

# Virtual environments for citizen participation: principal bases for design

**Pedro Prieto-Martín**

**Universitat Oberta de Catalunya, IN3, Barcelona, Spain**

pedro.prieto-martin@ckyosei.org

**Abstract:** Based on an analysis of several municipal e-participation experiences, and of the virtual environments used in these, this article covers key aspects to be considered when designing an electronic Internet-based system for participation at the municipal level, whose aim would be to enhance communication between public officials and citizens while streamlining municipal civic participation and consolidating citizen networks.

**Keywords:** citizen participation, municipal policy, e-participation, e-democracy, free software, systems design

## 1. Introduction

This article is the first of a series of documents written as part of the e-Participa project ([www.ckyosei.org](http://www.ckyosei.org)) whose objective is the design of a virtual environment based on Free Software to reinforce citizen participation at the municipal level.

By means of an interdisciplinary methodological approach which combines issues related to socio-political analysis with systems design methodologies, this article analyses the requirements that an e-participation system at the municipal level should fulfill. The system, which is Internet accessible, facilitates collective action on the part of both municipal governments and citizens' groups (civic and neighborhood associations, NGOs, political parties, etc.). For this purpose, the system provides tools which can be adapted to the requirements of every entity, tools which, amongst other things, permit information sharing, work group coordination and discussion forums.

The system will be used mainly to buttress traditional modes of face to face citizen participation by complementing them with a contrasting virtual component. Its principal objective, therefore, will be to support the sort of participatory actions typically carried out in a municipal context, participatory actions such as advisory committees, citizen juries, or participatory budgets (Font and Blanco 2003). Nevertheless, the system will permit the completion of exclusively virtual participatory processes.

## 2. From citizen participation to e-participation

We consider civil participation as "all activities engaged in with the intention of influencing public policy either indirectly or directly" by both individual citizens as well as by all types of citizen collectives and associations (Font and Blanco 2003: p. 15). This broad definition includes actions as varied as voting, attending demonstrations, or even sending suggestions to a governmental office.

Nevertheless, the e-Participa project focuses on participative processes which are organized or at least supported by local government authorities, and oriented towards decision making at the municipal level. To the extent that they can rely on the involvement of local municipal authorities, these processes constitute a privileged participatory space because they are especially capable of exerting an influence on public policy.

In recent years, as a result of the interest shown in participative politics, there has been a proliferation of experiments involving e-participation, especially at the level of municipal government, an area in which a multitude of participative mechanisms and tools, adapted to the different circumstances, necessities and contexts in which they have arisen, have been developed (Hermanns 2004; Ziegenfuss 2000). These events have included various experiments in the use of Information and Communication Technology (ICT), mainly Internet, in order to promote and develop citizen participation, otherwise known as electronic participation or e-participation.

It should be taken into account, however, that at the government level, there remain major cultural, institutional, legal and organizational impediments to the implementation of citizen-participation processes as well as to the use of ICT in participative processes (OECD 2004; Prieto Martín 2004: pp. 21-25). At the municipal level, there are additional technological barriers since the majority of municipalities lack the technical know-how and the necessary infrastructures to develop processes of e-participation. The lack of virtual environments for citizen participation which are specifically designed for the municipal context constitutes one of the greatest challenges for the expansion of e-participation.

### 3. Systems and experiences in e-participation

In the context of this research, several technical and functional analyses amongst different electronic participation systems have been carried out in order to evaluate the most important e-participation events developed with them<sup>1</sup>. With this purpose, all related documentation and evaluation reports were consulted and wherever possible, system behavior was directly tested.

As a result of these analyses, three fundamental aspects of e-participation have been identified (Prieto Martín 2005):

- the main results and consequences of the implementation of ICT in participative processes;
- the key factors related to the success of e-participation processes;
- the main deficiencies of current virtual environments.

With regard to the positive consequences of e-participation, the events analyzed underscore that the implementation of ICT in participative processes permits:

- the distribution and sharing of all types of information related to the process;
- quality debate and effective communication;
- the documentation of participative processes while promoting their transparency;
- the extension of citizen participation to a greater number and range of citizen groups.

