

# **Internet Based Participation: Emerging From A Local Planning Tool To A Federal eParticipation-System**

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## **1 INTRODUCTION**

Public participations for formal planning processes have become a common method in Germany since the nineteen sixties for planning projects like motorways, harbours, airports etc..

But public participation is gaining higher significance within the next few years. Especially the European Union is putting a strong focus on this issue: numerous research programs, various directives and the according national legislation indicate a tangible increase (compare the Aarhus convention, the EU-directive on public participation or the EU water framework directive). A more detailed description of the legal regulations in Germany is described in Schulze-Wolf & Menzel, 2007 and Schulze-Wolf & Köhler, 2007

Planners and politicians agree that due to huge personnel and material cut-backs in the public sector, future participation projects can only be efficiently carried out by massive utilization of the Internet.

Furthermore as a result of the increasing availability of PCs and Internet in the public and private sector the communication possibilities and habits have changed dramatically. Internet business, e-mail, chats, blogs -to mention only a few- became familiar to almost two thirds of the population of Middle Europe. Nevertheless it has to be kept in mind that there is a digital divide between a majority which is 'living online' and a minority (mainly elderly or poor people) which isn't.

But anyhow these transformations in society communication habits must be recognized and acted upon by authorities in order to prevent a governmental communication isolation.

## **2 ONLINE PARTICIPATION**

As a first approach an Internet based participation has to reproduce the different stages, the workflow and the ways of communication of a conventional formal participation procedure. Thus it allows the online substitution of the traditional participation and creates advantages for the authorities as well as for the participants.

In addition to this mere substitution the Internet offers a lot more possibilities to improve and enhance participation procedures. This can be achieved by integrating the great variety of the techniques which were developed to conduct informal participation procedures like public budget discussions or municipal overall concept discussions.

The overall objective for the development of an Internet based participation system is to create a uniform and continuous communication system without any breaks or changes of media

### **2.1 Prerequisites**

Basically a formal participation process consists of three identifiable stages:

- Presentation of all planning documents
- Communication between the authorities and the participants
- (authority) internal assessment process with a concluding hearing

Existing eParticipation platforms suffered from the disadvantage that only parts of these stages or necessary functions were integrated. This leads to difficulties because the information exchange procedure makes use of various media types. This also restrains the overall acceptance and understanding of the innovative potential of this type of eParticipation.

### **2.2 Technical Requirements**

The realization of an Internet platform for formal participation requires elaborate technical solutions. This is due to the fact that the comprehensive planning documents usually consists of both, a great number of large format maps and extensive written documents. Furthermore formal participation procedures frequently go

along with a huge number of statements. In this article 'statement' is meant as a generic term for objections, proposals or comments which are in use within different participation procedures.

In addition the use of email as the main communication channel has been increasingly impaired through Internet viruses, worms and spam-mail, so that desired mails are sorted out through restrictive filtering of mail servers. Finally the unencrypted email communication is a severe security risk.

As governmental bodies are frequently engaged in participation procedures there is a need to reflect their workflow in an Internet based participation scheme in order to minimize media breaks.

The prerequisites and the technical requirements lead to the following aspects which had to be realised in an Internet supported participation system:

- Online presentation of large-format and yet well readable (high resolution) cartographic material
- Online presentation of comprehensive written material
- Writing statements and remarks regarding selected paragraphs
- Drawing statements on maps
- Re-identifying concerned paragraphs or maps
- Accurate assignment of statements to participants
- Completely database supported
- User friendliness
- Obvious benefits for participants and planning authority
- Only Internet browser necessary
- Secure transfer of statements
- Flexibility to adapt to different types of planning processes
- Good price/performance ratio

### 2.3 First Steps

In April 2002 the Development and Implementation Project Interactive Landscape Plan Koenigslutter was started. One main objective of this interdisciplinary project was to develop a map-based Internet participation platform (v. Haaren & Warren-Kretschmar, 2005; Halama & Roccasalva 2006).

A developer team consisting of software engineers from entera - Environmental Planning & ICT and researchers from the University of Hanover developed the basic concepts for an eParticipation platform. This took place in conjunction with the preparation and implementation of the landscape plan and was carried out in 2002 and 2003. The developed so called 'participation modules' were implemented and evaluated during the public participation procedure for the landscape plan. The evaluation revealed many useful hints and suggestions on system deficits and further development necessities. The results of this Development and Implementation project are available as an open source project.

