Knowledge Base page on VERCE website has been continuously updated. Finally, training opportunities from other EU projects have been identified and disseminated within the project in coordination with NA4.

Achievements: The main achievements during this period are: 1) successful first internal training session; 2) satisfaction and feedback questionnaires were analysed in order to improve next training event; 3) all training materials were collected and organized in order to prepare the future release of public VERCE training material on the project website; 4) an issue tracker "NA3 trainer" was created on Redmine; 5) external training events offered by other EU projects have been identified and disseminated via Redmine.

Deviations: No deviation has been actually observed.

In progress: Tutorials - selected training materials from the first training workshop- are now organized and will be released on the project website in the next months. No videos or webinar training material has been released so far. This will be done and experimented during the next period.

2.3. WP4 – NA4: Dissemination and Public Outreach

WP leader: EMSC

Status: On time

Document: D-NA4-3: Dissemination and public outreach - first report and evaluation

Progress: During this period VERCE's dissemination channels have been improved and refined, and new paper/electronic dissemination materials have been developed to promote VERCE to a number of well-identified targets. Metrics and indicators have been set up and put in place to monitor the dissemination activities and the different channels used so far. Partners' social networks have been used to post VERCE's first messages. Following UE experts' recommendations given during the first review meeting, photos and images have been collected from partners and some graphical improvement planned in order to prepare a website revamp that will be implemented in the following months. The Redmine NA4 section has been updated and implemented. Finally, template and graphic chart for project pages to be included in the partners' website has been provided.

Achievements: Main achievements during this period are: 1) Improvement of VERCE public website (contents and graphics, a publication section and links to social networks); 2) development of a VERCE template web page to be included in partners' websites; 3) first VERCE posts on social networks; 4) development and improvement of Dissemination material (poster template, leaflet/flyer and newsletter); 5) definition and implementation of dissemination channels' metrics and indicators for the monitoring of the dissemination activity.

Deviations: No deviation has been actually observed. Regular meetings with NA1 are now in place.

In progress: Next objectives are to work with NA3 for disseminating training session material in and out the project through Redmine, the public website and the identified social networks. Further efforts will be done to dynamise the website. Further monitoring of the dissemination activity will be implemented in the next months.

2.4. WP5 – SA1: Management and operation of the research platform

WP leader: CNRS-INSU

Status: On time

Document: D-SA1.2: VERCE platform – first operation and monitoring report

Progress: During this period, SA1 paid attention first of all to the organisation of the working group, started to deploy components recommended by SA2, and gathered documentation. Efforts have been concentrated on improving the organisation of the working group, on publishing a catalogue of the private and public resources provided by the partners to the VERCE platform, on deploying and testing initial software components on the platform, on setting-up an initial Virtual Organisation for the project's members, and on testing tools for monitoring.

Achievements: A catalogue of private and public resources made available by partners for the VERCE platform, has been prepared and is now available. For each resource, it contains at least a contact person and a description of the resources and of the access policy. In August, after test and evaluation, SA2 recommended to deploy some software components: one seismological code (SeisSol), and two libraries/tools (ObsPy, GridFTP). For each of those components, SA1 created a wiki page to gather useful information (contacts, history, installation documentation, user documentation...) and deployments have been performed. GridFTP for data transfer between VERCE resources has been validated on a subset of resources through a Data movement campaign. The Virtual Organisation "verce.eu" - in the framework of EGI - has been created and the first registered users are using it to test seismological tools on the Grid resources. Two monitoring tools have been analysed: Inca at the user-level, and Scalasca at the application performance level.

Deviations: Beside some delays, no major deviation has been observed so far. Manpower shortage is still an issue, but this is expected to be resolved soon.

In progress: Next period will focus on the definition of a clear procedure for the deployment of the components in order to make them easily installable, fully operational and documented. The monitoring part has to be more clearly defined, for each type of resource.

2.5. WP6 – SA2: Integration and evaluation of the platform services

WP leader: BADW-LRZ

Status: On time

Document: D-SA2.2: VERCE platform integration – first release of integrated services and tools

Progress: During this time period, work has been focussed on the first PDCA cycle, corresponding to the first release of integrated services and tools. In order to coordinate this release, a release management schedule was prepared to ensure that the process was clear to each of the work packages that were involved. A total of eight application codes and four tools were submitted by the JRAs for evaluation. Three of the application codes were prioritised by JRA1, as requested by SA2, to be evaluated first. In total, five application codes and four tools were evaluated in this reporting period. A questionnaire was circulated among relevant work packages to evaluate the release management procedures and improve the release process.

Achievements: The first PDCA cycle was completed on September 12, 2012. Eight application codes, nine external libraries and tools request were received from JRA1 and JRA2. The codes were all CPU-intensive codes, and included Seisol, AxiSEM, SPECFEM3D, SPECFEMGLOBE, RegSEM, Ses3D, Sec3D,

COMCOT. The external libraries and tools included ObsPy library components, GridFTP, and the DISPEL gateway. A web-based continuous integration application, i.e. Jenkin CI, was installed for that purpose at LRZ, allowing access to registered EuroGridPMA certificated owners. The evaluation and testing procedure comprised component generic tests, and provided component specific tests. For GridFTP, robot framework test suites were provided by IGE, within the MOU framework signed with VERCE in the last periodic report. A version of the approved components, and their test examples, were archived in the VERCE Redmine repository. Approved components so far are: Seisol, ObsPy and GridFTP. The remaining applications need more work and will be scheduled for the next release cycle. The release cycle has been documented in the SA2 wiki page in Redmine.

Deviations: No significant deviation has been observed beside delays for some of the requested components due to issues with their implementation. Communications with SA1 need to be improved through more regular meetings and documentation.

In progress: For the next release cycle, a work plan and agenda has been already set-up and proposed to other work packages. This is further detailed in the deliverable document.

2.6. WP7 – SA3: Scientific gateway and user interfaces

WP leader:	KNMI-ORFEUS
Status:	On time
Document:	D-SA3-2: Scientific gateway – first report on release on services integration and management integration

Progress: During this reporting period, the effort has been focused on the establishment of a development strategy for the implementation of a set of demonstrators of the scientific applications defined by the VERCE use-cases. Moreover, attention has been also dedicated to the coordination with other on-going projects in Seismology and Solid Earth Sciences, such as NERA (Network of European Research Infrastructures for Earthquake Risk Assessment) and EPOS (European Plate Observing System), in order to envisage how the VERCE technology could also provide valuable solutions to these other initiatives.

Achievements: The implementation of a working demonstrator of an initial scientific gateway has been delivered. The main objective of this prototype is to show VERCE partners how the different layers of the platform interact and where are the boundaries between the development efforts of the IT experts and the scientists. The prototype demonstrates how a workflow defining a pre-processing pipeline of seismic traces, the first step of the data-intensive use-case scenarios, can be implemented with the DISPEL language and how it translates into the execution of the scientist's analysis code within a distributed deployment of the platform on the DEP-UEDIN-01, the data Intensive machine in Edinburgh. The prototype shows how the data transformation, the collection of the metadata and its visualisation, are performed in a complete automated way, leaving to the user only the important responsibility of validating the results. A set of interactive web pages for the workflow submission and provenance visualisation is also provided, as part of the initial design of the scientific gateway front end. This demonstrator has been presented during the training session organized at University of Liverpool, early September.

Deviations: No significant deviation has to reported, and the initial delay is being overcome.

In progress: The demonstrator definitely fostered the discussion on how to proceed with the work in the following months. In that respect, relevant contacts have been established among scientists and IT experts, in order to form small working groups that are part of the data-intensive transversal task forces that will have the responsibility to push forward the development of the scientific use-cases. The VERCE scientific gateway's components will strictly follow these developments in order to refine its specification, towards an incremental implementation of the users' needs and expectations.

