

GLOBAL excursion

Extended Curriculum for Science Infrastructure Online

PROJECT FINAL REPORT

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Final publishable summary report

Executive summary

GLOBAL excursion set out to enhance science teaching in European schools. This ambitious goal was reached by providing an innovative portal that offers teachers and their pupils as well as scientists and policy makers a package of activities, materials, and tools for enabling the integration of scientific content and infrastructures into school curricula. The Virtual Science Hub, short ViSH (<http://vishub.org>) is the core product of the project and the main access point.

The ViSH includes educational resources, an editor to prepare virtual excursions as a mix of multimedia content that can be shared and reused as well as social network features and a virtual excursion room for live events. During these live sessions pupils are able to experience real e-science applications in areas of high relevance for the future, such as nano- and biotechnologies, volunteer computing, and life sciences.

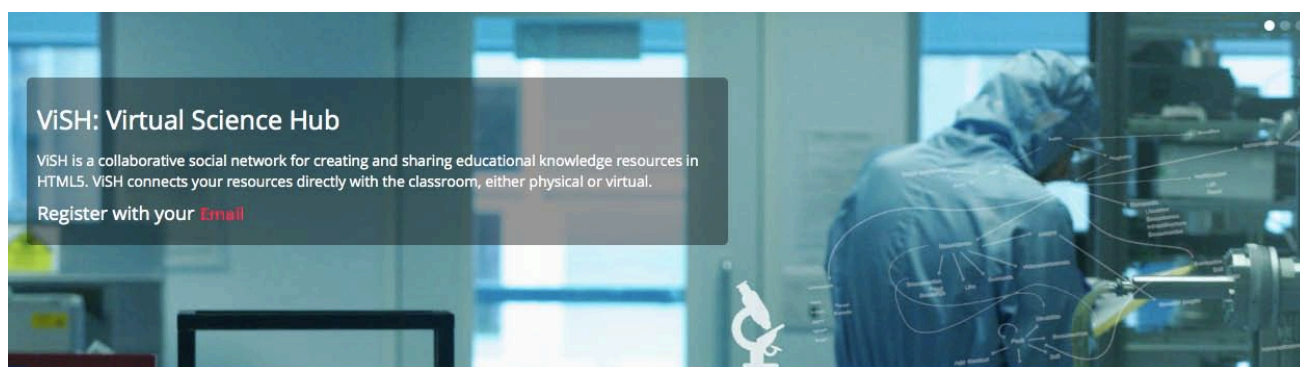


Figure 1: Image from the ViSH portal

With a community of almost 2000 registered users, out of which about 500 are active users (meaning that they have logged in during the last month), a couple of thousands more unregistered users, and almost 500 excursions in various languages the ViSH has developed into an established educational portal for science teaching in European schools. The ViSH 2013 Content Competition with over 130 submissions in various languages and across 10 scientific domains strongly contributed to this development. The collaboration with other important educational initiatives, above all, the integration with ODS (Open Discovery Space), which serves as a central hub for eLearning resources, connects the ViSH to the wider European community of educational stakeholders.

The series of live events labelled “Meet the Scientists” has received very positive take up from the audience and thus the project team established these online sessions as a regular educational offer to schools across Europe. During these online events teachers, students and scientists interacted in a live meeting while scientists showing their labs and equipment to the audience.

The main success story of the project in terms of commercial exploitation has been the creation of the spin-off company MashMeTV, which was able to attract important seed funding during this second project year. MashMeTV is going to be further exploited commercially in the future. Its basic version will be however be offered for free for educational purposes to the ViSH users.

There is a strong commitment from the whole consortium to maintain the established services in the future. First and foremost the ViSH will be offered as a free educational service during the coming years and will even be further promoted via the consortium's network of partners and projects.

The elaborated stakeholder policy recommendations will hopefully contribute to new initiatives, such as teacher training campaigns or science communication campaigns where we hope to be involved as one of the stakeholders for STEM teaching in Europe.

Project context and objectives

In the recent past, Europe has been struggling with low achievement in mathematics and science education and a high rate of dropouts. Consequently, the European Union has defined the advancement of science, technology, engineering and mathematics (STEM) related skills as one of the priorities for 2020. At the same time higher education and research institutions are struggling to recruit highly qualified and motivated scientists. From this challenging situation the idea was born to create an online portal that addresses both issues. On the one hand, science teaching can be made more exciting by providing access to real lab equipment and other resources from the world of science. On the other hand scientific institutions may attract young students into following a scientific career by showing them the excitement of their labs. The GLOBAL excursion project set out to address these issues and develop a portal, the Virtual Science Hub, short ViSH, where teachers and scientists can exchange resources and provide students access to scientific infrastructures such as microscopes, telescopes, etc. Thus the ViSH addresses the need of teachers to engage students in science teaching and the need from the scientific institutions to disseminate their work to a broad audience and the specific target group of adolescents in order to get them interested in science and possibly to engage in a scientific career in the future.

The Cornerstones of the GLOBAL excursion project

The GLOBAL excursion's objective was to link pupils and teachers with scientists and science communicators via e-infrastructures and advance state-of-the-art of e-Infrastructures in education. To reach this goal the project built on three cornerstones:

1. The technological basis:

From a technological perspective, a main objective has been to make the ViSH portal cross-platform compatible so that it works on several operative systems such as Windows, Mac or Linux and multi-device accessible, such as desktop, tablet and mobile devices. Thus, the ViSH is based on the latest web technologies. The platform has been developed in HTML5, the latest standard for web development, assuring that it can run on any modern browser. In addition to social networking features a core element on the ViSH is the virtual excursions editor. It is a web tool that allows teachers and scientists to create rich mash-ups of learning resources provided by the e-Infrastructures (i.e. remote laboratories and live webcams). These rich mash-ups can be presented in either slides or flashcards format. Taking advantage of the web architecture supported, additional powerful components have been integrated like a recommendation engine to provide personalized suggestions about educational content or interesting users and a videoconference tool to enhance real-time collaboration like MashMeTV (<http://www.mashme.tv/>).

2. The **user-centred design framework** was defined as a clear objective from the beginning. It supported the involvement the heterogeneous stakeholders of GLOBAL excursion, like schools, scientists and e-Infrastructure providers, into the requirement elicitation to align the design of the ViSH with the specific needs of the stakeholders and the context in which they are performing. The design and development phases were performed following a participatory design approach. An important aspect in this process was to create design partnerships amongst all actors involved, researchers, developers, infrastructure providers, teachers, social scientists, and pedagogical experts early in the project. The aim was to create a joint sense of ownership. The process also triggered important changes during the conceptual phase which were implemented in the ViSH due to early user feedback.

3. The **pedagogical framework** set the objective to provide science teachers with trainings and manuals on how to integrate e-Infrastructure services and contents to the daily teaching activities in the realms of *nano- and biotechnologies, life sciences and volunteer computing*. The core of the ViSH's concept design is based on virtual excursions, which allow for a number of pedagogical models to be applied. According to our internal definition a virtual excursion is a tour through some digital context by teachers and pupils on a given topic that is attractive and has an educational purpose. Inquiry-based learning, project-based and problem-based learning are the most prominent approaches that a virtual excursion may serve. The virtual excursion approach allows an easy combination of available resources (inside and outside the ViSH) into interdisciplinary teaching scenarios. In addition, social networking features support the users in collaborating and communicating in relation to these excursions and thus create a community of interest for innovative science teaching.

In order to achieve all the defined objectives, the GLOBAL excursion project arranged them along four partly overlapping phases:

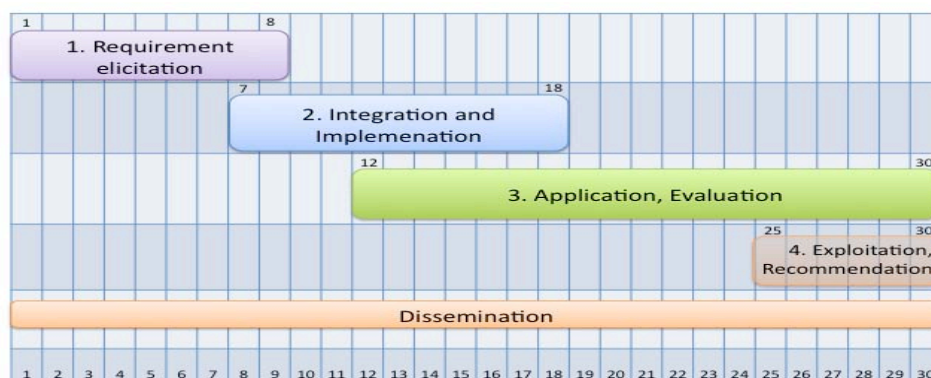


Figure 2: The Four Project Phases

Phase 1: Requirement elicitation and partner involvement- Month 1 – Month 8

The first phase of the project has been dedicated to carrying out the basis for both: the *development of the necessary basic infrastructure* (the adoption of the GLOBAL software for being the virtual hub as well as the involvement of relevant scientific e-Infrastructure providers) and the *requirements for content work and pedagogy concepts*. Participatory design workshops with different stakeholder

groups took place in this phase. Existing e-Infrastructures have been contacted, features and functionalities have been adopted and technical improvements have been done according to user needs and refined during the following phases.

Phase 2: Integration and Implementation - Month 7 – 18

In the second phase of the project, mainly the content of the *virtual excursion room* have been elaborated and additional existing *e-Infrastructure* have been integrated. The pedagogical framework has been developed; for the extended curricula, tasks and materials have been worked out, teacher trainings have started to take place.

Phase 3: Application, Evaluation Month 12 – 30

Phase three has been designed as the *core phase* of the supporting action, integrating infrastructures, involving the different stakeholder groups and bringing live to the virtual hub. During this phase only selected schools have been granted access to the hub and have been able to run their tasks and exchange about their work. Interactive sessions have been carried out and various live-events and science competitions have been organised. *Evaluation* activities have continuously delivered feedback to the implementation activities.

Phase 4: Exploitation and Recommendations- Month 25 – 30

The final phase of the GLOBAL excursion has been dedicated to exploitation of the ViSH and the products and activities carried out throughout the project. The ViSH has been launched publicly and has been made available for further schools. *A catalogue of recommendations* has been elaborated as a main milestone of this phase for policy providers of education, as well as policy providers of scientific infrastructures and content.

Main S&T results/foregrounds

During the 30 months runtime of the official funding period of GLOBAL excursion the project has been focusing on implementing a sustainable service for schools and scientific institutions across Europe to integrate scientific infrastructures and content into school curricula. The main tool supporting such integration activities is the ViSH. In addition, a number support tools and activities have been developed and established around it. This includes tools such as a quiz editors, Smart Cards and MashMeTV, video conference events, as well as “Meet the scientist” sessions and content competitions.

In the following the different results are discussed in more detail.

