



ever-est

D2.2 Dissemination Strategy and Plan

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| Acronym | Description |
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| ARPA | Regional Environmental Protection Agency of Italy (Agenzia regionale per la protezione ambientale) |
| CEOS | Committee on Earth Observation Satellites |
| CFSP | Common Foreign and Security Policy (EU) |
| DoA | Description of Action |
| DDR | Disaster Risk Reduction |
| DRM | Disaster Risk Management |
| EGI | European Grid Infrastructure |
| EO | Earth Observation |
| EPOS | European Plate Observing System |
| ES | Earth Science |
| ESFRI | European Strategy Forum on Research Infrastructures |
| FP7 | European Commission Framework 7 funding programme |
| GEO | Group on Earth Observation |
| GEOSS | Global Earth Observation System of Systems |
| GES | Good Environmental Status of European Seas: main aim of EU Marine Strategy Framework Directive (2008) |
| GSNL | Geo-hazard Supersites and Natural Laboratories |
| H2020 | European Commission Horizons 2020 funding programme |
| HIM | Hazard Impact Model |
| IaaS | Infrastructure as a Service |
| ICT | Information and Communication Technology |
| IGs | Interest Groups |
| KPI | Key Performance Indicators |
| MPA | Marine Protected Areas |
| MSFD | Marine Strategy Framework Directive |
| NHP | Natural Hazards Partnership |
| NSF | National Science Foundation |
| PaaS | Platform as a Service (PaaS): a category of cloud |



| | |
|---------------|---|
| | computing services |
| RDA | Research Data Alliance |
| RO | Research Objects |
| SaaS | Software as a Service |
| SatCen | European Union Satellite Centre |
| SMART | Criteria for setting of objectives in project management: <u>S</u> pecific, <u>M</u> easurable, <u>A</u> chievable, <u>R</u> elevant and <u>T</u> ime-bound |
| VRC | Virtual Research Communities |
| VRE | Virtual Research Environment |
| VOs | Virtual Organisations |
| WGs | Working Groups |
| WP | Work Package |

Applicable Documents

| Document ID | Document Title |
|----------------|---|
| Annex 1 | EVER-EST Description of Action (Part B) |
| D1.1 | Project and Quality Management Plan |
| D2.1 | Project Website |
| D3.1 | Use cases description and user needs document |
| D4.1 | Workflows and Research Objects in Earth Science - main concepts and definitions |

Reference Documents

| Document ID | Document Title |
|-------------|----------------|
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Executive Summary

Maximising awareness of the EVER-EST project aims, objectives, activities and outcomes requires a robust and comprehensive dissemination strategy. This strategy includes promotion of EVER-EST to the wider user community and planned coordination/alignment with other related initiatives. It also outlines the planned activities for engagement with user communities, stakeholder interactions, and liaison with other European and international initiatives.

The dissemination strategy describes:

1. Target audiences
2. EVER-EST project identity
3. Promotional materials (posters, leaflets, website, social media presence e.g. Twitter, LinkedIn etc.)
4. User and stakeholder engagement (workshops, conference presence etc.)
5. Impact assessment: key performance indicators (KPIs) and alignment with the relevant SMART objectives identified for the project

The EVER-EST dissemination strategy will evolve throughout the lifetime of the project according to changing technologies, techniques and best practice for engaging with different target audiences, and also additional opportunities and/or fora for promoting the project and its outcomes. It will be formally updated twice during the project.



1. Introduction

The overall objective of the EVER-EST dissemination strategy is to outline the scope and approach for the promotion and communication activities that will be conducted by the project. It also describes the target audiences, the content and mechanisms that will be used and the methods and performance indicators that will be employed to assess the impact of the dissemination activities.

The dissemination strategy aims to raise awareness of the EVER-EST project and highlight the potential benefits of virtual research environments for a range of identified target audiences. It also seeks to promote and encourage adoption of the EVER-EST tools and services whilst also eliciting feedback from potential users on the suitability and applicability of the solutions under development.

1.1 Project Overview

EVER-EST is developing a generic virtual research environment (VRE) that is tailored to the requirements for collaborative working in the Earth Science domain. It is creating an innovative framework which enhances the ability of the Earth Science communities and, observational scientific disciplines in general, to interoperate and share knowledge and expertise. The EVER-EST VRE will incorporate selected innovative and state-of-the-art technologies, systems and tools developed by previous relevant EU-funded FP7 projects.

1.2 Document Structure

This document, deliverable D2.2. *Dissemination Strategy and Plan*, outlines the approach, mechanisms and techniques that will be used to engage with the project partners and also the wider community including other relevant initiatives at the national, regional and international scale. Specific target audiences have also been identified and the tailored approach to engaging with each one is also outlined as part of the dissemination strategy.

This document also describes the roles and responsibilities for the individual dissemination activities and provides a timeline for each one. It concludes with a summary of the mechanisms and metrics that will be used to assess the overall impact of the EVER-EST dissemination strategy including the approaches and mechanisms that have been employed.



2 Scope, Vision and Objectives

2.1 Scope

This document, which is identified as deliverable D2.2. *Dissemination Strategy and Plan*, outlines the approach that will be used for outreach, communication and dissemination of the EVER-EST aims, objectives, products and results. It also describes the target audiences, the metrics used to assess the impact of these dissemination activities as well as the mechanisms and techniques that will be employed.

The aim of the EVER-EST dissemination activities is to raise awareness of the project both within the project consortium and also with the wider user community with the aim of encouraging uptake of the EVER-EST VRE solutions under development.

The dissemination strategy also outlines the responsibilities for the individual tasks and the metrics that will be used to assess its overall impact including, where relevant compliance with the stated SMART objectives and key performance indicators (KPIs) for the project. It provides a timetable of deliverables for these dissemination activities and allocates specific responsibilities for their execution.

2.2 Vision

The dissemination strategy is aligned with the overall objectives of the EVER-EST project and forms an integral part of the project development activities. It encourages engagement with the EVER-EST project both by the consortium partners and the wider Earth Science community that are potential users of the VRE technologies being created.

Although work package (WP)2 is directly responsible for communication and outreach in the EVER-EST project dissemination will also form part of the activities for all of the project tasks and involve all of the consortium partners. WP2 will therefore work closely with all work packages to strengthen internal communication and ensure a consistent approach to raising awareness of the EVER-EST initiative across the wider community.

The engagement of the Earth Science communities as potential users of the EVER-EST VRE is central to the long-term sustainability of the results of the project. The dissemination and communication activities will use a range of approaches and mechanisms to reach the target audiences in order to maximise the impact of the EVER-EST outcomes and promote sustainability of the project outcomes in the longer term.

The EVER-EST dissemination strategy is intended to be a dynamic document that will be updated when necessary in order to respond to the changing needs of the project throughout its duration, and to take into account any new approaches to dissemination and communication that are relevant for WP2. Two formal updates of the strategy document will be produced during the lifetime of the project.

2.3 Objectives

2.3.1 Project Objectives

The “Earth Science Research and Information lifecycle” is an iterative process used by scientists to conduct, validate and disseminate scientific knowledge. This lifecycle can be summarised as four main phases which include different stakeholders at each stage:

1. Scientists access information and share results; this stage relies on researchers and data providers giving access to the data and associated knowledge



2. Shared results and information are analysed, interpretative models are generated and discussed with other colleagues within the team and/or the wider community. This phase may require the use of visualisation tools and data analytics;
3. Discussion leads to new ideas and concepts which might require validation through further experimentation or data acquisition and may include access to additional datasets held by other data providers
4. New results are validated and shared, including the the workflows and processes used to generate them, for further discussion and dissemination.

The EVER-EST project will deliver a service based framework that will support each phase of the Earth Science Research Lifecycle. It will provide innovative e-research services to Earth Science user communities to support communication, cross-validation and the sharing of knowledge and science outputs.

The EVER-EST project has three core objectives:

1. Establishing a virtual research environment (VRE) that is tailored to the needs of the different Earth Science (ES) communities with the aim of facilitating a more dynamic approach to collaborative working and research.
2. Validation of the resulting VRE by four selected virtual research communities (VRCs) that will provide different multidisciplinary uses cases from the following ES communities:
 - Sea Monitoring
 - Natural Hazards
 - Land Monitoring
 - Supersites (volcanicity and seismicity)
3. Implement and validate the use of the Research Objects (RO) concept as described in deliverable D4.1 for the Earth Science domain to establish more effective collaborative working practices within and across research teams.

