

Title:

Title: User Involvement Document – Forth Version

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References:

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Title: User Involvement Document – Forth version

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Short Description:

The purpose of this Document is to describe and monitor the way end users are involved in HUMBOLDT. This is the forth version. The User Involvement Document will be updated regularly (every 9 months) to monitor the amount and quality of end-user involvement into the project.

Keywords:

Users; User involvement; User@HUMBOLDT Platform

History:

Version	Author(s)	Status	Comment
001	Simone Scherer, Joachim Rix	new	Overall revision and commenting
002	Dániel Kristóf	rfc	Major revision, overall structural updating and integration of comments/changes made by Simone and Joachim

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1 Introduction

1.1 Aim of this document

This document aims to define a strategy to maximize the involvement of users in HUMBOLDT. User involvement is a key element and is therefore vital in the user-driven development of the framework itself as well as for its long-term sustainability.

The User Involvement Document is a strategic document serving as a reference for all user-related activities. Different versions of this document have accompanied the project since the beginning, with regular updates and tuning to match the strategy to the project needs over the consequent period. It serves as a main guideline for the measures to be taken in terms of user involvement, and as such it has been the basis for the developments and the creation of user-related infrastructure.

Synchronisation with other documents and joint efforts with other working groups are also necessary, e.g. the collaboration with WP11 is of high importance.

This is the fourth version of the User Involvement Document, which has been and will be updated regularly during the project period in order to incorporate the most up-to-date information outputs from the project and to refine the strategy as the project progresses.

1.2 Context

HUMBOLDT contributes to the implementation of a European Spatial Data Infrastructure (ESDI) that integrates the diversity of spatial data available from the multitude of European organizations. It is the aim of this project to manage and advance the implementation process of this ESDI. To achieve this objective and to maximize the benefits gained from this integration, the requirements of INSPIRE, of GMES, of the environmental agencies and of other related activities in the EU will be met.

HUMBOLDT started with an analysis to facilitate the re-use of existing concepts, processes, implementations and experiences. This also included the analysis of harmonization processes in other application areas. Following this, HUMBOLDT extended the existing state of the art according to the needs of users and administrators especially in the area of GMES. As a cornerstone for future businesses, citizen security, risk management and many more fields of application, the ESDI has to be a lasting development, prepared for the steps that will inevitably follow with the continuing progression of globalisation.

To facilitate all of this, the HUMBOLDT project proposes an optimised, community-centred implementation process. New knowledge is gained thereby and new processes are already and will be developed from the combination of data that already exists, but which is currently highly scattered and heterogeneous. Besides a technological-focussed framework, which is developed in HUMBOLDT, the project also has set up a number of scenarios which use the developed framework components in real-world conditions, and which are used as promoters for the target users of the project. Several user groups like industry, public authorities and research are targeted and dissemination and training instruments have been and are used as early as possible within the project, coherent with the INSPIRE time plan, based on feedback from the project results to enhance the effectiveness of the dissemination activities.

The core philosophy of this project is that success comes from acceptance, use and continual improvement of the results of its work. Acceptance is therefore gained by offering concepts that make migration manageable without loss of data, time, or other resources. Therefore, lessons learned from the many prototypes in various application areas, and the groundwork provided by standardisation organisations and projects are leveraged, to support more effective implementation. The cycle that is thereby created leads to the development of products that are really required by the user groups in an iterative process. In this way, the implementation of INSPIRE is supported at all levels, the development of GMES services benefits, and the hurdles for the data harmonisation processes are lowered significantly by the HUMBOLDT project.

A strategy is described in this document concerning the means to involve a wide community of users, who are often data providers and users at the same time (institutions, local authorities). This strategy is the guideline which has been followed from the beginning of the project activity, identifying how the stakeholders will be reached by the dissemination and training plans. This guideline has been adapted constantly according to the project status. All Public Relations activities draw upon information generated by other work packages illustrating the technical capabilities of the concepts and the methodology of the components developed within the project. The HUMBOLDT dissemination partners have considered activities such as training and exploitation of the results of the demonstrators as very effective instruments for demonstrating the potential and actual use of harmonised spatial data, GMES services, Web-GIS facilities, according to the INSPIRE principles since its beginning.

The needs of the potential users of an ESDI are integrated into the development process and form a basis for the conception of business models. These needs have been identified and are regularly monitored by direct involvement of the user groups, such as public authorities including environmental agencies monitoring the state of natural resources, planning agencies, cadastral authorities and national mapping agencies, as well as developers implementing new software, replacing legacy software, and adding new interfaces to existing software.

Several user groups like industry, public authorities and research agencies will be targeted and dissemination and training instruments used as early as possible within the project to achieve a high coherence with the INSPIRE time plan, and also to achieve effective dissemination and feedback for the project results. A User Platform addresses and builds on existing user federations and user groups including those from previous GMES projects (e.g. GSE phase I, IP Geoland, IP BOSS4GMES), current projects (e.g. GSE phase II, eSDI-Net+, ESDIN) and future projects. In the past these user groups have been mainly oriented to provide user needs within each specific project. The User Platform is a major source of feedback for the user-driven development of the HUMBOLDT Framework. Moreover, it reinforces the required collaboration across projects and contribute to the dissemination of project results.

The components and measures developed in this document are a major source for HUMBOLDT's dissemination and exploitation strategy. Therefore, both the final report on the Dissemination and Exploitation Plan and this forth User Involvement Document cross-reference at each other.

2 Definition of HUMBOLDT products from a user's perspective

The output of the HUMBOLDT project should be analysed and the “products” are to be identified from the user perspective in order to identify the relevant products and the groups to be targeted.

2.1 Software products

Software products are of principal importance and constitute the main output of the HUMBOLDT project. They are essential in establishing bi-directional connections as making them available to the users is a true catalyser for user involvement and also boosts user feedback.

2.1.1 The HUMBOLDT Framework

The HUMBOLDT Framework is one of the main outcomes of the project. It is a set of software components that can be used by themselves or all together to create geodata harmonisation applications and that are re-useable in multiple toolset applications and scenario applications.

2.1.2 The HUMBOLDT Toolset

The HUMBOLDT Toolset is the collection of general-purpose data harmonisation tools with well-defined transformation capabilities. It is a set of applications that support data modelling experts with all activities surrounding data harmonisation processes.

2.1.3 HUMBOLDT Scenario Applications

HUMBOLDT Scenario Applications are concrete End-User applications using the framework components and (adopted) versions of toolset applications.

2.2 Documentation

Reports, deliverables and other documentary output of the project can be interesting and relevant for users and stakeholders. Another important item is the HUMBOLDT Wiki, which is currently used as an efficient communication tool for the developers, available for the wide public on the Community Website (<http://community.esdi-humboldt.eu>) serving as a basis for communication and reaching common sense.

2.3 Training products

The HUMBOLDT Training Platform (www.gisig.it/humboldt/training/) and specific training packages that are currently developed within the project are of interest for all users. The overall training on data harmonization and the specific solutions provided by the HUMBOLDT project will be presented in the training packages at different levels according to the user categories defined.

The Training Package is the main access to the training material and training infrastructure of the project. It is structured around a website accessible from both, the project's public website and its Community Website.

This “portal” gives the user all necessary information about the training offer in the form of detailed descriptions of the courses. From this site the users have also the possibility to subscribe to the courses that are of interest and have direct access to the e-learning platform.

This site is online and updated periodically as new courses are incorporated. The subscription to the up to now completed training material is already open to the public.

The HUMBOLDT Training Material is structured in a modular and flexible way according to a net-based learning approach, mainly in form of lectures and interactive tutorials.

The material is being developed considering three content levels:

- Level 1, aims to include training material related to knowledge useful to operate with the HUMBOLDT Framework
- Level 2, aimed at providing training on data harmonisation and the HUMBOLDT Framework tools
- Level 3, addressed to the users and in particular currently to those organisations that are involved in the HUMBOLDT Application Scenarios and in the future to all people using the HUMBOLDT Framework, tools and services.

Currently, much of the material from the Level 1 is completed and in process of final revision. The “Data Harmonisation” courses are being developed at this time as well as the training material related to the single HUMBOLDT Framework tools. Level 3 courses are being developed in parallel with the creation of demonstrative examples of the use of tools by HUMBOLDT scenarios.

3 Definition of HUMBOLDT User Roles

Although numerous user group definitions exist (see e.g. INSPIRE User Group segmentations defined in “Environmental Thematic User Needs Position paper”, available online: http://inspire.jrc.ec.europa.eu/reports/position_papers/inspire_etc_pp_v2_3_en.pdf), this document focuses on specific user groups targeted by HUMBOLDT. Moreover, the HUMBOLDT Consortium was aware from the beginning that it is necessary to take into account the manifold connections between user groups from the perspective of the project. Therefore, it was decided to define “user roles” from the HUMBOLDT point of view, applying a *functional* instead of *organisational* grouping. This grouping is also in line with Deliverables A3.3 D1 and D2 (State of the Art in User Groups and Needs). HUMBOLDT does not distinguish between government, researchers, industry and other cross-domain roles at the very general level. Of course, each of the HUMBOLDT User Groups may contain interested organisations as mentioned above. The categorisation based on thematic domains instead of business roles will support the application-oriented approach of the HUMBOLDT R&D and will contribute to the long-term sustainability of the project results.