1. ViSH (Virtual Science Hub)

The ViSH platform is a social network, where users can follow each other acting as a link between science centres and schools. They can also share resources that they have found or have created, as well as e-Infrastructure resources, to be used by others. In order to facilitate the integration of these resources, ViSH has the Virtual excursions editor which allows the creation of a mash-up with these resources in the form of a presentation. This editor presents many enhanced features like the introduction of external resources such as Youtube videos, Flickr images or any website. It also allows the transformation of the presentation into a Flashcard, offering interactive hot zones that the

user can click or touch to show extra information. Other smart elements in the ViSh editor are e.g. enriched videos, where the user can link slides with timestamps in a video or virtual tours, where the user can link slides with points in a map. Here are a few examples:

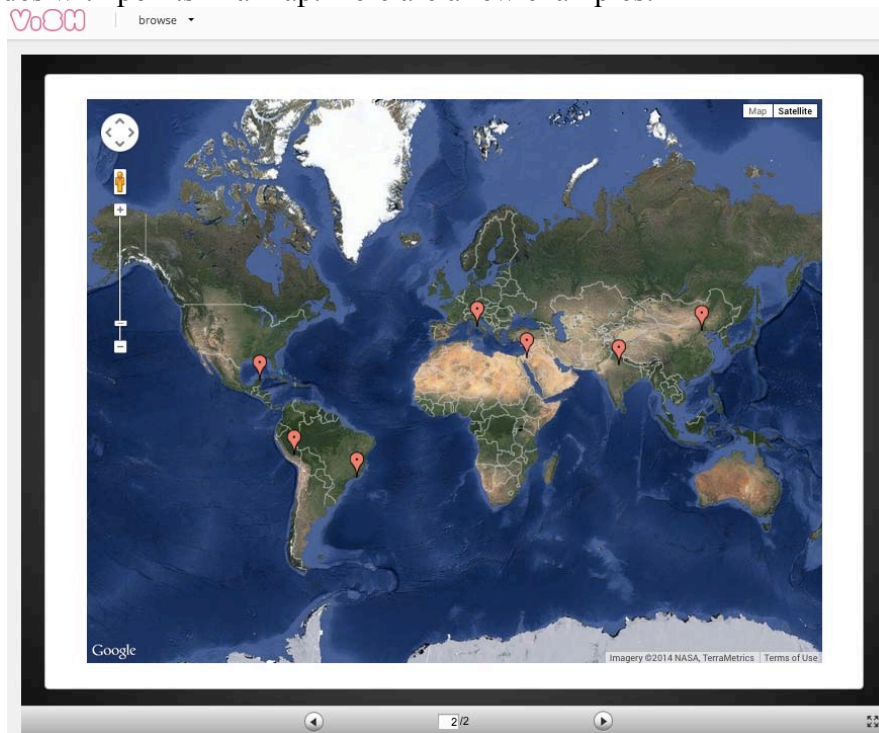


Figure 3: Virtual Tour in ViSH

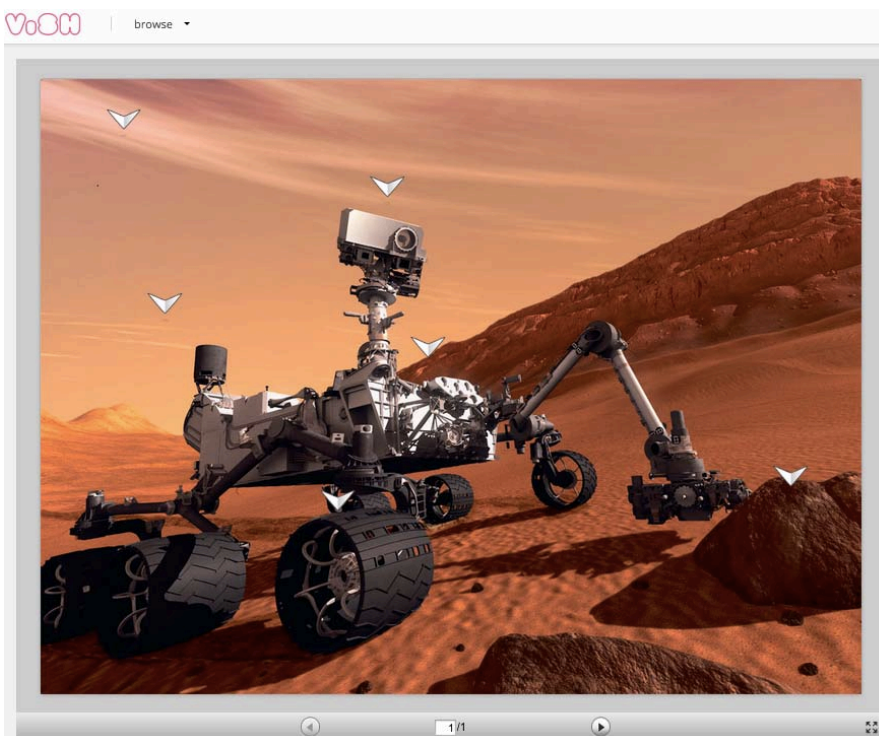


Figure 4: Flashcard in ViSH

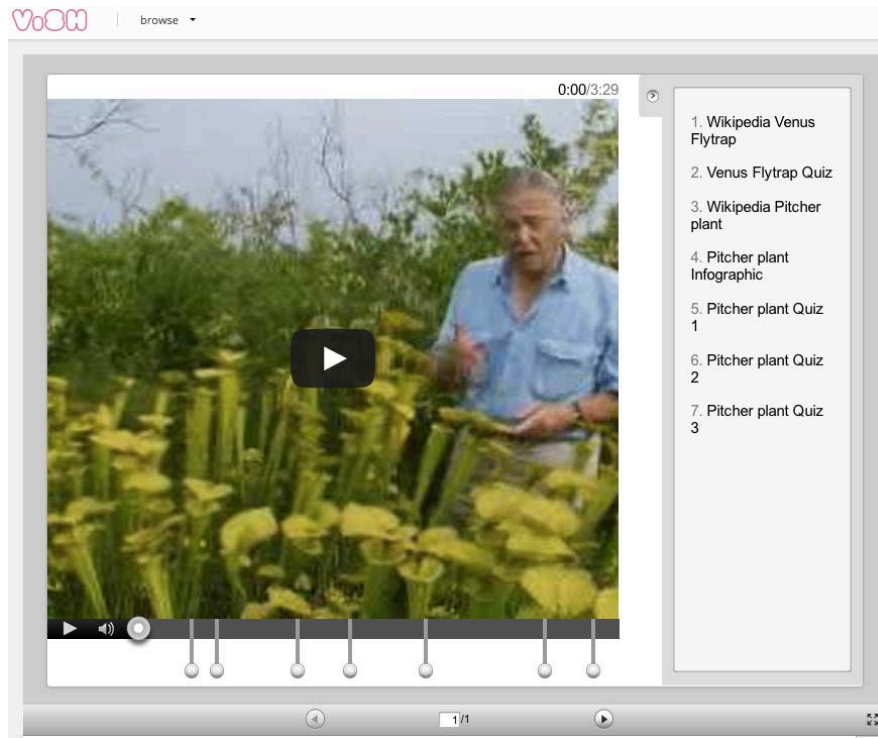


Figure 5: Enhanced Video in ViSH

Taking into account the growing number of learning resources available in ViSH, personalized recommendations of resources are provided by the system bearing in mind the specific user's profile. In addition, the system recommends users with similar interest in order to encourage the collaboration in the network. Virtual excursions can also be shared synchronously using a videoconference application integrated in ViSH. Therefore teachers and their classrooms can communicate with scientists in real time to go through a virtual excursion and enjoy the resources explanations of the scientists. In addition, ViSH provides smartphone applications (both Android and iOS) to enhance the creation of resources, where users can take photographs and videos, and share them with the community in a very easy way.

From a pedagogical perspective excursions can be evaluated by any user following and adapted version of the Learning Object Review Instrument (LORI). The compilation of these evaluations is presented to the users as a bar chart; hence with a simple view the user can see if the excursion meets its learning goals, motivate and engage the students and has enough quality.

The ViSH has been developed in HTML 5, the latest web standard, offering multi-device use and access to the portal.

Value Proposition of the ViSH

The main value proposition of the ViSH can be summarized as the following:

Virtual Science Hub - ViSH - is the social space for science education in Europe.

We are connecting schools with science! On ViSH you can create, share, and reuse virtual excursion on any science topic. You can get in touch with your peers, exchange your experiences and connect live to others via video chat.

- It is free
- It is for everyone: teachers, students, scientists
- It is interactive

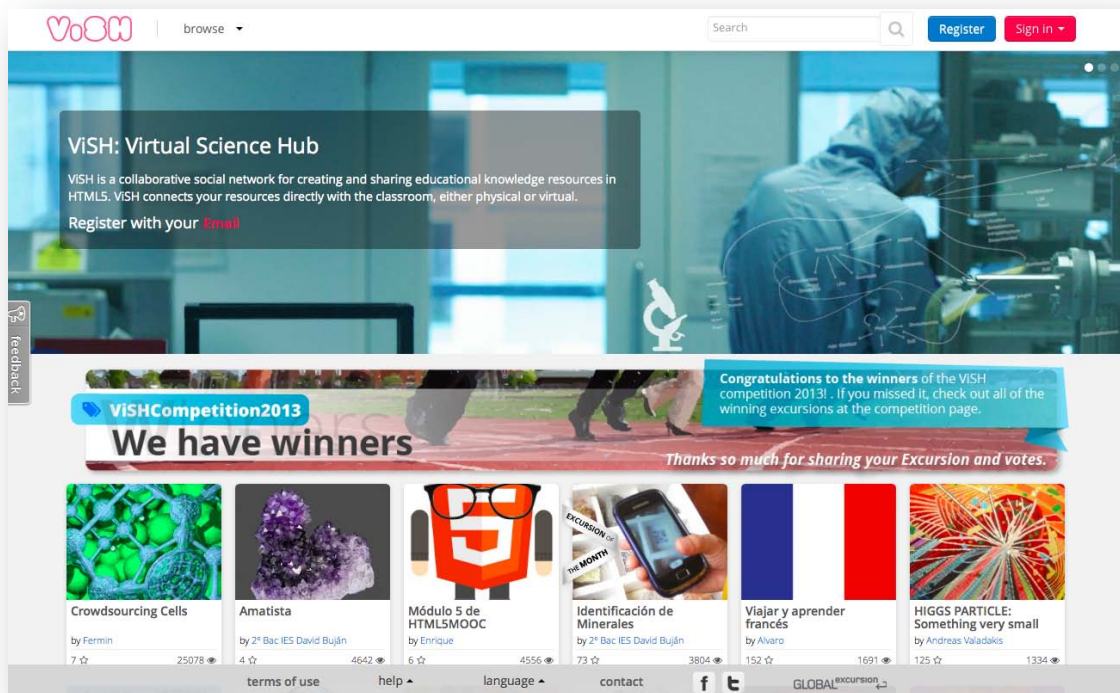


Figure 6: -ViSH main page

2. MashMeTV

MashMeTV is a video chat collaboration tool that allows up to 10 participants to interact and collaborate face-to-face in real-time. When inside the video chat, participants may perform various activities around a series of tools including: watching video, creating and editing documents, presenting slideshows, painting on a collaborative blackboard, browsing the web, and navigating Google Maps, all in a web browser. MashMeTV gives users the ability to synchronize any web app such as Google Docs or YouTube and transform it into an immersive social experience.

