

# Training in Web 2.0 tools: a way to bring Spatial Data Infrastructures to people

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## Abstract

The fast evolution of the Internet and the Information and Communication Technologies is highly superior to the ability of the people to get used to it and to understand it.

Many people, such as professionals, technicians and members of the society in general, may have a very valuable knowledge, but it remains hidden. The use of the Internet and the Web 2.0 tools is still an obstacle.

To think about the Internet as a tool for seeking information, but not as a Web 2.0 environment with interaction, is a handicap for many people.

This situation can be seen in many environments, including the Spatial Data Infrastructures (SDI) and related issues, taking into account the fact that the whole society is participating in the SDI when it is considered in a wide sense.

Therefore, the situation mentioned above was considered to develop a Project, including researchers from: Universidad Nacional de Educación a Distancia (UNED) from Spain, the Universidad Nacional de la Patagonia San Juan Bosco (UNPSJB) from Argentina, the Universidad de Concepción (UdC) from Chile and the Escuela Politécnica del Ejército (ESPE) from Ecuador. This Project is titled: "Training and Knowledge Management with Web 2.0 tools for University Teaching, Administrative and Educative Management and Continuing Professional Development in Argentina, Chile and Ecuador". This project is currently in the implementation phase.

The paper has five sections. The first one describes the identified problem. The second one, the lines of action of the project. The third one, the project's general tasks and, particularly, the training program using online courses and video-conferences (these ones mainly oriented to SDI). The fourth one, the specific characteristics of those tasks and the results obtained until the present, and the fifth and last one is centered in some final considerations about the current project.

**Keywords:** Web 2.0, SDI, online courses, video-conferences – spatially enabled society

## **1. INTRODUCTION**

In the last few years the society has been an actor and a witness of an entire revolution in communication. What is now taking place in this field is a transition to a digital era. This means that the whole model is going through a complete change in the communication business.

To begin with, when information is translated into digital information, it can be presented in all kinds of formats and platforms, as multimedia and interactive content. This is not new, but, the new thing is that accessibility has been strongly improved, and even more important, is that now the user can be also de producer of the information.

Until the early 2000 years, the Internet was based on browsing and navigation. Then user contribution became a fact with what is called the Web 2.0. This new model for the Internet is based on tools like blogs, wikis, social networks and platforms like Youtube, that allow users to publish and share their knowledge with total freedom and with universal access.

As a consequence, the society has to adapt itself to the use of these technologies. Nowadays, being present on the Internet is a must, and, besides, web 2.0 is contributing to create a global network of knowledge.

For these reasons, web 2.0 tools can be a powerful method to bring Spatial Data Infrastructure to people, not only the professionals that work in this field, but also the rest of the society. Since now, a lot of valuable information, talent and knowledge remained hidden, but this needs to be changed to be in harmony with the present communication model.

## **2. PROBLEM IDENTIFICATION**

According to previous experiences carried out by the research groups from the universities of Argentina, Chile, Ecuador and Spain, the possibilities given by the Inter-University Cooperation Program and Scientific Research. This Program has been offered by the AECID in 2009. The intention was, to arrive to a consensus among the four universities, to detect the main problems and needs. As a result of this common vision, the main problem to face in this project was: "Training and Knowledge Management with Web 2.0 tools".

Therefore, the scope of the project proposal was centered in this main theme.

## **3. THE PROJECT'S ACTION LINES**

Under the framework of this main subject "Training and Knowledge Management with Web 2.0 tools" the following three actions lines were deduced:

1. University Teaching.
2. Administrative and Educative Management.
3. Continuing Professional Development.

Different tasks were planned for this action lines in order to achieve the objectives of the project.

### **3.1 Context and objectives of the Project**

The project "Training and Knowledge Management with Web 2.0 tools for University Teaching and Educational Administrative Management and Continuing Professional Development in Argentina, Chile and Ecuador," A/024521/09, is in a stage of implementation since January 2010. This project includes synergies of research among groups from the faculties of Economics, Engineering and Humanities and Social Sciences from "Universidad Nacional de la Patagonia San Juan Bosco" (UNPSJB) from Argentina, "Universidad Nacional de Educación a Distancia" (UNED) from Spain, "Universidad de Concepción" (UdeC) from Chile and "Escuela Politécnica del Ejército" (ESPE) from Ecuador.

