



VRE4EIC

A Europe-wide Interoperable Virtual Research Environment to Empower Multidisciplinary Research Communities and Accelerate Innovation and Collaboration

Deliverable D6.1

Engagement and Training Plan – First version

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VRE4EIC DELIVERABLE

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What is VRE4EIC?

VRE4EIC develops a reference architecture and software components for VREs (Virtual Research Environments). This e-VRE bridges across existing e-RIs (e-Research Infrastructures) such as EPOS and ENVRIPIUS, both represented in the project, themselves supported by e-Is (e-Infrastructures) such as GEANT, EUDAT, PRACE, EGI, OpenAIRE. The e-VRE provides a comfortable homogeneous interface for users by virtualising access to the heterogeneous datasets, software services, resources of the e-RIs and also provides collaboration/communication facilities for users to improve research communication. Finally it provides access to research management /administrative facilities so that the end-user has a complete research environment.

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1 Introduction

The VRE4EIC project aims at making it easier for researchers to reuse heterogeneous scientific datasets from multiple disciplines. The aim of a Virtual Research Environment (VRE) is to assist researchers in their work by providing access to resources and technical infrastructures and assisting interaction among researchers¹. The e-RIs today are heterogeneous and include a range from none to some features of a VRE.

The project will deliver a VRE reference architecture, a reference implementation, and prototypes for specific e-RIs (EPOS and 20 others in the cluster of ENVRI^{Plus}), thus removing barriers of existing VREs and providing a single point of homogeneous access to heterogeneous data and tools that support data reuse. The reference architecture and prototypes to be used for future VREs, will include building blocks that can be used to improve and thus enable retrofit of existing platforms/e-RIs to the proposed architecture, or as a guideline for establishing new e-RIs. Requirements increase continually and VREs cannot always satisfy the demand. The architecture has to be flexible to accommodate this.

A VRE should be easy to use and should provide: a unified access to resource, information on datasets and software that are used or can be expected, information through metadata about the e-RI, access to all sources relevant to data, cooperation between researchers by collaborative tools².

An important characteristic of VREs is that they allow for the generation of new scientific results by facilitating collaboration between scientists³. Considerable attention of VRE development should therefore be paid to community building aspects⁴.

It is considered a challenge to encourage end-users to move from the known e-RI and embrace an enhanced or new one. Thus the end-user engagement and training are considered critical for the successful adoption of the VRE architecture and prototypes developed in this project. Since user engagement and training require careful planning and thorough preparations, a separate task is devoted to the user engagement and training plan. This is the task of T6.1. There will be two deliverables, being two versions of the plan, the first at M6 and the second at M24.

The engagement and training activities that will be organised (e.g. engagement and training documentation, workshops, online courses, presentations) will be described. There will be allocated specific dates for the training events. The engagement of users/stakeholders (Section 2.1) have to be taken continuously into consideration. The importance of this is taken seriously in this project.

 $\frac{\text{http://webarchive.nationalarchives.gov.uk/20140702233839/http://www.jisc.ac.uk/whatwedo/programmes/vre.aspx}{\text{re.aspx}}$

https://www.surf.nl/binaries/content/assets/surf/en/knowledgebase/2010/Collaboratories+Connecting+Researchers9april.pdf, Collaboratories: Connecting Researchers, SURFfoundation

¹ See

² Result of discussion at VRE4EIC project kick-off meeting October 2015 Rome

³ See http://eprints.soton.ac.uk/263961/, De Roure, David and Goble, Carole (2007) myExperiment – A Web 2.0 Virtual Research Environment. In, International Workshop on Virtual Research Environments and Collaborative Work Environments, Edinburgh, UK

⁴ See

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A plan is designed to define:

- (a) How to engage the relevant communities;
- (b) How to provide them with relevant information (this links to dissemination activities in WP7);
- (c) How the project partners who will give the training sessions (i.e. the 'trainers') to the relevant communities will be trained;
- (d) How the training will be delivered (e.g. face-to-face, online courses such as online training, cooperative working environment...);
- (e) Initial ideas on how the engagement and training activities should be evaluated (to prepare for an integrated approach to D6.2 Engagement and Training Evaluation Plan).