Due to the limited financial resources of the project the further development of the 'participation modules' were completely privately financed by entera. Meanwhile the 'participation modules' have been redesigned twice and are available under the name of Participation-Online (Beteiligung-Online as it is called in German).

## 3 CONCEPT

The basic concept of the 'participation modules' respectively Participation-Online combines a number of innovative technical approaches. However several of the technical solutions could only be conceived or begun throughout the duration of the Development and Implementation Project Interactive Landscape Plan Koenigslutter. The finalisations and implementations of these tools were realized later. In spite of its development deficits the Interactive Landscape Plan Koenigslutter was considered by Steinmann, Krek and Blaschke (2005) to be in the group of PP-GIS (Public Participatory Geographic Information System) with the highest degree of interactivity.

### 3.1 Internet

All three participation phases run exclusively on the Internet. That means that participants as well as the planning authority need only a web browser to accomplish all the necessary tasks like searching, drawing, printing, database queries and so on. As all of the data processing is handled by the Internet server there are no special technical requirements for the users' computers.

Therefore no gaps between online and offline working periods, no redundant data storage and no changes or breaks of media occur.

### 3.2 Database

To be able to overcome the above mentioned disadvantages of email communication, the basic concept provided a different communication structure: the necessary database application is not used only for storing and retrieving statements but serves as a communication centre as well. Therefore all the statements are written directly into the database by the participants themselves. This frees the authority from the time consuming task of feeding lots of statements into the database.

The necessary database application was developed and implemented on an Internet server. All statements which are written into the database make use of the secure Internet protocol (https) and a 128 bit encryption (SSL).

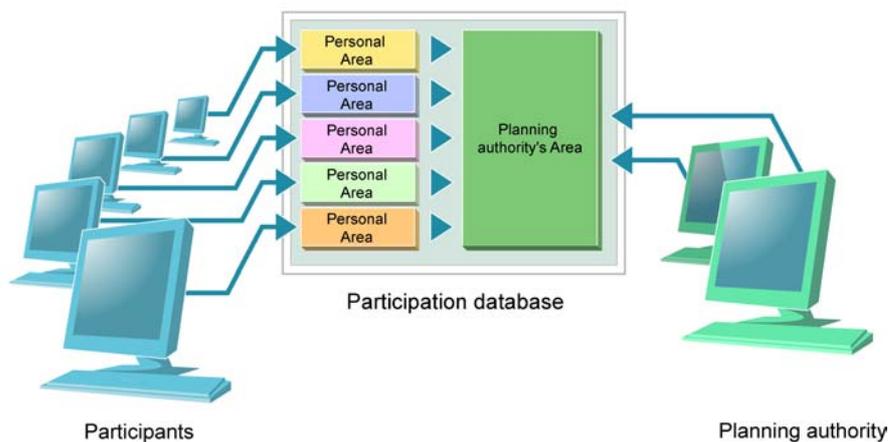


Fig. 1. The participation database

The core application is the so called participation database (Fig.1.). It consists of two strictly separated areas which are password protected: The working area of the authority and the individual personal areas of the participants. The personal areas are created for every person or institution that takes part and is only accessible by that person. It is here that all the comments and statements are created, stored, collected, edited, and finally 'sent' to the authority. The process of sending does not use the Internet protocol at all because the data is simply transferred from the personal area to the authorities working area in the same database.

For every single statement, a specimen copy remains in the participants personal area, which of course either can be saved locally onto a hard drive or printed out.

### 3.3 Written Statements

Usually written statements are referring to a certain paragraph or phrase of the planning document. If the source is not precisely indicated it becomes an annoying task to find out which paragraph is concerned.

Therefore the original text had to be converted into a Internet suitable format that allows a visualisation as close as possible to original and at the same time keeping a exact reference of the cited phrase. This was

realized by breaking the text into small addressable parts and using the HTML format for reading convenience. The participant only has to mark the relevant paragraph. With a mouse click this text is transferred into the personal area. There the statement can be written with a word processor.

The participation projects carried out using this technique have shown that Participation-Online helps to produce statements which are shorter, much more precise and clearer.