MashMeTV is available in desktop/laptop computers, android or iPhone smartphones, and tablets. The interface is adapted to the device so the user gets the best experience possible. We can see it in the captures below.



Figure 7: iPhone and iPad screenshots of MashMeTV

3. Pedagogical value

The pedagogical value stemming from this project is manifested in various ways. Overall, inquiry based learning, which has been the main focus and is supported by the ViSH, can be performed in many ways and with a variety of resources. Instead of predefining one specific teaching style the ViSH has been designed to accommodate different approaches to teaching a certain topic and to explore scientific concepts.

The Smart Cards of the ViSH editor, namely Flashcards, Virtual Tours and Enriched Videos, are important pedagogical elements that have been co-designed with the pedagogical experts in the project. They are easy to create for the teachers and offer educational value in terms of their interactive structure. Quizzes, which can be easily prepared and executed on the ViSH, offer an additional value for the teachers. Additional features to exchange the users pedagogical experiences with individual excursions, rating the excursions, cloning and adopting them as well as the PDF export and import features all add value from a pedagogical point of view and have been designed in collaboration with the teachers.

Overall, the ViSH is thus suitable for different curricula and different teaching styles of the teachers.

To show the pedagogical value a Bloom's taxonomy has been created for the ViSH and the ViSH Editor:

BLOOM TAXONOMY & VISH	
CREATE	<ul style="list-style-type: none"> - BUILD an excursion on a specific topic - EXTEND one existing excursion (after cloning it) - DESIGN a scientific study and create an excursion with it
EVALUATE	<ul style="list-style-type: none"> - REVIEW an excursion and fill in the form - JUDGE the results of a survey/questionnaire - CONDUCT a debate on a topic using excursions for evidence
ANALYZE	<ul style="list-style-type: none"> - EXAMINE other people's profile - IDENTIFY what a credible excursion looks like - COMPARE & CONTRAST excursions on the same subject
APPLY	<ul style="list-style-type: none"> - TRANSLATE one excursion into your language - COLLECT several excursions as a class - ILLUSTRATE concepts by finding relevant excursions
UNDERSTAND	<ul style="list-style-type: none"> - CLASSIFY excursions in categories - SUMMARIZE one of the best excursions - GIVE EXAMPLES of what you learnt in an excursion
REMEMBER	<ul style="list-style-type: none"> - FIND excursions related to your topics of interest - VIEW any of the videos in ViSH - IDENTIFY the most visited excursions

Figure 8: Bloom Taxonomy for ViSH

BLOOM TAXONOMY & VISH EDITOR	
CREATE	<ul style="list-style-type: none"> - RELATE knowledge from several areas - COMBINE different sources and types of resources - DESIGN a scientific study
EVALUATE	<ul style="list-style-type: none"> - CONVINCE someone of an argument with only 3 slides - DESIGN a questionnaire - CONDUCT an investigation to support a view
ANALYZE	<ul style="list-style-type: none"> - ORGANIZE photos into a virtual map - SURVEY friends and family and present the data in a chart - ORGANIZE concepts into a flashcard
APPLY	<ul style="list-style-type: none"> - ILLUSTRATE concepts by finding relevant resources - TRANSLATE one slide from other author - INSERT one slide from other author
UNDERSTAND	<ul style="list-style-type: none"> - SUMMARIZE a text with a limited amount of bullet points - GIVE EXAMPLES of classroom concepts with images and text - CLASSIFY objects into the slides
REMEMBER	<ul style="list-style-type: none"> - DEFINE vocabulary with definitions on each slide - DESCRIBE the main topic of the excursion - LIST the main characteristics of an object or item

Figure 9: Bloom Taxonomy for ViSH editor

Bloom's taxonomies offer a classification of learning objectives and "*primary school teachers usually think and act based on Bloom's taxonomy*" according to one of the teachers using the ViSH.

The above taxonomies identify activities that can be performed with the ViSH and ViSH editor to achieve specific learning objectives, such as creating, evaluating, etc.

One nice example of pedagogical value of the ViSH is the winning team of the ViSH 2013 Competition. This group of students from a secondary school in the North of Spain were actually the low achievers of their class. ViSH has given them an enormous boost and the outcome has been amazing. Moreover, these students received a certificate/award for their efforts from the local Ministry of Education (Galicia, Spain), which is of course a great honour for them, their teacher, and for the whole school.



Figure 10: Local newspaper article: students winning ViSH Competition

Multilingualism

An additional pedagogical values of the ViSH is its support of various languages. On the one hand, the interface of the ViSH itself is available in 6 languages (Dutch, English, French, German, Hungarian, Spanish) and likewise can the content be prepared in any language. Teachers appreciate the multilingual support offered by ViSH. Currently most of the content is either in English or Spanish due to the large user community in Spain. However, content is also available in other languages, including Italian, Romanian, etc.

4. Event series “Meet the scientist”

GLOBAL excursion has initiated the successful event series of live and interactive sessions called “Meet the Scientist”. The events are very popular amongst teachers and students as the positive feedback obtained from the participants reveals.

The series is also highly timely as comparable initiatives such as Google’s Connected Classrooms (<http://connectedclassrooms.withgoogle.com/>) indicates. Since this event series has turned out to be an important instrument for engagement in schools it can be counted amongst the important project results that should be continued in the future.



Figure 11: Meet the Scientist session at BIFI

5. ViSH Content Competitions

The ViSH Competition 2013 where any ViSH user was able to participate by preparing a virtual excursion on the ViSH was very successful and the participation rate was high, with 136 excursions submitted. Although the ViSH Competition was originally considered as a unique promotional activity to attract more content to the ViSH it turned out to be a valuable instrument also used in the future.

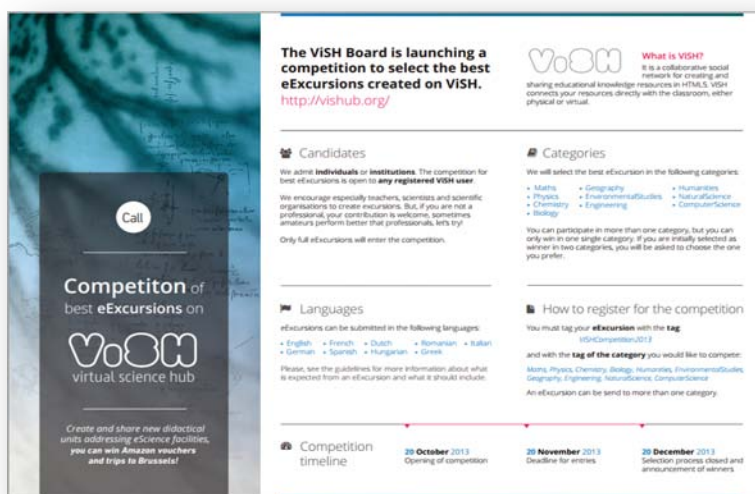


Figure 12: ViSH Competition Flyer

6. Policy recommendations

Information gathered during the project showed that the majority of the involved actors were highly interested and showed willingness to participate in a possible future development of ViSH. However, only a (significant) minority of the respondents showed a readiness to contribute financially to the cost of the follow-up activities.

Furthermore, as reported by most of the actors involved during the research phase, access to selected e-Infrastructures is already successfully taking place at national level, BUT in a very small scale with little communication and interaction among interested parties.

Thus, the ViSH could play a key role in the collection, organisation and availability of all these e-Infrastructures which can be introduced and made available to a wider audience, especially within the educational sector.

In this light, the following key questions were identified for educational policy-makers:

- a. How can school curricula be adapted in order to foster this collection of e-infrastructures and promote their use in order to improve the teaching of science and the motivation of learners to undertake scientific studies and careers?
- b. How to motivate teachers to make use of the ViSH and other ICT to enhance their science teaching and to exchange their experiences with their peers across Europe?
- c. What resources are already or can be made available in terms of funds at national/European level and how can they be encouraged in order to contribute to ViSH more efficiently and effectively without a substantial increase in costs?

At the end of the project, the consortium has produced a small publication targeting educational policy makers. The publication includes a summary of project's aims, outcomes events plus a set of recommendations.



Figure 13: Educational policy recommendations

European Schoolnet has already disseminated this publication to its Steering Committee which is composed by members of Ministries of Educations from 30 countries from Europe and beyond.

7. Academic output

Although the project has been defined as a support action in terms of EC funding, there has also been some important academic output. In the course of the project 19 academic publications have been produced (see complete list below) as well as 3 theses, on a PhD and Master level:

Enrique Barra Arias: New Methods and Tools for the Creation and Use of Multimedia Resources in Education, PhD Thesis

This dissertation proposes a set of methods and tools to foster and facilitate the creation and use of multimedia resources in all stages of education. These multimedia resources can be used in face to face, online or blended learning. The main outcome of this PhD is the Virtual Science Hub (ViSH) and the ViSH Editor (the excursion creator tool) and its validation in several scenarios. ViSH was designed following a participatory design process, where final users were involved from the very beginning, it combines four main functionalities, a social network, videoconference events, a learning object repository and an authoring tool. These four functionalities have demonstrated to fit well together and to complement one another. Both ViSH and ViSH Editor are open source and can be found on GitHub. ViSH Editor has been developed separately from ViSH as it can be used stand alone in future projects or it can be integrated as an authoring tool in existing learning platforms such as Moodle. It allows the user to create presentations integrating all kinds of online resources. It also allows four kinds of visualizations, lineal, flashcard (background with hot spots to other slides), virtual map (map with hot spots to other slides) and enriched video (video with hot spots to other slides).

Daniel Gallego Vico: Contribution to Proactivity in Mobile Context-aware Recommender Systems, PhD thesis

This dissertation proposes a set of models, algorithms and methods to incorporate proactivity into mobile Context Aware Recommendation Systems (CARS), while the impact of proactivity is studied in terms of user experience to extract significant outcomes as to "what", "when" and "how" proactive recommendations have to be notified to users. To this end, the development of this dissertation starts from the proposal of a general architecture for building mobile CARS in scenarios with rich social data along with a new way of managing a recommendation process through a REST interface to make this architecture multi-device and cross-platform compatible. A novel model is presented for proactivity in mobile CARS which shows the key ideas related to decide when a situation warrants a proactive recommendation by establishing algorithms that represent the relationship between the appropriateness of a situation and the suitability of the candidate items to be recommended. Following the previous model, this dissertation presents the design and implementation of new mobile user interfaces for proactive notifications. The results of an evaluation among users testing these novel interfaces is also shown to study the impact of proactivity in the user experience of mobile CARS, while significant factors associated to proactivity are also identified. The last stage of this dissertation merges the previous outcomes to design a new methodology to calculate the appropriateness of a situation so as to incorporate proactivity into mobile CARS. Additionally, this work provides details about its validation in the Virtual Science Hub (ViSH), an European e-learning social network in which the whole architecture and proactive recommendation model together with its methods have been implemented.