The project A/024521/09, adds synergies of research groups from four universities, in order to promote the use of Web 2.0 tools and other technologies for education and knowledge, to enhance and ease the tasks of university teaching, training and administrative management, especially in rural communities and continuing professional development in Argentina, Chile and Ecuador, extended to Spain and other countries in some cases.

The project is supported by the participating universities and funded by the Spanish Agency for International Development Cooperation (AECID).

This project capitalise the results achieved in previous research also funded by AECID, "Application of ICT for the development of institutional capacity of management of Rural Communities in the Patagonia Argentina", Code A/8108/07, developed by the same research groups from the UNED and UNPSJB, during the years 2008-2009.

Team members come from various disciplines and added experience in education at all levels, as well as in the public, private and non-governmental sectors.

Regarding researches and experiences in distance education and use of new technologies, some members of the team have over 15 years of experience in the field.

The main objectives of the project are:

- Promote academic cooperation between Spain, Argentina, Chile and Ecuador and its application to specific environments and situations.
- Foster the use of Web 2.0 tools and other technologies within the groups concerned.
- Extend the results of Project Code AECID A/8108/07 to Chile and Ecuador.
- Promote collaborative working and learning within all the members and beneficiaries of the project.
- Boost the proper management of information and knowledge obtained in the different environments of intervention.

## **4. THE PROJECT'S GENERAL TASKS**

One of the key factors of the project is the communication among the research groups, which are distributed in different geographical locations.

### **4.1 Dissemination of the Project**

The main activities to disseminate the project can be summarized as follows:

1. Creation of the Web Site of the Project: [www.idetic.net/cgcweb20](http://www.idetic.net/cgcweb20).
2. Access to virtual classrooms, through the Project Web site, in order to promote their diffusion.
3. Creating a welcome Video to the online courses, hosted on the Moodle platform at the beginning of all courses.
4. Broadcast in the Newsletter IDE Iberoamérica.  
<http://redgeomatrica.rediris.es/Newsletter>.
5. Presentations and publications.

Presentations were made at national and international congresses, including the XV International Congress of Educational Technology and Knowledge, under the main theme "Social Networks for Learning" Madrid, Spain, July 2010. At this Congress researchers from four member universities of the project took part.

Papers were presented at Congresses and Conferences related to: Informatics, Education with emphasis on new technologies and Geospatial Information (FIG, GSDI12). In addition to publications in proceedings of congresses and conferences, there have been other publications in specialized journals.

#### **4.2 Proposal for Training different groups**

Training for different groups, was proposed mainly through e-learning courses, implemented in the Moodle platform.

Access to courses could be done from the project web site and this was intended to be given from Chile, Argentina and Ecuador. This model to deliver and to distribute courses, has presented some challenges, such as achieving a common presentation of course materials from all universities.

An important and positive aspect to highlight is that access to all training courses been raised through the project web site and, in this way students have the possibility of being trained in at least three countries.

An additional advantage of distributed courses is that all the universities of Latin America that are taking part in the project, will have the possibility to lead and to manage part of the training, gaining experiences and learning in this field.

#### **4.3 Online Courses**

##### **Courses -1<sup>st</sup> stage**

This is a fundamental part of project activities, oriented to three strategic lines, proposed a 1st stage of training through online courses geared to Web 2.0, oriented to people from Chile, Argentina, Ecuador, extending to Spain and other countries in some cases. By means of these courses it is expected to contribute with aspects such as the digital gap, lack of time and lack of resources that may affect the access to technology applications. The idea is to help in these problems and optimize the activities in any area in which people operate.

The planning and development was carried out with the help of specialized teams of the participating universities. The contribution of the tutors, was fundamental, sparking greater participation and making close monitoring of activities.

Each university contributed to the generation and implementation of at least one course in the servers hosted at the National University of Patagonia San Juan Bosco, Argentina.

The course duration is 40 hours, and because demand is projected to raise a 2nd edition.

The number of actual participants is: 360. The courses were offered free, and each participant will receive two diplomas: one from the local university and another issued by the project.