### **3.4 Map-based statements**

Most formal participation projects rely on maps to visualize the planning intentions. Therefore statements frequently refer to mapping contents and its essential not to enable only written but also map based statements.

Unlike other participation systems this is realized by capturing a snapshot of the viewed section of the map displayed with mapserver technology. Simple drawing tools provided by the web application allow to create objects like points, lines, polygons in different colours and sizes. These tools allow to sketch the spatial statements right into the original maps.

The advantages of this are obvious: the drawings always have an exact spatial reference and are exceptionally precise and well readable. Thus they make the detailed (but frequently inaccurate) description of locations unnecessary.

Due to the fact that the map-based drawings are georeferenced, they can directly be used with a geo-information system (GIS) in order to edit the original geo-data.

### **3.5 Document Upload**

Frequently statements are supplemented by additional material like other planning documents, drawings, maps or even GIS-data. Therefore an online participation tool has to provide an upload possibility for this additional material as an attachment to a statement.

An upload process always bears the risk of an intrusion of viruses, worms and other malware which can disturb or even kill the online participation server. Therefore an accessory upload sever was necessary to be set up. This server is especially intrusion protected and not directly connected with the participation server. Therefore an upload of malicious code onto the upload server has no effect on the participation process itself.

### **3.6 Analogue Input Interface**

In spite of the increasing popularity of online participation there will be a significant quantity of statements which are sent by regular mail. This is due to the mentioned digital divide which is diminishing only hesitantly.

In order to avoid two different management systems for digital and analogue statements there has to be an input interface which allows to integrate and manage the analogue material in the same Internet database as the digital input. Thus, all statements from the participants, sent by whichever method in whatever form, can be managed and processed within the same system.

### **3.7 Authentication**

Depending on the type of planning (e.g. Land Use Planning, Regional Impact Assessment Procedure, Plan Approval Process) it is more or less necessary to identify the participants as the basis of individual communication or communication between authorities.

Therefore a module had to be provided which allows an individual registration and authentication as well as a registration as an authority with different access levels.

### **3.8 Assessment Tool**

As mentioned before the same Internet database is used by the participants creating statements as well as by the authority for the assessment process. Therefore elaborate tools for managing statements, balancing conflicting interests and preparing the final hearing are essential to an online participation tool which claims to cover all three stages of a participation procedure.

Through the authentication procedure prior to the creation of statements, all statements are automatically assigned to the corresponding individual or institution.

With the help of different database tools, all statements on the database are directly accessible. An easy to use but yet powerful query editor allows to retrieve a single statement out of thousands as well as a group of statements with common decisive factors. Statements can of course be sorted and ordered by different criteria.

Statements (single, group, all) can be printed out in a standardized tabular form (synopsis) or any other predefined layout scheme. This allows to produce a complete printed or digitally distributed synopsis of thousands of statements and the related assessments by a mouse click.

An integrated workflow management tool allows to manage and control the process of the assessment. Thus its very simple to keep trace of the status of a single statement as well as of the whole procedure.

All these different tools facilitate the time consuming assessment process which has to be carried out by the authority or the project carrier. As these tools decrease the necessary amount of time considerably the overall duration of a participation procedure will be reduced significantly. This is especially important for large or economically outstanding projects. They will gain substantial economic advantages from this shortening of processing times because of an earlier implementation.

### 3.9 Components

Participation-Online is not an 'out-of-the-box' product, but rather a complex integration of many different components, mainly adapted Open Source software products. The most important system components are shown in figure 2.

The mapping interface is constructed through MapBender. The participation database and all other database functions are accomplished by high performance database management systems such as MySQL or PostgreSQL. In conjunction with PostGIS, the spatial database extension for PostgreSQL, it is possible to store and retrieve not only alphanumeric data but spatial data as well in the data base.

The scripting language is PHP 5.

The so-called participation modules which actually provide all the complex functions for the online participation are entirely developed by entera.

All system components are connected through system links which can be individually tailored according to the needs of the particular project. Due to the accessibility of the program code for each component (either Open Source or entera owned), Participation-Online offers the highest possible degree of flexibility and adaptability.