Victor Hugo Bazán: Integration of Interactive Educational Contents in a Multidevice Authoring Tool, Master thesis

This master thesis consist of the addition of three new functionalities to the Virtual Science Hub (ViSH) Editor authoring tool: possibility to add Youtube videos, from its huge database; possibility to add Flickr pictures from its large variety of existing images; and possibility to create quizzes which will allow the user to create interactive votes in real time to evaluate, value or just make a survey for the students. The developed quizzes allow a question with several options as an answer. The questions and also the answers can be written as enriched text in a user interface for the quiz creation is friendly and easy to use. The great value of this kind of content is one of its cases of use: once the content is created and saved, the teacher or quiz creator can start a survey among the students and it will be interactive and in real time, so the survey respondent can use computers or even mobile devices to vote.

Potential Impact

The potential impact of the project can be manifested on different levels along the main project outcomes. In the following we present the current stage of agreement amongst the partners for exploiting the project results and sustaining the services:

ViSH

All partners agreed to establish a Supervisory Board. Officially, the ViSH Supervisory Board has been established in March 2013. It is the ultimate authority concerning quality and community management of the ViSH. The Board is monitoring the compliance with the Terms of Use and will deal with any inappropriate content or inappropriate use of the ViSH reported. Being the ultimate authority the Board takes the right to remove any inappropriate content from the ViSH portal. Any appeal regarding the content or usage of the ViSH portal has to be addressed to the Board. (virtual.science.hub@gmail.com) The ViSH Supervisory Board currently holds the following responsibilities:

1. *Control of compliance with terms of use:* upon request from the community and any user of the ViSH the Board will screen any content reported as inappropriate or any other misuse of the ViSH portal. Any content identified as not compliant with the Terms of Use can be removed from any of the Board members.
2. *Appeal:* any registered user can appeal to the Board regarding inappropriate or unjustified modification or removal of their content
3. *Accreditations:* the Board will verify the accreditation of organisations registering at the ViSH as an official representation of this organisation
4. *Competitions:* the Board is the final decision taking board on any competitions being launched on the ViSH in case not otherwise indicated

The ViSH Supervisory Board is currently composed of the following members:

- Evita Tasiopoulou, European Schoolnet, Belgium (Head of ViSH Supervisory Board)
- Barbara Kieslinger, Centre for Social Innovation - ZSI, Austria
- Aldo Gordillo, Universidad Politécnica de Madrid, Spain
- Sue Murkett, University of Cambridge, UK
- Fermín Serrano Sanz, University of Zaragoza, Spain
- Kitti Varga, Institute for Computer Science and Control, Hungarian Academy of

- Sciences, Hungary
- Enrique Barras, Agora Systems, Spain

As visible from the list above, are members of the ViSH Board, taking care of quality management and other organisational issues of the ViSH.

The basic services of the ViSH are sustained by UPM and Agora on a technical level and EUN takes on a special dissemination role for the ViSH due to its extensive networks and projects in education across Europe. More individual exploitation plans of the consortium members are addressed further below.

MashMeTV

With more than 500.000 users in over 71 countries MashMeTV is now focused on expanding internationally already setting base in the US (San Francisco) and targeting Latin America and India. The spin-off company created during the project runtime has expanded continuously, being an SME with 6 employees currently.

MashMeTV's objective for 2014 is to become more of a platform than a tool, being able to adapt to further vertical markets like e-learning, e-health, remote working amongst others.

MashMeTV revenue model comes from selling plans of their services, the plans can be accessed here: www.mashme.tv/page/pricing during 2014 they are planning to launch additional premium services that would include Session recordings, MashMeTV event rooms and further customization capabilities and applications.

“Meet the Scientist” sessions

As previously mentioned, the “Meet the Scientist” event series has been very successful amongst our target audience and thus the consortium is committed to continue with this activity in the future. Current plans are to have one such event per month (or at least every second month) with scientists from across Europe presenting their working environment and their specific research. From the feedback obtained by teachers we will also try to reach a balanced mix of male and female researchers presenting in these sessions and also have sessions in different languages.

Having female researchers presenting in the “Meet the Scientist” can be very helpful and supportive for young females in serving as role models.

ViSH Competitions

The ViSH competition has been very successful in gaining more users and expanding the number of excursions on the ViSH. Thus the consortium has identified a real potential for continuing with the experiences gained during the first competition and organise 1-2 competitions per year. For that funding has to be secured, however. This might be done with the ViSH Fund (see below) or also by collaborating with other projects that might be running competitions for specific topics, such as Nanotechnology, etc.

Competitions have started to become a very popular instrument in educational projects and the ViSH is well prepared now to allow other projects to run specific content competitions on its portal.

ViSH Fund

The creation of a ViSH Fund is currently under discussion within the ViSH board. The idea is to collect grants and donations under the umbrella of a fund with the broader aim to enhance the quality of science education in the EU by supporting the activities and work of the actors involved (teachers, head teachers, researchers, scientists and lab owners, etc.).

Institutions, organisations, Ministries, universities and other bodies are considered as possible contributors. The ViSH board needs to define the range of activities it mainly wishes to focus on during the following years (i.e. teachers' trainings, connection to a greater range of e-infrastructures) and come up with a clear estimation on the amount of funding that will be needed. The maintenance of close collaboration with other projects plus the reclaiming of synergies has also a lot to contribute in that direction.

A critical step that also needs to be taken is the definition of a package of advantages that ViSH board will be able to offer to these funders. Different types of visibility and dissemination, targeted networking and collaboration possibilities are just some of them.

Established collaborations

In the course of the project GLOBAL excursion has managed to establish substantial collaborations with other project and initiatives, which are an important basis for the future impact of the project. In the following we will highlight the most active collaborations:

SOCIENTIZE

<http://www.socientize.eu/>

With the SOCIENTIZE project a Memorandum of Understanding (MoU) was signed during the second project year. The project is offering Citizen Science projects that can be experimented in schools and is also preparing a White Paper on Citizen Science. The aim is to offer citizens an entry into science by participating directly in scientific projects.

The collaboration of the project has been defined mainly in terms of joint dissemination activities. During the final project period of GLOBAL excursion these activities have been intensified.

SOCIENTIZE has been doing some roadshows in schools in Portugal and Spain to create awareness amongst teachers and students about the possibilities of Citizen Science. One of the promotion materials used for this purpose are virtual excursions created on the ViSH that explain the concept of Citizen Science and dive into the experiments that can be joined by schools.

In one of the "Meet the Scientist" session researchers from the SOCIENTIZE project were presenting the concept and a specific Citizen Science project.

NanOpinion

<http://nanopinion.eu/>

NanOpinion is an EC-funded project which is monitoring public opinion on what to expect from innovations with nanotechnologies. One of the main target groups of the project is young people and students.

With NanOpinion collaboration has intensified only recently. We have started a mutual promotion of events and activities by offering our dissemination channels to each other. NanOpinion has been creating virtual excursions with project results that contribute to the value of the resources on the ViSH.

In addition, we have consulted the project regarding the setting up and management of a content competition for a school audience. The experiences from our ViSH Competition have been very useful in supporting NanOpinion. We are now exploring together possible options to run a nano-specific competition also on the ViSH.

Open Discovery Space (ODS)

<http://www.opendiscovery.space.eu/>

ODS is a socially-powered and multilingual open learning infrastructure to boost the adoption of eLearning resources. The project is offering a single, integrated access point for eLearning resources from dispersed educational repositories. Thus it is an important hub for any online learning portal, such as the ViSH, that generates and integrates learning resources from different sources.

Collaboration with ODS has also intensified during the final project period. Now, we are in the process of providing not only access to their resources for our users to create their excursion but in the near future ODS is also going to harvest the ViSH repository (using the OAI-MPH standard) and everyone using ODS will be able to access and find ViSH excursions in the ODS repository. This is a good opportunity to promote our excursions and our resources outside ViSH so we can get more users. Also as we have added this OAI-MPH standard to be harvested, we are getting in contact with other projects and hub repositories to harvest our resources, this is the case of the Spanish repository *Agrega* (<http://www.agrega2.es/>).

SCIENTIX

<http://www.scientix.eu/>

SCIENTIX collects and promotes best practices in science teaching and learning in Europe, and organises trainings and workshops for STEM (Science, Technology, Engineering, Maths) teachers. It is the main community portal for STEM teaching in Europe. The main stakeholders of Scientix are teachers, researchers and project managers in STEM education, and policymakers.

For GLOBAL excursion the collaboration with SCIENTIX has been very important. In the course of the project we have organised a series of joint events that allowed GLOBAL excursion to reach a wider audience across Europe.

INGENIOUS

<http://www.ingenious-science.eu/>

inGenious is the European Coordinating Body in Science, Technology, Engineering and Mathematics (STEM) Education. It is a joint initiative launched by European Schoolnet and the European Roundtable of Industrialists (ERT) aiming to reinforce young European's interest in science education and careers and thus address anticipated future skills gaps within the European Union.

Through a strategic partnership between major industries and Ministries of Education, inGenious has the objective of increasing the links between science education and careers, by involving up to 1,000 classrooms throughout Europe.

Due to the close connection between inGenious target audience and Global-excursion's outcomes, ViSH has been presented in numerous inGenious events i.e. inGenious Academy March 2013 and inGenious summer school August 2013.

GO-LAB

<http://www.go-lab-project.eu/>

Go-Lab concentrates on providing access to online laboratories in order to enrich classroom experience in schools as well as learning activities out-of-class. The overall aim of the Go-Lab Project is to provide students an opportunity to gain hands-on experience in science by conducting experiments using modern laboratory equipment by themselves, deepen their knowledge in fundamental sciences, and to motivate them for making scientific carrier in the future.

Go-Lab creates an infrastructure (the Go-Lab Portal) to provide access to a set of online labs from worldwide renowned research organizations, such as European Space Agency (ESA, the Netherlands), European Organisation for Nuclear Research (CERN, Switzerland), Núcleo Interactivo de Astronomia (NUCLIO, Portugal), as well as multiple universities and institutions.

Go-Lab and Global-excursion share common objectives and targets which facilitated the collaboration between the two projects and their co presentation to events and workshops. One of the highlights was the common workshop the two projects held during EDEN 2013 in Oslo.

National Cooperations

Spain and Portugal

In Spain, the interest for the ViSH and future exploitation scenarios is big. Project partners got in contact with the Madrid project for “innovation in ICT high schools”. The initiative includes over 30 high schools, where we presented ViSH and it got very good acceptance. Teachers in these schools are starting to use it for their class presentations and they are promoting it among their contacts. Also they have left open the possibility of introduce it in all the Madrid high schools these years depending on the success of the use in this project.

In Galicia, an autonomous community in the north of Spain, public authorities need a knowledge management system (KMS) for the public health service, where they could add their clinical cases

and explain them. This KMS has many parts but one that they lack was an authoring tool. The ViSH editor might be a possible solution and is currently under evaluation.

