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to Design Issues** Keywords: Social Relevance,

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Usually design projects are born in the situation a person, company or institution is asking a designer to provide a service in order to improve technical, aesthetical or functional aspects of his product or service. In some way this «way of doing it» has put designers in a rather passive role, a fact which stands in contradiction to the way most designers see themselves.

We'd like to present two case studies where identifying a social relevance became the starting point for a design research before it actually became a project.

One is located in the bay of Venice, the other one in the swiss alps. Preliminary researches were focusing new dynamics emerging from Web-Geo-Information-Systems (WebGis) and Telematics and consequently both projects deal with peoples needs related to their location they live, work or spend their leisure time in. In one cases the decision was taken to invest time in an observation of a

specific social issue in order to identify problems which could be dealt by designing a WebGis. The other case is based on a strong co-productive approach since it meets the needs of Venice's citizens. Important is that both GIS-applications don't only deal with the graphic treatment of data but are based on an information architecture developed together with and for the people who are using it.

Many discussions have been held about how to approach design research should begin or what it should concentrate on. Some approaches were developing methods to treat design itself as an object of research, others have been rather based on the practical nature of design processes. In the recent past also a remarkable step towards Inter- and Transdisciplinarity has been undertaken. But one thing which in our eyes has not been talked about enough is a proactive role of the design researcher himself.

Like in the world of design practice in the «research world» as well we are used to be confronted with problems or research proposals which means that in most cases we are not the person who identifies the problem but are asked by other people to solve them. Often the answer to this rather passive role is a set of participatory methods directed by the designer himself in order to focus the user - but doesn't it seem somehow like a compensation of what should have been done before – actively talk and work with people to identify new design problematics?

«D» like Detect

The recent move towards Transdisciplinarity and the exploration of other research fields shows that designers are about to redefine their personal role in the scenery of design research. A search has begun for «(...) the phenomena of the world we are interested in observing and understanding» (Findeli et al., 2008). First steps to change the designers role from «problem-solvers» towards «problem-identifiers» (Frascara, 2002).

In many cases we might not know yet about the relevance of design for other fields or problems. So it is up to us to detect and identify these problems and make them become issues which can be dealt by design research. Something which is emphasized by Jorge Frascara in his dialogue with Dietmar Winkler on design research: «If designers want to be socially relevant, we must become active agents in the identification of problems, because clients only see a need for design when that need has become obvious» (Frascara, Winkler, 2010)

In the both of the following cases a preliminary research on Geo Information Systems and Telematics has been made. But there wasn't yet defined a specific field where the research might be applied. In Consequence the following step was to observe different fields in order to detect socially relevant problems which might trigger a starting point for a design research project.

A Proactive user and new social issues in the <Network Society>

Several influential people have stated in the last decade how Information Communication Technology would affect the participation of people in fields like governance, environment, security, and so on. The philosopher Michael Castells talked about the <network society> and how a new technological context affect spatial and social transformations of cities and regions, which means also our everyday context especially in terms of social needs: for example a citizen's active participation in the city government or the prevention of people from environmental risks (Castells, 2009). Only twelve years ago Al Gore foresaw a <Digital Earth> as a model of representation of the planet (Al Gore, 1998). While five years ago Kofi Annan at the <World Summit on the Information Society> saw a cornerstone in the Internet connection to all the world's cities in the development of digital democracy. These claims, even if in a very general way, anticipated the importance and role of ICT, which get more and more established for development, transformation and affecting many practices of cities and regions life in contemporary society.

In our researches we have paid specifically attention to the telematic application of geographic information systems (GIS), something which has opened further and important possibilities to participate actively in sharing and conveying information which concerns social problems (e.g. e-government).

In fact during the last few years, the telematic scenery has changed considerably. The most evident aspect of this change is the passage from the hierarchical structure of the Web 1.0 – which follows communicative models assimilable to the broadcasting in which the producers provide the contents to a wide public – to the Web 2.0 in which the communicative methods become modular, distributed, created and arranged by a multitude of users. These transformations influence inevitably GIS applications as well. Information in combination with digital maps is more accessible than ever thinking of people's mobile devices and their possibility to access and contribute digital content at nearly any place.

With the webGIS (2.0) happen both a technological change and an evolution of the forms of social interaction, which is becoming more and more dynamic and participatory. Thanks to this communication mean people become very involved in getting, sharing, and creating information.

From a designers point of view the realistic representation of the territory inside of an interactive and multimedial web environment enables the configuration of new typologies of interfaces through which users may convey information. This means that in this specific case design has to pay even more attention to the users and accommodate their proactive role with adapted information structures and interfaces.

The complexity due to the interplay of several dimensions such as a technological, a social, cultural and personal, requires to ground such projects on methods that have to involve a better understatement of the people using such services and a transdisciplinary approach.