The application development system is Linux but the whole system is fully functioning on a Windows server. Therefore it is capable of cooperating with commercial software components like ArcIMS (by ESRI) or Oracle as a DBMS instead of the above mentioned Open Source products. Of course Participation-Online is fully compatible with the OGC standards.

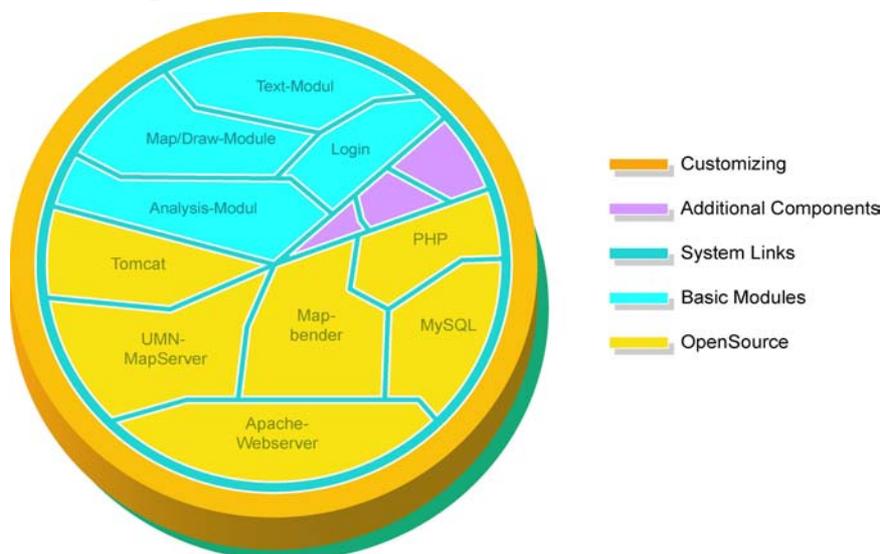


Fig. 2. The components for an Internet based participation platform

### 3.10 Utilisation

As described earlier there are quite a number of different components necessary to perform the different tasks needed for an online participation procedure. The easiest way to use Participation-Online for a certain participation project is by Application Service Providing (ASP). That means that the complete administration, security, backup, monitoring and the employment of a powerful and specifically designed Internet server with the complete and, on request, individually adapted software components lies completely within the responsibility of the application service provider.

The great advantage of ASP is that the whole service must only be leased for the duration of the participation procedure. This results in savings of cost and time because there is no requirement for skilled personnel, individual hard- and software equipment, and no need to care about installation, maintenance, support, backup procedures etc..

## 4 DEPLOYMENT

The result of the Interactive Landscape Plan Koenigslutter was a software which was tailored for a landscape planning project but not ready to be used for arbitrary participation projects. The source code therefore had to be revised, a lot of features needed to be altered or added and the setup of the whole system was changed to give it the flexibility and power which is necessary to be adaptable to the requirements of other participation projects.

Finally Participation-Online was released for the first time in Summer 2004. Since then it was used in numerous participation projects in association with diverse types of planning schemes. Meanwhile it is well known in Germany. A prior version is described in the 2006 Specifications Report on Internet Based Participation Measures in Formal Planning Procedures released by the German Federal Ministry of Economics and Technology (BMWi 2006).

Since 2004 a lot of different participation procedures were carried out with the aid of Participation-Online, such as

- Regional Plans (Landesraumordnungspläne)
- Subregional Plans (Regionalpläne)
- Landscape Plans (Landschaftspläne)
- Landscape Framework Plans (Landschaftsrahmenpläne)
- Open Landscape Development Concepts (Freiraumkonzepte)
- Regional Impact Assessment Procedure for Motorways (Raumordnungsverfahren für Autobahnneubauten)

Participation-Online gets improved permanently and more features are added continuously based on the experiences gathered with these projects. Further developments will therefore improve for instance the workflow functionality for both, participants and authority, add more standard exporting possibilities (e.g. Word, Excel) and enhanced the analogue input interface.

Another important development objective will be the integration of eParticipation tools from informal participation procedures. This will combine discursive possibilities with the map and text related functions of Participation-Online.

The current German version 3.0 of Participation-Online was released in spring 2007. A fully featured version is running on the Internet: <http://www.beteiligung-online.com>. An English preliminary version is available for testing purposes under <http://www.participation-online.com>.

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