As far as the most important factors for the success of e-participation processes are concerned, we would highlight the following:

- the thorough planning of the participative process so that it is appropriate for the subject matter and for the participants;
- a commitment to the process on the part of political and administrative entities;
- the promotion of the processes so that citizens become aware of their existence and participate;
- the use of a virtual participative environment which is adapted to the idiosyncrasies of the process, provides an attractive easy-to-use visual environment and facilitates the moderation of discussions;
- universal public access to the virtual environment;
- adequate training of citizens and public servants in the utilization of the virtual environment.

Finally, our analysis of existing systems indicates that there is still an absence of virtual participative environments that would cover the needs of municipal government as regards day to day activities involving citizen participation. The systems analyzed present the following deficiencies:

---

<sup>1</sup> For this study, we have especially analyzed the following systems: Community Enabler (<http://communitye.net>), Consensus (Prieto Martín 2004; Torras and Díaz 2004), DEMOS (Hohberg and Lührs 2002; Lührs et al. 2004; Lührs and Hohberg 2003), Delibera (<http://delibera.net>), Discourse Machine (<http://binary-objects.de>), Dito & Digalo (Börding 2003; Märker et al. 2002; Roeder et al. 2004; Salz 2003; Salz et al. 2003), e-Community Council (<http://ecomcommunitycouncil.org.uk>), EDEN (Whyte and Macintosh 2004), Meetup (<http://meetup.com>), omidyar network (<http://omidyar.net/home>), OpenSpace-Online (OpenSpace 2005), Quixote (Rubio et al. 2005), orkut.com (Meneses 2004), e-OP from Ipatinga (Faria and Prado 2002; Martinez de Oliveira et al. 2003), Webocracy (Mach et al. 2003), Wikipedia (<http://es.wikipedia.org>) y Yahoo! Groups (<http://groups.yahoo.com>).

- A predominance of systems using proprietary software, which hinders their spread, and prevents municipalities from adapting them to their own specific requirements.
- The systems do not take into account the role of moderators, failing to provide them with the tools necessary to preside over debates in an efficient and transparent manner.
- the participative processes lack continuity, consisting normally, as they do, of isolated events.
- a lack of compatibility with the necessities and characteristics of the municipal environment.

This last factor imposes by far the greatest limitations on the participatory systems studied. This lack of compatibility stems from the scarce participation of municipal technicians and citizen groups in the design of these systems, for which thorough studies of municipal requirements are rarely carried out prior to their implementation (Hassan et al. 2004).

## **4. Fundamental components for the design of virtual citizen-participation environments at the municipal level**

### **4.1 Development based on Free Software**

In keeping with the general trend in governments to promote the use and production of open source software, and taking into account the severe budgetary restrictions affecting investment capacity in the majority of municipalities, we think that it is essential that any system of citizen participation at the municipal level be based on the collaborative model of Free Software. The public entities that use it will benefit from all the advantages that are usually associated with open source software (Mas i Hernández 2005) amongst which we emphasize a lower cost of development and implementation, a higher level of technological innovation, independence with respect to suppliers (which will usually permit the use of local developers), greater security and privacy as a result of public scrutiny of the code, greater ease of platform adaptability to their specific needs, and, finally, the support of a greater number of languages.

Since the platform is open source, whatever improvements that a municipality incorporates into the system to attend to its specific needs (for example, the adaptation of an environment to another language) will be available to the entire community of users.

### **4.2 A focus on the municipal environment**

The system will be designed to attend to the needs of the municipalities, the majority of which will not have the human resources or financial capital to develop and host their own systems. Therefore, the virtual environment should allow a single installation to provide service to a large number of municipalities; in this way, it will be possible for regional governments or a confederation of city governments to offer all of the regional town governments a participative web space from a control center, freeing them from having to worry about the technical aspects of system installation, updating, or maintenance.

The platform should accommodate and provide virtual support to neighborhoods and other subdivisions normally found in municipalities, and its Graphical User Interface (GUI) should be configurable so that it can be adapted to the corporate design of each municipality, and easily be integrated into the municipal web.

System management should be simple and decentralized so that lay people can be entrusted to manage specific areas. The various functions, which are intended to complement and support face-to-face participative processes rather than substitute them, can be selectively activated and deactivated depending on the needs of the city government, neighborhood, or concrete participative process.

### **4.3 Attention to the collectives involved in citizen participation**

The system should be adapted to the needs and capacities of the different actors involved in citizen-participation processes at the municipal level. Therefore, prior to implementation, a sociological and institutional study should be carried out at the municipal level identifying all of the

collectives involved in the system's functioning, so that its design can contemplate the interests, objectives, resources and interrelationships of all these collectives.