2.3.2 Dissemination Objectives

Within the wider project objectives described in the previous section the dissemination activities have a number of specific aims that are:

- Ensure a clear and consistent flow of information both within the EVER-EST project and also with the wider community
- Raise awareness of the EVER-EST project, its activities and outcomes across a range of stakeholders and target audiences
- Capture feedback from stakeholders including virtual research communities (VRCs) to ensure that the EVER-EST tools and services being developed are aligned with their requirements and relevant for their future needs
- Provide the EVER-EST partners with a clear and consistent set of information and material that can be used to promote the EVER-EST project and the VRE under development e.g. posters/leaflets, presentation templates, social media presence etc
- Support the future sustainability of the EVER-EST virtual research environment (VRE) and also the associated community of practice that will form around the project
- Ensure an effective and efficient representation of the EVER-EST project at relevant events e.g. conferences, workshops etc



- Put in place mechanisms to assess the impact of the project and its outcomes both within the project consortium and the wider community
- Identify key collaborative relationships with other relevant initiatives for the purposes of mutually beneficial knowledge exchange



3 Key Messages and Target Audiences

3.1 Key Messages

The EVER-EST project can be considered to be a challenging and innovative initiative and, with this in mind, there are some fundamental key messages that need to be considered when developing the dissemination activities for this project which are:

- 1) EVER-EST is developing a state-of-the-art technological solution to allow Earth Scientists to share their work and publications with others. The availability of such an infrastructure will considerably enhance the quality of how Earth Scientists work together within their own institution and also across other organizations.
- 2) The concept of Research Objects (ROs), which are being used in the Earth Sciences for the first time, will form the backbone of the EVER-EST infrastructure by enhancing the ability to re-use and share entire or individual parts of scientific workflows and all the resources related to a specific scientific investigation.
- 3) The project is building on a suite of software/hardware modules which are the result of almost 15 years of research on Earth Science data management infrastructures, mostly through EU funded projects.
- 4) The VRE Oriented Architecture is being meticulously designed to accommodate a wide spectrum of Earth Science communities and use cases: the goal is to maximise the simplicity of usage and thus ensure future sustainability within the user communities beyond the end of the project.
- 5) During the final year of the project (M24-M36) the EVER-EST VRE will be customised and deployed by four Virtual Research Communities (VRCs) representing different Earth Science disciplines that vary in terms of the data used, activities undertaken, organization, workflows, etc.
- 6) A key outcome of the project will be the enhanced interaction between data providers and scientists with focus on both scientific data and workflow preservation.

3.1.1 Rationale

The EVER-EST proposal emphasised the importance of enhancing the current state of the art in Earth Science data management particularly for three main stakeholder groups: the scientific community, data providers and civil society. It has been recognised that each of these stakeholder groups needs to improve their approach to Earth Science data management and also how they interoperate with each other. Improving the dialogue between these stakeholder groups is therefore the main rationale behind the EVER-EST project.

This description of the drivers for the EVER-EST project can also be found in Chapter 1 – Excellence of the Description of Action (DoA), and this has also been used as the rationale for developing the EVER-EST communication activities.

The expected impacts of EVER-EST, as described in Chapter 2 – Impact of the DoA, are sub-divided into those expected for Earth Science in general, Researchers and Data Providers, and it is this subdivision that helps to further refine the approach for the dissemination activities according to the specific target audiences. For example, an individual virtual research community (VRC) will provide a use case for how the EVER-EST infrastructure is facilitating and enhancing their relationship with the segment of civil society that they normally serve.



3.1.2 Use Cases: Science Specific Messages

Each of the VRCs participating in the EVER-EST project represents a specific community that requires targeted dissemination information that is tailored to their own specific use cases.

3.1.2.1 Sea Monitoring

The Sea Monitoring Virtual Research Community (VRC) aims to provide useful and applicable contributions to the evaluation of the variables that define the Good Environment Status (GES) of the European seas according to the EU Marine Strategy Framework Directive (2008) (http://ec.europa.eu/environment/marine/index_en.htm).

The ambitious Marine Strategy Framework Directive (MSFD) aims to more effectively preserve the marine environment throughout Europe by achieving the “Good Environmental Status (GES) of the EU's marine waters by 2020, and to protect the resource base upon which marine-related economic and social activities depend. It is the first EU legislative instrument related to the protection of marine biodiversity, as it contains the explicit regulatory objective that biodiversity is maintained by 2020, as the cornerstone for achieving GES.

The aim of the Sea Monitoring VRC is to provide practical methods, procedures and protocols to support coherent and widely accepted interpretation of GES Descriptors 1-4 and 6-11

(http://ec.europa.eu/environment/marine/good-environmental-status/index_en.htm). In this context, both the criteria and methodological standards already identified by the European Commission and the on-going activities and projects will be taken into account.

The set-up of practical methods to estimate and measure GES descriptors requires a close cooperation among different disciplines including: biology, geology, geophysics, oceanography, earth observation and others. This will lead to the collection of many types of scientific data and observations (e.g. biology related, chemicophysical, etc.) from different inputs and sensors (e.g. remote sensing, on-site buoys, marine stations, administrations, citizen observations, etc.). Furthermore, different communities require support and guidance to be able to effectively interoperate and share practices, methods, standards and terminologies. The Sea Monitoring virtual research community of potential users is wide and heterogeneous including both scientists and national/international agencies and authorities (e.g. MPA directors, technicians from regional agencies e.g. ARPA in Italy, the technicians working for the ministry of the environment) that are dealing with the adoption of an improved approach to measuring the quality of the marine environment.

The EVER-EST VRE will provide the Sea Monitoring VRC user community with an innovative framework aimed at enhancing their ability to interoperate and share knowledge, experience and methods for GES assessment and monitoring.

The key dissemination messages for this target audience are considered to be:

- Potential for EVER-EST to provide new and/or applied knowledge to help define, assess and achieve GES and support implementation of the Marine Strategy Framework Directive
- Demonstrating the potential to aggregate data and information across geographic scales and the direct comparison of results;
- Improved access to reliable, relevant, targeted and timely data and information
- Implementation of research objects (ROs) for sharing methodology and protocols for GES assessment throughout the wider marine virtual research community.

3.1.2.2 Natural Hazards

The Natural Hazards Partnership (NHP) brings together expertise from a number of the UK's public sector organisations for the purposes of assessment of and response to a range of natural phenomena including flooding, geological hazards, space weather events, volcanic ash, extreme weather, poor air quality and wildfires. The NHP provides a mechanism for giving co-ordinated advice to government and those agencies responsible for civil contingency and emergency response in the event of a natural disaster.



The NHP is developing the Hazard Impact Model (HIM) which will form the basis of a hazard impact forecasting service. This model will combine data and expertise to identify the potential socio-economic impacts for a range of natural hazards including wind, flooding and landslides. These impacts could include loss of life, the scale of any damage and/or disruption, economic loss and number of people potentially affected. This approach requires cross agency cooperation in order to develop a model that reflects a changing situation over time and can take into account the vulnerability of different types of infrastructure and people to natural hazards.

The key dissemination messages for the Natural Hazards Partnership (NHP) with respect to the EVER-EST virtual research environment are:

- the potential it provides for dynamic collaboration between the consortium partners for the purposes of developing the HIM model to support natural hazard forecasting and remediation
- the increased possibilities of knowledge exchange with other national agencies in the UK and also with other European organisations that have similar interests and requirements
- The potential for the HIM to become a key resource for those agencies in Europe dealing with hazard forecasting
- the NHP is providing a test-bed to demonstrate how the EVER-EST VRE would be used in practice by an established collaborative entity and the benefits it might provide to other UK and European collaborations involved in impact modelling and hazard forecasting
- the value of using research objects (ROs) for sharing methodology and best practice for hazard impact modelling both within the UK and more widely at the European scale.

3.1.2.3 Geohazard Supersites

The Geohazard Supersites and Natural Laboratories initiative <http://www.earthobservations.org/gsnl.php> (GSNL) is a voluntary international partnership aiming to promote better scientific knowledge and societal benefits in the field of geohazards, focusing on seismic and volcanic Hazards.

GSNL is carried out in the framework of GEO (Group on Earth Observation), and its general objectives reflect the GEO principles of free and open access to data, of open exchange of scientific knowledge, of global collaboration among scientists and public and private stakeholders, of the necessity to improve the societal benefits of science.

Specific objectives of GSNL are to promote new and better scientific results useful for Disaster Risk Reduction (DRR) by focusing efforts on special sites around the world (the Supersites) in which there are particularly high hazard levels and/or important unresolved scientific questions. The establishment of a Supersite implies commitments from local and global data producers (ground and satellite data) to provide open access for the global scientific community. The latter should also commit to share the research results freely within the community, and to support the DRR needs for scientific information at the local scale. The general management of the Supersite initiative coordinates the Supersite network to assure that the single communities are aligned with the objectives, and works to eliminate all obstacles and bottlenecks to data access and knowledge transfer to society.