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2 Engagement and Training

A major challenge is engaging the potential users of the e-VRE (e-Virtual Research Environment) developed by VRE4EIC to utilise the system in their work. The user categories are described (Section 2.1). While the major user group are researchers utilising the e-VRE to access e-RIs, there are also commercial VRE developers and ICT VRE researchers developing new technologies.

Reaching 70,000 researchers and convincing them to start using the VRE4EIC approach can be a barrier for the public exploitation of the project. The project therefore involves partners with considerable experience in the adoption of new technologies, as well as partners who have experience in training researchers to use technologies, and partners who have access to large networks of researchers.

The development of dissemination, engagement and training plans reduces the risks that these challenges bring along.

Thus a key aspect of planning for engagement and training is to ensure the impact of VRE4EIC is achieved.

The complete table of expected impacts as defined in the DoW is reproduced below. Whilst all goals require engagement for their impact to be achieved those relating specifically to training are highlighted in bold

Impact goals e- infrastructures call	VRE4EIC impact	Measurable objectives
More effective collaboration between researchers	More effective collaboration between researchers from various research domains, including all the research domains mentioned in Table 3 and beyond	 - 70,000 researchers targeted as potential end-users - Many targeted research domains addressing societal challenges (see Table 3 for the exact domains) - 25 real use cases which enhance collaboration between researchers from these domains - 15 new high quality software services which stimulate collaboration between researchers - 75% of the end-users involved in the evaluations convinced that the VRE4EIC architecture and the prototypes enable researchers to work more effectively compared to existing VREs - Effectiveness to be tracked through log data (taking due account of privacy aspects) - Collaboration with the 43 related projects mentioned in Table 3 (and their communities), and with at least 10 additional relevant related projects (e.g. INFRADEV-4-2014/2015 projects)

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Impact goals e- infrastructures call	VRE4EIC impact	Measurable objectives
Higher efficiency and creativity in research	More research efficiency and creativity through the integration of datasets, innovative software services, publications and other resources	 - Access to data from many research domains at one single place, stimulating multidisciplinary research which leads to new insights (see Table 3) - Integration of 15 innovative high quality software services, 10,000 datasets, and their related publications - 75% of the end-users involved in the evaluations convinced that the VRE4EIC architecture and prototypes enable researchers to work more efficiently compared to existing VREs - Efficiency to be tracked through log data (taking due
Higher productivity of researchers	Higher productivity of researchers by offering better access to datasets, software and publications, contributing to better data utilization	account of privacy aspects) - Enhancing existing VREs by integrating existing software services with 15 new high quality software services - Access to 10,000 datasets and their related publications - Higher productivity through collaboration among researchers from different research domains - 75% of the end-users (researchers) involved in the evaluations convinced that the VRE4EIC architecture and prototypes support higher productivity of researchers compared to existing VREs - Productivity to be tracked through log data (taking due account of privacy aspects)
Accelerate innovation in research via an integrated access to potentially unlimited digital research resources, tools and services across disciplines and user communities	Accelerate innovation by providing access to a VRE that goes beyond state-of- the-art VREs, integrating various resources and enabling researchers to conduct excellent research	 Use of accepted metadata and architecture standards for VRE development Development of three prototypes: 1 canonical prototype applicable to different multidisciplinary domains, and 2 domain-specific prototypes for the EPOS and ENVRI projects which demonstrate the applicability of the canonical prototype in different research domains VRE canonical prototype available in all EU28 countries and additional countries covered by the project partners, available in at least 5 languages Contributing to standards development for improved VREs by participation in RDA and W3C working groups, and by setting up a W3C Community Group 4 commercial associate partners (SMEs) involved in the project to bring practical knowledge and experience to the project (as well as a conduit to commercial exploitation) Integrated access to 15 new high quality software services, 10,000 datasets, their related publications and other resources across many disciplines and user communities (see Table 3 for the disciplines) Of all researchers reached, at least 10% will use the VRE and/or training material provided by the project