2.7. WP8 – JRA1: Harnessing data-intensive applications

WP leader: LMU

Status: On time

Document: D-JRA1-2.1: Enabling pilot applications – first report and validation of the VERCE architecture

Progress: During this time period, activities focused on analysing and evaluating methods and their implementation together with SA2. A number of applications, mostly CPU-intensive applications, have been evaluated in close collaboration with SA2, SA1 and NA2. Deployment of these applications, on a subset of VERCE's private and public resources, has been assisted by JRA1 when needed.

Achievements: During the first release cycle, two software components have been accepted by SA2: the wave propagation code Seisol, and the data handling and data analysis library ObsPy, developed at the University of Munich. Extensive feedback was given by SA2 on the other prioritized applications 1) Specfem3D, 2) Ses(c)3D, 3) Axisem and 4) Comcot, which need to be improved to match the requirements of SA2, and efforts are currently in progress. A performance analysis scheme for the CPU-intensive applications developed by JRA1 (CINECA) started to be applied to pilot applications, i.e. Specfem3D. Workflows of the selected use-case scenarios were further analysed and broken down into detail. A prototypal implementation of the 'Forward Modelling and Inversion', focussing on the forward modelling part, has been set up to run on the VERCE testbed, involving certificate based authentication, remote job submission/file transfer to and from the HPC site SuperMUC using the Globus toolkit as well as remote visualisation. Finally Python/ ObsPy routines have been wrapped into the VERCE workflow enactment engine DISPEL and included in the first scientific gateway demonstrator delivered by SA3.

Deviations: No significant deviation has to be reported. Communication and collaboration with SA2 still need to be improved through meetings and workshops. A workshop is scheduled next January in Munich.

In progress: Performance analysis will continue to be applied to Seisol, Ses3d, Sec3d and Axisem and Comcot as well. Applications will be supplied with a regressive testing scheme to ensure performance in accuracy as well, where not already in place. Furthermore a benchmark for the 'Ambient Noise Cross-Correlation' use-case scenario will be set up, in order to validate performance. In the upcoming release period, JRA1 will continue to work on modifying the application to fulfil the requirements based on the feedback received from the other work packages, as well as to develop and analyse the use-case scenarios workflows and their respective requirements.

2.8. WP9 – JRA2: Tools for data analysis on modeling

WP leader: UEDIN

Status: On time

Document: D-JRA2.1.1: Annual revision of the VERCE architecture - catalogue of prototyped or upgraded services and tools and code package available to SA2 and to research developers, catalogue of new or upgraded portlets in the scientific gateway tuned to the requirements of researchers

Progress: During this time period, effort has been focused on the incremental specification of software packages to be passed to SA2, on parallel specification and development of additional components in preparation for the next cycle, and on active contribution to the cross WP taskforces, facilitating JRA2

interactions with other WPs. Training material and exercises introducing the DISPEL workflow processing language, and the different components of the workflow engines, has been prepared and presented at the internal training session in Liverpool, early September.

Achievements: A first catalogue of both internal and external software – which have either been assessed or are under assessment - to be used by the VERCE platform has been released. Short descriptions of their intended use and rationale of the different software components are provided in JRA2 Deliverable, together with a summary table along with version numbers and stages of development and assessment. For completeness, the protocols that will be used by the various software packages have been also provided. The software packages are divided in three categories: software under direct control; external libraries and components; required platform software. The first category includes: the open-source system OGSA-DAI, the currently enactment platform of choice for VERCE and the Dispel Gateway service, the VERCE registry and VERCE scientific gateway components. The second category includes the SAGA and RAPID technologies for job submission on HPC and Grid, RabbitMQ and Active MQ for message streaming, Tomcat server. A number of ObsPy processing elements have been registered as seismology Dispel elements and made available.

Deviations: No significant deviation has to be reported, initial human resources shortage has been resolved.

In progress: The next steps include the introduction of a file type to the Dispel language, to provide support for large file transfers; specification and design of the scientific gateway in collaboration with SA3; extension of the VERCE registry, that will support provisioning for registration of remote computing resources and data centres, as well as of data items of interest.

2.9. Milestones and Deliverables

Table 1- RP1 + RP2 Midterm Milestones

MILESTONES							
Milestone no.	**Milestone name**	**Work package no**	**Lead beneficiary**	**Delivery date from Annex I**	**Achieved Yes/No**	**Actual / Forecast achievement date**	**Comments**
MS1	M-NA1.1	1	**CNRS**	**Month 6**	yes	25/05/2012	
MS2	M-NA2.1	2	**INGV**	**Month 6**	yes	25/05/2012	
MS3	M-NA3.1	3	**ULIV**	**Month 6**	yes	25/05/2012	
MS4	M-NA1.1	4	**CNRS**	**Month 6**	yes	31/03/2012	
MS5	M-NA4.1.1	4	**EMSC**	**Month 6**	yes	25/05/2012	
MS6	M-SA1.1	5	**CNRS**	**Month 6**	yes	25/05/2012	
MS7	MSA3.1	7	**KNMI**	**Month 6**	yes	25/05/2012	
MS13	M-JRA2.1	9	**UEDIN**	**Month 6**	yes	25/05/2012	Slight deviation; see paragraph 2.8. "WP9 – JRA2: Tools for data analysis on modeling"
MS8	M-NA1.1.2	1	**CNRS**	**Month 12**	yes	01/10/2012	
MS9	M-NA2.4	2, 4	**INGV, EMSC**	**Month 12**	yes	01/10/2012	
MS10	M-SA2.1	5, 6	**CNRS, BADW-LRZ**	**Month 12**	yes	01/10/2012	

MS11	M-SA3.2	7	**KNMI**	**Month 12**	yes	01/10/2012	
MS12	M-JRA1.1	2, 8	**INGV, LMU**	**Month 12**	yes	01/10/2012	
MS24	M-JRA2.2	9	**UEDIN**	**Month 12**	yes	01/10/2012	

Table 2 - RP + RP2 Midterm Deliverables

DELIVERABLES											
Del. no.	**Deliverable name**	**Version**	**WP no.**	**Lead beneficiary**	**Nature**	**Dissemination level[2]**	**Delivery date from Annex I (proj. month)**	**Actual / Forecast delivery date**	**Status**	**Contractual Yes/No**	**Comments**
D2.1	D-NA2.1	1	2	INGV	Report	Public	Month 6	25/05/2012	Submitted	Yes	
D3.1	D-NA3.1	1	3	ULIV	Report	Public	Month 6	25/05/2012	Submitted	Yes	
D4.1	D-NA4.1	1	4	EMSC	Report	Public	Month 6	25/05/2012	Submitted	Yes	
D5.1	D-SA1.1	1	5	CNRS	Report	Public	Month 6	25/05/2012	Submitted	Yes	
D6.1	D-SA2.1	1	6	BADW-LRZ	Report	Public	Month 6	25/05/2012	Submitted	Yes	
D7.1	D-SA3.1	1	7	KNMI	Report	Public	Month 6	25/05/2012	Submitted	Yes	

D8.1	D-JRA1.1	1	8	LMU	Report	Public	Month 6	25/05/2012	Submitted	Yes	
D9.1	D-JRA2.1	1	9	UEDIN	Report	Public	Month 6	25/05/2012	Submitted	Yes	
D1.1.1	D-NA1.1.1	1	1	CNRS	Report	Public	Month 12	01/10/2012	Submitted	Yes	
D2.2	D-NA2.2	1	2	INGV	Report	Public	Month 12	01/10/2012	Submitted	Yes	
D2.2.1	D-NA2.2.1	1	2	INGV	Report	Public	Month 12	01/10/2012	Submitted	Yes	
D3.2	D-NA3.2	1	3	ULIV	Report	Public	Month 12	01/10/2012	Submitted	Yes	
D4.3	D-NA4.3	1	4	EMSC	Report	Public	Month 12	01/10/2012	Submitted	Yes	
D5.2	D-SA1.2	1	5	CNRS	Report	Public	Month 12	01/10/2012	Submitted	Yes	
D6.2	D-SA2.2	1	6	BADW-LRZ	Report	Public	Month 12	01/10/2012	Submitted	Yes	
D7.2	D-SA3.2	1	7	KNMI	Report	Public	Month 12	01/10/2012	Submitted	Yes	
D8.2.1	D-JRA1.2.1	1	8	LMU	Report	Public	Month 12	01/10/2012	Submitted	Yes	
D9.1.1	D-JRA2.1.1	1	9	UEDIN	Report	Public	Month 12	01/10/2012	Submitted	Yes	

3. Project management during the period

3.1. VERCE consortium: management, structure and governance

No change in the Consortium composition and beneficiaries' legal status has occurred. The Legal Representative of INGV has been changed recently and the information has been updated in the Commission database, Commission letter 30 July 2012.