Global Excursion has been adopted and supported by the Fundación Ibercivis, the Spanish-Portuguese initiative devoted to Citizen Science composed by the main research institutions: MINECO, CSIC, CIEMAT, FZC, DGA, UNIZAR, Red.es, FCT, UMIC, LIP, CNC-UC and Ciencia Viva. It is promoted part of the advanced learning materials delivered to the teachers of these countries. Both virtual visits using MashMeTV and the contents from ViSHub have been incorporated to the set of tools and procedures of this public-private institution.

The David Buján High School from Galicia in Spain, one of the partner schools in GLOBAL excursion was granted a new educational project from “EducaBarrié Foundation”. In this new project they plan to use the ViSH for citizen science and virtual laboratories. The pupils will design and create e-excursions and they will use the e-excursions in class. They will collaborate with IBERCIVIS, SOCIENTIZE and Ocean Network Canadá for the contents. The presentation of the project can be found directly in ViSH: <http://vishub.org/excursions/800>

Other similar case is the “Domus museum”. It is the first interactive museum about the human being, it is in Spain and they have created an excursion with their resources, they are going to evaluate the experience of showing it to their visitors and if they like it they will create more with more contents. This is the excursion that they created: <http://vishub.org/excursions/520>

Austria

In Austria ZSI has started join forces with the Austrian Ministry of Education as well as with the University of Vienna, who is involved in the ODS project. A series of events have been identified where the GLOBAL excursion project results will be presented to a national and international audience of educational practitioners and policy makers.

A workshop together with the University of Vienna and the Ministry of education has been planned for April 2014. The workshop will show innovative approaches to science teaching by offering the tools and services developed in our projects, such as the ViSH, MashMeTV as well as ODS, etc. Hands-on sessions are planned especially for to-be teachers that are currently still in their professional studies.

List of scientific publications

Date	Title
June 2012	<i>Holocher-Ertl, T., Kieslinger, B., Fabian, C.M.: Linking Schools with Science: How Innovative Tools Can Increase the Effectiveness of Science Teaching in the Classroom - In Proceedings of the 2012 EDEN Annual Conference</i>
October 2012	<i>Enrique Barra Arias, Daniel Gallego Vico, Sandra Aguirre Herrera and Juan Quemada Vives: Facilitating the creation of K-12 interactive learning objects using a multi device web tool - In Proceedings of the 2012 Frontiers In Education Conference</i>
October 2012	<i>Enrique Barra Arias, Daniel Gallego Vico, Sandra Aguirre Herrera and Juan Quemada Vives: A web tool to create educational content with gaming visualization - In Proceedings of the 2012 Frontiers In Education Conference</i>
October 2012	<i>Daniel Gallego, Enrique Barra, Sandra Aguirre and Gabriel Huecas: A Model for Generating Proactive Context - Aware Recommendations in e-Learning Systems - In Proceedings of the 2012 Frontiers In Education Conference</i>
October 2012	<i>Holocher-Ertl, T., Kieslinger, B., Fabian, C.M.: Designing for the users or with the users? A participatory design approach for science teaching in schools. - In Proceedings of the 2012 eChallenges Annual Conference</i>
December 2012	<i>Antonio Tapiador, Diego Carrera, Joaquín Salvachúa, Social Stream, a social network framework. In Proceedings of the International Conference on Future Generation Communication Technology 2012</i>
March 2013	<i>Barbara Kieslinger, Teresa Holocher, Claudia M. Fabian, Daniel Gallego, Sandra Aguirre, Enrique Barras and Gina Mihai: Virtual Excursions: a new way to explore Science in class. In Proceedings of the International Conference on New Perspectives in Science Education, Florence, Italy.</i>
March 2013	<i>Aldo Gordillo, Enrique Barra and Juan Quemada: Enhancing K-12 science education through a multi-device web tool to facilitate content integration and e-Infrastructure access. In Proceedings of 7th International Technology, Education and Development Conference (INTED 2013).</i>
March 2013	<i>E. Lostal Lanza, F. Serrano Sanz, J.A. Carrodegua Villar, P. Martínez Alonso, F. Sanz García, C. Val Gascón: Cell Images Analysis as a Case of Citizen Science for Advancing Education Laboratory and School, Back and Forth. In Proceedings of 7th International Technology, Education and Development Conference (INTED 2013)</i>
June 2013	<i>Daniel Gallego, Enrique Barra, Pedro Rodríguez, Gabriel Huecas: Incorporating Proactivity to Context-Aware Recommender Systems for E-Learning. International Conference on Education & E-Learning Innovations</i>

	<i>(ICEELI'2013)</i>
<i>October 2013</i>	<i>Aldo Gordillo, Enrique Barra, Daniel Gallego, Juan Quemada: An online e-Learning authoring tool to create interactive multi-device learning objects using e-Infrastructure resources. In Proceedings of the 2013 Frontiers In Education Conference.</i>
<i>October 2013</i>	<i>Aldo Gordillo, Enrique Barra, Daniel Gallego, Juan Quemada: A model for integrating learning object repository resources into web videoconference services. In Proceedings of the 2013 Frontiers In Education Conference.</i>
<i>October 2013</i>	<i>Daniel Gallego, Enrique Barra, Aldo Gordillo, Gabriel Huecas: Enhanced Recommendations for e-Learning Authoring Tools based on a Proactive Context-aware Recommender. In Proceedings of the 2013 Frontiers In Education Conference.</i>
<i>February 2014</i>	<i>Enrique Barra, Aldo Gordillo, and Juan Quemada. "Virtual Science Hub: An Open Source Platform To Enrich Science Teaching." In International Conference on Educational Sciences and Technology (ICEST) 2014.</i>
<i>February 2014</i>	<i>Enhancing web-based learning resources with quizzes through an Authoring Tool and an Audience Response System, Aldo Gordillo, Enrique Barra and Juan Quemada, submitted to 2014 IEEE Frontiers In Education Conference.</i>
<i>February 2014</i>	<i>A flexible open source web platform to facilitate Learning Object evaluation, Aldo Gordillo, Enrique Barra and Juan Quemada, submitted to 2014 IEEE Frontiers In Education Conference.</i>
<i>February 2014</i>	<i>Facilitating the creation of interactive multi-device Learning Objects using an online authoring tool, Aldo Gordillo, Enrique Barra and Juan Quemada, submitted to 2014 IEEE Frontiers In Education Conference.</i>
<i>February 2014</i>	<i>Towards a Learning Object pedagogical quality metric based on the Learning Object Review Instrument, Aldo Gordillo, Enrique Barra and Juan Quemada, submitted to 2014 IEEE Frontiers In Education Conference.</i>
<i>February 2014</i>	<i>The usefulness of Usability and User Experience evaluation methods on an e-Learning platform development from a developer's perspective: A case study, Aldo Gordillo, Enrique Barra, Sandra Aguirre and Juan Quemada, submitted to 2014 IEEE Frontiers In Education Conference.</i>

List of dissemination activities

Event Dates	Description	Type	Countries addresses	Size of audience	Partner responsible/i nvolved
14-16 Sep 2011	European Foundation for Quality in e-Learning (EFQUEL)	forum	Portugal	50	ZSI
19-21 Sep 2011	Social Innovation Conference	conference	Austria	20	ZSI
19-23 Sep 2011	EGI Technical Forum	exhibition& conference	France	600	SZTAKI
20-22 Sep 2011	Physics at Work 2011	exhibition, forum	UK		UCAM
22-23 Sep 2011	9th e-Infrastructure Concertation Meeting	presentation	France	50	SZTAKI
27-30 Sep 2011	10th International Desktop Grid Federation tutorial and workshop	workshop	Malaysia		SZTAKI
4 Oct 2011	Seminar & Workshop : Desktop GRID Computing	workshop	Indonesia		SZTAKI
14 Oct 2011	National Research Programme Sparkling Science. Results from the area Technical and Natural Sciences	conference	Austria	100	ZSI
3-4 Dec 2011	Participatory teachers workshop in Vienna	workshop	Austria, Belgium, Hungary, Spain, UK	17	ALL
26 Feb -02 Mar 2012	ISGC 2012 Conference	conference			
12-25 Mar 2012	Cambridge Science Festival				UCAM
21-23 Mar 2012	International Conference on Research Infrastructures (ICRI 2012)	conference and exhibition	International	400	SZTAKI
26-30 Mar 2012	EGI Community Forum	conference and exhibition	International	400	SZTAKI
27 Mar 2012	e-skills event in BMUKK, Austria	presentation , networking session	Austria, EU	40	ZSI
18-20 Apr 2012	12th International Public Communication of Science and Technology Conference	conference	International	700	ZSI, SZTAKI
23-25 Apr 2012	Science in Dialogue conference	stand	International	180	EUN

Event Dates	Description	Type	Countries addresses	Size of audience	Partner responsible/involved
25 May 2012	Enabling Technologies meeting in Istanbul, Turkey				
30 May 2012	sending 50 Global excursion flyers to Zara (eScience Talk) for further distribution	partner (MoU)	International	open	ZSI
31 May 2012	Global-excursion has been presented at the Excite 2012 Conference in Toulouse, France				
5-9 Jun 2012	EDEN 2012 Conference	conference	International	350	ZSI
25 Jun 2012	Scientix Newsletter	newsletter	en, de, fr, es, it, pl	1500	EUN
24 Jul 2012	Eötvös Természettudományos Tábor	presentation and demo	Hungary	25	SZTAKI
14-16 Sep 2012	Presentation on Gx to the non-Gx teachers at the Scientix workshop: Science projects and teaching STEM in the Future Classroom, Brussels, Belgium	workshop and training	International	50	EUN
17-21 Sep 2012	EGI Technical Forum	exhibition& conference	EU	400	SZTAKI
3-6 Oct 2012	Frontiers in Education Conference	conference	International		UPM/ASSA
17.-19. Oct 2012	eChallenges 2012 Conference	conference	international		ZSI
19-21 Oct 2012	30 ViSH brochures to be sent to the inGenious Academy (70 teachers, industry partners)	academy	international	70	EUN
14-15 Nov 2012	Media&Learning conference, 14-15 november 2012	conference	international	300	EUN
10-12 Dec 2012	IDGF SP project kick-off	meeting	international	15	SZTAKI
21 Feb 2013	Working lunch with UK Member of Parliament Peter Luff & local STEM outreach to school University faculty members & local industry. MP will be starting a National campaign to raise awareness of STEM in schools	Meeting	UK	10	UCAM
6-7 Mar 2013	10th e-Infrastructure Concertation Meeting	Meeting	international		EUN attended