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Impact goals e- infrastructures call	VRE4EIC impact	Measurable objectives
Enable researchers to process structured and qualitative data in virtual and/or ubiquitous workspaces	Help researchers to process structured and qualitative data in the improved VRE	 VRE learning environment and training material for the use of the VRE focused on different types of end-users with various data use skills VRE learning environment and training material in at least 5 languages, distributed through partners, free for end-users (i.e. researchers) Development of advanced dissemination and engagement strategies
Contribute to increased take-up of collaborative research and data sharing by new disciplines, research communities and institutions	collaborative research and data sharing among 5 research domains and beyond	 Communities, building blocks and VRE last after the project ends 4 commercial associate partners (SMEs) involved to exploit the project results Exploitation plan for the VRE architecture and the canonical prototype, using knowledge of the 4 associated partners A competence centre to disseminate the innovate services (open source) Strategies containing conditions under which data can be shared and handling privacy, security and trust issues VRE knowledge in different research domains and countries 25 scientific publications by the project partners

Impact is assured if the project attains successfully community engagement in all phases. Community engagement works best where it is an ongoing cumulative process enabling relationships and trust to build and strengthen over time. Individual engagement events should be planned and designed with this in mind and aim to contribute to the overall aims of the engagement process.

Agreeing a clear purpose will help identify engagement objectives, anticipated outcomes and help to determine the scope and depth of the engagement. This can range from consultation to involvement in decision making through to community and voluntary groups delivering projects and services. Providing information on proposals, plans or services is part of any communication plan to support engagement but is not in itself community engagement⁵.

⁵ See http://www.communityplanningtoolkit.org/sites/default/files/Engagement.pdf

2.1 Objectives

This deliverable describes the plan for engagement and training. This has several objectives:

- Identifying the relevant communities and their key individual organisations and persons;
- 2. Defining the engagement and training opportunities and modalities;
- 3. Planning the structure and content of those activities;
- 4. Delivering the activities;
- 5. Obtaining feedback on the activities in the form of evaluation;
- 6. Improvement of the activities.

2.1.1 Community Identification

The identification of communities will be done by using the networks of contacts of the partners, especially euroCRIS and ERCIM. Key targets will be existing e-Research Infrastructures such as those in the ESFRI Roadmap. The consortium includes already representatives of EPOS and ENVRIPIUS and via those members, further contacts among ESFRI projects exist. Additionally, many ERCIM and euroCRIS member organisations are considering or implementing VREs and their input will be critical for ensuring VRE4EIC delivers an appropriate architecture. It is expected that from the ESFRI projects and other VRE-related research activities some individual persons will be identified who will keep in close contact with VRE4EIC and become nodes for engagement and training in their project or organisation.

Target groups:

- VRE users. The main target group of the VRE4EIC project comprises researchers as VRE users.
 A variety of VRE user researchers will be addressed, including academic and governmental researchers, research managers, educators, students, innovators, entrepreneurs and the interested citizen.
- **VRE developers.** VRE developers that will be targeted can be commercial (large IT companies, SMEs, entrepreneurs) and non-commercial (universities, not-for-profit organisations, foundations, VRE related projects).
- **Scientific VRE researchers.** This target group includes academics who conduct research on VREs, for instance on VRE components and VRE communities.
- **VRE data publishers.** This category encompasses publishers who wish their data to be available to VRE users. Data publishers include research institutions and archives, universities, governmental organisations, various researchers and other data publishers.
- Others. This category covers other potential target groups, such as journalists, educators and students, although these groups are not key to the project.

These five target groups may overlap. For example, data publishers can also be VRE users. The target groups will be targeted especially in the domains of earth and environmental sciences related to other sciences (e.g. social sciences, humanities, life sciences, physics and other domains), as well as in the other domains

VRE4EIC users will be registered with the VRE4EIC website. By this means information on engagement and training events and materials can be appropriately made known using email and social networks.

However, the project will also disseminate its results to communities beyond these user groups as opportunities and/or demands arise.

2.1.2 Defining Modalities

With an ambitious target of 70,000 contacted users the modalities for engagement and training will have to be chosen carefully to optimise the engagement and transfer of skills utilising the relatively limited resources of the project. Thus the plan is based heavily on online modalities (website, online training) although face to face engagement and training is very much part of the plan. This activity links closely also with dissemination activities (WP7). The modalities intended to be used are as follows:

a. Face-to-face engagement and training activities

This modality is utilised mainly for specific high-impact target groups, for engaging potential exploitation channels (the AUG (Associated User Group)) and for 'training the trainers'

- i. Engagement; mainly through traditional dissemination channels;
- ii. Training; specific events for key user groups where the benefit of face-to-face training outweighs the costs (e.g. workshops);

b. Website

This modality is used for initial engagement (being cited from other sources or appearing on searches), for stakeholders interested in following the development of the project and influencing it and as reference information and materials for self-training