The budget received from EC on 26/07/2012 after the approval of VERCE's first Form C has been distributed among partners according to each partners' expenses, as summarized in table 3.

Table 3 - RP2 budget distribution among partners

PARTNER	DATE	AMOUNT
CNRS	31/08/2012	39 972,00
UEDIN	31/08/2012	63 574,00
KNMI	31/08/2012	3 765,00
CSEM	31/08/2012	34 897,00
INGV	31/08/2012	38 439,00
LMU	31/08/2012	14 352,00
ULIV	31/08/2012	11 504,00
BADW-LRZ	31/08/2012	38 795,00
SCAI	31/08/2012	18 395,00
CINECA	31/08/2012	42 730,00
		306 423,00

There has been no change in the composition of VERCE's boards, except for the Executive Board, where Geneviève Moguilny, SA1 (WP6) coordinator, has been added as official member in order to have all WP leaders represented. Santhi Veloupoule (EMSC) and Iraklis Klampanos (UEDIN) have been added to the peb@verce.eu mailing list as PEB members' substitutes.

Regular joint SC/PEB online meetings – average every two weeks except for the summer break – have been setup to foster active collaboration across the VERCE consortium, insure a common understanding and ontology, and drive progress towards project objectives.

For the time being it has been decided to leave the project's online meetings open to both SC and PEB members (which means scientific representatives and younger researchers and technical experts) in order to guarantee the presence of all key people from all partners (especially during the holidays period) and therefore foster a more active participation and collaboration, and allowing also partners' participation to change flexibly according to the agenda. The possibility to split meetings between SC (less often and for more important issues) and PEB (more often, for everyday management) will be considered again in the future.

The whole project meetings list follows:

- 2 April 2012, joint SC/PEB online meeting
- 16 April 2012, joint SC/PEB online meeting
- 2-4 May 2012, F2F Paris
- 11 May 2012, joint SC/PEB online meeting
- 4 June 2012, joint SC/PEB online meeting
- 7 June 2012, F2F Bruxelles
- 8 June 2012, Project Review Bruxelles
- 28 June 2012, joint SC/PEB online meeting

- 3-5 September 2012, F2F Liverpool
- 10 September 2012, joint SC/PEB online meeting

During the 12 May meeting, a financial contribution to the organization of the Erice meeting sponsored by EPOS, 25-30 May, has been agreed and VERCE officially took part to the organization and scientific committee of that meeting together with NERA and ORFEUS

(http://erice2012may.rm.ingv.it/1st%20Circular%20Erice%20Workshop%20May2012_web.pdf).
During the 28 June meeting the cross-WPs task forces were set up, following the discussion and work done in the F2F meeting in Munich, 24-25 June. During this same meeting, a budget shift of 4000 euro from CNRS to INGV, corresponding to the financial support of the ERICE EPOS-VERCE-NERA meeting, was approved. All these decisions were approved unanimously at the presence of a valid quorum.

Additional details on other project's meetings are detailed in section 3.2.2.

3.2. Internal communication

3.2.1. VERCE Redmine collaborative environment

No major change has occurred in the organization of internal communication. Overall the use of the VERCE Redmine online collaborative environment has increased and improved in the last period and partners seem to be more familiar and at ease with its structure and tools.

The heart of the community, the wiki section, is growing fast and may need some reorganization in the future in order to better organize its content and make it more accessible. The identification of one person per WP as responsible of structuring and animating each WP's wiki section has proven successful.

The NA1 (WP1) wiki section is where all SC and PEB meetings' minutes are uploaded and where many transversal issues are dealt and updated, as collaboration with other projects (each linked project has a wiki page that partners and coordinator keep updated), reporting deadlines and procedures, deliverables' state of the art, risk management, etc. The participation of partners to related events and relevant seminars and the presentation of VERCE in national and international contests are tracked in an *ad hoc* wiki page in the NA4 section, called "Other events and VERCE presentations".

The use of the News section as internal tool for information sharing on relevant other events is not very used by partners and regularly updated only by the PMO. Nevertheless it still represents the most suited way to keep partners informed on important issues without sending them too many emails.

The Meeting section is regularly updated. This is where all information on on-going and past meetings, both within and across WPs and at project level, can be found, either on the space made available from that tool or on a linked wiki page that contains further details. Also the Doodle tool for online polls is very useful and used especially for the organization of meetings.

The Document section is mainly updated by the PMO mainly for sharing official documents or internal templates.

The Repository (SVN) is used mainly for uploading and downloading the different Deliverables' versions and other drafts that need a version tracking.

Forums are not used frequently but are still an important means of communication and allow keeping track of important on-going discussions.

An Issues Tracking System has been set up for NA3 (WP3).

The rate of usage by partners and the level of their satisfaction of the Redmine environment will be monitored constantly and partners asked to suggest improvements in order to plan relevant adjustments.

A big part of the internal communication still passes through emails, especially for communications from the PMO to the project's boards and for communication within WPs. The mailing lists system works well and helps targeting groups, even though there is still some overlapping in messages for SC and PEB (also due to joint meetings). The full integration of some new personnel helped better differentiate roles and delegate some tasks from scientific representatives. Mailing lists are regularly updated by the PMO on the basis of the Manpower file that collects all personnel working in VERCE. A new list has been added for the newsletter editorial board, newsletter@verce.eu.

3.2.2. Meetings

Project and WP meetings are very important for the effective management of the Consortium and to foster work progress. During the last 6 months many online WP and cross-WPs meetings have taken place, focusing on specific issues and involving technical and scientific personnel from all involved partners. WP leaders are in charge of organising and documenting those meetings on Redmine.

Following is the list of main WPs' online and F2F meetings that took place during the period, m. 6-12 (the list is not exhaustive since only main meetings have been registered on Redmine, and not the everyday exchange).

30 March 2012 JRA1 (WP8)/NA2 (WP2)
5 April 2012 JRA2 (WP9)
5 April 2012 SA1 (WP5)/SA2 (WP6)
10 April 2012 JRA1 (WP8)/NA2 (WP2)
10 April 2012 JRA1 (WP8)
10 April 2012 SA2 (WP6)
11 April 2012, JRA1 (WP8), **F2F** Rome (INGV), preparation of 12-13 April meeting
12 April 2012 JRA2 (WP9)
12-13 April 2012, NA2/JRA1/JRA2, **F2F** Rome, Workflows and use-cases, technical work
24 April 2012 SA2 (WP6)
26 April 2012 JRA2 (WP9)
30 April 2012 JRA1 (WP8)/NA2 (WP2)
8 May 2012 JRA1 (WP8)
10 May 2012 JRA2 (WP9)
16 May 2012 SA2 (WP6)
5 June 2012 SA1 (WP5)
14 June 2012 JRA2 (WP9)
16 June 2012 SA2 (WP6)
20 June 2012 JRA1 (WP8), **F2F** Munich, Code requirements for Deployment within PRACE
21 June 2012 NA3/NA1
25-26 June 2012 JRA1 (W8)/NA2 (WP2)/JRA2 (WP9)/SA2 (WP6), **F2F** Munich, work progress and Task forces set up
28 June 2012 JRA2 (WP9)
29 June 2012 NA4 (WP)/NA1 (WP1), **F2F** Paris (CNRS), dissemination material contents and next steps
3 July 2012 SA2 (WP6)
2 July 2012 SA3 (WP7)/JRA2 (WP9)
12 July 2012 cross WPs: data intensive and HPC Task forces
17 July 2012 cross WPs: data intensive Task force
17 July 2012 SA2 (WP6)
23 July 2012 cross WPs: data intensive Task forces
25 July 2012 NA4/EPOS
26 July 2012 cross WPs: data intensive and HPC Task forces
31 July 2012 SA2 (WP6)
9 August 2012 JRA2 (WP9)