After several iterations within the User Involvement Group and taking into account the proposals of the HUMBOLDT Review and Advisory Board, the following HUMBOLDT user roles have been defined:

- HUMBOLDT **Developers**,
- HUMBOLDT **Data Custodians**,
- HUMBOLDT **Data Integrators**,
- HUMBOLDT **End-Users of Geo-Data**,

- **HUMBOLDT End-Users of Spatial Information.**

The definition of each user role can be found below.

All of these user groups are partly represented by members of the consortium, but to ensure the wide use and the sustainability of the results further users are continuously involved in the project.

Following the EU guideline of gender equality the HUMBOLDT Consortium took the issue into consideration to address as well gender specific user needs and requirements (see Chapter 3.5).

3.1 Developers

HUMBOLDT Developers are software developers who work on the HUMBOLDT framework directly or implement software on the basis of the framework, supporting the Open Source Community of HUMBOLDT.

On the long term, HUMBOLDT's aim is to get as many organizations as possible to ensure the sustainability of the models, concepts and the software framework that are developed during the project. Therefore this group covers organisations that are mainly interested in the technical development and the usage of HUMBOLDT results, especially the Framework.

3.2 Data Custodians

HUMBOLDT Data Custodians are people or institutions who are offering data which have been adapted to given standards (harmonised) because of legal or market requirements. They provide data and have the responsibility to do so in a format that may be different from the one they normally use. They are mainly data providers. Examples for this group are the national INSPIRE-responsible bodies.

This group is basically interested in the HUMBOLDT toolset as it can serve their generic data harmonisation requirements and support the data processing they are responsible for. The framework is also of interest for them as it can serve as a basis for custom-made software serving their specific needs.

3.3 Data Integrators

HUMBOLDT Data Integrators are people who have to use heterogeneous geodata to meet the requirements of their daily job (e.g. integration of data for complex analysis). They need data themselves and access this from different facilities potentially in different formats. They have to combine various data sources, harmonise them to make use of them for their own purposes. They are mainly service providers.

They are also interested in the HUMBOLDT toolset as it can serve their generic data harmonisation requirements and support data processing, and possibly the framework as a basis for custom-made software serving their specific needs. Moreover, they may be interested in some of the scenario applications if they cover their activity area.

3.4 End-users

The HUMBOLDT End-users, building a large group, want to solve a problem and decide to use geospatial data for applications purposes – not interested in the harmonization process itself but only in its results.

Initially GMES provides a framework for defining the end user community as described in Annex I. The User Involvement Document approach is to gain more insight into this user segment and their manifold requirements. This will be supplemented by analysis of the Scenarios' user community. Although the most relevant thematic areas for HUMBOLDT are those tackled by the project and covered by the scenarios, more users are included in the detailed analysis throughout the project as a result of the midterm scenario calls, connection made with the user community via the dissemination and training activities etc, and further evolution of GMES. HUMBOLDT allows others to get information about the project and to being kept informed, but the strategic approach focuses on Scenario related user groups, and as soon as they are covered completely, further thematic areas will be approached.

Two further subgroups can be distinguished within this user role:

3.4.1 End-users of geodata

End-users of geodata are users who are directly working with geographical data itself. They either use geodata in an already harmonised form or geodata that do not need harmonisation or integration at all. They are interested in the toolset to support their generic data harmonization needs, or in some of the scenario applications depending on their activity.

3.4.2 End-users of spatial information

End-users of spatial information do not use geographical data directly, they only use information arising from it (indirect use of geodata). Most commonly they are users on laymen level, e.g. people using navigation systems, online routing services, etc.

4 Intentions and Expectations Towards Users

4.1 General Intentions and Expectations by User Role

4.1.1 Intentions and expectations towards Developers

At the beginning of the project, developers have been HUMBOLDT Consortium members. However, by involving further users in HUMBOLDT as soon as a certain level of usage had been reached, we aimed at generating network effects, which contribute to a self-sustaining project result. Moreover, Software developers can act as multipliers: a good marketing strategy could get them to use the HUMBOLDT framework, and at the point when there is a sufficient critical mass of users, software manufacturers will find it commercially viable to produce plugins or applications extending the capabilities of HUMBOLDT, making it more attractive for organizations to switch over. These manufacturers can then become HUMBOLDT developers as well. This will most certainly include migration paths from current, non-ESDI-enabled applications to ESDI-enabled ones.

Currently HUMBOLDT is strongly engaged in creating a developer community to ensure continuity in the development of the framework even after the end of the project itself. The ownership of the framework and the developer community may be organised within a “HUMBOLDT Developer Platform”.

Feedback from the developers is used especially for usable software architecture, interfaces, documentation, FAQs, tutorials etc for the framework.

4.1.2 Intentions and expectations towards Data Custodians and Data Integrators

Data Custodians and Data Integrators have the deepest insight into data harmonization needs. Therefore, they should provide the essential inputs and feedback to developers for the user-driven development of the HUMBOLDT framework. They are involved as test candidates in the evaluation phases of HUMBOLDT. Their feedback is mainly used for ensuring efficient support for the harmonisation process.

4.1.3 Intentions and expectations towards End-users

End-users are essential for obtaining feedback on the results (outputs) of the entire HUMBOLDT framework. The scenario users provide feedback for the development of each Scenario. The needs of the end-users will be indirectly focussed by the HUMBOLDT framework and will be directly focussed by the HUMBOLDT scenarios. Usually end-users will not be in direct contact with the HUMBOLDT framework, but by using the HUMBOLDT framework it should be easier for Data Custodians to deliver the required quality of data, with a reasonable effort, and it should be easier for the Developers to provide the best fitting applications for users needs. So, end-users are in general the motivator for each of the targeted groups. Therefore it is evident for HUMBOLDT to ask for feedback from this group and to distinguish between feedback relevant for the scenarios and feedback relevant for the framework.

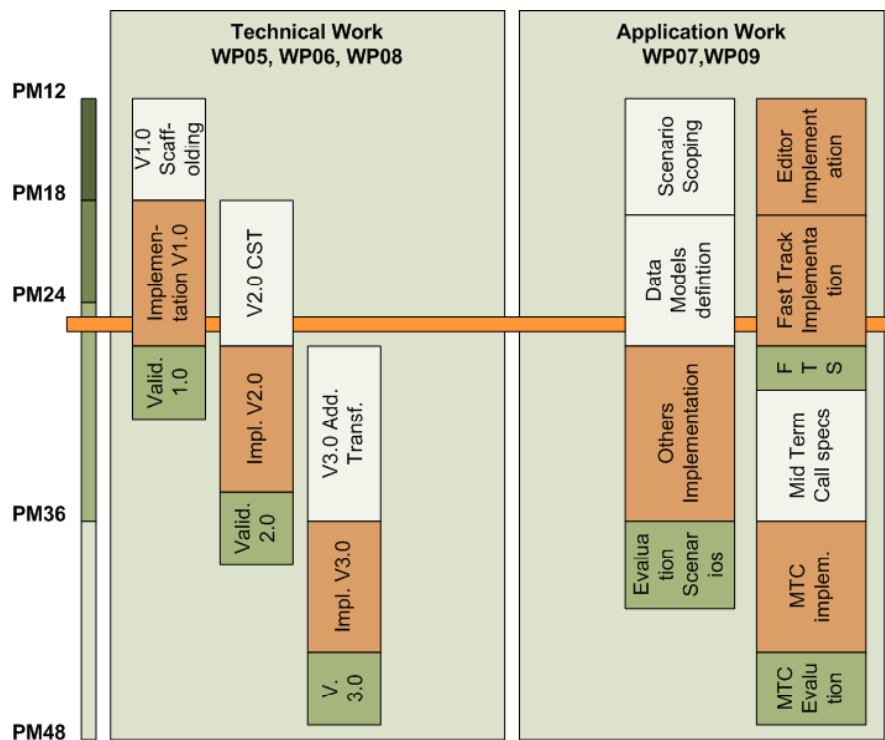


Figure 1. Project phases and activities between PM 12 and 48.

4.2 Intentions and Expectations by Project Phase

The integration of users has been a priority for the HUMBOLDT project from the beginning. User Integration is intended to provide WP5 with both functional and technical requirements and also with the verification of the proposed architecture. For this, different user groups are involved at different phases of the project. Figure 1 presents an overview of the different project phases described below.

4.2.1 Prototype Phase (*finished*)

In this phase, the development was mainly technology-driven. The purpose of the prototype was basically to test key technologies that are to be re-used for the framework, and to see whether these can be integrated. The selection of these technologies was based on inputs from developers and researchers in the project itself that have been gathered in WP3.

However, there was also a checking step that involves the project partners developing the HUMBOLDT scenarios. For this, all scenarios were provided with a dossier of questionnaires that aims at determining both the current system landscape, and the new elements that could be introduced based on HUMBOLDT. Furthermore, these questionnaires addressed both business aspects and technological aspects, but targeted at determining technological consequences and thus aimed at developers.

Based on the results of these dossiers, a set of technological requirements was extracted and used to test whether the system design fits within the different environments, and if it is also able to cover the Use Cases presented.

4.2.2 Framework Version 1.0 (*specification finished in PM18, implementation finished in PM26*)

This phase intended to create a robust framework based on the lessons learnt in the prototype phase. At this stage, the capabilities of user interfaces were still low. Further, only limited capabilities for the harmonisation module were available. Obviously, the development for Framework V1 still was mainly technology-driven.