Event Dates	Description	Type	Countries addresses	Size of audience	Partner responsible/involved
6 Mar 2013 (2h session)	Presentation on ECB/inGenious, Scientix, Go-Lab, Global excursion and eTwinning to 30 teachers, researchers and industry representatives in Barcelona, Catalonia	Presentation	Barcelona, Spain	30	EUN
10 Mar 2013	Global-excursion workshop during the inGenious Academy in Madrid	Workshop (45')	Madrid, Spain	25	EUN
14-15 Mar 2013	Global-excursion presentation during the "New Perspectives in Science Education" Conference	Presentation	Florence, Italy	50	EUN
11-24 Mar 2013		Exhibition, lectures, meetings	UK	circa 30,000	UCAM
4 Apr -29 May 2013	Catalonia (Àgueda)	lecture	Spain		EUN
8-12 Apr 2013	EGI Community Forum	conference and exhibition	international	500	SZTAKI
18 Apr 2013	Hungarian event - project meeting with teachers and students from 3 countries	project meeting	Hungary, Italy, Netherlands		Agnes Bocsook (and SZTAKI)
19-21 Apr 2013	Gx workshop at 2nd Science projects workshop in the FutureClassroom Lab, Brussels, Belgium	Workshop (1h30')	International	20	EUN
13 May 2013	Intel International Science and Engineering Fair 2013	Conference	US + International	80	EUN
25 Apr 2013	Teachers' Workshop in Vienna	workshop and training	Austria (national)	30	ZSI
22 May 2013	NRENs User Workshop, CEENGINE, Kiev, Ukraine	workshop	Europe, mainly Eastern Europe	60-70	ZSI (Barbara Kieslinger)
17 May 2013	Citizen Cyberscience Hack Day	Hackaton	Spain	60-70	BIFI
12-15 Jun 2013	Gx workshop at EDEN 2013, Oslo	Workshop (1h30')	Norway	12	EUN
Feb 2013	Scientific Circuits in Aragon	Visits	Spain	150	BIFI
23-25 Aug	Global excursion workshop during the	Workshop	Spain	40 (workshop)	EUN

Event Dates	Description	Type	Countries addresses	Size of audience	Partner responsible/involved
2013	inGenious Summer School in Barcelona			, 200 brochures	
16-20 Sep 2013	EGI Technical Forum	conference and exhibition	International	400	SZTAKI
Sep 2013	IbercivisLab	Exhibition	International	open	BIFI
9-13 Sep 2013	UIMP-INTEF Summer Course for teachers	Workshop	Spain		BIFI
14 Sep 2013	Vienna Science Week Participation of ZSI and distribution of GLOBAL excursion flyers	Exhibition	International		ZSI
24-26 Sep 2013	Physics at Work 2011	Exhibition	UK		UCAM
7 Oct 2013	Global excursion presentation during the Nanopinion teacher training in Kiriat Bialik, Israel	Conference	Israel	19	EUN
10 Oct 2013	Global excursion presentation during the Nanopinion teacher training in Vilnius, Lithuania	Conference	Lithuania	21	EUN
11 Oct 2013	Global excursion presentation during the Nanopinion teacher training in Kaunas, Lithuania	Conference	Lithuania	20	EUN
16 Oct 2013	OPENING A DIRECT PATH FROM SCHOOL TO SCIENCE conference	Conference	International		EUN
24 Oct 2013	Global excursion workshop during the Pathway Final Conference, Bad Hofgastein	Workshop	International	10	EUN
5-7 Nov 2013	Networking booth & session together with SOCIENTIZE at ICT2013 conference in Vilnius	Conference and exhibition	International	>4000	ZSI, BIFI
13 Nov 2013	ViSH presentation at eTwinning Creative Classrooms webinar	Webinar	International	43	EUN
4 Dec 2013	Poster session on Global excursion at Eminent conference 2013 -Teacher training for the 21st Century	Poster presentation	International	open	EUN
Jan 2014	Specific event for 35 teachers in Aragon		Spain	35	BIFI
14 Feb 2014	Short presentation at the Information Days on Horizon 2020 Research Infrastructures Work Programme 2014-2015 with focus on e-Infrastructures		International	250	EUN

Contact Details

Electronic media

Project website: <http://www.globalexursion-project.eu/>
Vish portal: <http://vishub.org/>
MashMeTV: <http://www.mashme.tv/>
Facebook: <https://www.facebook.com/VirtualScienceHub>
Twitter: @ViSH_portal

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Project Consortium

GLOBAL excursion is a collaborative effort of the following European institutions:

	Centre for Social Innovation - ZSI, Austria www.zsi.at
	Universidad Politécnica de Madrid (UPM), Spain www.upm.es
	EUN Partnership AISBL (EUN), Belgium www.europeanschoolnet.org
 Instituto Universitario de Investigación Biocomputación y Física de Sistemas Complejos Universidad Zaragoza	UNIVERSIDAD DE ZARAGOZA (UNIZAR-BIFI), Spain http://bifi.unizar.es
 Nanoscience @Cambridge	THE CHANCELLOR, MASTERS AND SCHOLARS OF THE UNIVERSITY OF CAMBRIDGE (UCAM), UK www.cam.ac.uk



COMPUTER AND AUTOMATION RESEARCH INSTITUTE OF THE HUNGARIAN ACADEMY OF SCIENCES (MTA SZTAKI), Hungary
www.sztaki.hu



ASSA AGORA SYSTEMS S.A. (ASSA), Spain
www.agora-2000.com

...and a team of highly committed individuals:



Use and dissemination of foreground

Section A (public)

This section includes two templates

- Template A1: List of all scientific (peer reviewed) publications relating to the foreground of the project.
- Template A2: List of all dissemination activities (publications, conferences, workshops, web sites/applications, press releases, flyers, articles published in the popular press, videos, media briefings, presentations, exhibitions, thesis, interviews, films, TV clips, posters).

These tables are cumulative, which means that they should always show all publications and activities from the beginning until after the end of the project. Updates are possible at any time.

TEMPLATE A1: LIST OF SCIENTIFIC (PEER REVIEWED) PUBLICATIONS, STARTING WITH THE MOST IMPORTANT ONES										
NO.	Title	Main author	Title of the periodical or the series	Number, date or frequency	Publisher	Place of publication	Year of publication	Relevant pages	Permanent identifiers ¹ (if available)	Is/Will open access ² provided to this publication?
1	<i>Linking Schools with Science: How Innovative Tools Can Increase the Effectiveness of Science Teaching in the Classroom</i>	<i>Holocher-Ertl, T.</i>	<i>21st European Distance and e-Learning Network</i>	<i>EDEN 2012</i>	<i>Curran Associates, Inc.</i>	<i>NY, USA</i>	<i>2012</i>	<i>pp. 122-128</i>	ISBN: 9781622763290	no

¹ A permanent identifier should be a persistent link to the published version full text if open access or abstract if article is pay per view) or to the final manuscript accepted for publication (link to article in repository).

² Open Access is defined as free of charge access for anyone via Internet. Please answer "yes" if the open access to the publication is already established and also if the embargo period for open access is not yet over but you intend to establish open access afterwards.

			<i>Annual Conference 2012</i>							
2	<i>Facilitating the creation of K-12 interactive learning objects using a multi device web tool</i>	Enrique Barra Arias	<i>Frontiers in Education Conference (FIE), 2012</i>	2012	IEEE	NJ, USA	2012		DOI: 10.1109/FIE.2012.6462236	no
3	<i>A web tool to create educational content with gaming visualization</i>	Enrique Barra Arias	<i>Frontiers in Education Conference (FIE), 2012</i>	2012	IEEE	NJ, USA	2012		DOI: 10.1109/FIE.2012.6462237	no
4	<i>A Model for Generating Proactive Context-Aware Recommendations in e-Learning Systems</i>	Daniel Gallego	<i>Frontiers in Education Conference (FIE), 2012</i>	2012	IEEE	NJ, USA	2012		DOI: 10.1109/FIE.2012.6462246	no
5	<i>Designing for the users or with the users? A participatory design approach for science teaching in schools.</i>	Holocher-Ertl, T.	<i>eChallenge s e-2012 Conference Proceedings</i>	2012			2012		ISBN: 978-1-905824-35-9	no
6	<i>Social Stream, a social network framework</i>	Antonio Tapiador	<i>Proceedings of the International Conference on Future Generation Communication Technology 2012</i>	2012	IEEE		2012			
7	<i>Virtual Excursions: a new way to explore Science in class</i>	Barbara Kieslinger	<i>International Conference on New Perspectives in Science Education</i>	2013			2013			yes
8	<i>Enhancing K-12 science education through a multi-device web tool to facilitate</i>	Aldo Gordillo	<i>7th International</i>	2013	IATED		2013	pp. 5432 - 5441	ISBN: 978-84-616-2661-8	no

	<i>content integration and e-Infrastructure access</i>		<i>Technology, Education and Development Conference (INTED 2013)</i>							
9	<i>Cell images analysis as a case of citizen science for advanced education laboratory and school, back and forth</i>	<i>E. Lostal Lanza</i>	<i>7th International Technology, Education and Development Conference (INTED 2013)</i>	2013	<i>IATED</i>		2013	<i>pp. 2489 - 2497</i>	ISBN: 978-84-616-2661-8	no
10	<i>Incorporating Proactivity to Context-Aware Recommender Systems for E-Learning</i>	<i>Daniel Gallego</i>	<i>International Conference on Education & E-Learning Innovations (ICEELI'2013)</i>	2013			2013			
11	<i>An online e-Learning authoring tool to create interactive multi-device learning objects using e-Infrastructure resources</i>	<i>Aldo Gordillo</i>		2013	<i>IEEE</i>	<i>NJ, USA</i>	2013		ISBN: 978-1-4673-152604	no
12	<i>A model for integrating learning object repository resources into web videoconference services</i>	<i>Aldo Gordillo</i>		2013	<i>IEEE</i>	<i>NJ, USA</i>	2013		ISBN: 978-1-4673-152604	no
13	<i>Enhanced Recommendations for e-Learning Authoring Tools based on a Proactive Context-aware Recommender</i>	<i>Daniel Gallego</i>		2013	<i>IEEE</i>	<i>NJ, USA</i>	2013		ISBN: 978-1-4673-152604	no

TEMPLATE A2: LIST OF DISSEMINATION ACTIVITIES

NO.	Type of activities	Main leader	Title	Date/Period	Place	Type of audience ³	Size of audience	Countries addressed
1	Forum	ZSI	European Foundation for Quality in e-Learning (EFQUEL)	14-16 Sep 2011	Portugal	Scientific Community	50	International
2	Conference	ZSI	Social Innovation Conference	19-21 Sep 2011	Vienna, Austria	Civil Society	20	Austria
3	Exhibition& conference	SZTAKI	EGI Technical Forum	19-23 Sep 2011	Lyon, France	Scientific Community	600	International
4	Exhibition, forum	UCAM	Physics at Work 2011	20-22 Sep 2011	Cambridge, UK	General public		UK
5	Presentation	SZTAKI	9th e-Infrastructure Concertation Meeting	22-23 Sep 2011	Lyon, France	Scientific Community	50	International
6	Workshop	SZTAKI	10th International Desktop Grid Federation tutorial and workshop	27-30 Sep 2011	Malaysia	Scientific Community		International
7	Workshop	SZTAKI	Seminar & Workshop : Desktop GRID Computing	4 Oct 2011	Indonesia	Scientific Community		International
8	Conference	ZSI	National Research Programme Sparkling Science. Results from the area Technical and Natural Sciences	14 Oct 2011	Vienna, Austria	Scientific Community, Teachers, Others	100	Austria
9	Workshop	ALL	Participatory teachers workshop in Vienna	3-4 Dec 2011	Vienna, Austria	Teachers, Scientists	17	Austria, Belgium, Hungary, Spain, UK
10	Conference		ISGC 2012 Conference	26 Feb -02 Mar 2012	Taipai, Taiwan	Scientific Community		International
11	Science festival	UCAM	Cambridge Science Festival	12-25 Mar 2012	Cambridge, UK	General public		UK
12	Conference and exhibition	SZTAKI	International Conference on Research Infrastructures (ICRI 2012)	21-23 Mar 2012	Copenhagen; Denmark	Scientific community	400	International

³ A drop down list allows choosing the type of public: Scientific Community (higher education, Research), Industry, Civil Society, Policy makers, Medias, Other ('multiple choices' is possible).