The courses are detailed below:

1. Enhancing social interactions through Web 2.0

Introductory Course based on the use of Web 2.0 tools for interaction in social networks.

2. One approach to the use of Web 2.0 tools for professional development

Introductory Course based on the use of Web2.0 tools for online edition of texts, spreadsheets and forms.

3. Project Management through Web 2.0

Introductory Course to use groups and calendars for Collaborative Project Management through the Internet.

4. Introduction to Design and Administration of Moodle virtual classrooms

Course oriented to the acquisition of skills to manage virtual classrooms on the Moodle platform.

The courses were focused to the recipients, following the three action strategic lines of the project, accompanied by practical tasks in order to optimise the teaching-learning process.

The 1<sup>2nd</sup> edition, will provide delivery of courses: 1, 2 and 3 before mentioned and add the course: Managing photos with Picasa tool.

#### **4.4 Video-conferences (mainly oriented to SDI)**

Video-conferencing is a communications technology that integrates video and voice to connect remote users with each other as if they were in the same room.

Video-conferencing allows users to save time and costs by bringing people face-to-face virtually.

Nowadays applications of video conferencing technology are just the beginning. As video and voice capture technology, software, and display technologies continue to improve, the experience of video conferencing will become increasingly natural and intuitive to a wider range of users.

In addition to the courses experiences on video-conferences have been carried out, implementing experiences among project members and with third parties, with the aim of applying to the strategic line 3 of the project in the near future. In other projects, in which several members of this project are involved the use of video-conferences, with different purposes and technologies, began some years ago.

The main field of action of the Video -conferences is related to Spatial Data Infrastructure (SDI), due to the fact that such infrastructures are an important part of the core of the Information Society.

According to (Rajabifart, 2010), SDIs aim to facilitate and coordinate the sharing of spatial data between stakeholders, based on a dynamic and multi-hierarchical concept that encompasses the policies, organizational reimits, data, technologies, standards, delivery mechanisms and financial and human resources necessary to ensure that those working at the appropriate (global, regional, national, local) scale are not impeded in meeting their objectives (GSDI, 1997).

The initial development of SDIs was largely in the hands of small elite of spatially aware professionals. This elite not only dominated the production of geographic information, but were also its main users. In recent years, the position has substantially changed to the extent that the vast majority of the public are users, either knowingly or unknowingly, of spatial information (Masser I., 2009).

The evolution from Web 1.0 to Web 2.0, in the field of Geo Web has been summarized by (Masser I. 2009), expressing the Differences between GeoWeb 1.0 and 2.0 (after Maguire, 2005).

Table 1: Differences between GeoWeb 1.0 and 2.0

<b>GeoWeb 1.0</b>	<b>GeoWeb 2.0</b>
Static	Dynamic
Publishing	Participation
Producer centric	User centric
Centralised	Decentralised
Close coupling	Loose coupling (mash ups)
Basic	Rich

The SDIs are evolving in the last years towards Spatially Enabled Society. These are societies where SDIs are oriented to a better contribution to social needs focused to both developing and developed countries.

Spatially Enabled Society is a scenario when the society manages their information “spatially” using spatial component. This can be a response to our increasingly complex and rapidly changing world (Rajabifart, 2010).

## **5. MAIN CHARACTERISTICS OF THE PROJECT’S TASKS AND PARTIAL RESULTS**

### **5.1 Main Characteristics of the Project’s Tasks**

Before the delivery of courses and video conferences, there has been previous work among the teams of the member countries, in terms of sharing experiences, creation of collective knowledge and its applications.

A significant fact is that the project has created synergies with other projects, documented at the time of writing the project proposal, which have given very positive results in the implementation stage.

### **5.2 Partial Results**

## **Dissemination and communication**

Regarding the objective of disseminating and communicating, various actions have been carried out, including:

- the creation of the image of the project through its logotype.
- the development of its Web site.
- dissemination of the project through various means.
- participation of researchers with presentations at various events and specialized publications.

## **Management**

The management for the execution stage of the project, including four countries, required the Spanish and Latin American coordinators, the definition and test of operational procedures, tools and implementation of concrete experiences with all the members. This has been of significant value in order to achieve, consistent and agile ways of working.