For this phase, a series of requirements was extracted from the A3.3-D1 and A3.3-D2 reports. Here, secondary literature was analysed which consists mainly of third-party user surveys. The items collected from these studies and surveys were used to prioritise developments within Framework Phase I and II.

Further, inputs of external users became more important in this phase. The external users for this phase were developers and researchers from the related projects, and also from INSPIRE. Since this phase has seen the commencement of the harmonization activities in WP7, the domain knowledge and modelling capabilities of the Data Custodians and Data Integrators were also important to integrate.

In addition, the processes for the integration of requirements and for specification suggestions were available both for the limited external users and for all project-internal users. This involved means to directly propose specification changes and addendums, as well as additional information on existing requirements and on new ones.

At the end of this phase, the software was released to the public, therefore ending the phase of limited external access.

4.2.3 Framework Version 2.0 (*specification finished in PM26, implementation finished in PM34*)

In this phase, the rather empty frame needed to be filled, and the harmonization capabilities had to be significantly advanced. Therefore, the development of the scenarios started in this phase. A great deal of feedback was provided from the usage of the framework and its extension by the developers working in the scenarios, addressing items such as developer usability of the APIs, but also the verification of the scenario requirements collected during the Prototype Phase through the involvement of utilisers, as described in the next paragraph.

The people actually using the scenarios play an additional role in this phase, since they define the functionalities they need, which in turn are evaluated for integration into the main framework. Even though these people have been asked for their requirements in the earlier project phases as well, many requirements come up during the actual formation of the scenarios.

The call for additional scenario concepts also occurred in this period. The call invited industry and research to examine the specification and implementation, and to identify both technical and functional gaps that can then be addressed within their proposal.

At the end, a consistent and sufficiently detailed set of requirements has been achieved through web-based requirement management and personal consolidation meetings, brainstormings.

4.2.4 Framework Version 3.0 (specification started in PM 27, implementation and validation due in PM47)

This second phase of filling the framework will end with a HUMBOLDT framework that is functionally complete, i. e. all necessary modules have been implemented. There will be some open points and certainly improvable characteristics such as performance and resource consumption, but the essential developments especially in processing and data harmonization will be completed now. Here, inputs from data providers will be as important as from users in the scenario and external applications, to see if their quality expectations on harmonisation are reached.

Becoming Open Source and establishing the web-based communication platforms is essential in this period to ensure necessary feedback and to prepare post-project life - which will result in a migration from project environment to community environment.

5 Expectations and Intentions of Users

5.1 Developers

During the four years of the HUMBOLDT project, the Consortium members are obviously motivated in framework development. However, it is reasonably expected that they will be deeply involved in the further development of the framework, an issue that will be further detailed in the Exploitation Plan.

The HUMBOLDT framework can also be appealing for “external” software developers if a large number of users is involved. They can then develop, for example, specific interfaces for each user group tailored to their needs, which provide the basis for business development. In the INSPIRE Internet Consultation Report (http://inspire.jrc.it/reports/analysis_consultation_01092003.pdf) a key comment states that the IT and geographical information industries should be involved in the development of the ESDI standards. HUMBOLDT can become a testbed for this. As HUMBOLDT will be provided as an open source framework under LGPL even business models of particular actors can be based in part on the Software. Therefore the quality of implementation and implementation relevant information, as well as an efficient and reliable structure for ownership and decision making are the evaluation criteria for this group.

The HUMBOLDT products of interest for developers:

- Framework and its documentation,
- (possibly) the Toolset and some Scenario Applications if ready-made solutions exist to their specific goals,
- Training material on developer level (HUMBOLDT components & architecture).

5.2 Data custodians and data integrators

Public-sector data providers possess a vast amount of diverse data that needs to be harmonized in a common framework e.g. public authorities who have to react to the implementation of the INSPIRE or the WFD Directives. What HUMBOLDT can offer to the data providers is therefore a reduction of their efforts by offering a complete framework for data harmonization.

According to the already above mentioned INSPIRE Internet Consultation Report, numerous users, acting as “harmonisers” from the HUMBOLDT point of view, stated that information for spatial

infrastructure should be built upon the existing elements available in the Member States. In many cases they take part in these initiatives and therefore can avoid duplication of effort.

On the other hand, private companies offering cross-border services may also benefit from the HUMBOLDT framework as it enables them to obtain seamless data for their specific field e.g. fleet management or navigation including live traffic information, etc.

HUMBOLDT can also help in increasing the number of possible consumers of both data and services. Currently, spatial data is often acquired and used in a single context. An aim of this project is therefore to make it possible to reuse data in various application contexts. This will be accomplished by laying the groundwork for a semantic interoperability of the data, as well as by providing modules for the automatic reclassification of data by user's demands, and by the creation of data views that “remodel” the raw data for use in other applications. In this way, organizations from raw data providers to value added service providers can offer their products for new applications and so address a wider audience.

Logically, both subgroups are motivated in applying the framework and giving feedback to the developers as this increases its usefulness and hence their benefits.

Important criteria for this group to use HUMBOLDT results or not, are the efficiency and quality of the harmonisation, and the sustainability concept of the framework.

The following HUMBOLDT products are of particular interest for data custodians/integrators:

- HUMBOLDT Framework (depending on the availability of developers within the organisation),
- HUMBOLDT Toolset (for general-purpose data harmonization),
- HUMBOLDT Scenario Applications (especially for Data Integrators, depending on activity area),
- HUMBOLDT Documentation,
- HUMBOLDT Training Package / Data custodian & integrator level.

5.3 End-users

It is evident that all end-users would like to have specific data for their activity area. If this activity requires cross-border or cross-disciplinary harmonization of the data, then the framework developed in HUMBOLDT should be of interest for these users. Much effort has been expended in INSPIRE and GMES to develop a picture of user needs and requirements. During the internet consultation on INSPIRE, most users agreed with the basic principle that *“It must be possible to combine seamlessly spatial data from different sources across the EU and share it between many users and applications”*. The HUMBOLDT Framework will be able to solve the technical part of this. Moreover, three of the five main obstacles listed in the study – namely: lack of documentation, incompatible spatial data sets, and incompatible geographic information systems – are within the scope of the project.

End-users will therefore be motivated in using HUMBOLDT and providing feedback, provided they are aware of its importance and practical use in their particular field of activity.

The following HUMBOLDT products are of particular interest for end-users:

- HUMBOLDT Toolset,
- HUMBOLDT Scenario Applications (depending on the user's activity area),

- HUMBOLDT Documentation,
- HUMBOLDT Training Package / End-user level.

6 Instruments for User Involvement and Feedback Management

6.1 Raising Awareness

6.1.1 Building on existing networks: Creation of the Key User Group

In order to raise awareness on the project and construct a solid Key User Group, it was decided to make use of the pre-existing networks of the Consortium Members and build on their well-established connections. Therefore, all Partners were asked to identify and contact possible Key Users in their respective environment (country / application area), inform them about the potential benefits and requirements of the HUMBOLDT project, and ONLY if they agree and are motivated to join, to forward their contact information to the Project Office. (It is, again, very important to underline that the user must be contacted and has to agree before the contact information is submitted to the PO.) The Project Office manages an online database of user contact information, which is – according to the regulations – intended to the purposes of the HUMBOLDT project only and is not in any case provided to third parties. The list of the users is handled confidentially, but some information is provided in the User Inventory section (9.1.2.1).

On the other hand, GI-related professional organisations (associations, consortiums, etc.) on national and international levels are intended to be used as multipliers. All Partners have been asked to identify and target these organisations in their respective countries and areas, as most of them are members of such bodies. This can lead to an important increase in the number of possible users.

6.1.2 HUMBOLDT Main Dissemination Instruments

The HUMBOLDT dissemination instruments are described in detail in the Dissemination and Exploitation Plans (A11.1-D1 and A11.1-D2). However, dissemination is vital in raising awareness, and is thus crucial from the point of view of efficient user involvement. Therefore, user involvement activities have to use dissemination instruments, namely:

- HUMBOLDT Scientific Publications and Articles
- HUMBOLDT White Papers
- HUMBOLDT Brochures
- HUMBOLDT Leaflets
- HUMBOLDT Scenario Leaflets
- HUMBOLDT Web pages (HUMBOLDT Public Web page www.esdi-humboldt.eu, HUMBOLDT Community Website community.esdi-humboldt.eu, HUMBOLDT Training Platform www.gisig.it/humboldt/training/)
- HUMBOLDT Newsletters
- HUMBOLDT Conference

- Press Conferences and Press Releases.
- Attendance at National and International Workshops, Fairs and Conferences
- Publication in GI-related newsletters

6.1.3 Motivating users to join the HUMBOLDT User Community

6.1.3.1 Public deliverables, summaries

HUMBOLDT users will have the right to browse all the public deliverables created during the project. Besides this, it is foreseen to provide an overview of all documents created within the project that might be of interest for the HUMBOLDT audience on the public website. A contact point for each document will be named to whom interested people can send an e-mail asking for the document. The contact points then decide (on their own or together with other not yet named responsables), if the requested document will be sent to this person in total or only partially.