Two Case Studies

PatOnLine for the City of Venice

In the first case the Venice City Council decided to develop a WebGIS application which will offer citizens the possibility to give their own observations about new Urban City Plan. Thanks to this web-platform citizens of Venice can submit observations about the Plan and share opinions in a new and more dynamic way that provide easy accessibility to city government polices.

E-government meets Social Relevances

Some while ago the city of Venice has introduced its concept of the <digital citizen> which consists in a new dynamic form of e-governance by which Venice citizens are becoming more and more involved, thanks the adoption of ICT services, in the city management policies.

First these services were only accessible at the citizens-office in Venice. But in reality this kind of bureaucracy procedure often requires a lot of time and ends up often quite complex. In consequence a number of socially relevant services have been brought on the web by creating Web GIS applications (e.g IRIS, ARGOS, Figure 1) in order to cover the most important functions and means in the Venice communication policy. PatOnLine will represent one future piece of this broad system of communication, which wants to satisfy Venice's citizens needs.

Working on the new Land Development Plan there was identified the urgency to work much closer with the citizens together in order to accommodate their needs. Simple facts like turning a quiet zone into a building zone might have big effects on social life in these areas and it is absolutely relevant to know the citizens opinion on such changes.

The challenge was to find an effective way to create a close collaboration with the citizens in order to allow them to bring forward their own remarks about the right zones and building areas of a Venice's new Land Development Plan.

Figure 1 → **IV**
*WebGIS applications at disposal
of Venice's citizens*



Identifying design issues

In the described context a series of questions rose which could trigger possible starting points for a design research or project.

Some of these questions made were: Is it possible to create an internet tool to give citizens a quite easy way to express they own opinions about new Urban Plan? And which kind of tool would be the most accessible one?

The proper answer was to use a mean that embody both the possibility to represent territory and the telematic access to the citizen in an active way. For these main reasons web GIS seemed the best solution. The combination of a map-application and user generated content resulted in new opportunities of sharing and accessing information between citizens and the authorities.

The aim of this future WebGIS is to offer consulting, management and signalization of the observations citizens or technicians have on the new plan. The application is located on Venice's web-platform together, as mentioned before, with other already existing services.

Citizens will be able to mark their observations right on the map and all in-

formation will be organized and managed by the WebGIS platform based on Web 2.0 technologies.

Finding the right methodology

Jesse James Garrett (Garret 2003) wrote «web design is more than just creating clean code and sharp graphics. A site that really works fulfills your strategic objectives while meeting the needs of your users. Even the best content and the most sophisticated technology won't help you balance those goals without a cohesive, consistent user experience to support it.»

First of all it is really important to identify who is our user and, above all, their profiles in order to design web GIS that can offer citizens accessibility in terms of text languages, information architecture and interaction.

After having understood the user needs and the context requirements the next step is the arrangement of information and the interaction among them. It is crucial the way information is gathered, organised and presented in order to make it understandable and convey meaning. We pursued an effective information architecture that enables the citizens to navigate logically through an information space and offers them an intuitive access to contents. This is only possible because the content structure is based on a bottom-up approach which takes into great consideration the survey of user needs in order to keep in great consideration the social purpose.

Each of these design steps are merged into Information Design (Jacobson, 2000) which should define the arrangement of navigational items allowing the users to visualise the contents. Information Design focuses more narrowly on the information itself: information content design, page design, web site design, illustration design, typography decisions, and so forth. It should be the presentation of information in a way that facilitates understanding. It means detailed design of information that has to be provided to a particular audience to meet specific objectives – this is also in collusion with Italian accessibility laws for web interfaces. Finally the visual interface – which citizens will see online – is essentially the result of this design process.

The com-presence of several figures in the creation of this webGIS system, who have taken part in different aspects of the projects, has requested a big design effort to correlate distinct professions. The result was a transdisciplinary and co-productive process to meet a socially relevant issue by designing the WebGIS platform called PatOnLine.

Snowsense a Planning Tool for Backcountry Skiers and Mountain Guides

In the second case design meets both people who go to the mountains to have fun while skiing off-piste and people who actually work in the same area as mountain guides or rescuers.

Detecting a relevance

Every year in the Swiss Alps around 30 persons die due to avalanche accidents and more than 3500 Helicopter flights are executed all year around to rescue people who get lost or injured in the mountainous areas. Besides the human damage there are huge costs being caused by these accidents. Only the Helicopter flights (in and out, without treating, and loss caused by inability to work etc.) cause around 12 000 000 Swiss Francs each year. Money which

could be much better spent into prevention or education of the people working or spending their leisure time in the mountains. (numbers are taken from the reports of the Swiss Air Rescue Companies: Rega, Air Zermatt and Air Glaciers, 2009)

In the Swiss context the Alps and all correlated activities represent a central cultural and economic good; problems around mountain life are highly perceived and have an immediate effect on social life as well.