- Engagement: the website provides passive information for engagement but community users may be attracted and registered by appropriate registration of interest;
- ii. Training; the main website of the project will provide only basic information for training. However, it will list training opportunities so that users may register for those activities;

c. Online

This modality is used for user groups where engagement and training are required 'as a package' and will be targeted dominantly at researchers who will utilise a VRE for their everyday work

- i. Engagement; engagement will be achieved together with training by the use of online education:
- ii. Training; the use of online education will provide massive access to training for users at relatively low cost and also encourages engagement through the various feedback mechanisms. TU Delft has extensive experience with online education.

2.1.3 Content and Structure

The structure and content of the engagement and training courses is envisaged as follows:

- Introduction to VREs: a course delivered either face-to-face or through online education
 which explains the purpose of VREs, how they relate architecturally to e-Research
 Infrastructures and e-Infrastructures and how they assist various user groups;
- 2. **The architecture of VRE4EIC, its components and interfaces**: a course delivered either face-to-face or through online education aimed at VRE constructors and implementers on how to utilise the outputs of VRE4EIC;
- 3. **How to use VRE4EIC**: a course piloted with EPOS and ENVRI^{Plus} users delivered through face-to-face and online education modalities to encourage the users to access the e-Research Infrastructure facilities via the VRE prototype developed in VRE4EIC;

Detailed structure and content will be developed during the project based on (a) requirements and use cases which indicate what is required and (b) the development of the architecture providing appropriate facilities.

Building the content around use-cases is very important as it is probably the most appealing way to engage existing / future users.

2.1.4 Delivery

The expected delivery mechanisms are face-to-face sessions and online education. These events will be advertised on the VRE4EIC website and promulgated through the various dissemination mechanisms of VRE4EIC.

2.1.5 Feedback

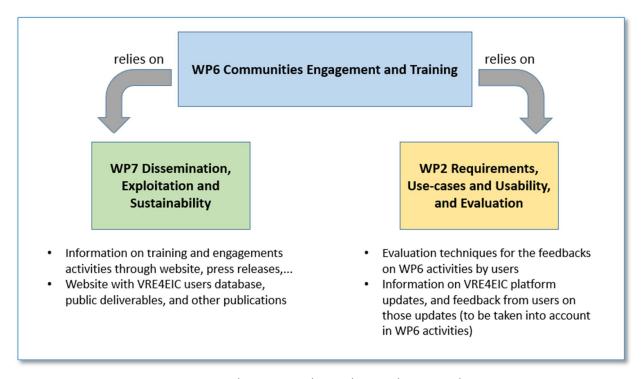
An important aspect of engagement especially is feedback and of course feedback is required to improve any training activity. Within the WP6 and coordinated with the evaluation activities concerning the VRE4EIC platform a set of evaluation criteria and pro-formas will be designed and implemented with each activity.

2.1.6 Improvement

Based on the feedback, and ongoing developments both in the techniques and technology of engagement and training VRE4EIC will follow a policy of continuous improvement. In order to ensure governance and management improved activities will be versioned and dated to ensure accurate relationship of feedback to version of the activity.

2.2 Relationship of WP6 to WP7 and WP2

This is best expressed diagrammatically indicating the dependencies between these WPs.



Engagement and Training Relationships with WP7 and WP2

WP6 relies on WP7 for the website providing (a) information on training and engagement activities, (b) the website having associated with it a database of VRE4EIC users (c) the website having a list of deliverables that are public with URLs to the full documents; (d) the website having a list of publications produced by VRE4EIC with URLs pointing to the full documents.

WP6 relies on WP2 for (a) optimal evaluation techniques for the feedback on WP6 activities by users; (b) information on VRE4EIC platform updates and feedback from users on those updates which has to be taken into account in improving WP6 activities. The important input provided by WP2 are the usecases, around which the engagement and training activities content will be built, to better engage the participants, and around which, also, specific *User Groups* can be built.

3 Planning

To meet the objectives planning (this deliverable) it is essential not least to ensure that the relatively small costs within the project leverage greater benefits in the communities.

The overall direction of meeting the objectives has been outlined above.