12 August 2012 JRA1 (WP8)/SA2 (WP6)/NA3 (WP3)
14 August 2012 SA2 (WP6)
23 August 2012 JRA2 (WP9)/NA3 (WP3), **F2F** Edinburgh (UEDIN), preparation for Liverpool training
20 August 2012 SA2 (WP6)
30 August 2012 NA4 (WP)/NA1 (WP1), **F2F** Paris (CNRS), dissemination material contents and graphics
11 September 2012 SA2 (WP6)
13 September 2012 JRA2 (WP9)
25 September 2012 SA2 (WP6)

During the 6 months covered by this report also many online and face-to-face (F2F) whole project meetings (SC/PEB) took place to coordinate partners' contribution and foster WPs' activities towards project's objectives. Agenda, links and attachments relevant for the discussion, list of participants and minutes are uploaded on Redmine. The first Project Review also fell during this period and therefore great effort was put during these meetings in the production and harmonisation of our first Deliverables, Management Report and Form C. Please refer to section 3.1 for the full list of whole project's meetings.

For a first period the PMO studied and set up the OpenMeetings software for project's online meetings, in order to have a more structured environment that would allow sharing files, using a chat and a whiteboard and also sharing screens during meetings. Unfortunately the tool proved to be too complex to use and the technology too time consuming for some partners. After some trials we decided to use Skype since it proved to be the simplest, cheapest and most stable tool that all partners knew well and had already installed. The only partner that would not be able to use it, as any other online conferencing tool except for telephone conferencing, was EMSC, because of firewalls and very strict security rules. During SC and PEB gatherings EMSC therefore joins the meeting via simple telephone call with Paris, IPGP.

Some more details on major F2F whole project or cross-WPs' meetings:

- 12-13 April 2012, Rome, a major F2F cross-WPs meeting took place for joint work on WP2, WP8 and WP9 (NA2, JRA1 and JRA2)
- 3-4 May 2012, Paris (IPGP), whole project F2F meeting with technical cross-WPs workshops and plenary sessions to share work progresses, discuss open issues, work on deliverables and prepare the project review.
- 25-30 May 2012, EPOS Meeting "Global Challenges for Seismological Data Analysis" (with ORFEUS-NERA-VERCE), Erice, Italy.
- 7-8 June 2012, Bruxelles, the SC and some PEB members gathered in Bruxelles for the first Project Review.
- 25-26 June 2012, Munich, a major F2F cross-WPs meeting took place, coordinated by JRA1 (WP8) for joint work on JRA1 (W8)/NA2 (WP2)/JRA2 (WP9)/SA2 (WP6). The setup of cross-WPs Task forces was first proposed during this meeting.
- 3-5 September 2012, Liverpool (ULIV): first VERCE internal training workshops and SC meeting. All training materials will be made available on our website, in the training section: http://www.verce.eu

One major face to face whole project meeting has already been planned for the next 6 months, January 2013 in Munich, with hands on workshops and cross WPs technical meetings; during this meeting partners will also work on next Deliverables and on the preparation and the organization of the second Project Review. Other meetings may be organised, both within and across WPs, as need and opportunity arise.

3.3. Project activities monitoring

After the first project review some internal procedures and templates have been slightly changed on the basis of lessons learnt. The new procedures and some "tips for deliverables" have been uploaded on Redmine.

The frequent online and F2F meetings and the intense online collaboration has allowed the PMO to easily monitor partners' contribution and WP progress. The preparation for the internal VERCE training meeting in Liverpool just after the summer break has helped partners to keep focused and pushed activities towards project objectives.

Partners are finalizing their recruitment process for the still open positions. The PMO has closely monitored this issue and will continue in the next months until all open positions are taken.

Some of the initial delays are still affecting WP activities, but all WPs are progressing at satisfactory pace and we reckon to fully realign with the DoW forecast by next Project Review, March 2013.

3.4. Cooperation with other projects

The cooperation and coordination strategy with related European and International projects have been detailed in the first management report.

Beside participation to a number of meetings organized by related projects like EPOS, EUDAT, EGI, QUEST, the MOU with EGI will be finalized in the next months, and we are working over a MOU with EUDAT.

3.5. Other related events

Partners participate and meet at major international events in relation with the VERCE's activities, for updating, exchanging and dissemination purposes. Those meetings provide also opportunities to organize coordination meetings with other related projects, and make sure VERCE develops coherently with the Community's needs and wishes. A full and always updated list of these events is kept on the Redmine by WP4. Some examples are:

- 22-27 April 2012 **EGU General Assembly 2012**, Vienna, Austria. Participants: Jean-Pierre Vilotte (IPGP), M. Atkinson (UEDIN), A. Michelini (INGV), H. Igel (LMU), and T. van Eck (KNMI). In the session "SM1.4/G6.2/GI1.6 - Integrating large-scale European Research infrastructures for solid Earth Sciences: from data centers to core services", Poster.
- 13-16 May 2012, **Petascale Computational Geoscience Symposium Meeting**, Perth, Australia. Participants: H. Igel (LMU).
- 20-26 May 2012, **3rd QUEST workshop**, Tatranska Lomnica, Slovakia. Participants: H. Igel (LMU).
- 25-30 May 2012, **1st EPOS-NERA-VERCE-ORFEUS Coordination Meeting: Global Challenges for Seismological Data Analysis**, Erice, Sicily. Participants: I. Klampanos, M. Atkinson and P. Martin (UEDIN), JP. Vilotte (IPGP); T. van Eck, A. Spinuso (KNMI); L. Faenza, G. Soldati, A. Michelini (INGV); L. Krischer (LMU) and others. Presentations: "Data-intensive analysis and modelling" by JP. Vilotte, "Combining data- and modelling-intensive services" by M. Atkinson, other presentations by KNMI.
- 17-21 June 2012, **International Supercomputing Conference**, Hamburg, Germany. Participants: H. Schwichtenberg (SCAI); G. Erbacci (CINECA).
- 25-26 June 2012, **1st EUDAT Training Days - Building Blocks of Data Infrastructures**, Amsterdam Science Park, The Netherlands. Participants: M. Galea (UEDIN).
- 25-29 June 2012, **11th International Symposium on Parallel and Distributed Computing**, Munich, Germany. Participants: A. Frank (LRZ).
- 26 June 2012, **iRODS**, Lyon, France. Participants: G. Moguilny (CNRS).

- 2-6 July 2012, **SCI-BUS, SHIWA, and EDGI joint Summer School on Workflows and Gateways for Grids and Clouds**, Budapest, Hungary. Participants: G. Moguilny (CNRS).
- 4 July 2012, **Meeting with EGI**, Amsterdam Science Park, The Netherlands. Participants: M. Atkinson, A. Krause, I. Klampanos (UEDIN).
- 16-19 July 2012, **Open Science Data Cloud NSF PIRE Workshop - Knowledge Discovery from Complex, Heterogeneous Data Using Cloud Computing.** Participants: I. Klampanos, M. Atkinson and P. Martin (UEDIN). Presentations: "Data-intensive workflow languages (DISPEL)"; "Supporting Earth scientists with diverse requirements".
- 20 July 2012, **LRZ's SuperMUC Inaugurational Ceremony**, Munich, Germany. Participants: SH. Leong, A. Frank (LRZ).
- 19-24 August 2012, **ESC**, Moscow, Russia. Participants: Remy Bossu (EMSC), G. Moguilny (CNRS). Booth and new poster.
- 23-27 August 2012, EuroSciPy conference, Brussels, Belgium.
- 27-31 August 2012, **GridKa School 2012**, Karlsruhe, Germany. **Summer School,** participants**:** SH. Leong (LRZ).
- 17-19 September 2012 **EPOS PP Integration Meeting**, Prague, Czech Republic. Participants: Torild Van Eck (ORFEUS-KNMI), H. Schwichtenberg (SCAI).
- 17-19 September 2012 **EGI Technical Forum 2012**, Prague, Czech Republic. Participants: SH. Leong, A. Frank (LRZ), H. Schwichtenberg (SCAI). VERCE e-infrastructure (Research Infrastructures session), VERCE: data management use-case (EGI, EUDAT and PRACE workshop).