13	Conference and exhibition	SZTAKI	EGI Community Forum	26-30 Mar 2012	Munich, Germany	Scientific Community	400	International
14	Presentation, networking session	ZSI	e-skills event in BMUKK, Austria	27 Mar 2012	Vienna, Austria	Scientific community, teachers	40	Austria, EU
15	Conference	ZSI, SZTAKI	12th International Public Communication of Science and Technology Conference	18-20 Apr 2012	Florence, Italy	Scientific Community	700	International
16	Stand	EUN	Science in Dialogue conference	23-25 Apr 2012	Odense, Denmark	Civic Society, Scientific Community	180	International
17	Workshop	SZTAKI	Enabling Technologies meeting in Istanbul, Turkey	25 May 2012	Istanbul, Turkey	Scientific Community		International
18	Memorandum of Understanding	ZSI	sending 50 Global excursion flyers to Zara (eScience Talk) for further distribution	30 May 2012	Online	Scientific Community	open	International
19	Conference	EUN	Global-excursion has been presented at the Excite 2012 Conference in Toulouse, France	31 May 2012	Toulouse, France	Scientific Community		International
20	Conference	ZSI	EDEN 2012 Conference	5-9 Jun 2012	Porto, Portugal	Scientific Community	350	International
21	Newsletter	EUN	Scientix Newsletter	25 Jun 2012	Online	Teachers	1500	en, de, fr, es, it, pl
22	Presentation and demo	SZTAKI	Eötvös Természettudományos Tábor	24 Jul 2012	Hungary	Teachers	25	Hungary
23	Workshop and training	EUN	Presentation on Gx to the non-Gx teachers at the Scientix workshop: Science projects and teaching STEM in the Future Classroom, Brussels, Belgium	14-16 Sep 2012	Brussels, Belgium	Teachers	50	International
24	Exhibition& conference	SZTAKI	EGI Technical Forum	17-21 Sep 2012	Prague, Czech Republic	Scientific community	400	EU
25	Conference	UPM/ASSA	Frontiers in Education Conference	3-6 Oct 2012	Florence, Italy	Scientific Community		International
26	Conference	ZSI	eChallenges 2012 Conference	17.-19. Oct 2012	Lisbon, Portugal	Scientific Community		international
27	Material distribution	EUN	30 ViSH brochures to be sent to the inGenious Academy (70 teachers, industry partners)	19-21 Oct 2012	Online	Teachers, Industry	70	international
28	Conference	EUN	Media & Learning conference 2012	14-15 Nov 2012	Brussels, Belgium	Scientific Community	300	international
29	Meeting	SZTAKI	IDGF SP project kick-off	10-12 Dec 2012	Budapest, Hungary	Scientific Community	15	international

30	Meeting	UCAM	Working lunch with UK Member of Parliament Peter Luff & local STEM outreach to school University faculty members & local industry. MP will be starting a National campaign to raise awareness of STEM in schools	21 Feb 2013	UK	Policy makers	10	UK
31	Meeting	EUN attended	10th e-Infrastructure Concertation Meeting 2013	6-7 Mar 2013	Brussels, Belgium	Scientific community		International
32	Presentation	EUN	Presentation on ECB/inGenious, Scientix, Go-Lab, Global excursion and eTwinning to 30 teachers, researchers and industry representatives	6 Mar 2013 (2h session)	Barcelona, Spain	Teachers, industry	30	Spain
33	Workshop (45')	EUN	Global-excursion workshop during the inGenious Academy in Madrid	10 Mar 2013	Madrid, Spain	Teachers, industry	25	Spain
34	Presentation	EUN	"New Perspectives in Science Education"	14-15 Mar 2013	Florence, Italy	Scientific community, teachers, policy makers	50	Florence, Italy
35	Exhibition, lectures, meetings	UCAM	Cambridge Science Festival	11-24 Mar 2013	Cambridge, UK	General public	circa 30,000	UK
36	Lecture	EUN	Catalonia (Àgueda)	4 Apr -29 May 2013	Spain	General public		Spain
37	Conference and exhibition	SZTAKI	EGI Community Forum	8-12 Apr 2013	Manchester, UK	Scientific Community	500	International
38	Project meeting	Agnes Bocsok (and SZTAKI)	Hungarian event - project meeting with teachers and students from 3 countries	18 Apr 2013	Budapest, Hungary	Teachers and students		Hungary, Italy, Netherlands
39	Workshop (1h30')	EUN	Gx workshop at 2nd Science projects workshop in the FutureClassroom Lab, Brussels, Belgium	19-21 Apr 2013	Brussels, Belgium	Teachers	20	International
40	Conference	EUN	Intel International Science and Engineering Fair 2013	13 May 2013	USA	Scientific Community	80	US + International
41	Workshop and training	ZSI	Teachers' Workshop in Vienna	25 Apr 2013	Vienna, Austria	Teachers	30	Austria (national)
42	Workshop	ZSI (Barbara Kieslinger)	NRENs User Workshop, CEENGINE, Kiev, Ukraine	22 May 2013	Kiev, Ukraine Participation online	Scientific Community	60-70	Europe, mainly Eastern Europe
43	Hackaton	BIFI	Citizen Cyberscience Hack Day	17 May 2013	Spain	Scientific community	60-70	Spain
44	Workshop (1h30')	EUN	Global excursion workshop at EDEN 2013 conference	12-15 Jun 2013	Oslo, Norway	Scientific community	12	Norway

45	Visits	BIFI	Scientific Circuits in Aragon	Feb 2013	Aragon, Spain	General public	150	Spain
46	Workshop	EUN	Global excursion workshop during the inGenious Summer School in Barcelona	23-25 Aug 2013	Barcelona, Spain	Teachers, industry	40 (workshop), 200 brochures	Spain
47	conference and exhibition	SZTAKI	EGI Technical Forum	16-20 Sep 2013	Madrid, Spain	Scientific Community	400	International
48	Exhibition	BIFI	IbercivisLab	Sep 2013	Zaragoza, Spain	General public	open	International
49	Workshop	BIFI	UIMP-INTEF Summer Course for teachers	9-13 Sep 2013	Spain	Teachers		Spain
50	Exhibition	ZSI	Vienna Science Week Participation of ZSI and distribution of GLOBAL excursion flyers	14 Sep 2013	Vienna, Austria	General public		International
51	Exhibition	UCAM	Physics at Work 2011	24-26 Sep 2013	Cambridge, UK	General public		UK
52	Conference	EUN	Global excursion presentation during the Nanopinion 53teacher training in Kiriat Bialik, Israel	7 Oct 2013	Kiriat Bialik, Israel	Teachers	19	Israel
53	Conference	EUN	Global excursion presentation during the Nanopinion teacher training in Vilnius, Lithuania	10 Oct 2013	Vilnius, Lithuania	Teachers	21	Lithuania
54	Conference	EUN	Global excursion presentation during the Nanopinion teacher training in Kaunas, Lithuania	11 Oct 2013	Kaunas, Lithuania	Teachers	20	Lithuania
55	Conference	EUN	OPENING A DIRECT PATH FROM SCHOOL TO SCIENCE conference	16 Oct 2013	Brussels, Belgium	Scientific community, teachers		International
56	Workshop	EUN	Global excursion workshop during the Pathway Final Conference, Bad Hofgastein	24 Oct 2013	Bad Hofgastein, Austria	Teachers	10	International
57	Conference and exhibition	ZSI, BIFI	Networking booth & session together with SOCIENTIZE at ICT2013 conference in Vilnius; presentation at student outreach	5-7 Nov 2013	Vilnius, Lithuania	Scientific community, students	>4000	International
58	Webinar	EUN	ViSH presentation at eTwinning Creative Classrooms webinar	13 Nov 2013	Online	Teachers	43	International
59	Poster presentation	EUN	Poster session on Global excursion at Eminent conference 2013 -Teacher training for the 21st Century	4 Dec 2013	Brussels, Belgium	Teachers	open	International
60	Workshop	BIFI	Specific event for 35 teachers in Aragon	Jan 2014	Aragon, Spain	Teachers	35	Spain
61	Information day	EUN	Short presentation at the Information	14 Feb 2014	Brussels, Belgium	Scientific	250	International

			Days on Horizon 2020 Research Infrastructures Work Programme 2014-2015 with focus on e-Infrastructures			Community		
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Section B (Confidential⁴ or public: confidential information to be marked clearly)

Part B1

The GLOBAL excursion project has not filed any patents or trademarks or registered designs. The project has been committed to open source technology and as such as published the source code of its technology (ViSH, ViSH Mobile and ViSH editor) at Github (<https://github.com/>), one of the largest open source code repositories.

As defined in the terms of use All educational resources created in ViSH are published under the creative commons license by . This work is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License](https://creativecommons.org/licenses/by-nc-sa/3.0/). Users waive any right to receive a retribution for such authorization.

The domain name vishub.org has been registered as well as MashMe.tv. The spin-off company MashMeTV, as an individual legal entity, may have registered trademarks and hold copyrights that are outside the realm of the project.

⁴ Note to be confused with the "EU CONFIDENTIAL" classification for some security research projects.

Part B2

Please complete the table hereafter:

Type of Exploitable Foreground ⁵	Description of exploitable foreground	Confidential Click on YES/NO	Foreseen embargo date dd/mm/yyyy	Exploitable product(s) or measure(s)	Sector(s) of application ⁶	Timetable, commercial or any other use	Patents or other IPR exploitation (licences)	Owner & Other Beneficiary(s) involved
	<i>ViSH portal for the creation and exchange of educational resources</i>	<i>No</i>	-	<i>Educational portal</i>	<i>Education Science</i>	<i>2013 - 2020</i>		<i>Open source software; Beneficiary 2 (UPM) and Beneficiary 7 (ASSA) mainly involved</i>
	<i>MashMeTV</i>	<i>Yes</i>	-	<i>Video conferencing system and collaboration features</i>	<i>ICT</i>	<i>2011 - 2020</i>	<i>trademark</i>	<i>Spin-off company from Beneficiary 2 (UPM)</i>
	<i>Pedagogical experience</i>	<i>No</i>	-	<i>Publication</i>	<i>Education</i>	<i>2013 - 2020</i>		<i>All beneficiaries</i>
	<i>Stakeholder policy advice</i>	<i>No</i>	-	<i>Publication</i>	<i>Education Science</i>	<i>2013 - 2016</i>		<i>All beneficiaries</i>
	<i>"Meet the Scientist" events series</i>	<i>No</i>	-	<i>Educational event series</i>	<i>Education Science</i>	<i>2013 - 2016</i>		<i>All beneficiaries</i>

The ViSH is the main foreground of the project. It will be sustained by the partners and will offer a free service to the educational community.