Key aspects throughout the planning of engagement and training are:

- Identification of key persons with interest and ability to act as local nodes for their project / e-Research Infrastructure / organisation acting as ambassadors for the concept of VRE and recruiting beta users⁶ (see below);
- 2. **Identification** within each project / e-Research Infrastructure / organisation of **beta users** who are willing to test and utilise the engagement and training activities (and subsequently the prototype e-VRE platform) and provide feedback that can be used for improvement;

The actual delivery will be achieved, as indicated in the section on Objectives, by face-to-face events and online education backed up by documentation and engagement opportunities on the project website.

3.1 Approach

3.1.1 Provide Opportunities

The project website will make available the opportunities for persons and organisations to engage with VRE4EIC. As indicated under objectives, VRE4EIC will provide multiple modalities for engagement and training. The users of these activities will be registered so that they can be kept informed directly (by email and social networks) of VRE4EIC activities and developments and to record the reach of the VRE4EIC engagement and training.

3.1.2 Invite Participation

The VRE engagement and learning environment, and the training material for the use of the e-VRE, focus on different types of end-users with various data use skills.

The use of ambassadors and beta users should ensure a 'pyramid' approach — where the project team training 1 person leads to that person training 10 or more - to engagement and training (this is more efficient and scalable than a flat approach where the project team would have to train everybody). The VRE4EIC user's database will track participation in engagement and training activities and allow rapid and effective dissemination of information about VRE4EIC opportunities and developments.

⁶ **Beta test:** Second level, external pilot-test of a product (usually a software) before commercial quantity production. At the beta test stage, the product has already passed through the first-level, internal pilot-test (alpha test) and glaring defects have been removed. But (since the product may still have some minor problems that require user participation) it is released to <u>selected customers</u> for testing under normal, everyday conditions of use to spot the remaining flaws. (Source: http://www.businessdictionary.com/definition/beta-test.html#ixzz3zsWHEIDs) The selected customers are called beta users.

3.2 Prepare and Execute

The preparation has three aspects:

- preparing the material for engagement and training activities, using information from requirements and use-cases collected within VRE4EIC and also knowledge of the communities and their various project / e-Research Infrastructure / organisation and their requirements;
- 2. training the trainers: this involves VRE4EIC project staff and also the ambassadors described above;
- 3. preparing the delivery mechanism whether a venue for a face-to-face event or appropriate times for an online education event to be available;

Once all the above are in place the engagement and training can begin in earnest. Of course, using the dissemination mechanisms of VRE4EIC and the contacts established with the various projects / e-Research Infrastructures / organisations, preparatory groundwork will have been achieved to ensure some knowledge of the existence of VRE4EIC, its objectives and its proposed deliverables.

3.3 Get Feedback

As indicated above feedback is essential for improvement and to ensure real engagement with the communities of users of VRE4EIC.

The mechanisms will be coordinated with the evaluation of the e-VRE prototype by users from EPOS and ENVRI^{Plus} and others to ensure consistency. However, the main mechanisms expected to be used are:

- 1. User feedback forms (online but if necessary paper) at events;
- 2. Discussion sessions at events to allow users to discuss among themselves and with the VRE4EIC project staff concerns and ideas for improvement;
- 3. Online tool on the VRE4EIC website for general feedback from the community of users probably taking the form of one or more wikis or blogs;

Feedback from workshops' participants is a very important step, allowing to connect them to the online community. Where relevant, specific *User Groups* made of participants sharing a specific interest or set of use-cases could be created inside the community, allowing them to keep connected and to interact in-between physical workshops. Such a group would also constitute a specific beta users group to test the associated e-VRE features.

The evaluation plan for engagement and training will be elaborated further in D6.2 (M12)

3.4 Create Community

The community will be created by participation in the various activities associated with VRE4EIC. Some methods for identifying and growing the community have been described above. The activity level of the community will depend on (a) their interest in VRE4EIC activities; (b) the provision of VRE4EIC facilities that are useful to the users for their daily work. The VRE4EIC website with feedback mechanisms, information on activities and associated mailings will be the key mechanisms to keep the community active. A forum place will be needed for the community members to exchange.

The community may be considered as a set of communities, one for each target group, but as they overlap, we can consider it a unique community with diverse interests.