The key dissemination messages for the GSNL VRC can be summarized as follows:

- Access to Supersite data will be made more straightforward and easier as a result of the implementation of the EVER-EST VRE. This will result in increased use of the available Supersites data
- The data processing services provided by the EVER-EST VRE will allow those scientists lacking these capacities to fill their technology gaps.
- EVER-EST will provide a variety of services that improve collaboration among the Supersite scientists that are often located in different parts of the world. The VRE will provide effective solutions for conducting typical research tasks such as sharing data, referencing and validating results, discussing models and interpretations, managing intellectual property issues, etc.



- EVER-EST will improve the dissemination of scientific knowledge, methods, and results by providing a common framework that can be used by all Supersites to access and use the different and distributed resources available.
- The EVER-EST VRE will provide tools and services that allow Supersite scientific panels to readily examine, compare and cross validate research findings from different scientists and provide consensus information to local stakeholders
- EVER-EST will allow Disaster Risk Reduction (DRR) stakeholders to access useful geohazard information in an environment managed by the scientific community through consensus procedures, thus allowing the actual accuracy and uncertainty of the information to be highlighted where necessary.

3.1.2.4 Land Monitoring

Land Monitoring is a transversal issue (common to a number of users ranging from scientists to institutions) that can refer to both the urban landscape and natural environments. Monitoring is conducted for the purposes of identifying certain features and anomalies or changes across areas of interest, including natural resources, to observe their condition and exploitation. Space assets play an important role in Land Monitoring and activities related to their usage in this context are currently being conducted as part of international programmes both within and outside Europe.

Land Monitoring provides key information to those entities that are required to make informed decisions regarding interrelated environmental, scientific, humanitarian, health, political and security issues. This information is also highly valuable to those involved in the adoption of sustainable management practices.

The Land Monitoring community can therefore be considered to include institutional and operational entities as well as scientific and research bodies, all of which are using the same space assets and similar services/techniques but with different final goals.

The European Union Satellite Centre (SatCen) is an agency of the Council of the EU whose mission is to support the decision making of the EU in the field of the Common Foreign and Security Policy (CFSP) by providing products and services resulting from the exploitation of relevant space assets and related data. Within the framework of the EVER-EST project, SatCen will represent the Land Monitoring domain with responsibility for collecting user requirements from the related community, implementing an appropriate use case related to Land Monitoring for Secure Societies and testing the functionalities and the infrastructure created by the project. The key dissemination messages for this community are:

- EVER-EST will specifically address the requirements of the Land Monitoring VRC for data and services that support exploitation of space assets for security applications as well as for other different final goals (e.g. in the domains of climate, environment or transport).
- Within the context of the EVER-EST project SatCen, as an institutional and operational entity, is seeking to identify both science and research oriented common requirements for the Land Monitoring User Community that can potentially be addressed by the EVER-EST VRE.
- The Land Monitoring use case aims to provide a concrete example of cross disciplinary interaction between Earth Scientists and institutional entities for the purposes of transferring knowledge, best practice and tools. The user scenarios, workflows and Land Monitoring infrastructure services will be constantly updated based on the requirements coming from user community in order to demonstrate the the relevance of the VRE for the Land Monitoring community.

3.1.3 Role of ICT infrastructures in Earth Sciences

The new generation of Earth Observation sensors (in-situ and in space) are currently generating huge amounts of data that is not easily integrated into processing chains outside the ground segments of space agencies and very



large institutions. Very often public and private institutions aiming to deliver end-user services based on Earth Observation data do not possess the computing power and storage capacity to profit from these new data flows.

The latest developments in Information and Communication Technology (ICT) facilitate the handling of large volumes of data and service creation and, most importantly, have started to modify the expectations of companies and institutes for these new services to support data exploitation. The current focus is to move the processing to where the data is located and to optimize the connectivity of the data centres with new discovery and processing methods. New data exploitation capabilities brought by Cloud technologies are allowing the creation of enablers that help users to access and process data on the Cloud, from their facilities. New Cloud technologies also provide virtualized work environments and the necessary interfaces to leverage the computing resources of the service providers.

Cloud computing solutions can often be significantly cheaper than in-house computing, particularly in cases where large resources are not continuously required. Nevertheless it is still necessary to consider the openness of the infrastructure and assure the easy portability of virtual machines to other infrastructures through the use of open standards and by avoiding vendor or technology "lock-in". Furthermore, long-term sustainability requires selection of the source infrastructure based on their cost/performance considerations, especially when it comes to large hosted processing operations requiring significant amounts of data staging and running on large compute clusters.

The Hybrid Cloud approach is very helpful in certain Earth Sciences scenarios. A private cloud infrastructure allows cost effective development and integration of operations, while a set of public cloud infrastructures with partnership agreements allows both on-demand Application Cloud Bursting and Cloud data hosting. In this approach the IaaS procurement can be done via a buyer pool using standardised IaaS APIs to avoid commercial cloud provider "lock-in". Operationally this strategy will engage four main actors with very specific core competencies that will perceive different benefits:

- Public ICT Infrastructure providers: benefit from new business cases for their IaaS, allowing their IaaS to deliver data and resource sharing at optimised cost for targeted market segments.
- Processor developers: benefit from a cost-effective Cloud integration environment (PaaS), a dynamic Hub for shared scientific collaboration (GitHub integration, OpenStore for Science and Marketplace for B2B) and allows them to scale their resources on massive ICT infrastructure under pay-per-use models.
- Application Integrators: benefit from a Cloud bursting platform with access to a pool of Cloud applications ready for operation, and thus a flexible strategy for SaaS deployments.
- Scientific users: benefit from integrated services, primarily in partnership with integrators giving users access to mutualised Cloud resources which they would not be able to afford independently, or integrating with them when they can open their own accounts on a Cloud Provider and directly provision their IaaS that way.

Overall, the new ICT infrastructures in Earth Sciences will change how developers, integrators or scientists see their role and how they are able to fund their work. Cloud computing allows different economic models like a subscription-based delivery model that will help small and mid-size companies and research institutes to obtain a world-class business applications with a lower up-front cost and eliminating the initial capital investment. With this model, the developers are able to bring down total cost of ownership, lower the risk and promote innovation by focusing their time and money on the essential facets of their service. At the same time it also offers a protected information technology setup that has a high continuity and promotes talent retention by providing the right development conditions.

New ICT infrastructure equally enhances competitiveness and efficiency by lifting all organisations to same technological level and providing competitive differentiation through the quality and applicability of the scientific and intellectual work. Overall, their adoption presents new opportunities by:

- Lowering the opportunity cost of running a given technology
- Lowering the technology total cost of ownership



- Allowing a bigger focus on operating expenditure rather than capital
- Redirecting technological focus on the service core strengths and activities

These points are key to a mature business model dedicated to sustainable use of ICT infrastructures in Earth Sciences. A mix of public funding, commercial revenues, and costs-sharing between stakeholders and end-users will allow the evaluation of its benefit for long-term sustainability and how better provision and consume ICT resources.

3.1.4 Interdisciplinary Needs for Facing Societal Challenges

The complexity of the societal challenges require the rapid formation of holistic views to understand (and narrow down) options and ultimately make decisions. This is valid for different levels of decision, from major policy decisions to individual practices, and the availability of the associated information can have a large economic impact. The bringing together of different pieces of research is often hampered by lack of synchronism which in turn may depend on the difficulty and/or lack of motivation of different research teams to look at a specific point in a given time frame and communicate it to another team for further use, but still getting the credit for it. The recognition of research outside the specific field of the researcher is actually not well developed, despite being crucial for a real boost for research driven by societal challenges. This specific process can be much facilitated and accelerated by the existence of processes recording research pathways and authorship of processes, providing the expected recognition to the different players. This requires on one hand simple book keeping but also on the other the ability to connect specific research results to the interdisciplinary topic being studied through a particular funding mechanism that is expected to deliver a specific societal benefit.

The implementation of the above process is facilitated by the existence of “neutral” infrastructures providing services of recording and associating research, authorship and publications, that would also streamline the research assessment by policy bodies including funding agencies.

In this context the EVER-EST key dissemination messages should focus on the role that Research Objects (ROs) can have in interdisciplinary research, notably

- research oriented functional to interdisciplinary topics, often requires multiple checks and also attribution
- the reproducibility of the research in different environments
- re-use of individual or intermediate research results in other contexts
- traceability and attribution of research to individual and groups

which may render interdisciplinary research more attractive and more useful for science career building and also for the direction of research funding.