During the system's design, construction and trial phases, dialogue and collaboration should be constantly engaged in with representatives of these groups in order to continuously assess and improve the system's adaptation. This essentially presupposes the support of political and administrative organisms at the municipal level, as well as the support of citizens, themselves, but without forgetting the interest demonstrated by other related protagonists including, amongst others, local media, mid-level educational institutions in their privileged role as educators of citizenry, not to mention representatives of the business community where appropriate.

Only in this way, can compatibility be achieved between the functions provided by the system and user necessities, capacities and work processes. This will permit the establishment of a new channel for electronic participation which would complement the formal and informal face to face participation channels which now exist.

#### **4.4 Support for the face-to-face participative methods already in operation**

As has been noted, electronic participation supports and complements rather than substitutes face-to-face participative mechanisms and processes. This is true to such a degree that one of the most important characteristics of the system is that it can be easily integrated into face-to-face participative processes.

Consequently, the system should offer a range of functions that could be selectively activated depending on the type of participative process to be undertaken, and on the characteristics and capacities of the collectives involved in this process.

In particular, the system will be set up with a view towards incorporating the most frequent participative processes, which include: Participatory Budgeting, Multi-year Municipal Planning, the Municipal Master Plan, Local Agenda XXI, Citizen Councils, Panels and Citizens' juries (Font and Blanco 2003), neighborhood participative processes, the internal discussion processes of citizens' groups, internal participative work in city government, and the participative drawing up of political parties' electoral programs.

#### **4.5 Temporary use of the participation system**

A participation system can be used sporadically on particular occasions as a form of electronic participation, but it reaches its maximum potential when it is used continuously, providing those municipal governments that really want to incorporate its citizens into its decision making processes, with a permanent "virtual web space for participation," which supports all of the city's virtual participation processes, and which the citizen can rely on for all sorts of information related to participation.

The more that citizens and their associations, municipal technicians, the media, etc... make use of the same virtual environment to receive information, communicate with political representatives and participate in question-answer sessions, discussions, and participative processes, the less effort they will have to expend in learning how to rapidly carry out these tasks. The system should include functions which serve to make the user *feel a bond with the participation system*, thus inspiring him to want to continue using it. An example of these functions is the possibility of personalizing the system's work environment in order to streamline the tasks that it carries out most frequently.

As a result, greater and more frequent citizen involvement in the issues affecting the city is fostered, while greatly increasing the efficiency of this participation. To give an example, consider the degree to which the work of publicizing the participative processes, the distribution and exchange of information amongst citizens' groups, the dissemination and communication of results, and the monitoring of decision implementation would be made easier. It is reasonable to assume that the level of discussion itself would improve, and that these discussions would represent the will of the citizenry to a greater degree as a result of the creation of a virtual participation space.

Currently, neither governmental entities nor citizens themselves are yet prepared to alter their current work dynamic, and to extend participative management to all municipal decision making areas. Slow processes of experimentation and learning that foster the evolution and putting into place of more participative forms of politics and citizenship have yet to take place (Prieto Martín 2004: pp. 20-22, 26). Despite this, we consider it to be of vital importance that virtual participation channels be continuously in operation. The system needs to be able to accompany these learning processes, initially permitting the use of simple tools for distributing information about participative municipal activities; subsequently, as the need arises, it can provide more powerful functions.

#### **4.6 A tool for municipal government AND citizens' groups**

The development of local electronic-democracy projects on the part of municipal government plays a very important role in strengthening civil society and increasing social capital. But more important than focusing on the individual citizen, it is particularly important to create conditions that will enable the organizations found in civil society to appropriate of Internet, constructing spaces that encourage the discussion, exchange and dissemination of information amongst them, which, in turn, shall promote the progressive reinforcement of citizenship (Vaz 2002: p. 21).

We are convinced that electronic participation systems constitute the optimal environment from which to promote the appropriation of Internet by civic organizations, thus facilitating the consolidation of citizen networks and social capital in an urban context. To further this end, the design of this system should allow it to simultaneously serve both municipal government and citizens, along with their networks and associations.

As has been indicated, the system provides municipal government with a set of tools enabling it to distribute information, facilitate communication between different governmental organisms, request information and create special areas for participation which serve to complement face-to-face participative processes.