Interests from VRE developers and users, especially, will create a community comparable to other Open Source software communities: most members will be relatively passive in terms of their interactions with other community members, and on the other hand, a few members will decide to take on more active roles through, for example, reporting bugs, helping other users, writing documentation or evangelising.

Rewarding the most active members is a good way to engage them into developing their activities in the community: rewards can be in terms of involvement and access into the software development, or simply through a visible recognition (points, badges, etc.) in the forum where they demonstrate a high level of activity.

The community can start very small, with only a few developers and hardly any users. The necessary pre-condition to start is having 'something runnable and testable to play with' (Eric Raymond, The Cathedral and the Bazaar): under the conditions of managing clearly the expectations, there are great benefits in releasing early work to the community.

Prospective users must be convinced that the system under development will bring something significantly better than the existing system(s) they are using. Once they are interested, it should be easy for them to engage, testing things and contributing back. That means the team should be ready to answer questions from developers for some time before getting some contribution back.

Monitoring the community activity to reward the most active on one hand, answering the questions and decide which contribution to integrate, on the other hand, means there is a <u>need for an active role</u> to manage the community (Community Manager). This role should be defined as part of the sustainability and exploitation approach to be defined in T7.3 – "Exploitation and sustainability of the technology".

4 Activities Planning

A list of planned activities will be developed and maintained on the VRE4EIC project website. Where face-to-face activities are required these will be planned to cover the appropriate geographic areas. It is hoped that in some cases VRE4EIC events can be planned alongside appropriate EC events concerning VRE and e-Research Infrastructure activities.

4.1 Training activities

The training activities that are planned will follow the progress of the project. To understand the VRE concepts will be the start activity and it will probably be necessary to continue this activity throughout the project period, since it would be good to repeat the first activity, to make sure that the users understand the VRE concepts, throughout the project.

The next step will be to demonstrate the use of VRE by the researchers, followed by the use of the e-VRE across multiple e-research infrastructures. At the very end the activity to demonstrate the VRE for the EIC (Empower Multidisciplinary Research Communities and accelerate Innovation and Collaboration) to build your own VRE.

Project period	Training focus	By Whom	Modality
M12-M18	VRE concepts	Project team members	Face to Face
And then continuous			Online education
M18-M24	Use of VRE by researchers	Project team members	Face to Face
		Then ambassadors	Online Education
		Then beta-users	МООС
M24-M30	Use of VRE across multiple e-research infrastructures	Project team members	Face to Face
		Then ambassadors	Online Education
M30-M36	Use of VRE for EIC components to build your own VRE	Project team members	Face to Face

Before widely giving those trainings, some training will be given and used to prepare the "Training the trainers" activity: prepare material, training curriculum, and assessments, and get feedbacks from attendees. This will start as early as M6 (MOOC started on March 14th, 2016) and get improved from feedback from each training session until the end of the project.

4.2 Engagement activities

A line of workshops is proposed, opportunities to engage and inform about training activities. The full list of workshops defined as-of-today is provided in the 3.5 Workshops section of the D7.2 Dissemination plan — First version deliverable. The specific User Groups that may be built from workshop participants around a specific interest will interact using the online community tools between workshops.

5 Conclusions and Next steps

The overall challenge of the project is to promote the e-VRE to user communities of existing e-RI or VREs, persuading them to use the proposed new platform.

The aim is to encourage newly or to-be built e-RIs to follow the e-VRE guidelines with the available and recommended components that will be the output of the project. This is to support user communities that are using partially inadequate RIs to retrofit their platform to the recommended architecture.

The Engagement and Training task will run along the project to the end, setting the bases and creating a community that will live after the project:

- The planned training activities will follow the progress of the project. To understand the VRE concepts will be the first training activity and it will probably be necessary to repeat this activity throughout the project period. Other training activities will tackle more advanced subjects.
- Engaging with prospective users relies on Ambassadors and Beta users. Then, managing the e-VRE Community will rely on an active <u>Community Manager</u> (belonging to the development team initially but later for example an elected member of the community for sustainability; this is to be defined during T7.3) to monitor the members' contributions, engage them and integrate their contributions.

At the end of project year 2, an update of this deliverable will be produced (deliverable D6.4 – Engagement and Training plan – second version). That update will focus on Year 3 activities, and enhance the plan on training the trainers using feedbacks from the experiences to that date.