3.2 Target Audiences

The EVER-EST project has identified a number of key target audiences for its dissemination activities. Each one will require a slightly different approach and some of the communication and outreach activities will need to be tailored for specific groups of stakeholders. Engagement with the target audiences will take one of several approaches.

3.2.1 EVER-EST Partners

The dissemination strategy for this target audience is partly focused on the internal communication within the EVER-EST project. All of the partners have demonstrated their full commitment to the project since the proposal phase and the communication strategy for this group aims to maintain this dialogue. This pro-active approach to internal communication will support efficient project management and ensure that any problems are addressed quickly.



To achieve this objective there will be regular virtual meetings as follows:

- Bi-weekly project management meetings to evaluate the current status of on-going tasks.
- Bi-weekly technical management meetings for specific discussions relating to the VRE architecture, research object paradigm integration, etc.
- Bi-weekly virtual research community (VRC) meetings to assess the current status of the individual VRCs.

In addition, to these regular scheduled meetings there will also be ad hoc work package level meetings called to address specific issues. To facilitate this mode of working dedicated e-mail lists has been created for each work package that only include those people that have a direct involvement in the related tasks

Internal communication is also fundamental for how the consortium will coordinate participation in external events and initiatives. The involvement of the EVER-EST partners is key to the success of the dissemination activities and they will be encouraged to communicate the project aims, activities and outcomes as widely as possible. For example, by making presentations at conferences and workshops, publishing papers in journals or articles in newsletters or using social media. The EVER-EST partners will also already have connections with some of the other identified target audiences and they will be encouraged to promote the project across their own networks. The dissemination strategy for this group is therefore in part focused on providing the information and materials required for the partners to promote EVER-EST to the wider community.

It is also important to note that the motivation of the individual partners with respect to the dissemination activities will have a subtly different focus according to their role within the EVER-EST project:

- The Earth Science data holders in the consortium, have a keen interest in the effective dissemination of the project results as this promotes better engagement with new and existing user communities encouraging both the deposit of data and use of their holdings. These partners also have an interest in demonstrating their expertise with the data and in the associated knowledge preservation domain in order to increase their reputation.
- The researchers and technical developers have similar motivations to those of the Earth Science partners because they will be developing services and tools that are 'close to market' and meeting the real needs of users. Participation in the dissemination activities ensures engagement with user communities to promote the take-up of these new services and tools and provides possible future opportunities for exploitation and commercial support.

3.2.2 EVER-EST virtual research communities (VRCs)

EVER-EST also involves four Virtual Research Communities (VRCs) that are fundamental to the overall success of the project. These communities have been chosen from within the Earth Science domain because they present very specific and unique use cases in terms of the way the scientists work together, how the different agencies interact and cooperate on an Earth Science theme or topic, or how they communicate with external stakeholders both in the governmental or the public sector.

The focus and structure of communication with the four VRCs will be similar to that for the EVER-EST partners with two distinct elements:

- Internal communication: this aspect of the dissemination strategy for the VRCs will largely be addressed through close interaction between the activities in work packages WP3 VRE Use Cases and WP4 Research Objects in Earth Science, and the technical team. Each VRC will have a technical partner directly representing its needs in the technical committee to ensure inclusivity. The Project Coordinators will ensure that those responsible for WP3 and the members of the technical team



are constantly updated and fully aligned, to avoid the potentially perilous lack of dialogue between “data people” and “technical experts” that has been seen in previous research projects.

- External communication: the individual VRCs are responsible for raising awareness of the EVER-EST project within their own communities using specifically targeted resources e.g. newsletters, community meetings. Each VRC will be responsible for creating communication activities that are relevant for their respective community (see Section 3.1.1 above) with the objective of enlarging the potential user base for the EVER-EST VRE in preparation for the release of the initial outcomes of the project. These wider communities will also be used to capture feedback on the EVER-EST tools and services to ensure their suitability and applicability for the individual VRCs. All partners will be requested to provide a ‘Dissemination Activity Report’ using a standard template. These reports will then be collated and used for the purposes of assessing the impact of the dissemination activities (see Section 8) and also for generating news items for inclusion on the EVER-EST website.

3.2.3 Wider Earth Science Community

3.2.3.1 Scientists

The bulk of the scientists’ work in the Earth Science field is to look for new information from data, either collected for a specific purpose or obtained from other scientists or found in archives, and advance the knowledge on Earth phenomena. Normally this requires organisation of the work in teams to cover the different aspect- which ultimately tend to assemble periodically in large conferences or even to form large international associations to facilitate community building for a particular large discipline (eg Geodesists and Geophysicists have IUGG and its associations). The potential of research infrastructures to organise and keep records of the work is generally understood, but not the need for continuous interaction to obtain feedback and generate ideas for new services.

The dissemination and communication activities for this target audience should focus on the benefits of the EVER-EST tools and services to support different types of research, namely:

- increasing the impact of research which can be achieved through greater outreach and more collaborations. The EVER-EST VRE can potentially provide a valuable tool to find new research opportunities
- a VRE allows new research to be easily explored and evaluated using minimal effort (and funds)

3.2.3.2 Space Mission Owners

There is generally a strong trend towards the increased efficiency of space missions. More and more recurring services are being outsourced to third party specialists. Examples of this are the “NASA Authorization Act of 2010”, that forced the contracting-out of transport (services) for cargo and people to the International Space Station in the future; and ESA’s effort for procurement of the Master archive of EO data as a service.

The development in data usage from: “Collect once, use little” to “Collect once, use as extensively as possible” also contributes to this more efficiency-focused way of thinking. The division of the process chain from data acquisition to data utilization requires broker systems. VREs will therefore become an increasingly important component of efficient data usage in the future.

In addition, the broader use of data via VREs will lead to more feedback on the data from users and a improvement in the data quality as a result.



3.2.3.1 Research Data Producers

Scientists and researchers are data creators and they require an effective tool to make their data and results available to both their own and the wider community. Their work is focused on adding value to the raw data, and revising their algorithms and processes to generate new versions of datasets. However, in many cases there is a limited budget and lack of experience available for implementing standard and efficient access services on top of their datasets.

The Research Data Alliance (RDA) (see section 5.2.3 below) plays a central role in promoting data sharing in this era of Open Science. Several thematic groups exist to implement the RDA vision “Researchers and innovators openly sharing data across technologies, disciplines, and countries to address the grand challenges of society”.

In this context the VRE e-infrastructures facilitates the collaboration amongst researchers and research teams by providing them with a more effective means of collaboratively collecting, manipulating, managing and sharing data, as well as implementing the Research Object concept in Earth Science domain to support the reproducibility of the full workflow.

3.2.3.2 Data Facilitators and Repositories

Data facilitators and repositories form important elements of the developing science data environment. Data facilitators have certain attributes that make them an important for data sharing and re-use:

- they have awareness of a multitude of repositories
- already have established relationships with the data owners
- possess the tools and resources necessary to reach the largest user-base possible

In this context the VREs can play several roles:

- Encourage greater exploitation of data
- Foster multiple perspectives on data
- Facilitate comparative research
- Provide feedback on data to repositories and the data producer
- Assist with avoiding duplication.

VREs will also contribute to the homogenization of interfaces and access policies. However, it should be noted that as a rule one system will not fulfil all of the requirements. The future will be characterized by the coexistence of different VREs that are accessing some on the same data sets.

3.2.3.3 Research Infrastructures

The scientific community has long identified the need to aggregate their efforts in terms of facilities and resources. Based on this aggregation of techniques and know-how, the Research Infrastructures provide services that support their communities to conduct top-level research in their respective fields.

Research Infrastructures’ (RI) are facilities, resources and services that are used by the research communities to conduct research and foster innovation in their fields. They include: major scientific equipment (or sets of instruments), knowledge-based resources such as collections, archives and scientific data, e-infrastructures, such as data and computing systems and communication networks and any other tools that are essential to achieve excellence in research and innovation. They may be 'single-sited', 'virtual' or 'distributed'.

A number of current initiatives are attempting to bring these RIs together into a more coordinated framework or ‘cluster’ that ensures researchers can access them effectively. The European Strategy Forum on Research



Infrastructures (ESFRI) Roadmap was established to identify those RIs that are relevant for the long-term needs of researchers in Europe. It includes a number of thematic research infrastructures directly relating to the Earth Sciences domain that are of direct relevance to the aims and objectives of the EVER-EST project e.g. European Multidisciplinary Seafloor Observatory (EMSO); European Plate Observing System (EPOS) (see section 5.1.4 below).