Within the city, it is possible to define neighborhoods and other organizational sublevels to which all of these tools can also be made available, so that every neighborhood has its own participation environment similar to that found at the level of municipal government itself. In a similar way, civic organizations could be allowed to register inside the system, after which they would have access to their own participation environment, through which they could interact with both citizens in general, and with their associates and other related organizations.

As a result of the fact that the participation environments of the municipal government and civic organizations occupy the same system, a large number of synergies are created which benefit everyone involved. Citizens, for example, who register in the system to take part in a municipal participative process, will at the same time be able to access associations' web spaces, learn about their objectives, contact their members, read their debates, etc. Another example would involve those citizens who periodically request e-mail news about a particular social issue, and about related events; whenever an organization were to place information in their schedule about upcoming activities related to this area, the citizen would be automatically informed.

#### **4.7 Promoting increased knowledge and social networks**

One of the most revolutionary characteristics of Internet stems from its capacity to use the limited resources of an infinite number of interconnected subjects to generate networks with an unlimited aggregate capacity. For example, using bandwidth and the "surplus" processing capacity of the vast number of computers connected to the Web, the programs, *eMule* and *Skype* respectively allow one to exchange files and make telephone calls using Internet with such success that the audiovisual and telecommunications sectors are having to re-evaluate their ways of doing business. In a similar fashion, by creating a forum for the voluntary, day to day sharing of opinions and knowledge by millions of customers, companies such as *e-Bay* and *Amazon* are creating new forms of business, characterized by levels of efficiency and market share unheard of until now. En masse collaboration on the Web is leading to a definitive, radical restructuring of many areas of economic activity on a worldwide scale (BusinessWeek 2005).

Along these lines, our system will seek to take advantage of Internet capabilities in order to encourage the creation and diffusion of knowledge, broaden social networks, and foster a collaborative culture amongst citizens. The environments we have studied for purposes of this article provide numerous examples of collaborative tools which need to be incorporated into a municipal, electronic participation system. Amongst these we would highlight:

- **The possibility of personalizing the system:** a user can create direct access links to those sections which interest him the most. For example, those participative processes or debates in which he is taking part, the web spaces of organizations he belongs to, a particular document area, or the profiles of users whose opinions he respects.
  - **User profiles,** by way of which users can introduce themselves and provide information about their own interests. These profiles are visible to other users who can access contributions made by the user in discussion forums, check his favorite links and even contact him with a personal message.
  - **Recognition of quality participation:** As one continues using the system (reading the contributions of others, participating in debates, responding to surveys, etc.) one earns “feedback points” which can be used to positively or negatively judge the contributions of other users. Every time points are assigned, one might make a comment justifying his/her opinion. The feedback points received by the user constitute his “reputation” in the system, and will always be shown alongside his name. In this way, a mechanism is established by means of which users themselves can recognize those who, in their opinion, stand out in terms of the quantity and quality of their contributions. Alongside information indicating the amount of web space activity, the various forums and web spaces for participation will show the list of most highly esteemed contributors.
- Another benefit of the mechanism is its potential utility for establishing networks amongst users who share a common interest. If one especially appreciates the contributions made by a particular user, one can check who has judged his contributions positively and why. Following on from this, it is easy to locate people who share ones own ideas, discover the web spaces in which they participate, the organizations they are members of, etc.

#### 4.8 Quality discussion, supported by mediation and transparency

One of the most important elements of a virtual participation system are its web spaces devoted to discussion and debate, which ought to include tools for encouraging the thoughtful, informed, quality exchange of ideas. Upon analysis of the factors that influence the quality of electronic discussions, a diversity of factors has been brought up ranging from the topic under discussion itself to the political culture of the participants to the forum’s accessibility, and the technical characteristics of the environment used. (Janssen and Kies 2004) The participant’s level of commitment turns out to be especially important (Graham and Witschge 2003: p. 199) in that it influences whether they participate in the conversation until it has concluded. In an environment such as that of Internet in which, at any given moment, one is only the click of a mouse away from withdrawing from a debate, special attention will have to be paid to the environment, the topic, and the methodology of the discussion, so that participants will be motivated to stay on.