6.1.3.2 Available HUMBOLDT software components

Up to now, a number of valuable HUMBOLDT components have been developed that can be of interest to various kinds of users. The new Community Website is the main platform for their distribution and feedback management. Below is a short list introduction to the different components of FW V3.0; more details can be found in the document "A5.2-D3 [3.0] A Lightweight Introduction to the HUMBOLDT Framework V3.0" and in the specification documents referenced in within.

The HUMBOLDT Data Harmonisation Toolkit

The HUMBOLDT data harmonisation toolkit consists of a set of graphical user interfaces that enable users to perform different tasks related to the HUMBOLDT software, such as conceptual schema mapping, workflow or context definition.

- The GeoModel Editor: a tool to support users in producing suitable data schemas and data specifications for geospatial demands. The GeoModel Editor was specified and developed as part of activities for framework version 1 and version 2.
- The Alignment Editor HALE: a rich graphical user interface for defining mappings between concepts in conceptual schemas (application schemas created with the HUMBOLDT GeoModel Editor), as well as for defining transformations between attributes of these schemas.
- The Context Client: allows users to create and manage contexts and user / organisation profiles. Within HUMBOLDT, the term Context refers to a set of constraints on geospatial data sets, such as constraints on language, spatial reference system or bounding box. Contexts can be linked to Organisation- and / or User Profiles, where information on users and organisations is maintained. The Context Client is the graphical user interface for the HUMBOLDT Context Service.
- The Workflow Frontend: a workflow designer and the graphical user interface of the Workflow Design and Construction Service (WDCS). It allows users to register, manage and graphically compose geoprocessing components into workflows. The Workflow Frontend therefore offers quite similar functionality as e.g. the GUI of the ArcGIS Model Builder or a BPEL Workflow Designer.

The HUMBOLDT Framework for Service Integration

The HUMBOLDT Framework for Service Integration consists of software components that enable users to publish geodata and to consume geodata via OGC-conformant interfaces, harmonised and transformed to their requirements. It consists of the following services:

- *the Context Service (CS)*, a service for managing product descriptions for transformation results, users and organisations;
- *the Mediator Service (MS)*, a harmonisation workflow execution engine that offers transformation, download and view service interfaces for seamless integration with existing environments;
- *the Workflow Design and Construction Service (WDCS)*, a component for analysing harmonisation needs and for constructing workflows;
- *the Information Grounding Service (IGS)*, is the HUMBOLDT catalogue. It provides cascading catalogue functionalities by periodically harvesting external catalogues.
- *the Model Repository (MR)*, a conceptual schema and mappings repository.

6.1.3.3 User Involvement by means of Training

Training and awareness are two of the most important issues in capacity building, both the basic rationale and the final target of any action carried out. Training impacts on the capacity of the stakeholders in developing an understanding of innovative technologies and processes and in exploiting them.

Awareness in SDI, standards, metadata, web technology, as well as training in the use of the HUMBOLDT framework as a base for developing harmonised applications contribute to the creation of the “Humboldt Community” compliant with INSPIRE principles, at the cutting edge of the GI technology, with proper skills concerning technical features including OGC standards, interoperability etc.

A HUMBOLDT training package assisted by a well-organised training framework is then able to support the HUMBOLDT dissemination and exploitation policy, and the effective involvement of the users. The training package will be available for download through the project website for the registered HUMBOLDT users.

The training platform is already available and made online in its first version, see 2.3.

It will be useful and effective to involve users throughout a training schema that leads them to build-up their own use cases with their own datasets within one or more of the Humboldt scenarios, according to the following schema:

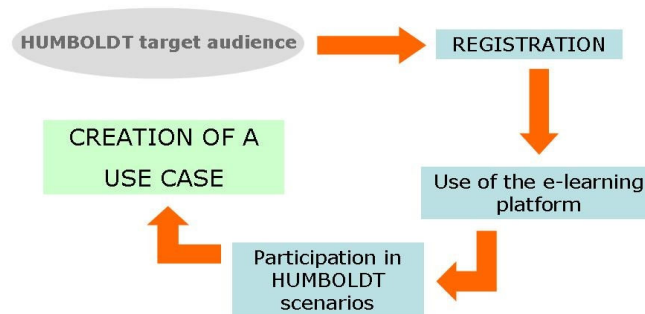


Figure 2. The e-learning platform as a tool for user involvement.

6.2 Management of user requests and feedback

6.2.1 Development processes driven by project-internal users

Deliverable A4.3-D1 (*788-process_especification_evaluation_and_improvement-etra-001-final*) contains all relevant information on the processes and tools at the disposal of users to influence developments. In the beginning, most of these possibilities were available for project-internal users only, but many of them are made available gradually as the project became open to the public, through the Community Website (see next section).

Generally, the role of specification in HUMBOLDT is one of collecting and filtering requirements and other input from all the different groups in the project and outside it in such a way that a working software system can be built and enables its users to cope with their tasks. The two groups mainly influencing specification work are technicians and researchers on the one hand and users (mainly addressed through the scenarios) on the other hand. Both groups have the same means of influencing specification and therefore the project results.

Also, for a project's long-term success as an open source project, an open process is essential. Open process does not only mean to be able to retrace what happens in the process, it also means to be able to influence the input and processing in the specification process. Finally, it means any group aforementioned can change the process itself. If they have any suggestions for modifying one of the processes below or adding a new instrument, they should contact the WP4 lead with their suggestion.

The following sections describe in detail what options and tools are available for influencing or driving specification. Each of these means can be used any time since PM18 (i.e. after V1.0 of the specification has been released). However, the most of requests are applied to the second working version of the specification, so they have not been reflected in the specifications from the beginning. This was necessary since the validation process, where the entire set of requirements is analysed looking for dependencies and conflicts was needed in order to gather correct and consistent requirements. This is the VOLERE approach¹ (see also next chapter). Also efficient development is hardly possible when requirements change all the time.

¹ <http://www.volere.co.uk>

Management of user requests and feedback

The specific procedures to be followed according to the purpose of the request are explained here. For each kind of request, a specific procedure and a specific tool is used. The following table will guide finding the right procedure for the modification wished to introduce in the specifications:

If you expect...	Then you can follow the procedure for...	Tool to be used...	Requester...
...expertise on how application-specific needs can be implemented.	<i>Architecture Request (AR)</i>	<i>HUMBOLDT Forum</i> (http://forum.esdi-humboldt.eu)	Scenarios within HUMBOLDT
...integration of concrete (functional or technical) solutions into the framework.	<i>Requirement Request (RR)</i>	<i>VOLERE Tool</i> (http://humboldt.etra.es)	Anyone within HUMBOLDT, related projects and initiatives
...that your possibly revised needs for concrete solutions be taken into account before the solutions are implemented.	<i>Requirement Change Request (RCR)</i>	<i>VOLERE Tool</i> (http://humboldt.etra.es)	Anyone within HUMBOLDT, related projects and initiatives
...integration of a whole new service into the framework.	<i>Specification Request (SR)</i>	<i>HUMBOLDT Forum</i> (http://forum.esdi-humboldt.eu)	Scenarios, WP6, WP7, WP8 within HUMBOLDT
...modification of an existing solution.	<i>Change Request (CR)</i>	<i>Polarion</i> (http://polarion.esdi-humboldt.eu/)	Anyone within HUMBOLDT, related projects and initiatives, preferably with a technical background

Table 1: Matrix of procedures and tools for managing requests in specification process.

POLARION system is a rather complex application that is mainly centred on technology experts. It allows to specify the requests in great detail, but can be confusing to people not doing software engineering or implementation regularly. It is therefore recommended only for Change Requests (CR, see A4.3-D1 for more details), when it is known in detail what is expected.

VOLERE system is easier to use and gives additional guidance on how to formulate requirements; it is therefore recommended for the submission of requirements (RR, see A4.3-D1 for more details) and changes to requirements (RCR, see A4.3-D1 for more details).

The **HUMBOLDT Forum** is a good public working space for the management of requests from users dealing with the Framework implementation. It is recommended for requests regarding specific needs of the users; they are Architecture Requests and Specification Requests. These requests should be managed using a specific Microsoft Word Template (see A4.3-D1 for more details).

A project-internal **HUMBOLDT Wiki** is also used and proved to be a very powerful information exchange tool not only in collaborative software development but also in all kinds of distributed work.

On the long term, this could serve as a basis for more efficient open-source development, and it can contain all kinds of HUMBOLDT-related information in a well-structured documentation system and thus can also be regarded as a “product” containing the result of common efforts.

6.2.2 Connections with the "outer world" and transition to post-HUMBOLDT phase: the Community Website

Communication with project-external users is becoming increasingly important as the project evolves and the transition towards the post-project ("Community") phase is getting closer. Open access to the source code repository and corresponding documentation has been provided since March 2009 through the "HUMBOLDT Community Website". This website has been provided to be the main communication platform, for the HUMBOLDT developer, professional user and key user communities, to exchange not only software, but also experiences, requirements, documentation. As the project is getting into the finish line, development processes will also be migrated to the Community Platform to ensure the smooth transition from the project period to the Community phase.

This website offers documentation on the developed software, contains news about on-going work and provides several means for interested parties to give their feedback on the tools HUMBOLDT is implementing. The Community Website was received very well both within the project and by the community. Positive proof of the acceptance and usefulness of the Community Website was given following the INSPIRE Workshop at the GSDI11 Conference hosted by the HUMBOLDT Consortium with several hundred people visiting this website, and several dozen downloading software. Some of them also provided detailed feedback and filed bug reports which have been included in HUMBOLDT's specification process. We have also received several feature requests via the community website.