The H2020 ENVRIplus project is also seeking to create a cluster of the European environmental and earth system research infrastructures, many of which are included in the ESFRI Roadmap. ENVRIplus recognises that although RIs were originally created in response to the specific needs of the individual disciplines, the interlinked nature of the Earth System demands that there is more multidisciplinary approach to research that necessitates a ‘clustering’ of the environmental RIs including those relevant to the solid earth system.

Research Infrastructures are therefore a key target audience for the EVER-EST dissemination messages and especially those regarding:

- the role of ICT infrastructures in the Earth Sciences
- Interdisciplinary needs for facing societal challenges
- how a VRE can improve research
- potential for improvement in the uptake of research results by society.

3.2.4 European Level

A key target audience for the EVER-EST dissemination and promotion activities are other relevant European initiatives and projects. These include the funding agencies at the regional and national level. Below is a list of those that will be included but it is not exhaustive and will be expanded throughout the project:

- European Commission
- H2020 projects (e.g. EPOS, ENVRIplus, VRE4EIC, EUDAT, etc. – See Section 5 below)
- European Environment Agency
- COPERNICUS

3.2.5 Global Level

The EVER-EST project will also seek to engage with relevant global initiative that are supporting the sharing and re-use of Earth Science data and which are directly relevant to aims and objectives of the project:

- GEO
- Belmont Form
- Research Data Alliance (RDA)

A more detailed description of these initiatives and the planned interaction between them and the EVER-EST project are outlined in Section 5.

3.2.6 Policy and Decision Makers/Civil Protection Agencies/Emergency Responders

These communities include those that are collaborating with the VRCs, for example the various agencies being advised by the Natural Hazards Partnership that are responsible for civil contingency and emergency response in the event of a natural disaster. These groups require timely information from multiple agencies to support a range of scenarios including, for example, contingency planning for extreme weather events or emergency response to a natural disaster.

All of the agencies involved in various aspects of decision/policy making and civil protection require data and information that can be shared using a co-ordinated and consistent approach. A VRE potentially supports and



enhances the ability of multiple agencies to work collaboratively using shared resources, workflows and models to address a common issue or challenge.

3.2.7 Industry

Due to various challenges and opportunities such as globalisation of the research agenda and global competition, VREs are of great interest within the industrial context as a possible way to promote business and opportunities. Initial interest was primarily focused on advancements in information and communication technologies but has now become more concentrated on the challenges concerned with big data management and the associated security aspects.

Opportunities for exploitation of VREs are still in their infancy. As always, industry is more focused on applied research in order to boost their business leaving the basic research to the universities and research centres.

Industry audiences that are potentially interested in virtual research environments, and should be the focus for EVE-EST dissemination and communication messages, can be divided into three main groups:

1. Industrial organisations, their representative structures and leaderships;
2. Manufacturing and service industries using the VRE-related technologies for business purposes;
3. Industrial organisations that have an interest in R&D and which are naturally close to the research environments in order to develop and pursue their objectives.

One of the main goals of EVER-EST to provide innovative e-research services user communities to support communication, cross-validation and the sharing of knowledge and science outputs. Engaging industry in a discussion about the technological potential of EVER-EST is of great importance. Dissemination activities that are focused on this group are essential to ensure that they are informed of the innovation potential and the technological solutions being developed by the EVER-EST. This will encourage industry and industrial researchers to provide feedback on the VRE tools and services and support their future sustainability.

As well as engaging directly with potential industrial partners, it is essential that an effort is made to disseminate the EVER-EST objectives and achievements to the national bodies responsible for the development of the industrial capacity, for example the various national departments of industry in Europe.

3.2.8 General Public

Virtual research environments are a potential benefit and the general public should be made aware of the importance of VREs for them in their daily life and also for addressing the global challenges faced by humanity as a whole. The EVER-EST dissemination activities will include some that are specifically focused on the general audience with the aim of raising public awareness of the EVER-EST project and its potential benefits using clear positive and informative material that is expressed in less formal and non-technical language.

3.2.9 Media

The media will be used to raise awareness of the EVER-EST project and the benefits of virtual research environments. Media will also be especially important for engaging with the general public, decision making bodies and industry. The media channels that will be targeted by EVER-EST are those that are generally utilised by EU-funded research project. These include:

- Press Agencies and Online Publications: this channel is of particular relevance for those virtual research communities where the improvement in working practices as a result of the EVER-EST VRE will potentially result in better early warning and saving of lives as a result e.g. geohazards, supersites
- Scientific magazines: both specialist and general interest



- Educational magazines: both specialist and general interest. (This will also be coupled with the e-learning activities planned as part of the EVER-EST outcomes).
- Newspapers
- Newsletters



4 Training and Education

4.1 Training

A key objective of the dissemination activities will be to inform end users of the benefits and potential of the EVER-EST virtual research environment, and prepare them for future adoption of the VRE tools and services by providing training and instructional materials. The members of the VRC communities embedded in the EVER-EST project will require hands-on experience of the VRE functionalities and this training, which is planned to commence from M18, will be provided in the form of both training events (see section 6.7) and on line training modules. Task 2.3 in WP2 is responsible for providing these training activities and will start by making an assessment of current community capabilities and the skill sets that would need to be developed for the community to take full advantage of the EVER-EST VRE.

4.2 Education

EVER-EST will also seek to engage with society and educate them about the potential benefits of virtual research environments through selected citizen science activities organised by the VRCs embedded in the EVER-EST project. The Sea Monitoring VRC (see section Sea Monitoring VRC) is developing practical methods to estimate and measure the Good Environmental Status (GES) of the European seas that requires close cooperation across a range of disciplines and needs a range of different data types from various sources and sensors.

One of the key sources of input for this community is that of the citizen scientist who will provide direct observations from the marine environment. An additional benefit of engaging with citizen scientist in this use case is that it will provide an opportunity to demonstrate the value of the EVER-EST virtual research environment to the more general audience.

To demonstrate the engagement of the citizen scientists in the Sea Monitoring VRC a pilot initiative on jellyfish occurrences along the Italian coasts will be started that involves a close collaboration with the popular science magazine Focus. A protocol for reporting jelly fish sightings will be established for the citizen scientist that includes uploading of records to a web-based system that is hosted by the Focus magazine and visible to the general public. This protocol will also be implemented for the Italian Ministry of the Environment to record sightings of gelatinous macrozooplankton as prescribed by the evaluation of Good Environmental Status required by the Marine Strategy Framework Directive. The data from both the citizen scientists and the Italian Ministry will be then be combined in a “jellyfish awareness system” that will inform citizens about the presence of these animals in the sea. This information will be of particular interest to the general public due to the stinging properties of the jelly fish. It is also likely to generate significant media interest at times when the jelly fish are especially abundant.



5 Strategic Collaborations with other Projects and /Initiatives

5.1 EU-funded projects

The EVER-EST dissemination activities will focus on aligning relevant aspects of the project with other EU-funded projects for the purpose of collaborative working. This will provide opportunities for mutually beneficial knowledge exchange that will reduce the potential for duplication of effort across related initiatives.

5.1.1 EUDAT

EUDAT is an EU-funded initiative that is developing common data services to support multiple research communities by creating a network of shared services and storage resources that are relevant throughout the entire life cycle of research data.

The main aim of EUDAT is to “bridge the gap between research infrastructures and e-infrastructures through an active engagement strategy” both with the communities that make up the the EUDAT consortium and by integrating others through innovative partnerships. EUDAT aims to support a Collaborative Data Infrastructure that allows researchers to share data within and across communities and enables them to carry out research effectively.

The aims and ambitions of the EVER-EST project are well aligned with those of EUDAT and the project will explore the potential benefits of becoming one of the recognised communities formally collaborating with the EUDAT initiative.

5.1.2 EGI

The European Grid Infrastructure (EGI) is a federation of resource providers that deliver a range of integrated computing services to researchers. EGI aims give researchers “easy, integrated and open access to advanced digital capabilities, resources and expertise needed to collaborate and to carry out data/compute intensive science and innovation”.

EGI represents European e-infrastructures and ensures policy makers are aware of their importance to modern scientific discovery. EGI currently coordinates “virtual organisations (VOs)” that are made up of groups of researchers with similar scientific interests and requirements that are willing to work collaboratively with other members and/or share resources irrespective of location.

EGI provides a range of services that could potentially support the aims and objectives of the EVER-EST project and WP2 will explore the potential opportunities and benefits of EGI for the future sustainability of the project outcomes.