MashMeTV is being commercially exploited by an independent legal entity, which has been established shortly after the official project start.

All beneficiaries also commit to exploit the other foreground, such as the pedagogical experience, the policy advice and the established events series within the limitations of their organisations. No

¹⁹ A drop down list allows choosing the type of foreground: General advancement of knowledge, Commercial exploitation of R&D results, Exploitation of R&D results via standards, exploitation of results through EU policies, exploitation of results through (social) innovation.

⁶ A drop down list allows choosing the type sector (NACE nomenclature) : http://ec.europa.eu/competition/mergers/cases/index/nace_all.html

Report on societal implications

Replies to the following questions will assist the Commission to obtain statistics and indicators on societal and socio-economic issues addressed by projects. The questions are arranged in a number of key themes. As well as producing certain statistics, the replies will also help identify those projects that have shown a real engagement with wider societal issues, and thereby identify interesting approaches to these issues and best practices. The replies for individual projects will not be made public.

A General Information *(completed automatically when Grant Agreement number is entered.*

Grant Agreement Number:

RI-283686

Title of Project:

Extended Curriculum for Science Infrastructure Online

Name and Title of Coordinator:

Dr. Barbara Kieslinger

B Ethics

1. Did your project undergo an Ethics Review (and/or Screening)?

- If Yes: have you described the progress of compliance with the relevant Ethics Review/Screening Requirements in the frame of the periodic/final project reports?

X Yes 0No

Special Reminder: the progress of compliance with the Ethics Review/Screening Requirements should be described in the Period/Final Project Reports under the Section 3.2.2 'Work Progress and Achievements'

2. Please indicate whether your project involved any of the following issues (tick box) :

YES

RESEARCH ON HUMANS

- Did the project involve children?
- Did the project involve patients?
- Did the project involve persons not able to give consent?
- Did the project involve adult healthy volunteers?
- Did the project involve Human genetic material?
- Did the project involve Human biological samples?
- Did the project involve Human data collection?

RESEARCH ON HUMAN EMBRYO/FOETUS

- Did the project involve Human Embryos?
- Did the project involve Human Foetal Tissue / Cells?
- Did the project involve Human Embryonic Stem Cells (hESCs)?
- Did the project on human Embryonic Stem Cells involve cells in culture?
- Did the project on human Embryonic Stem Cells involve the derivation of cells from Embryos?

PRIVACY

- Did the project involve processing of genetic information or personal data (eg. health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction)?
- Did the project involve tracking the location or observation of people?

RESEARCH ON ANIMALS

- Did the project involve research on animals?
- Were those animals transgenic small laboratory animals?
- Were those animals transgenic farm animals?

• Were those animals cloned farm animals?	
• Were those animals non-human primates?	
RESEARCH INVOLVING DEVELOPING COUNTRIES	
• Did the project involve the use of local resources (genetic, animal, plant etc)?	
• Was the project of benefit to local community (capacity building, access to healthcare, education etc)?	
DUAL USE	
• Research having direct military use	0 Yes 0 No
• Research having the potential for terrorist abuse	

C Workforce Statistics

3. Workforce statistics for the project: Please indicate in the table below the number of people who worked on the project (on a headcount basis).

Type of Position	Number of Women	Number of Men
Scientific Coordinator	2	1
Work package leaders	4	2
Experienced researchers (i.e. PhD holders)	5	11
PhD Students	7	11
Other	8	16

4. How many additional researchers (in companies and universities) were recruited specifically for this project? **5**

Of which, indicate the number of men: **4**

D Gender Aspects		
5. Did you carry out specific Gender Equality Actions under the project?	<input type="radio"/> X	Yes No
6. Which of the following actions did you carry out and how effective were they?		
	Not at all effective	Very effective
<input type="checkbox"/> Design and implement an equal opportunity policy	○ ○ ○ ○ ○	○ ○ ○ ○ ○
<input type="checkbox"/> Set targets to achieve a gender balance in the workforce	○ ○ ○ ○ ○	○ ○ ○ ○ ○
<input type="checkbox"/> Organise conferences and workshops on gender	○ ○ ○ ○ ○	○ ○ ○ ○ ○
<input type="checkbox"/> Actions to improve work-life balance	○ ○ ○ ○ ○	○ ○ ○ ○ ○
<input type="radio"/> Other: <input style="width: 200px;" type="text"/>		
7. Was there a gender dimension associated with the research content – i.e. wherever people were the focus of the research as, for example, consumers, users, patients or in trials, was the issue of gender considered and addressed?		
<input type="radio"/> Yes- please specify <input style="width: 50px;" type="text"/>		
<input checked="" type="radio"/> No		
E Synergies with Science Education		
8. Did your project involve working with students and/or school pupils (e.g. open days, participation in science festivals and events, prizes/competitions or joint projects)?		
<input checked="" type="radio"/> Yes- please specify <input style="width: 50px;" type="text"/>		via interaction with teachers
<input type="radio"/> No		
9. Did the project generate any science education material (e.g. kits, websites, explanatory booklets, DVDs)?		
<input checked="" type="radio"/> Yes- please specify <input style="width: 50px;" type="text"/>		ViSH – Virtual Science Hub of Global excursion
<input type="radio"/> No		
F Interdisciplinarity		
10. Which disciplines (see list below) are involved in your project?		
<input checked="" type="radio"/> Main discipline ⁷ : <input style="width: 150px;" type="text"/>		
<input type="radio"/> Associated discipline ⁷ : <input style="width: 150px;" type="text"/>	<input type="radio"/>	Associated discipline ⁷ : <input style="width: 150px;" type="text"/>
G Engaging with Civil society and policy makers		
11a Did your project engage with societal actors beyond the research community? (if 'No', go to Question 14)	<input checked="" type="radio"/> ○	Yes No
11b If yes, did you engage with citizens (citizens' panels / juries) or organised civil society (NGOs, patients' groups etc.)?		
<input checked="" type="radio"/> No		
<input type="radio"/> Yes- in determining what research should be performed		
<input type="radio"/> Yes - in implementing the research		
<input type="radio"/> Yes, in communicating /disseminating / using the results of the project		

⁷ Insert number from list below (Frascati Manual).

11c In doing so, did your project involve actors whose role is mainly to organise the dialogue with citizens and organised civil society (e.g. professional mediator; communication company, science museums)?	X ○	Yes No
12. Did you engage with government / public bodies or policy makers (including international organisations)		
<input type="radio"/> No <input type="radio"/> Yes- in framing the research agenda <input type="radio"/> Yes - in implementing the research agenda <input checked="" type="radio"/> Yes, in communicating /disseminating / using the results of the project		
13a Will the project generate outputs (expertise or scientific advice) which could be used by policy makers? <input checked="" type="radio"/> Yes – as a primary objective (please indicate areas below- multiple answers possible) <input type="radio"/> Yes – as a secondary objective (please indicate areas below - multiple answer possible) <input type="radio"/> No		
13b If Yes, in which fields?		
Agriculture Audiovisual and Media Budget Competition Consumers Culture Customs Development Economic and Monetary Affairs Education, Training, Youth Employment and Social Affairs	Energy Enlargement Enterprise Environment External Relations External Trade Fisheries and Maritime Affairs Food Safety Foreign and Security Policy Fraud Humanitarian aid	Human rights Information Society Institutional affairs Internal Market Justice, freedom and security Public Health Regional Policy Research and Innovation Space Taxation Transport

13c If Yes, at which level?		
<input checked="" type="checkbox"/>	Local / regional levels	
<input checked="" type="checkbox"/>	National level	
<input checked="" type="checkbox"/>	European level	
<input type="checkbox"/>	International level	
H Use and dissemination		
14. How many Articles were published/accepted for publication in peer-reviewed journals?		0
To how many of these is open access⁸ provided?		0
How many of these are published in open access journals?		0
How many of these are published in open repositories?		0
To how many of these is open access not provided?		0
Please check all applicable reasons for not providing open access:		0
<input type="checkbox"/> publisher's licensing agreement would not permit publishing in a repository <input type="checkbox"/> no suitable repository available <input type="checkbox"/> no suitable open access journal available <input type="checkbox"/> no funds available to publish in an open access journal <input type="checkbox"/> lack of time and resources <input type="checkbox"/> lack of information on open access <input type="checkbox"/> other ⁹ :		0
15. How many new patent applications ('priority filings') have been made? <i>("Technologically unique": multiple applications for the same invention in different jurisdictions should be counted as just one application of grant).</i>		0
16. Indicate how many of the following Intellectual Property Rights were applied for (give number in each box).	Trademark	
	Registered design	
	Other	
17. How many spin-off companies were created / are planned as a direct result of the project?		1
<i>Indicate the approximate number of additional jobs in these companies:</i>		6
18. Please indicate whether your project has a potential impact on employment, in comparison with the situation before your project:		
<input type="checkbox"/> Increase in employment, or <input type="checkbox"/> Safeguard employment, or <input type="checkbox"/> Decrease in employment, <input type="checkbox"/> Difficult to estimate / not possible to quantify	<input type="checkbox"/> In small & medium-sized enterprises <input type="checkbox"/> In large companies <input checked="" type="checkbox"/> None of the above / not relevant to the project	
19. For your project partnership please estimate the employment effect resulting directly from your participation in Full Time Equivalent (FTE = one person working fulltime for a year) jobs:		<i>Indicate figure:</i>

⁸ Open Access is defined as free of charge access for anyone via Internet.

⁹ For instance: classification for security project.

Difficult to estimate / not possible to quantify

I Media and Communication to the general public

20. As part of the project, were any of the beneficiaries professionals in communication or media relations?

Yes No

21. As part of the project, have any beneficiaries received professional media / communication training / advice to improve communication with the general public?

Yes No

22 Which of the following have been used to communicate information about your project to the general public, or have resulted from your project?

- | | |
|---|---|
| <input checked="" type="checkbox"/> Press Release | <input checked="" type="checkbox"/> Coverage in specialist press |
| <input type="checkbox"/> Media briefing | <input type="checkbox"/> Coverage in general (non-specialist) press |
| <input type="checkbox"/> TV coverage / report | <input type="checkbox"/> Coverage in national press |
| <input type="checkbox"/> Radio coverage / report | <input type="checkbox"/> Coverage in international press |
| <input checked="" type="checkbox"/> Brochures /posters / flyers | <input checked="" type="checkbox"/> Website for the general public / internet |
| <input checked="" type="checkbox"/> DVD /Film /Multimedia | <input checked="" type="checkbox"/> Event targeting general public (festival, conference, exhibition, science café) |

23 In which languages are the information products for the general public produced?

- | | |
|---|--|
| <input checked="" type="checkbox"/> Language of the coordinator | <input checked="" type="checkbox"/> English, German, Hungarian, Spanish, French, Dutch |
| <input checked="" type="checkbox"/> Other language(s) | |