The “Community Website” (www.community.esdi-humboldt.eu) has already proven to be a well accepted tool for getting in contact with the HUMBOLDT user and developer community and vice versa. Regarding the users, this Community Website addresses particularly the more technically skilled people, but this goes in line with the project status which still requires especially technological input in the means of development activities. This platform is assigned to be an important part of the sustainability strategy of the HUMBOLDT project. In this sense, step by step the whole community and user involvement activities will be consolidated here in the near future. That is why the “Get involved!” section of the project's public website (www.esdi-humboldt.eu/get_involved.html) will be restructured so that it will only be an “entry point”, a vehicle where interested people can find their way into the multiple possibilities of getting involved into the project. It is planned that each type of user will find there its specific description HOW they can get involved, WHERE they can do it and WHOM they can contact for further information. Therefore, the “Get involved!” section will provide all necessary information, e.g. links to corresponding tools at the Community Website. This strategy is described in the User Involvement Document, which is updated regularly to tune the user involvement activities to the project status and needs, as well as to optimise the dissemination of results (the latest version is available on the project website www.esdi-humboldt.eu/public-deliverables.html).

As the Community Website is constantly updated, visitors can use it to trace recent development activities and to get an overview about the planned next milestones.

6.3 Creation of the User@HUMBOLDT Platform

The User Platform could address and build on existing user federations and user groups including those from previous GMES projects (GSE phase I), current projects () and future projects (GSE phase

II). In the past these user groups have been mainly oriented to support user needs within each specific project. Collaboration across projects has rarely taken place. While the on-going activities are mainly addressing the technical level of collaboration, it is fundamentally necessary to also address decision-makers promoting collaboration and discussion between user communities. To address the decision-making level collaboration user networks could be proposed including Eionet, the European Environmental Information and Observation Network of the European Environment Agency (EEA), and city networking organisations including UBC, EUROCITIES, Med Cities, METREX etc.

An inner circle of User Platform members around the core HUMBOLDT partners consist of representatives of the user federations and networks identified above, with a second circle formed of service providers invited to participate in different meetings and to be involved in the multi-lateral dissemination approaches of the project. Critically, this network should be led by user organisations. Only a user network that is led and run by users will in the long term be considered credible by user organisations and articulate overall European user opinions.

Moreover, Consortium members involved in previous or other ongoing INSPIRE-, GMES- or other ESDI-related projects use their contacts to involve key users.

Users external to the project but identified as “key users” including representatives of the user federations, receive restricted access to the intranet e.g. to the “final” and external documents and some mailing list archives. They have also been invited to certain meetings where relevant issues are to be addressed (see Annex I and the Activity Report for details).

One of the most important developments in this respect from the last period is the creation of a HUMBOLDT-specific topic within the INSPIRE Forum, the main discussion platform for ESDI-related communication (<http://inspire-forum.jrc.ec.europa.eu/>). Here, HUMBOLDT will be responsible for moderating the discussions on open source tools related to data harmonisation.

- Provide a common platform and competent partner for discussion of key issues
- Provide a **platform** for user organisations and country interests
- Provide a home for an independent interest group representing the user point of view
- Report the discussions results and achievements to the above mentioned stakeholders
- Achieve continuous user involvement to support the common objective of setting-up sustainable services beyond the bi-lateral supplier-user relationship
- Build a network user organisation at all administrative levels (from European to local) and across nations sharing a common interest and mandate
- Create visibility and impact in the "official" working groups and decision making process by communicating these statements through user organisations that are pro-active opinion makers engaged in European or national working groups and processes
- Convince and motivate new user organisation to join the process

This is achieved by

- **Consensus** – by teaming user organisations with a common mandate and interest
- **Continuity** – going beyond the scope and lifetime of individual projects
- Making an **impact** in the decision making process.

This platform aims at enabling the user group to discuss the scope and content of user involvement within and outside of the various projects.

6.3.1 Other ways for gathering feedback

Personal contacts are very important from the feedback point of view. National and international events offer important opportunities for gathering direct feedback. Therefore, an Event Calendar was created on the Intranet server. In this calendar, consortium members are able to:

- Browse events,
- Enter events relevant to the project for dissemination and feedback collection,
- Indicate if they will take part in that event, add comments,
- Request dissemination material for particular events.

The Event Calendar is also published on the public web server of the project, so that external users can browse the events and can also see where HUMBOLDT will be represented.

Consortium members presenting HUMBOLDT related work at those events intend to gather feedback as far as possible and they share their observations with the relevant HUMBOLDT partners, and with the Advisory and Review Boards.

6.4 Use of Dissemination Instruments in the Project Phases

Opportune dissemination materials are an important communication vehicle regarding User Involvement. Therefore, all actions will be accompanied by dissemination work with the aim of general awareness, higher visibility and so the sustainability of HUMBOLDT. This includes the planned events throughout the project duration, PR, workshops, training, off and online marketing, Web PR, Point Of Interest presence with posters i.e. in academic, governmental and research environments etc.

6.4.1 Prototype Phase (*finished*)

Within the prototype phase, internal communication between project partners was of major importance, primarily needed for the development of the core technology. In this sense, the intranet performed a key role in dissemination supported by personalized contacts, phone, Skype and e-mail. From the beginning of the project the intranet serves as a distributional tool for the exchange of deliverables and as an archive for documents etc..

6.4.2 Framework Version 1.0 (*specification finished in PM18, implementation finished in PM26*)

This phase required active dissemination towards external users, and access to specific sections of the intranet was provided for the contributing external parties, including that derived from related projects. Besides this, data custodians and data integrators were addressed, i.e. by personal contact via the scenario teams, to encourage them to join the HUMBOLDT User Platform. As the basic fundamentals on which USER@HUMBOLDT can grow and develop dynamically involve comprehensive print material, such as brochures, leaflets, technology descriptions, these were provided to project partners and users for further distribution among interest groups. Confirmed contacts were stored and categorized, and a functional address data management was established. Newsletters and a frequently updated public website convey the data custodians' and data integrators'

commitment to HUMBOLDT related challenges and perspectives. Moreover, the possibilities and needs of a Community Website have been discussed and its implementation has been started in the last third of this phase.

6.4.3 Framework Version 2.0 (*specification finished in PM26, implementation finished in PM34*)

Following the action items of Framework Version 1.0, in this phase additional dissemination instruments came to use in order to provide deeper knowledge of the HUMBOLDT framework, and secure feedback from scenario related developers about their requirements concerning HUMBOLDT functionalities. Besides the use of the above mentioned dissemination instruments, the implementation of the Community Website has been promoted and further customisation has taken place in order to meet the varying needs and expectations of the audience. The development of a training framework has been started to distribute further knowledge and skills. The participation of project partners in conferences and external workshops has been accompanied by the distribution of updated dissemination material supplemented by personalised direct mailings.

6.4.4 Framework Version 3.0 (*specification started in PM 27, implementation and validation due in PM47*)

All featured dissemination instruments will be further aligned with individual goals, amongst others the demonstrators developed by the HUMBOLDT application scenarios will be embedded into the project websites and the final conference will be organised. A final Public Report will be created at the end of the project to give a complete overview of the four project years to be distributed within the defined key user groups. This concise summary shall keep the HUMBOLDT results available for the audience on the one hand but on the other hand also for future projects in this area.

6.5 Correct handling of collected information

Due to the fact that the HUMBOLDT project regularly collects data and information (including personal information) to carry out some parts of the work, and also because HUMBOLDT is establishing close connection to users and user groups, a detailed HUMBOLDT Privacy Statement covering all relevant aspects of information handling was elaborated and is available at the following address:

<http://www.esdi-humboldt.eu/contact/privacy.html>.

7 Gender perspective in user involvement

Gender issues are addressed in the Gender Issue Plan (998-gender_issue_plan_annex_i_gender_issueplan_table-tu-da-001-rfc) and a specific chapter deals with these issues in the Dissemination and Exploitation Plan, section 2.3 (999-a11_1-d2_dissemination_and_exploitation_plan_draft-tu-da-001-new). Please refer to these documents for further details on gender issues; this chapter gives only a short overview on the topic in the context of user involvement.

User involvement is already implemented within the consortium as HUMBOLDT as Open Source Software project needs to involve the targeted user groups from early stage. Therefore, different user groups and stakeholders are represented beside developers within the working groups. These groups were chosen with the goal of creating balanced sets of people considering their technical skills as well as the gender aspect.

Moreover, the needs of both genders have been distinguished during the state of the art work and requirements analysis by mixed groups of interviewers and interviewees. The fact that the research topic itself did not bring up any gender specific needs in terms of harmonization and GI services may however not be concealed. One of the reasons for these missing findings might be that the project's focus lies to a huge extent on the technical issue – i.e. programming – of how to harmonize the different data formats successfully. The discussions in the HUMBOLDT working groups have evidenced that the individual differences in everyone's programming style carry much more weight than gender-related ones.