Other events for which the participation of VERCE representatives is already foreseen in the next months:

- 22-24 October 2012**, EUDAT**, Barcelona, Spain (presentation by M. Atkinson UEDIN)
- 10-16 November 2012, **Super Computing 2012**, Salt Lake City, USA
- 3-7 December 2012, **AGU Fall Meeting**, San Francisco, California, USA

4. Risk Management Plan

The PEB monitors the risk plan periodically. Each risk will be assessed in terms of likelihood and impact, and will be recorded in the Risks Register. This metric will allow defining a Risk Exposure factor, which will help to prioritize the different risks for management control. This dynamic document will be continuously reviewed and updated throughout the project in interaction with the different work package leaders.

The *Risk Likelihood* is a probability of occurrence. The adopted scale is: low, medium, high, and very high corresponding to a numerical value (1 to 4).

The *Risk Impact* estimates the potential cost in terms of effort sharing, budget and deliverables delay or achievement. The adopted scale is: weak, moderate, severe, and critical, corresponding to a numerical value (1 to 4).

The *Risk Exposure* is measured by a numerical value given by the multiplication of the Risk Impact and Likelihood, as explained by the diagram below. In the day-to-day management, the Project Manager and the Project Coordinator will maintain and continuously update a list of the highest exposure risks to be monitored by the PEB on a regular basis, with the contribution of the work packages that are most concerned. If the risk becomes an actual issue, the Steering Committee, together with the PEB, will take action according to the contingency plan.

Main risks that have been identified for VERCE are listed below according to the type of activity and responsibility.

Table 4 - Risk Matrix

Exposure	Likelihood				
Impact		Very High (4)	High (3)	Medium (2)	Low (1)
	Critical (4)	16	12	8	4
	Severe (3)	12	9	6	3
	Moderate (2)	8	6	4	2
	Weak (1)	4	3	2	1

Very high exposure High exposure Medium exposure Low exposure

4.1. Management Risks

M-1: Human resources shortage in the consortium

Owner: WP1, all WPs, Partners

Likelihood: medium

Impact: moderate (affecting all deliverables and the overall project architecture)

Description: The risk is associated to the human resources management (recruitment, changes and/or departure, skills and motivation, work load) at partner and work package level - especially those with temporary positions.

Mitigation Strategy: The risk will be continuously monitored both at work package and partner level to identify and prevent issues at an early stage, through close contacts with all VERCE partners, work package leaders, and the potentially involved persons. The monitoring will be carried out in priority at the partner's level and reported to the management, in close coordination with the Project Executive Board. To decrease the risk, continuous efforts at the partner and at the project management levels, must be put. Another component is to facilitate the integration and the visibility of the persons in and outside the project, with clear incentive responsibilities together with training and professional plan within and beyond the project. At the PM level, proposed mitigation actions may involve: shared recruitment channels, training, continuous monitoring of the recruitment/allocation process of each partner.

Contingency plan: This will follow a gradual approach according to the type and the expected impact of each issue. Corrective procedures will have first to be found at the level of the involved partner, with the help of the project manager and coordinator, and when needed of the IT deputy. These may include locally reallocating tasks, defining replacement and/or hiring plans with the help of the project management and other partners (training, job-shadowing…). When the involved partner cannot solve the issue in a reasonable time, reallocation of responsibilities (temporary or permanent) between the project partners, within the work packages, will be defined by the project Steering Committee in coordination with the Project Officer, in respect of the procedures foreseen by the Consortium Agreement. This may imply rescheduling some of the project activities, deliverables and milestones.

M-2: Partner losing interest, focus or leaving the Consortium

Owner: WP1, Coordinator

Likelihood: low

Impact: severe (affecting all deliverables and milestones, project architecture and responsibilities)

Description: One or more partners can lose focus or interest during the project, or become involved in too many parallel projects leading to internal difficulties in achieving the original planned implication in the project. Finally a partner may decide to leave the consortium. This may impact (temporary or permanently) the work package activities and the deliverables/milestones agenda.

Mitigation Strategy: While the existing working relationships between the partners of the consortium make this event very unlikely, the project management together with the Project Executive Board will monitor continuously this risk, through close contact with each partner. Continuous monitoring will help the project management to identify and prevent the risk at an early stage, and to reduce the impact on the project by reacting quickly and implementing the contingency plan. The mitigation plan includes: shared activities planning, fostering possible synergy at the partner and project levels with these parallel projects, and rescheduling some tasks accordingly, suggest corrective procedures at the partner level such as adding human resources to the project.

Contingency plan: This will follow a gradual approach according to the type and the potential impact of each issue, always starting from informal contacts by the project coordinator and/or manager who will invite the involved partner to solve this issue internally, offering help if needed. If no satisfactory solution is found at the partner's level, the Steering Committee, in coordination with the Project Officer if necessary, will define an action plan to be implemented. This may include: rescheduling some of the project activities and deadlines to allow additional recruitment, re-allocation of responsibilities and financial support between partners of the consortium, and ultimately finding a replacement partner. A likely delay on the overall progress of the project cannot be avoided but shall be kept to a minimum by contributing with additional resources from the remaining partners. The action plan will be defined respecting the procedures foreseen by the Consortium and Grant Agreement.

M-3: Strategic management human resources shortage

Owner: WP1

Likelihood: low

Impact: critical (affecting all WPs)

Description: Critical members of staff at the project coordination and project management levels, or in the project management office, become unavailable or leave due to unforeseeable circumstances during the life of the project. Change and/or recruitment of properly trained persons, and their rapid integration, during the project activity may be difficult and jeopardize the whole project. While for permanent personnel - at the CNRS-INSU and IPGP – in the Project Management Office and for the Project Coordinator, this is very unlikely, the risk is significantly higher for critical temporary personnel, like the Project Manager, even when recruited for the whole duration of the project. In contrast, the probability of permanent personnel becoming snowed under with other parallel projects and/or duties is higher.

Mitigation Strategy: While the long experience of the CNRS in leading large FP7 projects makes this event very unlikely, this risk will be continuously monitored at the project management level, in coordination with the Steering Committee, in order to react promptly. A first aspect of the mitigation strategy is to maintain permanent communication and knowledge across the project coordinator, the project manager and the PMO members; when possible share some of the Project Coordinator's tasks with other project management office members and other leading members of the VERCE consortium; maintain good documentation. The project manager is a critical staff for the project and is on a long-term temporary

contract (4 years). An important aspect to maintain continuous and close interactions between the project coordinator and the project manager; to define incentive training and responsibilities for the project manager, and agree on early notice clause in case of dismissal, and adequate wage and benefits.

Contingency plan: At the project coordination level, involve more or different inner human resources; work with the CNRS and the IPGP direction to possibly reallocate priorities and tasks for the project coordinator. At the PMO permanent personnel level, involve more or different inner permanent human resources provide continuous training and reallocate accordingly workload, react quickly if needed for exceptional inner recruitment procedures. At the project Manager Level define if needed a transition period, identify permanent personnel that can temporarily take over until a replacement is found, organize promptly a new recruitment process.