5.1.3 ENVRIplus

The ENVRIplus project is an EU-funded H2020 initiative that is seeking to create a coherent, interdisciplinary and interoperable cluster of European environmental research infrastructures (RIs). The ENVRIplus Theme 2 Data for Science is addressing a number of the issues that are directly relevant for the development of the EVER-EST VRE. Specifically these include interoperable data cataloguing, provenance tracking, and interoperable infrastructure services for data integration, processing and storage. The EVER-EST dissemination activities will focus on the opportunities for knowledge exchange and collaborative working to promote interoperability of the EVER-EST VRE with those under development by ENVRIplus.

VRE4IC and other relevant VRE initiatives

Virtual Research Environment to Empower Multidisciplinary Research Communities and Accelerate Innovation and Collaboration (VRE4EIC) is an EU-funded H2020 project that is developing a reference architecture and prototypes



to be used for future VREs including building blocks that can be used to improve existing VREs. The project addresses the key data and software challenges to support multidisciplinary data driven sciences. EVER-EST will engage VRE4EIC and other related VRE initiatives for the purposes of knowledge exchange.

5.1.4 EPOS

The European Plate Observing System (EPOS) is creating an integrated network of national and trans-national Research Infrastructures for solid Earth science in Europe to provide seamless access to data, services and facilities. The EPOS project includes the Supersites initiative which is also embedded in the EVER-EST project as one of the virtual research communities (VRCs). The EVER-EST project will therefore collaborate directly with EPOS through the Supersites VRC and, as a result, will ingest data and products and services from EPOS where appropriate.

5.1.5 BigDataEurope

The H2020 BigDataEurope project (Integrating Big Data, Software & Communities for Addressing Europe's Societal Challenges) aims to provide support mechanisms for all of the major aspects of a data value chain, in terms of employed data and technology assets, the participating roles and the established or evolving processes. In order to realise its objectives, BigDataEurope will focus on two clearly defined coordination and support measures: 1) engaging with a diverse range of stakeholder groups representing particularly the Horizon 2020 societal challenges (Health, Food & Agriculture, Energy, Transport, Climate, Social Sciences and Security) collecting requirements for the ICT infrastructure needed and 2) designing, realizing and evaluating a Big Data Aggregator platform infrastructure. BigDataEurope activities are complementary to those of the EVER-EST project and interactions between the two projects should be included in the targeted dissemination activities.

5.1.6 Transversal Services Project Group

EVER-EST is also part of the Transversal Services project group that includes a number of the initiatives identified above. This objective of this group is to exploit synergies, remove overlaps, identify gaps, and share knowledge among the component projects. The EVER-EST dissemination and communication activities will include alignment with those initiatives in the Transversal Services Project Group to maximise the opportunities for collaboration and maximise the potential benefits of this coordinating activity.

5.2 Other Wider Initiatives

5.2.1 Committee on Earth Observation Satellites (CEOS)

The Committee on Earth Observation Satellites (CEOS) is an international coordinating mechanism involved in the management of international civil space-borne missions designed to observe and study the Earth. The CEOS Disaster Risk Management (DRM) Observation Strategy is a response to a collection of observation requirements from the scientific community to enable three pilots in three thematic areas: floods, seismic hazards and volcanoes. The thematic pilots aim to demonstrate the added value of EO data in DRM. The CEOS agencies (which includes ESA and DLR) will exploit the DRM Observation Strategy by granting data access to existing projects and initiatives. The GEO Supersites and National Laboratories (GSNL) activities are well integrated into the DRM pilots, since the latter expressly support the Supersites observation needs; for this reason in EVER-EST it is expected to be able to involve also the DRM pilot community in the platform demonstration phase.

5.2.2 Group on Earth Observations (GEO)

The Group on Earth Observations (GEO) is an international initiative with the mission "to realise a future wherein decisions and actions, for the benefit for humankind, are informed by coordinated, comprehensive and sustained



Earth Observations and information". To support this mission GEO is building the Global Earth Observation System of Systems (GEOSS) that will link world-wide Earth observation resources across multiple Societal Benefit Areas including those being addressed by the EVER-EST virtual research communities (VRCs).

The function of GEO is driven by establishing Working Groups to address aspects of the GEOSS implementation and provide a mechanism for members of the GEO community to engage full in the work of GEO. The annual plenary meetings bring together the GEO members for a Ministerial Conference that defines the defined/confirmed being held every two or three years. EVEREST will aim to participate in future GEO Plenary meetings. The project will also explore opportunities for inclusion in specific GEO tasks and participation in the GEO workplan meetings at a later stage in the EVER-EST project.

5.2.3 RDA

The Research Data Alliance (RDA) vision is "researchers and innovators openly sharing data across technologies, disciplines, and countries to address the grand challenges of society". The RDA is bringing together Scientists into exploratory Interest Groups (IGs) and focussed Working Groups (WGs) to enhance and facilitate global data sharing.

The RDA currently includes a number of WGs and IGs that are addressing topics of direct relevance to EVER-EST and therefore represent opportunities for the project to leverage an extensive international pool of expertise. The EVER-EST project will work with other EU-funded VRE initiatives to form an RDA IG addressing the development of tools and technologies for virtual research environments. The aim of this group will be to engage more widely with other VRE initiatives and also with the other relevant RDA IGs and WGs for the purposes of knowledge exchange. The VRE-IG will also act as a coordinating activity for the participating VRE initiatives including those funded by the European Commission.

5.2.4 Belmont Forum

The Belmont Forum is "a group of the world's major and emerging funders of global environmental change research. It aims to accelerate delivery of the environmental research needed to remove critical barriers to sustainability by aligning and mobilizing international resources."

One aspect of the research being promoted by the Belmont Forum is the open sharing and conservation of data and information through the adoption of its 'Open Data Policy and Principles 2015'. The main tenant of these principles is "the enhancement of global scientific collaboration and science diplomacy as essential conditions for developing more sustainable societies." This new policy demonstrates a commitment by the funders of global environmental change research to increase access to scientific data which is "essential to making informed decisions in the face of rapid changes affecting the Earth's environment".

The Belmont Forum will be seeking to implement this policy through an "unprecedented international cooperative effort" from 2016 onwards. It will engage with the global e-infrastructure community through cooperation with a broad network of organizations including the Group on Earth Observations (GEO) and the Research Data Alliance (RDA). The EVER-EST project will seek engagement with the Belmont Forum as part of the European e-infrastructure community as well as through the RDA VRE-IG (see section 3.2.3)

5.2.5 Earth Cube

Earth Cube is a National Science Foundation (NSF) funded initiative in the USA that aims to bring together cyber-research and the geosciences. It seeks to increase access to and use of, advanced technological and computational capabilities for geosciences research through approaches that use innovative technologies to integrate and make interoperable vast resources of heterogeneous data and knowledge within a knowledge management framework.



Earth Cube is made up a number of ‘building blocks’ that focus on cyber-infrastructure development some of which are of direct relevance to objectives of the EVER-EST project. Opportunities for collaboration with individual ‘building block’ projects will be assessed as part of the project outreach activities.

5.2.6 Others

The list of wider initiatives included in the previous sections is not exhaustive and EVER-EST will seek endeavour to engage with other relevant initiatives where this relationship is of direct benefit to the project and does not dilute the effort being dedicated to achieving the stated goals of the project described in the Description of Action (DoA) EVER-EST is a three year project and there are potentially new initiatives that will begin during the lifetime of the project. The EVER-EST partners will ensure that the project remains aware of the wider landscape and the evolving state-of-the-art to ensure that the project remains relevant and the tools and services being developed are aligned with current requirements and best practice.



6 Mechanisms for Dissemination and Communication

6.1 EVER-EST Project Identity

The EVER-EST project identity is being developed to demonstrate the highly innovative and challenging nature of this initiative. The acronym for the project has been specifically selected to reflect the enormity of the endeavour that the EVER-EST project is undertaking.

The EVER-EST project identity has adopted the metaphor of climbing a mountain to represent the challenges that this innovative initiative is facing to achieve its objectives. For example, the project timeline is represented as a series of incremental development steps that are necessary to realise the project goals (see Figure 1)

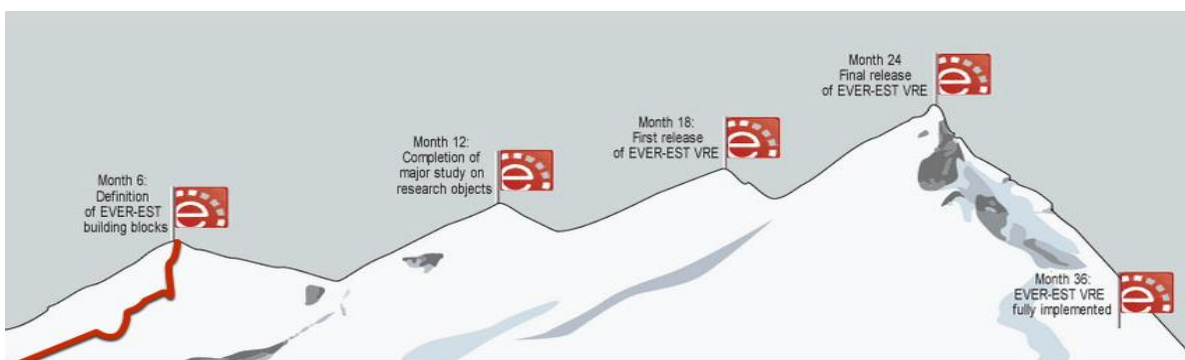


Figure 1 EVER-EST timeline: climbing the mountain

6.1.1 Logo and Icon

The EVER-EST logo and icon (Figures 2 and 3) reflect the concept of the project bringing together scientists into a fully inclusive and innovative environment where ideas, methods and data can be shared.