The opinion that programming or IT itself is not gender-related is also emphasized in a paper for the OECD-CERI Conference “Return to Gender: Gender in ICT and Education” in June 2008 in Oslo, Norway (http://www.oecd.org/document/20/0,3343,fr_2649_35845581_40830228_1_1_1_1,00.html) written by Tone Bratteteig. She suggests that there are two ways of looking into the subject of IT and gender: On the one hand, informatics includes human-computer interaction and information system analysis and design, areas which require certain kinds of socio-cultural knowledge and skills. On the other hand, IT focuses mainly on the computer which makes it difficult to see gender aspects. Discussing gender with the latter, mostly leads to questions like: “Is software gendered? Will a female programmer write a piece of code differently – how and why? What difference would it make? Are computer systems gendered? How can you tell? How could they be made differently, and what difference would that make?” Bratteteig on the contrary aims at highlighting that IT “is more than being able to search and type on a keyboard”. For her “being literate” is the major motive as IT is never the “goal” but always the “means”: “IT is a tool or a prosthesis supporting human activity” which means that not technology itself is gender-related but the technical know-how and the way of interacting.

As the female members of HUMBOLDT working groups and key user groups are inserting their opinions and needs in logic, interaction and use environments into the HUMBOLDT developments from the start, gender equilibrium of all project components is ensured. Especially for an Open Source Software project like HUMBOLDT the fact that more than 30% of its key users are women is a noteworthy success.

8 Current status of User Involvement and future perspectives

The main objectives set in the previous version of the User Involvement Document for the past period were: to **raise awareness** and **start establishing bi-directional connections** to users. It can be stated that they were mostly successfully achieved.

8.1 Achievements in the last period

8.1.1 Project environment

- The project environment has been further customised, all the instruments are available for the user-driven development (see section **Hiba! A hivatkozási forrás nem található.**).
- The Community Website has been developed and put online, which will be the essential platform for user-driven development over the last project year and in the future (see section **Hiba! A hivatkozási forrás nem található.**).

8.1.2 Networking

- Over 30 Key Users have been identified by the project partners upon request of the User Involvement Group (see below). These users are organizations or individuals with a strong interest in the outcome of the HUMBOLDT project and are also willing to influence the development, therefore volunteered to become a member of the HUMBOLDT Key User Network. The advantage of such a network is its visibility to the consortium and also the reliability of the users, as it consists of project-external users with close connections to at least one HUMBOLDT partner. This network has already proven its value within the specification and evaluation phase of Framework Version 1.0 and 2.0. General information can be found in 9.1.2.1.
- Connections to numerous other international and national SDI- and GI-related projects were established, and collaboration started to ensure more efficient and effective work and an optimal use of (joint) resources. The list of projects can be found below, in 9.1.2.3.
- Besides the pre-existing links to our “sister” projects, the established links towards other European projects (e.g. ESDIN and NatureSDI+) are very promising from a user involvement viewpoint. Through these projects, experienced and reliable domain user communities with awareness of the HUMBOLDT project can be reached, who are willing to use the results and provide expert feedback. Further cooperation is therefore essential.

8.1.3 Dissemination

- Further issues of the HUMBOLDT Newsletter were created and disseminated towards all registered HUMBOLDT Users (including Key Users).
- For the broader audience an Annual Report regarding the HUMBOLDT progress is published each year. This document is of major importance to reach also the non-developing target groups of HUMBOLDT for which most of the project documentation still is too technically oriented.

- To ensure that only up-to-date information of HUMBOLDT is distributed, a new version of the HUMBOLDT project Brochure was created to reflect the current project stage. Moreover, leaflets regarding the technical development and the HUMBOLDT application scenarios have been created and made available to the public (e.g. personally distributed on conferences and workshops by project partners). Brochure and leaflets can also be downloaded from the project's public website.
- The HUMBOLDT project was represented at several conferences, workshops and joint project meetings. The successful organisation of the HUMBOLDT Data Harmonization Workshop at the GSDI11 / 3rd INSPIRE World Conference (Rotterdam, The Netherlands) was one of the major achievements in dissemination and user involvement in this period. Organising another workshop in the frame of the AGILE conference was also a very important result.
- Presentation of HUMBOLDT in several sessions at the Towards eEnvironment Conference in Prague, 25-27 March 2009 was also essential in strengthening the links with GMES. This event was dedicated to information exchange among public administrations, EU institutions, environmental agencies, scientists and businesses involved in developing and using environmental informatics for the delivery of modern eEnvironment services in Europe. The conference was organised by the Masaryk University in cooperation with the Ministry of Environment of the Czech Republic, the European Commission, the European Environment Agency and the European Space Agency and further Czech institutions, and was one of the major GMES- and SEIS-related events in 2009. See the Annual Report for further details.
- A large number of GI- and ESDI-relevant newsletters, journals and other dissemination media were identified by the Project partners upon the request from WP11. The list is managed centrally by WP11 and is used for dissemination activities.

8.1.4 Development

- The Scenarios submitted their final and detailed set of requirements, and several consultations and discussions led to a consolidated set of requirements that serve as a basis for developing Framework version 3.
- The development results were made publicly available on the Community Website: community.esdi-humboldt.eu. The source code repository is linked there, and extensive software documentation has been / is being developed.
- News about on-going work can be consulted continuously.
- The site provides several means for interested parties to give their feedback
- Visitors can use it to trace recent development activities and to get an overview about the planned next milestones.

8.2 Strategy for the next period and outlook

Goal: Further dissemination and awareness-rising

- Towards GMES & End-users
 - Presentation of Scenario results, Demonstrators
 - Participation at thematic events

- Towards INSPIRE & Data Custodians / Integrators
 - FW components: demonstration of use and integration through other projects
 - Community website – maintaining continuous communication
 - Participation at events
 - HUMBOLDT as SDIC
- Towards Developers
 - Community website
 - Participation at events
 - Community website - maintaining continuous communication

8.2.1 Catalysing user feedback by development

In Framework Version 2.0, the specifications built upon the results achieved by the Fast Track Scenario and the Conceptual Schema Translation Task Forces have been implemented. This resulted in a number of functional components and services visible not only to developers, but also to the other user categories. In the previous periods awareness was widely raised about the project, therefore in the next period the aim is to satisfy expectations and catalyse bi-directional connections by making available software elements (Framework, Toolset, Scenario applications) and share them with the public. In the specification work for Framework version 3.0, Scenario requirements gathered via the VOLERE system were taken into account, and requirement consolidation workshops were organised to reach a sufficient maturity, completeness and consistency on the level of elementary requirements. The Community Website will be the platform for both sharing the latest developments with the user community and gathering feedback, requirements, etc.

8.2.2 Sharing project results with the broader public

Software elements developed within the project and considered as final should be made available to the public. Furthermore, active dissemination is needed to make people aware of the newest results. This will be achieved via newsletters, conference presentations and workshops, continuing HUMBOLDT's dissemination efforts of the last project years, but the software elements or their showcases/demonstrators will also be made available on the project websites.

All finished public deliverables are available on HUMBOLDT's public website. Moreover, a number of project-internal documents has been listed there, too. If a user is specifically interested in one of the restricted documents, he or she can write a request to the assigned contact person. The decision of making it available to the interested is then be taken on a by-case basis.

8.2.3 Transition to post-project life

HUMBOLDT went open-source in March 2009. The necessary steps and preparations have been made within WPs 4, 5 and 8 to ensure a smooth start. Basic considerations are written in A4.1-D1 "State of the art in collaborative software development and definition processes".

Creation of the Community Website was an important step toward the post-project era. In the last project year, all internal processes have to be migrated towards the Community Website and the Project Website, which (both) will be the primary platform for subsequent developments.

User involvement activities must concentrate now on reaching the critical mass of users, and establishing stable background for the sustainability of the results.

Dissemination, exploitation and business perspectives are addressed in details within the Dissemination and Exploitation Plan: 0999-a11_1-d2_dissemination_and_exploitation_plan_draft-tu-da-001-new.

9 Annex I: User Inventory

9.1 Inventory of current users

9.1.1 Users in HUMBOLDT Scenarios

The leader of WP9 and the Scenario leaders completed the compilation of all relevant information on users currently involved in the HUMBOLDT Scenarios. The results are incorporated in the Scenario System Specification deliverables, and are summarized below.

The list of users already represented in the Scenarios is provided below.

- HS Urban Planning
 - Indra Espacio (Spain)
- HS Forest:
 - Forest Management Institute (Czech Republic)
 - Regional Government Liberec Environment Protection and Forestry Department
 - Regional Government Usti nad Labem Environment Protection and Forestry Department
 - Regional Government Karlovy Vary Environment Protection and Forestry Department
 - CENIA
 - Grauba, Saxonian regional government
 - Forest owners
 - State Czech Forests
 - State Saxonische Forest
 - Forest schools (secondary, Universities)
- HS ProtectedAreas:
 - Regione Liguria (Italy)
- HS EriskA:
 - Bodenseekreis (Lake Constance district office, Germany)
 - Konstanz district office (Germany)
 - Water management agency of Kempten (Germany)

- Office for warning affairs of the state Vorarlberg (Austria)
 - Office for military and civil protection of St. Gallen (Switzerland)
 - Office for environmental affairs of Thurgau (Switzerland)
 - National mapping agency of province Vorarlberg (Austria)
- HS Water (*Now integrated into the new Transboundary Catchment Scenario, see below*)
- HS Ocean:
 - Aegean region:
 - General Secretariat of Civil Protection
 - Ministry of Mercantile Marine/Marine Environment Protection Division
 - Baltic region:
 - Seatrack Web users – Helsinki Commission (Baltic Marine Environment Protection) members
 - UK region:
 - The Maritime and Coastguard Agency
 - French region:
 - CEDRE, the French Marine Pollution Organisation
- HS Galileo:
 - Individual Users that are dependent on location-based air quality information (e.g. allergic persons)
 - Emergency respondent
- HS Transboundary Catchment (Midterm Scenario):
 - Conseil Général des Alpes Maritimes - Technical services (France)
 - PACA Region - Technical services (France)
 - Mercantour - Argentera Natural Parc (France)
 - Regione Liguria (Italy)
 - Province of Imperia (Italy)
 - Catchment management Authority (Italy)
 - Regional Parks (Liguria, Piedmont – Italy)
- HS Sustainable Urban Atlas (Midterm Scenario)
 - ...
 - ...