M-4: Lack of communication between partners – Emergence of silos or mutually exclusive requirements

Owner: WP1, all WPs, Partners

Likelihood: medium

Impact: moderate

Description: Different data- and CPU-intensive use-case scenarios and associated workflows, driving the VERCE developments and activities, will evolve at different speeds, imply different infrastructures and testbed components, and involve different geometries of collaboration between partners. This may lead to the emergence of silos, and of mutual exclusive requirements, with potential impact on the collaborative synergy and the achievements of VERCE.

Mitigation strategy: Continuous monitoring will allow detecting as early as possible and preventing this situation through regular meetings and teleconferences between the main work packages that are concerned, i.e., NA2, SA2, SA3, JRA1 and JRA2. Another component will be regular discussions with users and developers of the seismology community in Europe both through the mechanisms of the EPOS ESFRI project and in synergy with other related parallel European projects of the seismological community. Finally reports of the different work packages will be cross-reviewed; and collaborative work across the different work packages will be supported and organized within the project.

Contingency Plan: When silos or mutual exclusive requirements are detected, collaborative work will be restructured and supported by the project management in order to foster more discussions between users and developers in the seismology community and the IT researchers' and engineers' community within the project, and to collaboratively rephrase the requirements and the priorities. At this stage, specific meetings with other European projects in the framework of the ESFRI EPOS project may be organized in support.

4.2. Network Activities' Risks

NA-1: Science scenarios out of phase with seismology research community

Owner: WP2, Coordinator

Likelihood: low

Impact: moderate

Description: VERCE is driven by the applications of the seismology research community. Data- and CPU-intensive research methodology and practice evolve rapidly in a competitive international environment. The science scenarios and application use-cases must be therefore carefully selected and updated during the life of VERCE when needed for demonstrating the e-science environment and

facilitating its uptake by the seismology community and beyond by the EPOS community. The e-science environment may therefore become out of phase with the rapidly evolving research methodology and practice. The e-science environment developed in VERCE must therefore co-evolve continuously with the seismology research community.

Mitigation strategy: The established leading role of VERCE seismology partners and their strong involvement in international projects and well-known seismology committees insures that such problems during the life of the project can be detected rapidly and corrective procedures appropriately defined. Moreover continuous monitoring of the research methodology and practice will be performed through regular participation to international meetings, collaboration and synergy with other similar international projects in the US or Japan, and close ties to users and developers in data- and CPU-intensive seismology, in particular through the EPOS mechanisms. This will insure co-evolution of the e-science environment with the seismology research community needs and practice.

Contingency plan: When detected NA2 will, with the help of the project management, update and/or reformulate the science applications and the use-case scenarios in coordination with JRA1 and JRA2. This will help redefining the SA2 and SA3 priorities and strategy. To minimize the impact and potential delay on the overall progress of the project, science applications and use-case scenarios must be reviewed and reformulated when needed timely and incrementally with the help of the Project Executive Board and the Steering Committee.

NA-2: External community poorly aware or loses interest – little feedback

Owner: WP2, WP4

Likelihood: medium

Impact: severe

Description: The progress and the impact of VERCE as data- and CPU-intensive research multiplier rely on building trust and acceptance by external users and developers of the seismology research community and beyond by the solid earth research community. Losing the interest of the external community may strongly dim the impact of VERCE.

Mitigation strategy: The main strategy is to continuously monitor, review and adjust the different connection and feedback channels with the external community. Training activities must provide well-defined intellectual ramp in phase with the seismology user and developer research community of practice. Training sessions will be organized when possible in synergy with the seismology ITN project QUEST, and other infrastructure projects of the community like NERA, in the framework of the ESFRI EPOS project to reach the external community, in particular the young researchers, and get their feedback. A second is through dissemination of the training sessions, and a mix of training material and feedback channels, through the dissemination channels of EPOS and the portal hosted at the two non-profit seismology organisations of the project Consortium, i.e. ORFEUS and EMSC, which reach a wide community.

Contingency plan: Update and adjust the training and dissemination, improve the training material according to the review analysis and the feedback. Improve the synergy with the EPOS training and dissemination strategies; increase the synergy with the ITN QUEST project through well-targeted joint meetings, training and workshops that will allow exposing the e-science environment and tools to young researchers. Progressively open and ease the access and the use to the VERCE platform to a number of external projects through easy to use GUI embedded in the portal.

NA-3: Lack of impact through the dissemination activities

Owner: WP4, WP1

Likelihood: medium

Impact: moderate

Description: From the beginning of the project, a comprehensive set of targeted audiences has been identified and accordingly a comprehensive mix of communication strategies and channels set-up. Some of those channels and communication material may perform poorly dimming the visibility of VERCE.

Mitigation strategy: Continuous monitoring of the communication channels will allow detecting as early as possible those that are not performing well in order to adjust them accordingly. While the comprehensive mix of communication channels ensure that the inefficiency of some of those will dim the impact of the overall communication strategy, rapid correction measures must be adopted through a close interaction with the project management and in collaboration with other European and international related projects.

Contingency plan: When detected adjust dissemination strategy and dissemination material; improve synergy with the dissemination strategy of EPOS and other related projects in Europe; if needed increase temporarily the human resources committed to this activity in coordination with the Project Executive Board and the Steering Committee.

4.3. Service Activities' Risks

SA-1: Interoperability between software components: installation and configuration problems on the testbed sites

Owner: WP5, WP6

Likelihood: high

Impact: severe

Description: The testbed integrates distributed heterogeneous private and public resources and middleware environment. Resources may use different OS and software library versions that may not support or conflict with the platform tools to be deployed and configured locally. This will delay and/or impact the platform deployment at certain sites, and in turn the possible deployment of the scientific applications and use-cases scenarios across the testbed.

Mitigation strategy: Continuous close cooperation between WP5 & WP6, and rapid feedback from the system administrators of the different sites of the testbed in case of package conflicts or installation problems, should allow the solution of such issues. If not, corrective procedures in the component selection, testing and certification phase should be set up in order to minimize the impact on the project platform functionality and provided services. Tools to be deployed must be distributed with detailed documentation to allow recompiling them locally using when possible open/free software and compilers.

Contingency plan: When detected, corrective solutions, to be defined by the Project Executive Board and validated by the Steering Committee, may imply adaptation of the selected tools, and when not possible, or too time consuming, replacement and/or reduction of the number of tools to be deployed, after a careful analysis of the impact on the project infrastructure functionality with regard to the science applications and use-case scenarios requirements. While the delay associated to this risk cannot be avoided, close collaboration between the different work packages will allow defining a strategy driven by the scientific applications and minimizing this delay.

SA-2: Breakdown of the standardization process, e-infrastructures evolution

Owner: WP5, WP6, WP9

Likelihood: medium

Impact: severe

Description: During the lifetime of the project, the underlying public and private e-infrastructures may change, new technologies may emerge and standardization evolves. This may imply to adjust components of the architecture, of the middleware stack of the platform introducing delays and temporary services interruption.

Mitigation strategy: While the flexibility and the architecture of the e-science environment is designed to make it resilient to such changes, the strong involvement and the rich experience of several partners in established and well-known standardization and e-infrastructure committees will ensure that problems during the progress of the project will be detected early and counteracted in an appropriate way. The project is also establishing MOUs with the main e-infrastructure (i.e., EGI, PRACE, EUDAT) and middleware projects (i.e., IGE, EMI) to anticipate those changes and to develop the right channels for expressing the needs of the project.

Contingency plan: This will follow a gradual and flexible approach addressing first the most critical functionalities of the architecture and of the platform to minimize the service interruption, and when possible build temporary wrappers for some components.

SA-3: Software components to fulfil functional requirements from scientific applications and users not ready or not provided for installation

Owner: WP5, WP7, WP9

Likelihood: medium

Impact: moderate

Description: Missing or unstable functions may influence the deployment of the scientific applications and of the use-case scenarios; and trust and acceptance of the project e-science environment and platform by users and developers. This will dim the impact of the project as data- and cpu-intensive research multiplier.