In short, the system needs to encourage discussions that make it possible to make more thoughtful decisions buttressed by the contributions of the different collectives involved. To this end, a user-friendly interface should be provided which integrates the use of e-mails in order to streamline participation and provide tools which facilitate:

- the incorporation of the discussions in a specific *result oriented participative methodology*.
- a *monitoring of the discussion* so that people who join in after the discussion has begun can rapidly find out what topics are being discussed and what progress has been made;
- *rapid and intuitive access to the interventions*, while showing the messages ordered by title, author, date, relevance, etc., and permitting searches for specific texts amongst the forum messages;
- *high communicative expressivity*, since text formatting will be possible (the use of cursive, underlining, etc.) along with the use of symbols and “smileys”;
- different types of *debate mediation*.

This last aspect is especially important. The work of *mediators* is crucial if the discussions are to produce concrete, consensual proposals. The mediators should have tools at their disposal which facilitate the carrying out of their most important duties: the analysis of interventions, the creation of summaries and questionnaires that participants will respond to, and the introduction of sub forums, etc.

In a system such as this one, which at times will be managed by the municipal government, and in which the discussions will be of a political nature, it is very important that the mediators be *neutral* and trustworthy. As a means of reinforcing this neutrality, the system itself has to guarantee the *transparency* of its processes. In this manner, even when, in many areas of the system, moderators can reject messages which, for example, do not respect ethical standards or correspond to the topic of the forum, they will be required to communicate to the user why the message was rejected. Additionally, all of the rejected messages will remain available for public scrutiny in a web space created for this purpose.

In order to safeguard system transparency and facilitate decentralized management, a logging system will exist which stores detailed notes about all of the management activities carried out on the system.

#### **4.9 Citizenship School**

We have previously underscored the importance, in light of the widespread dissemination of more participative forms of politics, of developing pedagogical processes for citizens, politicians, and government technicians, that would foment the establishment of an active, discussion oriented civic culture. These pedagogical processes will mostly be the result of continuous experimentation with participative forms of doing politics on the part of municipal governments and citizens' groups. Nevertheless, we must not ignore the necessity of including theoretical and practical content in our educational programs that will allow youth to begin practicing the habits now that will make them more committed citizens tomorrow.

An especially promising strategy consists of developing participative electronic initiatives in school environments themselves (Frey 2002: p. 13). For this reason, we consider one of the fundamental characteristics of systems design to be that of enabling the system to be used in schools in order to facilitate the practical teaching of citizen participation.

If schools and city government use the same environment for electronic participative processes, this could encourage students to participate in municipal decision making.

#### **4.10 Supports the research on e-participation**

One of the most common problems faced by e-participation academics and researchers is derived from the important divergences existing between the current systems and how they are used. It is thus difficult to make comparative research and evaluations. Sometimes it is simply impossible to extract from the systems the information and datasets that are required for research.

For this reason, systems for municipal e-participation should facilitate the analysis of participatory processes to the social researchers, by providing functionalities that, for example, help to classify and analyze contributions or register the usage patterns of the system by the citizens.

Being a highly configurable system, which could be used in different cultural environments, to perform participatory processes with very different themes, the system could be particularly valuable for comparative studies that analyze the effect of these variations on some participatory aspect like, for example, the quality of the discussions (Janssen and Kies 2004).

### **5. Conclusions**

We are still barely initiating the long way to an integrated utilization of Internet to promote civic participation. However, there is no doubt that in the following years the importance of virtual environments for the extension of citizen participation is going to grow up meaningfully.

One of the most important obstacles standing in our way is the lack of virtual environments that are truly adapted to the necessities and characteristics of citizen participation in the municipalities.

Therefore, this article attempts to make an academic contribution to the creation of such systems, by means of identifying, from a technical and sociological standpoint, the main principles that should orient their design.