9.1.2 Project-external users

9.1.2.1 Key Users

Due to privacy reasons, only the corporate users and the respective countries are shown in the below table.

Organisation	Country
Research Institute of Geodesy and Cartography in Bratislava	Slovak Republic
Nitra self-governing region	Slovak Republic
Landeswarnzentrale Vorarlberg	Austria
Ministry of Mercantile Marine / Marine Environment Protection Directorate / Informatics and New Technology Directorate	GREECE
General Secretariat for Civil Protection	GREECE
Hungarian Ministry of Environment and Water / Dept. of Environment and Nature Protection / Dept. of Nature Protection Informatics	Hungary
Instituto de Meteorologia	Portugal
Instituto Hidrográfico	Portugal
Instituto Nacional de Estatística	Portugal
Office fédéral de topographie	Switzerland
NATURE-GIS (SDIC)	Italy
GI-CLAN (SDIC)	Italy
Fondazione Graphitech	Italy
Regione Piemonte	Italy
Regione Liguria	Italy
Provincia di Savona	Italy
Provincia di Genova	Italy
ICCOPS	Italy
Centre d'études techniques de l'équipement du sud ouest	France
Conseil Régional Nord Pas de Calais	France
Oil Spill Response and East Asia Response Limited	UK

9.1.2.2 Self-registered users

Due to privacy reasons, only the corporate users and the respective countries are shown in the below table.

Organisation	Country
Surveying and Mapping Authority	Slovenia
Arpa Piemonte - Centro Regionale per le Ricerche Territoriali e Geologiche - Sistema Informativo Geografico	Italy
Environment agency (UK)	United Kingdom
Sparx Systems Pty Ltd	Australia
Amt für Stadtentwicklung und Statistik	Germany
Environmental Studies Centre (Vitoria-Gasteiz City Council)	Spain
Monte Pino Met Research Observatory, GTOS/TEMS Database (FAO, UN)	Italy
University P. Comillas, Department of Sociology and Social Work	Spain
TeleGIS LAb - Dep. of Earth Science - Cagliari University	Italy
Space Research Center PAS	Poland
Deputación a Coruna	Spain
AMDE	Portugal
CMLisboa / DAEV	Portugal
EuroGeoSurveys	Belgium
Redcar and Cleveland Council	United Kingdom
Bundesamt für Kartographie und Geodaesie	Germany
SIGRID S.L.	Spain
Institute of Spatial and Cadastral Systems (ISPIK)	Poland
Plan4all project	Czech Republic / EU

9.1.2.3 Related projects

Name	Contact on Project side	Contacts on HUMBOLDT side	Status
BOSS4GMES	Dr. Richard Hilton (Co-ordinator) Jürgen Cronau	Thorsten Reitz (FHG-IGD) David Ludlow (UWE)	MoA signed; joint workshops (Toulouse 05/2008, Delft 11/2008); feedback on

Name	Contact on Project side	Contacts on HUMBOLDT side	Status
	Lars Tufte, Frédérique Blanc (CLS)	Frédérique Blanc (CLS)	specifications; BOSS4GMES has already ended (cf. report in CLS, WP3)
CASCADOSS	Thérèse Steenberghen	Thorsten Reitz (FHG-IGD) Joachim Rix (TU-DA)	CASCADOSS started in May 2007, MoU signed; documents exchanged Participation and Presentation at the CASCADOSS Workshop in Warsaw, Poland (Thorsten Reitz) Announcement of CASCADOSS workshops among HUMBOLDT Provision of contacts and references CASCADOSS has ended.
RISE / MOTIIVE	Wyn Cudlip	Tomas Černevičius and Anders Östman for CBA David Ludlow, Marianne De Vries, Manfred Loidold, Peter Winkler for Harmonisation with special Attention to HS Ocean	Working exchange on WP02/WP07 started
BRICKS	Robert Hecht	Thorsten Reitz	Exchanged documents; BRICKS provided their software and reports
SeaDataNet	Dick Schaap Gilbert Maudire (IFREMER) Frédérique Blanc (CLS)	Dick Schaap Gilbert Maudire (IFREMER) Frédérique Blanc (CLS)	Ocean partners ensure a working exchange SeaDataNet will provide the reference for terminology and homogeneous XML scheme issues with tools to initialise or

Name	Contact on Project side	Contacts on HUMBOLDT side	Status
			revise discovery metadata as well as an exhaustive ocean data base for research needs.
MerSea / MyOcean	Frederique Blanc (CLS) Gilbert Maudire (IFREMER)	Frederique Blanc (CLS) Gilbert Maudire (IFREMER)	Ocean partners ensure a working exchange MyOcean will implement a standard catalogue for operation oceanography purposes, and standard networking services on the data (access, viewing).
NaturNet Redime	Jiri Hiess	Karel Charvat	Working exchange with HS Forest and HS Urban Planning Scenario
c@r	Petr Horak	Karel Charvat	Working exchange with HS Urban Planning Scenario
AMI4ffor	Petr Horak	Karel Charvat	Working exchange with HS Forest Scenario
InterRisk	François Parthiot (Cèdre – France)	Gilbert Maudire	Ocean partners ensure a working exchange
GI-INDEED	Anders Östman (University of Gävle)	Giorgio Saio (GISIG)	ICT-based Training Platform, cross-check
eSDI-Net+	Joachim Rix (Coordinator)	Eva Klien (FHG-IGD)	Thematic Network; Information exchange
ORCHESTRA	Christine Giger (ETHZ)	Thorsten Reitz (FHG-IGD)	Re-use of Architectural requirements in HUMBOLDT specifications. Document exchange for RM-OA. Reports and Comments were provided HUMBOLDT presentation given at ORCHESTRA Day in

Name	Contact on Project side	Contacts on HUMBOLDT side	Status
			Stresa Project has ended
GENESIS		Daniel Fitzner (FHG-IGD)	The projects HUMBOLDT and GENESIS collaborate by exchanging knowledge and documents, mainly on topics of data harmonisation and INSPIRE-related topics
GS Soil		Daniel Fitzner (FHG-IGD)	The projects HUMBOLDT and GS Soil collaborate by exchanging knowledge, especially on harmonisation and transformation in the context of INSPIRE. Further, certain HUMBOLDT tools for data harmonisation might be reused within GS Soil.
Nature SDIplus	Giorgio Saio (GISIG)	Moses Gone (FHG-IGD)	Lessons and outcomes from NATURE-SDIplus harmonisation process can contribute to feed the development of the HUMBOLDT Framework together with the collection and the organisation of requirements of Protected Areas application domain developed by HUMBOLDT. The Training Framework developed within NATURE-SDIplus could be shared with HUMBOLDT.

Name	Contact on Project side	Contacts on HUMBOLDT side	Status
VESTA GIS	Anders Östman (HiG)	Giorgio Saio (GISIG)	<p>The Training Framework developed within VESTA-GIS could be shared with HUMBOLDT. In particular, the training courses developed in HUMBOLDT can be included into the VESTA-GIS Course Catalogue. Joint HUMBLODT / VESTA-GIS training workshops are organised.</p> <p>Moreover, synergies between the HUMBOLDT Scenarios “Protected Areas” and “Transboundary Catchments” and the respective VESTA-GIS streams “Natural Environment Protection” and “Water Management” are used.</p>
Plan4all		Ota Cerba	<p>Project Plan4all is continuing to activities of Humboldt Scenario Urban Planning such as spatial data harmonization and combination of different spatial data leading to building spatial planning background data used in designing of spatial plans and area limits and restrictions. Plan4all project plans to use free Humboldt tools regarding to spatial data harmonization. Finally results of Humboldt project (e.g. analyses, user requirements) are</p>

Name	Contact on Project side	Contacts on HUMBOLDT side	Status
			also used as backgrounds of introductory phase of Plan4all. Help service – remote sensing (HSRS) together with the University of West Bohemia are doing common dissemination strategy
GIGAS	Eva Klien	Thorsten Reitz	Contributions to the Technology Watch activities in GIGAS
ESDIN	Dominique Laurent (IGN) Dániel Kristóf (FÖMI)	Dániel Kristóf (FÖMI) Dominique Laurent (IGN)	MoU in preparation; working links established between several WPs