Mitigation strategy: Process of software components adoption, testing and integration will be constantly monitored by WP6 and WP9 in close collaboration with WP2 and WP8, and ultimately at the Project Executive Board and project management levels. Possible problem will be immediately reported to find possible solutions and minimize the impact to the project plan.

Contingency plan: Help WP6 and WP9 to assess the problem and feed back to the developers how to increase the stability. This will follow a gradual and flexible approach exploring possible temporary solutions like building wrappers to the unstable components limiting their usage to the only stable functionality, reschedule the provision of some functionalities in close collaboration with WP2 and WP8 in order to adapt some of the use-case scenarios and/or scientific applications.

4.4. Research and Development activities' Risks

JRA-1: Prioritized applications and use-case scenarios not in production

Owner: WP2, WP8

Likelihood: medium

Impact: moderate

Description: Some of the prioritized data-intensive and CPU-intensive scientific applications may not be at a production stage. Processing and analysis library tools, simulation and/or inversion codes may not be in a state to be integrated into a workflow environment and/or on the platform. This might be related to programing model, interface standardization, level of documentation, modularity and interface standardization, scalability, open-source licensing policy, lack of support from the developers. This will impact the scientific output of the use-case scenarios. This will also impact on the development of the platform functionalities and on the overall project plan diming the interest of the community.

Mitigation strategy: The applications, codes and libraries, will be continuously monitored in terms of their availability, implementation level, performance and scalability in collaboration between WP2 and WP8. Priority will be given to the pilot applications that fulfil the criteria to successful deployment on the project infrastructure. While this quite unlikely, close connection with the developers will be developed in order to minimize this problem. Synergy PRACE, and the HPC centres contributing to it, for the CPU-intensive applications will allow prioritizing applications already supported in this context and ported on different HPC architectures. Synergy with ERC project WHISPER will allow taking benefit of the software developments around data-intensive applications.

Contingency plan: Investigate other available open-source software and libraries developed in the community with a well-identified user community, prioritize them and include them in the scientific applications and use-case scenarios to be integrated on the project platform.

JRA-2: European e-infrastructure development fails to be ready in the project timescale

Owner: WP9, WP6

Likelihood: low

Impact: severe

Description: VERCE depends on a working environment of the e-infrastructure providing consistent digital access, authentication, authorisation, accounting, data storage, data movement… Delay or failure to achieve those services and functionalities will impact on the project plan and achievements. The immediate consequence is that VERCE will need to invest more time and effort into work-arounds and this would inevitably reduce the quality of the user and developer experience, performance and automated workflows. In the longer term it would make VERCE a less useful prototype of the e-science environment for EPOS, since such inconsistencies or incapacities in the underlying e-infrastructure must be fixed in time for the RIs becoming operational.

Mitigation strategy: The linked between VERCE and other projects like GEANT, PRACE, EGI and EUDAT will facilitate the communication of requirements. The strong involvement of several partners in those projects will help in developing a close synergy and that problems can be detected rapidly. Collaborations with other international projects, like in the US and Japan, will also help in exploring other strategies.

Contingency plan: Work around the hopefully small number of inadequacies in the deployed underlying e-infrastructure for as long as possible, make efficient use temporary of private infrastructures, and possibly adapt some of the applications in order to hide these inadequacies.

JRA-3: The R&D is overtaken by a new technology and architecture for multi-scale, data & compute intensive distributed computing

Owner: WP9, WP1

Likelihood: low

Impact: moderate

Description: The project is interested in the current RESTful web-services architectures, Service-Oriented Architectures with local, national and European provided facilities. Similar developments in the USA and Asia could develop momentum based on a different organisational model. This could sweep across Seismology and the solid Earth sciences as a result of greater investment. The impact is that the project will need to re-engineer aspects of its e-infrastructure and modify working practice.

Mitigation strategy: Maintain effective communication with relevant seismology and IT R&D leaders and analyse their output at conferences to assess the threat. Use meta-modularisation in the architecture so that impact can be localized. Through EPOS, contribute to European-USA related initiatives and to collaboration with related Asian initiatives, especially in Japan and China.

Contingency plan: Evaluate when a threat emerges as to whether VERCE should change at this time or wait until the different technology is better established or proves a damp squib. Once a revision is chosen, design the most effective path for its adoption.

5. Next steps

During the next 6 months the PMO will finalize the Risk Register and complete the risks' analysis and will provide a first Register's revision as explained above. This may be carried out either with a detailed survey or through individual talks with involved partners.

During the next 6 months, it will also focus on the drafting of a Sustainability Plan as asked by reviewers during the first Project Review.

It will keep coordinating and monitoring partners' contribution and project's activities making sure they are coherent with the DoW but also guaranteeing the needed flexibility to adapt to research developments, Community changing needs and collaboration with other projects.

The PMO will make sure all deliverables (and milestones) and administrative reports are ready for the next Project Review in 2013.

Glossary and Links

AGU	American Geophysical Union http://sites.agu.org/
AXISEM	A parallel spectral-element method - http://www.seg.ethz.ch/software/axisem
BADW-LRZ	The Bavarian Academy of Sciences and Humanities - Leibniz Supercomputing Centre - http://www.lrz.de/english/
cross-correlation	In signal processing, cross-correlation is a measure of similarity of two waveforms as a function of a time-lag applied to one of them.
data	Any digitally encoded information that can be stored, processed and transmitted by computers. Includes text files, database records, images, video sequences and recordings. In seismology, it is customary to refer to data as those digital values acquired by the pair seismometer/data-logger deployed in the field which is recording the ground motion object of the analysis.
data archive	The long-term storage of scientific data and methods.
data integration	The process of combining data residing at different sources and providing the user with a unified view of these data. This process emerges in a variety of situations both commercial (when two similar companies need to merge their databases) and scientific (combining research results from different repositories) domains.
data mining	The process of automatically extracting patterns from data using techniques such as classification, association rule mining and clustering.
data-analysis expert	An expert in building or using knowledge discovery methods in a data-rich environment. In the context of VERCE, for example, they build libraries, such as ObsPy or workflows, such as cross-correlation or visualizers, such as SDX.
data-intensive	An adjectival phrase that denotes that the item to which it is applied requires attention to the properties of data and to the ways in which data are handled.
data-intensive applications	Data-intensive applications are those that are used to process large volumes of data typically of the order of terabytes or petabytes in size and referred to as Big Data. They require large volumes of data and devote most of their processing time to I/O and manipulation of data.
data-intensive computing	Computing that necessitates attention to any relevant property of data, including their volumes, distributed locations, and the heterogeneity of their formats and storage structures.
distributed computing	The collective use of distributed resources, including data and applications, to solve a computational problem.
DoW	Description of Work
e-Infrastructure	The ICT element of a research infrastructure, i.e.~a distributed collection of data, storage and compute resources, interconnected by digital communications and organised to serve a common research purpose. It includes the hardware, software, middleware, staff, operational procedures and policies needed to make it operate for that purpose, and requires maintenance to function in the evolving digital environment and to meet the changing needs of its user communities.