## References

- Börding, J. (2003) *Dito User's Manual*, Sankt Augustin: Fraunhofer Institut Autonome Intelligente Systeme, [online], Available: <<http://alex.ais.fraunhofer.de/zeno/forum?action=editArticle&id=14695>> [2006.02.21].
- Businessweek (2005) "The Power Of Us. Mass collaboration on the Internet is shaking up business", *BusinessWeek*, 2005 (25), [online], Available: <[http://www.businessweek.com/magazine/content/05\\_25/b3938601.htm](http://www.businessweek.com/magazine/content/05_25/b3938601.htm)> [2006.02.21].
- Faria, A. and Prado, O. (2002) "Orçamento Participativo Interativo. Ipatinga (MG)", in G. Spanghero Lotta, H. Batista Barboza, M.A. Carvalho Teixeira and V. Pinto, *20 Experiências de Gestão Pública e Cidadania*, São Paulo: Programa Gestão Pública e Cidadania (FGV), [online], Available: <<http://inovando.fgvsp.br/conteudo/documentos/20experiencias2002/8%20-%20orcamento%20participativo%20interativo.pdf>> [2006.02.21].
- Font, J. and Blanco, I. (2003) *Experiències de participaciò ciutadana. Polis, la ciutat participativa. Participar en els municipis: qui, com i per què?*, Barcelona: Centre per a la Participació Ciutadana, Organisme Autònom Flor de Maig, Diputació Barcelona, [online], Available: <<http://www.diba.es/flordemaig/oafm/cpc/documents/Papers/09papers.pdf>> [2006.02.21].
- Frey, K. (2002) "The use of ICT for strengthening of local democracy: a Brazilian experience". *III Congreso Mundial de Redes Ciudadanas*, Montreal.
- Graham, T. and Witschge, T. (2003) "In search of online deliberation: Towards a new method for examining the quality of online discussions", *Communications; The European Journal of Communication Research*, 28 (2): págs. 173-204.
- Hassan, Y., Martín Fernández, F.J. and Iazza, G. (2004) "Diseño Web Centrado en el Usuario: Usabilidad y Arquitectura de la Información", *Hipertext.net*, 2, [online], Available: <<http://www.hipertext.net/web/pag206.htm>> [2006.02.21].
- Hermanns, K., Ed. (2004) *Participação Cidadã: novos conceitos e metodologias*, Fortaleza: Konrad-Adenauer-Stiftung, [online], Available: <[http://www.kas.de/db\\_files/dokumente/7\\_dokument\\_dok\\_pdf\\_6545\\_1.pdf](http://www.kas.de/db_files/dokumente/7_dokument_dok_pdf_6545_1.pdf)> [2006.02.21].
- Hohberg, B. and Lührs, R. (2002) *Offline Online Inline. Zur Strukturierung internetvermittelter Diskurse*, Demos Information Society Technologies (IST) Programme, [online], Available: <<http://www.demos-project.org/files/HohbergLuehrs.pdf>> [2006.02.21].
- Janssen, D. and Kies, R. (2004) *Online Forums and Deliberative Democracy: Hypotheses, Variables and Methodologies*, e-Working Papers 2004/01, Genève: e-Democracy Centre [online], Available: <<http://edc.unige.ch/publications/e-workingpapers/onlineforums.pdf>> [2006.02.21].
- Lührs, R., Albrecht, S., Hohberg, B. and Lübcke, M. (2004) "Online Diskurse als Instrument politischer Partizipation – Evaluation der Hamburger Internetdiskussion zum Leitbild „Wachsende Stadt“", *Kommunikation@gesellschaft*, 5, [online], Available: <[http://www.soz.uni-frankfurt.de/K.G/B1\\_2004\\_L%FChrs\\_Albrecht\\_Hohberg\\_L%FCbcke.pdf](http://www.soz.uni-frankfurt.de/K.G/B1_2004_L%FChrs_Albrecht_Hohberg_L%FCbcke.pdf)> [2006.02.21].
- Lührs, R. and Hohberg, B. (2003) *White Paper*, Demos, Hamburg: TUHH Technologie GmbH, [online], Available: <[http://www.tutech.de/IK/en/DEMOS\\_whitepaper\\_en.pdf](http://www.tutech.de/IK/en/DEMOS_whitepaper_en.pdf)> [2006.02.21].
- Mach, M., Cizmarik, T. and Dridi, F. (2003) *Project Webocracy. Edited annual report for publication* IST Programme, [online], Available: <[http://www.webocrat.org/docs/webocracy\\_annual\\_report3.pdf](http://www.webocrat.org/docs/webocracy_annual_report3.pdf)> [2006.02.21].
- Märker, O., Hagedorn, H., Trénel, M. and Gordon, T.F. (2002) "Internet-Based Citizen Participation in the City of Esslingen. Relevance - Moderation - Software". *Corp 2002 - Who Plans Europe's Future?*, Viena: Technical University of Vienna, [online], Available: <<http://www.tfgordon.de/publications/Maerker2002a.pdf>> [2006.02.21].
- Martinez De Oliveira, F., Vaz, J.C. and Carty, W. (2003) *Internet use and citizen participation in local government: Ipatinga's interactive participatory budgeting* Innovations in Technology and Governance Project, [online], Available: <[http://www.ashinstitute.harvard.edu/Ash/Ipatinga\\_ITG\\_Case.pdf](http://www.ashinstitute.harvard.edu/Ash/Ipatinga_ITG_Case.pdf)> [2006.02.21].
- Mas I Hernández, J. (2005) *Software libre: técnicamente viable, económicamente sostenible y socialmente justo*, Barcelona: Zero Factory S.L., [online], Available: <<http://www.infonomia.com/textos/llibrejmas.pdf>> [2005.07.25].