9.1.2.4 Related Projects interaction

Project	Date + Location	Topics
C@R, Naturnet Redime	Chotebor 17.5	Common End user involvement meeting
CASCADOSS	Via Mail 15 th -18 th June 2008, Warsaw	<ul style="list-style-type: none"> • Confidentiality Agreement • A2.4-D1 Report on Software Distribution Strategies • A3.3-D1 State of the Art in User Groups and Needs • A3.6-D3 Handbook of Standards • Participation in the CASCADOSS workshop in Poland in June 2008: keynote presentation, information exchange and discussion
CASCADOSS	December 2008 January 2009 March 2009	<p>Announcement of a national and regional CASCADOSS workshop among the HUMBOLDT consortium and in the HUMBOLDT event calendar at http://esdi-humboldt.eu/events.html</p> <p>Distribution of information about the CASCADOSS project in the HUMBOLDT consortium.</p> <p>Presentation of HUMBOLDT at the Hungarian national CASCADOSS workshop (Szeged 29-30/01/2009)</p>

		Hosting the CASCADOSS workshop in FÖMI on behalf of HUMBOLDT (Budapest 27/03/2009)
BOSS4GMES	22nd-23rd May 2008 Paris	Discussion of GMES – INSPIRE interactions in the context of the development of the top-down and bottom-up perspectives on service evolution.
BOSS4GMES	25th-26th June 2008 Toulouse	Discussion of GMES – INSPIRE interactions in the context of the development of the top-down and bottom-up perspectives on service evolution.
BOSS4GMES	November 2008, Delft	???
eSDI-Net+	Regular bilateral meeting between the Coordinators of both projects in Darmstadt Regular communication between work package leaders in dissemination and awareness of both projects. February 12-13, 2009 in Darmstadt, Germany	Discussion on strategic partnership Promoting synergies to achieve sustainability for both projects, e.g. complementary dissemination and awareness raising activities. Exchange of information about implementation of INSPIRE and ESDI at national and regional level. GISIG, also involved in both projects communicates user requirements and stakeholder needs among the participants of both projects. Planning of joint (final) event in 2010. Participation in the eSDI-Net+ national workshop “Lokale GDIs im Europäischen Kontext – Eine nationale Perspektive“ (local SDIs in a European context – a national perspective)
VestaGIS	Regular discussions between co-ordinators	Training material created in HUMBOLDT has been provided to VestaGIS as example courses
NatureSDIplus	Regular discussions between co-ordinators	A MoU was planned, and usage of HUMBOLDT transformation services to support the planned portal discussed
Plan4all	Co-ordination of exploitation results of HUMBOLDT related to Urban Planning in Plan4all	Plan4all planned to use HUMBOLDT work related to data harmonization and transformation services.
ESDIN	Regular communication	Synchronisation of activities and identification of joint actions through partners involved in both projects. MoU in preparation Developments of particular interest: HUMBOLDT Geomodel Editor, HUMBOLDT Alignment Editor

9.2 Users to be Targeted

9.2.1 GMES User Community

The Global Monitoring for Environment and Security programme provides geospatial information services to support European policy needs. GMES is targeted at:

- Europe's environmental commitments, within EU territory and globally;
- other EU policy areas such as agriculture, regional development, fisheries, transport, maritime policy, external relations with respect to the integration of the environmental dimension in the respective domains and their specific requirements;
- Common Foreign and Security Policy, including the European Security and Defence Policy;
- other policies relevant to European citizens' security at Community and national levels, e.g. policies related to justice and home affairs activities of the European Union, such as border surveillance.

9.2.1.1 Marine Core Service

The underlying objective of the Marine Core Service (MCS) is to improve EU capacities for monitoring and predicting the marine environment relating to the global oceans and the European regional seas (e.g. the Arctic and North Atlantic Oceans and the Baltic, Black and Mediterranean Seas).

The MCS will deliver information on three-dimensional ocean state, ocean dynamics, ecosystems and sea-ice with the spatial resolutions and timeliness of delivery chosen to meet downstream service requirements. Now casts, forecasts and analyses, covering a period of 20-50 years, will be produced and used to monitor and understand the changes in the state of the ocean.

The main components of the MCS will be in-situ and satellite thematic assembly centres, global and regional modelling and data assimilation centres, and systems to deliver the core information services.

Specific attention is being given:

- In the open ocean and shelf seas, to the characterization and modelling of the ecosystems and of their links and couplings with the ocean dynamics;
- In coastal zones, to the forcing of open ocean on coastal circulation and ecosystems, the development of data assimilation in coastal regions;
- To the characterisation of river discharges and their link with sediment transports;
- To the links between the MCS and downstream services (e.g. storm surge forecasting, maritime safety and fisheries management), as well as with Integrated Coastal Zone Management, coastal engineering and other maritime activities (e.g. security of maritime traffic).

9.2.1.2 Land Monitoring Core Service

The objective of the Land Monitoring Core Service (LMCS) is to improve the timely monitoring of land state, land use and land cover state and changes at regional, European and global levels. At the European level, the LMCS will deliver EU27 land use and land cover state and changes with a frequency and spatial resolution adequate for serving the monitoring and implementation of the environmental acquis and other community and Member States' policies related to the environment (cohesion, agriculture & forestry, water management, soil protection, sustainable urban development,

transport, etc.). The LMCS implementation requires the involvement of organisations legally mandated to collect land information in the Member States.

The LMCS will link to “downstream services” by developing for specific themes and areas, ranging from EU27 to 'hotspots' (e.g. urban zones, nature sites, areas subject to rapid changes or high environmental risks such as landslides, erosion etc.), land specific geophysical and biophysical information as a “core service”. The LMCS, as part of its “core service” will contribute to the delivery of a pan European digital elevation model.

At the global level, the LMCS will deliver bio- and geophysical parameters derived predominantly from space based observations in support to community development and collaboration initiatives and the implementation and monitoring of international conventions.

9.2.1.3 Emergency Response Support Service

The objective of the Emergency Response Support Service (ERSS) is to reinforce the European capacity to respond to emergency situations associated with meteorological-driven hazards (e.g. storms, fires and floods), geophysical hazards (e.g. earthquakes, tsunamis, volcanic eruptions, landslides and subsidence), deliberate and accidental man-made disasters (e.g. urban fires, chemical incidents on industrial sites) and humanitarian disasters.

In the long run, the proposed service will guarantee that Europe can provide adequate information capabilities to support early warning, urgent assistance, relief operations, humanitarian aid, and reconstruction activities.

In the short- to medium-term, the Emergency Response Service will be focused on strengthening preparedness and response capabilities of a range of institutions at national, EU and international levels. This requires in particular a rapid mapping capability after disastrous events occur and preparatory services to collect and map spatial and socioeconomic data in areas at risk. To this end, the Emergency Response Support Service will be focused on methodological, functional and organisational issues linked to the provision and delivery of reference maps and damage maps required for management and ground intervention in emergency situations.

Service evolution should also require:

- Better documentation of the risk vulnerabilities;
- Design and streamlining of early warning and preparedness systems and methodologies for the various types of hazards, taking into account their specificities and especially their location (inside or outside Europe).

9.2.1.4 Information Services for Security

The context of GMES developments for security is the European Security Strategy endorsed by the European Council in Brussels on 12th December 2003 which has defined the main threats as follows:

- The terrorist threat, and its linkages with international organised crime;
- The proliferation of Weapons of Mass Destruction (WMDs), addressed inter alia through verification of the provisions of the Treaties;
- The regional conflicts and their consequences.

Continuously updated information on proliferation activities, movements of population including illegal immigration, all kinds of trafficking, the status of critical infrastructures, and many other elements

which constitute the warning factors of major threats, can be essential for conflict prevention and fight against all less visible threats to European security such as terrorism and organised crime.

Environmental based crisis indicators (related to e.g. status and use of water resources, large scale pollution) are also of high relevance. Moreover, the EU needs to achieve an adequate level of operational capabilities and readiness to conduct Crisis Management Operations.

In this context, timely Earth Observation data (rapid mapping and tailored geo-information products) combined with ground information, secure and reliable communications as well as navigation systems are relevant. Reliable and complete reference data (asset mapping) of potential target areas and hotspots will also be a crucial ingredient in achieving an efficient service. The GMES products in the security area (e.g. asset mapping, rapid mapping, and humanitarian aid) share many characteristics with those outlined above for emergency response.

9.2.1.5 Atmospheric Composition and Dynamics Monitoring

Activities in FP7 are targeted at:

- **European air quality**, with the objective to provide:
 - Improved routine real-time forecasts of air quality;
 - Historical information from which trend analysis and impact of the implementation of directives and protocols could be assessed;
 - A modelling platform enabling the analysis of future scenarios;
 - Inverse modelling to improve emission estimates.

- **Regional sources and sinks of CO₂, CH₄ and related tracers**, especially through integration of operational collection of in-situ and satellite based concentration measurements and use of atmospheric transport models.

- **Availability of renewable energy sources**, in order to provide services for the selection of optimal sites for renewable energy power plants and the optimisation of production and management thereof.

Developments envisaged should provide standard European data on which further downstream service development (such as provision of local integrated air quality index, local air-quality related alerts, personalized skin-type specific UV information, etc.) can be based.

At global scale, an operational capacity is required to monitor (for climate purposes) and to forecast (for regional air quality purposes) the emissions, presence and hemispheric/global transport of atmospheric trace gases including reactive gases (e.g. stratospheric and tropospheric ozone, nitrogen dioxide, carbon monoxide, sulphur dioxide, formaldehyde), man-made and natural aerosols, clouds, and long-lived greenhouse gases. In particular, it should monitor the long term recovery of stratospheric ozone, including its day-to-day fluctuations and related ozone depleting components, and will forecast UV radiation at ground.