Dispel	Data-Intensive Systems Process Engineering Language, a workflow composition language for data-intensive applications.
EDGI	European Grid Initiative (http://edgi-project.eu)
EGI	European Grid Infrastructure - http://www.egi.eu
EGU	European Geophysical Union, www.egu.eu
EMSC	Euro-Mediterranean Seismological Centre
EPOS	European Plate Observing System is an ESFRI approved infrastructure currently in its preparatory phase, EC funded (http://www.epos-eu.org).
ESFRI	European Strategy Forum on Research Infrastructures.
EUDAT	EUropean DATa is a project currently funded by the EC for the development of the Common Data Interface (http://www.eudat.eu).
F2F	Face-to-face
FP7	Seventh Programme Framework
gateway	A software subsystem, typically at the middleware level, that accepts requests for computational and data-handling tasks. It vets those requests to establish whether they are valid, e.g.~are syntactically and semantically consistent, and are authorised. Requests that are not validated are rejected. Requests that are accepted are passed to other software systems, at the same or other locations, for execution. The gateway may partition and translate requests in order to combine heterogeneous services.
Globus	A Middleware for Grid Computing developed by the Globus Alliance - http://www.globus.org
Globus Toolkit	Open source software toolkit used for building grids - http://www.globus.org/toolkit/
grid	A system that is concerned with the integration, virtualisation, and management of services and resources in a distributed, heterogeneous environment that supports collections of users and resources (virtual organisations) across traditional administrative and organisational domains (real organisations).
GridFTP	Grid File Transfer Protocol, an extension of the standard FTP for use with grid computing.
GUI	Graphical User Interface
high-performance computing (HPC)	Use of powerful processors, high-speed networks and parallel supercomputers for running computationally intensive applications.
IGE	Initiative for Globus in Europe
INCA	Periodic, automated, user-level testing of Grid software and services - http://inca.sdsc.edu/drupal
INGV	Istituto Nazionale di Geofisica e Vulcanologia
iRODS	Integrated Rule-Oriented Data-management System - https://www.irods.org/
ITU	International Telecommunication Union
JRA	Joint Research Activities

JRA1	Equivalent to Work Package 8 (WP8)
JRA2	Equivalent to Work Package 9 (WP9)
LMU	Ludwig-Maximilians-Universitaet Muenchen
LRZ	Leibniz-Rechenzentrum
metadata	Data that describes data. Metadata may include references to schemas, provenance, and information quality. In Seismology, metadata may also refer to data required in order to sanitise a seismograph's response.
MoU	Memorandum of Understanding
NA	Network activities
NA1	Equivalent to Work Package 1 (WP1)
NA2	Equivalent to Work Package 2 (WP2)
NA3	Equivalent to Work Package 3 (WP3)
NA4	Equivalent to Work Package 2 (WP2)
NERIES, NERA	Seismological I3 projects supported by the EC http://www.nera-eu.org/
NGI	National Grid Initiatives - http://www.egi.eu/about/ngis
ObsPy	A Python framework for processing seismological data. http://obspy.org/
OGSA	Open Grid Services Architecture supported by Globus. - http://www.globus.org/ogsa
OGSA-DAI	Open Grid Service Architecture Data Access and Integration, an open source product for distributed data access and management.
ontology	In computer science, a formal explicit specification of a shared conceptualisation.
ORFEUS	Observatories and Research Facilities for European Seismology.
PDCA	The Plan-Do-Check-Act cycle - http://labspace.open.ac.uk/mod/resource/view.php?id=346003
PEB	Project Executive Board
Pilot application	Main software routine within a use-case (e.g., the cross-correlation analysis in the use-case addressing the velocity variations of the Italian peninsula crust properties).
PMO	Project Management Office
Portal	In the context of knowledge discovery, a tool designed for a particular group of domain experts that can be used via their browsers; it enables them to establish their identity and rights, and to pursue conveniently a set of research tasks for which the portal is designed.
PRACE	Partnership for Advanced Computing in Europe - http://www.prace-project.eu/
pre-processing	One or operations performed on the observed data to prepare the latter for the analysis and/or for performing quality control checks.
processing element -- PE	A software component that encapsulates a particular functionality and can be used to construct a workflow.

QUEST	Quantitative Estimation of Earth's Seismic Sources and Structure
RAPID	Rapid portals for Seismological Waveform Data - http://research.nesc.ac.uk/node/423
Redmine	Project management web application - http://www.redmine.org
Registry	A persistent store of definitions and descriptions of data or software components and their relationships accessed by tools and other elements of a distributed research environment. It is intended to facilitate discovery and use of the components.
RegSEM	A Spectral Element Method code to compute seismic wave propagation - http://www.ipgp.fr/~paulcup/RegSEM.html
repository	A store holding software definitions, other shared code and data, that supports distributed concurrent access, update and version management.
Research Infrastructure	The collection of equipment, resources, organisations, policies and community support that enables a particular discipline to conduct research. Normally, this refers to the advanced facilities that enable frontier research, such as the research infrastructures endorsed by ESFRI.
SA	Service Activities
SA1	Equivalent to Work Package 5 (WP5)
SA2	Equivalent to Work Package 6 (WP6)
SA3	Equivalent to Work Package 7 (WP7)
SCALASCA	A software tool that supports the performance optimization of parallel programs by measuring and analysing their runtime behaviour
SCI-BUS	SCIentific gateway Based User Support (http://www.sci-bus.eu)
SHIWA	Sharing Interoperable Workflows for large-scale simulations on Available DCIs - http://www.shiwa-workflow.eu/
science gateway	A consistently presented set of facilities designed to be a convenient working environment for researchers in a particular domain, in this case seismology. It should bring together access to all of the capabilities and resources such a researcher needs: including catalogues of available data and tools, established methods and arrangements for applying them with specified parameters to specified data.
SeisSol	A simulation software based on the Discontinuous Galerkin Finite Element Method - http://www.geophysik.uni-muenchen.de/~kaeser/SeisSol/
SEM	Spectral Element Method wave propagation
SES3D	Programme package for simulation of elastic wave propagation in a spherical section and the computation of Frechet kernels - http://www.geophysik.uni-muenchen.de/Members/fichtner/ses3d
SHIWA	Sharing Interoperable Workflows for large-scale simulations on Available DCIs - http://www.shiwa-workflow.eu/
SPECFEM3D	Simulation software code based on the spectral-element method for 3D seismic wave propagation in sedimentary basins or any other regional geological model - http://www.seg.ethz.ch/software/specfem3D

SC	Project Steering Committee
SuperMIG/SuperMUC	The name of a new supercomputer of the LRZ
UEDIN	The University of Edinburgh
Use-case	In software and systems engineering, a use-case is a list of steps, typically defining interactions between a role and a system, to achieve a goal. The actor can be a human or an external system (cf. http://en.wikipedia.org/wiki/Use_case). In VERCE it is assumed to represent the entire scientific application (e.g., analysis of the noise cross-correlation of the Italian seismic networks for 6 years period to detect temporal variations of the Crust material properties)
VERCE architecture	A high-level and coherent design for the VERCE e-Infrastructure; it evolves as the seismological goals and digital environment evolve and become better understood. It should guide the development of successive VERCE platforms.
VERCE e-Infrastructure	An envisaged result of VERCE, as an integrated computational and data environment that presents a coherent virtual research environment in which to conduct seismology research and eventually research in other Earth sciences.
VERCE Platform	The current realisation of the VERCE e-Infrastructure at any time in the VERCE project. Initially this is not fully integrated and may only constitute a partial implementation. Nevertheless, it is sufficient both to pursue research identified as priority seismology use-cases and to develop and test the design of the VERCE e-Infrastructure. The VERCE platform is an approximation to the VERCE e-Infrastructure. These approximations should converge on the VERCE e-Infrastructure by the end of the VERCE project.
virtual research environment (VRE)	A presentation of (ideally all of) the resources a researcher may need in a consistent and easily used form. These resources include catalogues, data, metadata, libraries, tools, workflows, programs, services, visualisation systems and research methods.
VOMS	Virtual Organization Membership Service - http://www.globus.org/grid_software/security/voms.php
workflow	A process of composed data-handling tasks, computational tasks and human interactions intended to implement a research method or established working practice.
WP	Work Package
WP1	NA1
WP2	NA2
WP3	NA3
WP4	NA4
WP5	SA1
WP6	SA2
WP7	SA3
WP8	JRA1
WP9	JRA2

WP leader	The institution that has the responsibility for a certain WP, not the single person. e.g. NA1 leader is CNRS
wrapper	A design pattern where a piece of code allows computational or data-handling components to work together that normally could not because of incompatible interfaces.