Identifying the real problem

From a methodological point of view the starting point for the research was a series of interviews with mountain guides, mountaineers, rescuers, insurance companies or snow- and avalanche-experts to better understand where the real problem and cause for the high number of accidents may be.

These Interviews have shown that on the one hand the rescue seems to be perfectly organized and also most professionals who are working in the field have access to all important information whereas many of the «usual» backcountry-skiers could be much better prepared before they actually leave to the hibernial mountains.

This lack of knowledge and experience plays a crucial role in the decision making process during a ski trip off the pistes. The Psychologist Jan Mersch and the ski instructor Wolfgang Behr describe the decision making process as an interplay between rules, intuition, knowledge and the capacity to take a mental distance to the actual action or situation. While an experienced mountain guide is able to decide using his experience, knowledge and mature intuition, an intermediate or beginner bases his decisions much more on rules. (Mersch, Behr, 2009)

Identifying a design question

The next question made was: Is there any possibility to substitute the lack of experience of a beginning backcountry skier in order to give him a substantial base for the decision making process in the field? One answer can be found looking at researches made about decision making. Gary Klein writes about «expert's experiences which grow out of the ability to run mental simulations» further he says «constructing a mental simulation involves forming an action sequence in which one state of affairs is transformed into another» (Klein, 1999) Now is there any way to top up ones experience by mentally simulate a ski trip? And in fact planning a trip on a map before executing it, is a such a sort of simulation and gives people already most of the information, they will need to make decisions in the field.

As mentioned before Geo Information Systems and the spread of telematic systems has remarkably increased peoples interaction with georeferenced information and the territory itself. Designing a specific map application for the planning of a ski trip might give skiers the opportunity to simulate their trip before executing it. As well they could interact and generate additional content which might be accessible on this map and useful for other people.

To tackle the technical part of the problem a final step has been done before setting up the design project. An analysis of the existing infrastructures and information channels in the Swiss Alps has shown that 1) even in mountainous areas there exists a very dense mobile network 2) there is also a wide spread network of sensors analyzing snow and weather conditions 3) there is a lot of

professionals in the field 4) there are many other skiers in the field. Putting all this together it seemed quite evident that the realization of a new map-application was possible and connecting all these people and data-sources could offer much more possibilities to access the right information at the right place and time creating even more useful information by giving people the possibility to generate content themselves.

Setting up the project

The WSL Institute for Snow and Avalanche Research SLF in Davos has already developed an iPhone-application which provides weather, snow and avalanche information and tool called the «Danger analyzer». Together the decision was taken to invest in a research project in order to design a new WebGIS-application which offers a number of map-based functions which are focusing the planning of a trip. To complete the process of planning and executing also a mobile counterpart will be developed in order to accompany the decision making process in the field.

At home people will be able to draw their tour on a map, define a timetable, spot difficult passages, check the hill slope, altitude and exposition as well as include snow and weather prevision into their planning. The mobile application will enable them to access their saved trip and current data from measurements stations providing useful information for the decision making process in the field.

Another main feature of this mobile application will be the possibility to actively participate at the data interchange by sending feedback on the actual conditions from the field. This way new content becomes generated and shared with other users. A function which will might be very interesting for the professionals working in the field since before many of the information coming in from mountain guides or local observers has only been reported after their return back home, a time gap which in some cases might become critical when talking about avalanche risk.

Designwise the challenge is to create both a functional and inspiring application which also stimulates skiers to use it. Something which only can be achieved in a co-creative context working together with people who really will use the product after its development as well as understand people who actually refuse to use such programs or mobile devices . One fact which creates a truly co-creative and -productive context is that each single person in the project team (designers, programmers, avalanche experts, ...) is a backcountry skier himself.

Actual State of the project

By the mid of July a large number of meetings and workshops as well as days in the field have produced first prototypes of both the WebGIS and the mobile application. Before many decisions about the structure and information architecture have been taken together with the programmers and skiers. Starting with paper models based on Post its and following up with first drafts of the database structure and ideas about the interface. Methods and steps we all might know from design practice put in a strong co-creative context.

The next step in winter 2010/11 will be the introduction of the prototypes to a group of selected future users. These people will use Snowsense for the first time in order to improve its usability and functionality. The aim is to present

a final version of Snowsense and Snowsense Mobile in march 2011 during a backcountry skiing event in the swiss alps.

Conclusion

Both projects PatOnLine and Snowsense grew from a common preliminary interest and research in the latest developments in WebGIS and Telematics. Both though address totally different groups of people who in future will use the outcome of these projects.

By tracing back the starting point of these two research projects we wanted to demonstrate how a transdisciplinary approach and the researchers pro-active search for socially relevant cases might generate outcomes which become relevant in very different social contexts.

In our eyes the step towards Transdisciplinarity which was taken in the past few years should be completed with a designers attitude to detect and identify relevant themes and problems in various fields in order to turn design research into a domain which more and more becomes useful for other disciplines as well.

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