They have also been designed to reflect what is currently referred to as the typical web2.0 icon designing and labelling system. It has been created in two formats, an icon and a text version, and using two different colour configurations.



Figure 2 EVER-EST graphic icon



Figure 3 EVER-EST logo



6.1.2 Templates

To ensure that there is a consistent appearance for all documents and presentations created for the EVER-EST project a series of templates have been created. Figure 4 and Annex A show examples of the templates that have been developed for presentations and deliverables respectively. These templates are available to partners through the project's collaboration tool.

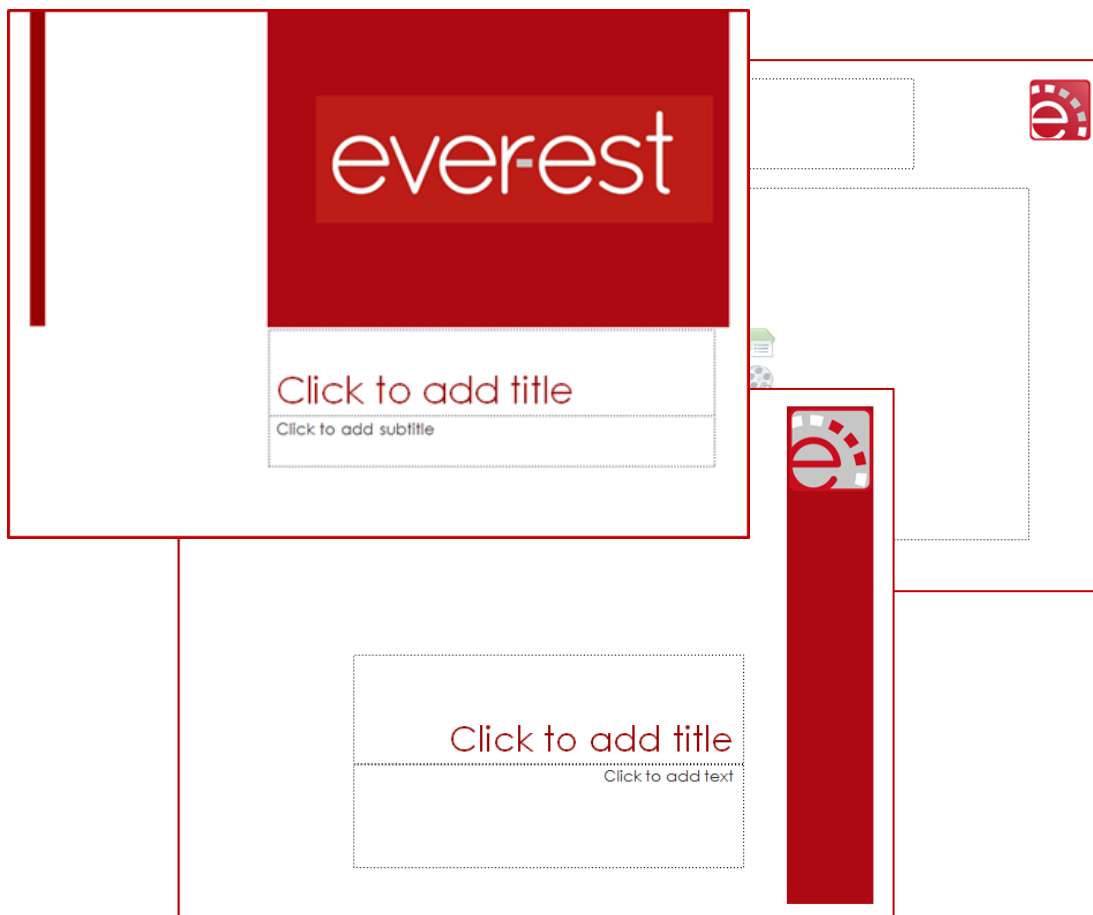


Figure 4 EVER-EST MS Power Point template



6.2 Web Site

The EVER-EST website is fundamental to the dissemination and communication activities for the project. It will be used to promote the project across a wide range of stakeholders and communicate the aims, objectives and outcomes to as wide an audience as possible. The website has been launched using the URL: <http://ever-est.eu>. The initial structure of the website is described in more detail in deliverable *D2.1 Project Website*.

The website will be updated on a regular basis throughout the project to provide new and relevant information about progress and outcomes. The website will also be used to promote events and activities organised both by EVER-EST and other related initiatives.

Development of the website will be planned using a roadmap that will provide an overview of the new sections and material that will be added. This will ensure that all project partners are aware of the contributions that are required and the timeline for the delivery of the new content. The EVER-EST website will also be used to deploy and provide access to the VRE tools and services as they are developed and released.

Partners will also be encouraged to promote the EVER-EST project through their own organisational websites. This should include as a minimum a link to the EVER-EST website and a brief description of the project.

6.3 Social Media

Social media is increasingly being used as an informal communication channel across a wide range of projects and initiatives. EVER-EST will use a Twitter account (@EVEREST_EU1) for ad hoc dialogue with stakeholders to support community building. The immediacy of social media also makes it particularly useful for highlighting specific activities and events, for example, to encourage participation in an EVER-EST side meeting or a presentation during a particular session at conferences and workshops. The live Twitter feed will also be visible on the EVER-EST website to maximise the impact of using this form of communication with stakeholders and specific items of interest will also be translated into more formalised news items that will be included in the relevant section of the EVER-EST website (see Section 4.2).

EVER-EST will also create a LinkedIn group that will be used for community building and raising awareness of the project across wider audience. This community group will also be used to connect directly with other related initiatives.

Partners will be encouraged to use the various social media channels to promote the project and to engage as widely as possible with current and potential stakeholders.

6.4 E-mail Lists

E-mail forms an important aspect of the communication and dissemination strategy for both the partners and the wider community. The EVER-EST project has created a number of e-mail lists (groups) to support the various levels of communication necessary for the project.

6.4.1 Project Consortium

A set of partner mailing lists have been created to support various aspects of the project activities and tasks as described in the Description of Action (DoA). These lists are exclusively for the EVER-EST partners and are used for internal project communication. These partner specific e-mail lists are:

- EVER-EST general : group including all members of the project consortium
- EVER-EST administrative: project management team and other nominated individuals responsible for the administrative aspects of the project
- EVER-EST technical: project management and all WP leaders belonging to the technical partners



- Work package: a dedicated e-mail group has been created for each work package that includes everyone involved in each one. The lists also include anyone in consortium who has specifically requested to be kept informed about the activities in a particular work package.

6.4.2 User Community

A user community e-mail list will be established that is used to disseminate specific information to stakeholders e.g release of publicly available deliverables or resources, launch of EVER-EST tools and services, events and activities organised by the project. The EVER-EST website will have the functionality for joining the community mailing list.

6.5 Printed and Digital Materials

A range of printed and digital media will be produced that reflects the EVER-EST identity and conveys information about the project. These resources will include, but are not limited to, posters, brochures and leaflets as well as digital materials such as videos and presentations. These dissemination and promotion resources will also be tailored to specific audiences and/or activities e.g domain specific conference, public engagement events etc. Where appropriate it may also be made available in other languages for specific events.

The dissemination materials will be revised at regular intervals throughout the project to include updated information on progress and achievements.

Dissemination resources will be made available to all project partners who will be encouraged to identify suitable opportunities where they can be distributed as widely as possible.