## **Courses -1<sup>st</sup> stage:**

Main task concerning the 1<sup>st</sup> stage of the courses:

- Implementation of the Platform Moodle course in each country.
- Course dissemination in the national media (digital and printed). Task of dissemination of the courses, were implemented under specific criteria in each country. Task of dissemination of the courses, were implemented under specific criteria in each country. Chile and Ecuador decided to spread the courses much more widely.
- Integration of a team of Tutors in each country.
- Analysis of the structure of the courses (objectives, contents, activities, evaluation) Course Tutors.
- Contents design and pedagogical revision.
- Courses Implementation.
- Support and student assessment.
- Analysis of the course with respect to participation (approved, desertion, etc.).
- Course completion. Evaluation and feedback information.
- Delivery of certificates to those who have passed the courses.

The first stage of the course is not fully completed, therefore only partial results are detailed below.

Statistical data of the courses:

The country of origin and percentage of students per country is exemplified by the statistics of the following courses: Project Management through Web 2.0.

Course 1. Enhancing social interactions through Web 2.0

Course 2. One approach to the use of Web 2.0 tools for professional development.

Course 3. Project Management through Web 2.0

Course 4. Introduction to Design and Administration of Moodle virtual classrooms.

Table 2: Students by Country: Courses 1, 2, 3 and 4

Country	Students registered	Students who started the courses
<b>Course 1</b>		
Chile	86	62
Ecuador	36	31
Argentina	13	11
Spain	13	11
Others	04	04
Total	152	119
<b>Course 2</b>		
Chile	239	183
Ecuador	36	28
Argentina	22	20
Spain	06	06
Others	02	01
Total	305	242
<b>Course 3</b>		
Chile	60	29
Ecuador	22	14
Argentina	10	07
Spain	01	01
Others	05	01
Total	98	52
<b>Course 4</b>		
Chile	86	57
Ecuador	34	32
Argentina	15	12
Spain	05	04
Others	01	0
Total	141	105
Courses 1+2+ 3+ 4	696	518

Table 3: Percentages of students by courses

Courses	Students registered	Students that started the courses	% of students registered	% of students that started the courses
<b>Course 1</b>	152	119	21,84	22,97
Total				
<b>Course 2</b>	305	242	43,83	46,72
Total				
<b>Course 3</b>	98	52	14,08	10,04
Total				
<b>Course 4</b>	141	105	20,25	20,27
Total				
Courses 1+2+3 + 4	696	518	100	100

According as planned, statistics show the involvement of students of the target countries and also from other ones.

### **Video – conferences**

The results obtained so far in the project in relation to video - conferences concerns to experiences carried out among its members.

## **6. FINAL CONSIDERATIONS**

Due to the fact that the project is being composed by a multidisciplinary team, which coincide in the common interest in new technologies and media, it is possible to generate proposals and solutions from a broad perspective.

The main results of this project are based specially, in the opportunity given to participants to get a formation on line, and in the importance of obtaining technological competences based on digital literacy.

The experiences of the project team in all education levels as well as in the private, public and non-government sectors, contribute to plan the training in accordance with the needs of the areas in which they are applied.

The 1<sup>st</sup> stage of the course ended with the following conclusions:

- The number of people interested in the courses was much higher than expected.
- Those interested in the courses were from the target groups deduced from the three action's lines of the project.
- Taking into account all the participants to the courses, the following results has been obtained:

Number of students registered: 696. Percentages of students by course:  
Course 1: 21,84, Course 2: 43,83 , course 3: 14,08 and Course 4:  
20,25.

Number of students who started the courses: 518. Percentages of  
students by course: Course 1: 22,97, Course 2: 46,72 , course 3: 10,04  
and Course 4: 20,27.

- The gained experience and lessons learned in the 1<sup>st</sup> stage of the course, gives some clues for planning the 2<sup>nd</sup> stage that will be also implemented in 2010.

At present, the joint team of four countries, has achieved a significant capacity for interaction and joint production.

The experience that is being carried out in the four countries in this network, is a collaborative training exercise that would benefit all its members to prepare them for a subsequent incorporation to larger networks.

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