6.6 Journal Articles and other Publications

The EVER-EST consortium partners will be encouraged to publish articles/papers in peer reviewed journals and other suitable publications in order to disseminate information about the project and its results as widely as possible. In line with European Commission policy for H2020-funded projects, partners must also ensure that any peer reviewed journal article produced using EVER-EST project funding is subject to open access (online access, free of charge, for any user). They are therefore required to:

- Deposit a machine readable electronic copy of the published version of final peer-reviewed manuscript accepted for publication in a repository for scientific publications as soon as possible.
- Ensure open access to the deposited publication via the repository at the latest:
 - o on publication, if an electronic version is available for free via the publisher
 - o or within six months in any other case
 - o ensure open access to the bibliographic metadata that identify the deposited publication via the repository

Partners must also ensure that the bibliographic metadata is in a standard format and includes:

- the terms “European Union (EU)” and “Horizon 2020”
- the name of the action, the EVER-EST acronym and the grant number
- the publication date
- length of embargo period (where applicable)
- suitable persistent identifier both for the publication and the author



6.7 Events

The EVER-EST project partners will be encouraged to promote the project as widely as possible at relevant conferences, meetings and events both by using promotional material that reflects the project identity and also by making presentations to highlight the aims, activities and outputs of the project.

All partners that carry out some form of dissemination activity for the EVER-EST project at a relevant event will be required to complete a short report using the template in Annex A. This report will then be used as the basis for a news item on the EVER-EST website. These reports will also be collated by the WP2 as part of the metrics used to measure the level and impact of EVER-EST dissemination activities that will be included in periodic reporting to the European Commission.

In addition to the ad hoc participation of the EVER-EST partners in relevant conferences, meetings etc. The partners responsible for the dissemination activities in WP2 will also target specific events where EVER-EST will be represented. These events will be selected to maximise the potential engagement with a range of different stakeholders especially in the Earth Science and Space research domains. For example, the annual European Geosciences Union (EGU) meeting attracts a large cross-section of the Earth Science community and includes a number of technical sessions where the EVER-EST project would be of direct relevance.

The EVER-EST project will also organise several events of different types which, as a minimum, will include:

- Training: members of the various communities that are engaging with the EVER-EST project will be offered the opportunity to attend a training day to learn how to use the VRE infrastructure. These training events will be organised according to the demand for them and will also be supplemented by online training.
- VRE launch: EVER-EST will organise a large event to launch the first main release of the VRE platform (M18). Invitees to this event will include key stakeholders such as representatives from the European Commission, other EU funded projects, research communities, Earth Science data providers, etc.

6.8 User Questionnaires

Questionnaires will be used to capture feedback from stakeholders on specific aspects of the VRE tools and services at various stages in the development process. The format and timing of this user engagement will be determined by the maturity of the VRE with the feedback received being used to guide and/or refine the EVER-EST tools and services.

The distribution of questionnaires to stakeholders will include on-line surveys that are either distributed via selected mailing lists or delivered as part of specific events such as training where attendees will be asked to provide feedback as part of the activities.



7 Dissemination Road Map

The dissemination activities will evolve throughout the different stages of the project and can be divided into three distinct phases:

1. **Project awareness and community building:** dissemination and communication activities in the early stages of the project are focused on raising awareness of EVER-EST, its aims and objectives. This includes community building both within the consortium and also with the wider user community (ies). The virtual research communities (VRCs) embedded in EVEREST will support this initial outreach by indicating the benefits of the EVER-EST initiative from their perspective and to define a clear rationale for the adoption of the key points by their respective communities. Information will be collected through interviews and a dossier will be compiled. The awareness will be built by showing relevant results in specific discussion fora, with publications and presentations and with examples. Proposals for external collaborations will need evaluating on a case by case basis

2. **Promotion of project results:** disseminating the project outcomes to the user community with the aim of encouraging wider adoption beyond the project consortium. As the project progresses the project will have results and outcomes which should be promoted more widely for the purposes of raising awareness and also ensuring that the EVEREST products are relevant for the wider user community. This also provides an opportunity to capture user feedback that can guide the VRE development.

A workshop will be organised at M18 months (see section 6.7), which will be open to the different groups connected with the EVEREST VRCs as well as the wider extended communities. The purpose of this meeting is to present the key concepts and the related underlying implementing processes for the purposes of gathering feedback that will be used to guide the VRE development trajectory.

3. **Post-project sustainability:** The final phase of outreach activities will focus on disseminating the results and outcomes of the EVEREST project to promote adoption and to gather feedback from partners and other potential users.

Engagement with the wider community will also ensure the results and synergies developed during the project continue beyond the lifetime of the project. Experience-based recommendations will be identified and disseminated through the usual channels (web, flyers, publications). However, it will be necessary to capitalise on the outreach done with different fund and fund-raising groups. Funding models for the infrastructure will need to be determined, where the critical mass of usage will play a fundamental role.

7.1 Work Plan

7.1.1 Tasks and Responsibilities

The dissemination and communication activities for EVER-EST will be managed by WP2 *Community Building and Dissemination*. This work package is responsible for dissemination and communication within the EVER-EST consortium and also across the wider user community. It is responsible for the provision of a strategy for engagement with users including potential users of the EVER-EST virtual research environment. WP2 will work closely with the other EVER-EST work packages to ensure a clear, coherent and consistent approach to dissemination and outreach for the project.

WP2 is led by partner NERC and is broken down into five tasks:

- Task 2.1 Community building and user engagement (led by ESA): responsible for defining the community building and dissemination plan which should be tailored to the needs of the different



user communities and VRCs. Community building activities will remain a priority throughout the project.

- Task 2.2 Dissemination (led by NERC): responsible for developing and maintaining the project website and the promotional material e.g posters, leaflets etc.
- Task 2.3 Training (led by Terradue): responsible for managing and organising the EVER-EST training activities and will focus on providing online reference documentation and organising training events
- Task 2.4 Contribution to international best practices (led by ALMA): focusing on adding the experiences and lessons learnt from the development of the EVER-EST VRE to the existing international body of knowledge relating to the creation and management of virtual research environments.
- Task 2.5 Research on VRE sustainability and takeover (led by ALMA): the outcome of this task will be an analysis of current sustainability models for VREs and big data management which includes an appraisal of the funding mechanisms for existing scientific infrastructures which are potentially applicable for supporting a virtual research environment. This task will also conduct an analysis of existing operational models and an evaluation of the steps required for the takeover of a VRE by an existing service provider.

Work package 2 includes the following deliverables:

| Deliverable | Lead Partner | Due Date |
|--|---------------------|-----------------|
| D2.1 Project website | NERC | M3 |
| D2.2 Dissemination strategy and plan | NERC | M6 |
| D2.3 Register of dissemination material | NERC | M36 |
| D2.4 Training strategy and plan | Terradue | M12 |
| D2.5 Report on the training activities | Terradue | M25 |
| D2.6 Synthesis of international best practice for the development and management of Virtual Research Environments | ALMA | M36 |
| D2.7 Analysis of potential VRE sustainability models | ALMA | M36 |
| D2.8 Plan for take-over of EVER-EST Virtual Research Environment | ALMA | M36 |
| D2.9 Workshop report | ESA | M20 |

Table 1 Dissemination deliverables and milestones



8 Monitoring Dissemination Effectiveness


8.1 Key performance Indicators (KPIs)

In order to evaluate the impact of the dissemination and promotion activities outlined in the strategy document there will need to be regular monitoring of the various dissemination channels that are being utilized by the project.

Work Package 2 will collate a regular report of these activities that will form the basis of the input from this work package to the regular reporting submitted to the EU. The success and impact of the dissemination activities will be quantified using:

- Website usage statistics including number of views of individual media resources e.g. video
- Numbers of new users joining the community e-mail list
- Number of publications by partners (including peer reviewed papers, newsletters, popular press etc.)
- Events where EVEREST was presented/represented by partners including number of abstracts submitted, dissemination activity reports submitted
- Events organised by EVER-EST e.g side meetings at conferences, workshops, training
- Levels of social media activity

A. “Dissemination Activity Report” template


EVER-EST-Dissemination-Activity-Report

Dissemination & Promotion Activity Report

| | |
|---|--|
| Name and Affiliation | |
| Title | |
| Author(s) | |
| Name of the Event, (full title) and venue | |
| Topic or aim of the Event | |
| Level of the Event | <input type="checkbox"/> International <input type="checkbox"/> Multi-national <input type="checkbox"/> National |
| Month/Year of the Event, And/or Volume, No. and pages | |
| Type of Presentation | <input type="checkbox"/> Oral presentation <input type="checkbox"/> Poster <input type="checkbox"/> Article <input type="checkbox"/> Other |
| Language of publication/ paper | |
| Comments | |

 Person providing the report and their organisation (e.g. ESA, BGS, NERC, INGV, etc.)
 Conference, Workshop, Exhibition, Journal, Newspaper, etc.
 Including Town, Country
 (e.g. English, Italian, German, etc.)