- Meneses, J. (2004) "El caso de Orkut.com: una reflexión sobre la exploración de nuevos caminos para la sociabilidad online en la tradición del estudio de las comunidades virtuales". *II congreso online del observatorio para la cibersociedad. ¿Hacia qué sociedad del conocimiento?*, Barcelona, [online], Available: <[http://www.cibersociedad.net/congres2004/grups/fitxacom\\_publica2.php?grup=65&id=516&idoma=en](http://www.cibersociedad.net/congres2004/grups/fitxacom_publica2.php?grup=65&id=516&idoma=en)> [2005.07.25].
- Oecd (2004) *Promise and Problems of E-Democracy: challenges of Online Citizen Engagement*, Paris: OECD Publications Service, [online], Available: <<http://www1.oecd.org/publications/e-book/4204011E.PDF>> [2005.07.25].
- Openspace (2005) *OpenSpace-Online. Real-time Conferencing*, Series OpenSpace-Online. Real-time Conferencing, OpenSpace GmbH., [online], Available: <[http://www.openspace-online.com/OpenSpace-Online\\_eBook\\_en.pdf](http://www.openspace-online.com/OpenSpace-Online_eBook_en.pdf)> [2005.07.25].
- Prieto Martín, P. (2004) "Participación Ciudadana y TICs en el ámbito municipal: el caso Consensus en Cataluña". *II congreso online del observatorio para la cibersociedad. ¿Hacia qué sociedad del conocimiento?*, Barcelona, [online], Available: <[http://www.e-participa.org/global\\_files/ParticipacionCiudadanayTICsenelambitomunicipal.PedroPrietoMartin.pdf](http://www.e-participa.org/global_files/ParticipacionCiudadanayTICsenelambitomunicipal.PedroPrietoMartin.pdf)> [2005.07.25].
- Prieto Martín, P. (2005) "Sistemas avanzados para la participación electrónica municipal: ejes conceptuales para su diseño", *TEXTOS de la Cibersociedad*, [online], Available: <[http://www.e-participa.org/global\\_files/e-Participa.EjesConceptualesDisenho.pdf](http://www.e-participa.org/global_files/e-Participa.EjesConceptualesDisenho.pdf)> [2005.12.19].
- Roeder, S., Märker, O., Michaelis, S., Popenborg, A., Salz, S.R. and Zierath, N. (2004) "Moderation internetbasierter Planungs- und Beteiligungsprozesse". *CORP 2004*, Wien: Kompetenzzentrum für Stadtplanung und Regionalentwicklung, [online], Available: <[http://corp.mmp.kosnet.com/CORP\\_CD\\_2004/archiv/papers/CORP2004\\_ROEDER\\_MAERKER\\_MICHAELIS\\_POPENBORG\\_SALZ\\_ZIERATH.PDF](http://corp.mmp.kosnet.com/CORP_CD_2004/archiv/papers/CORP2004_ROEDER_MAERKER_MICHAELIS_POPENBORG_SALZ_ZIERATH.PDF)> [2005.07.25].
- Rubio, J.A., Ríos Insua, D., Ríos, J.M. and Fernández, E. (2005) "Quixote: Supporting Group Decisions Through the Web". *E-Government: Towards Electronic Democracy, International Conference, TCGOV 2005*, Bolzano: Decision Engineering Lab, Universidad Rey Juan Carlos - DMR Consulting Foundation, [online], Available: <<http://infodoc.esctet.urjc.es/ted/documentos/QUIXOTE.pdf>> [2005.07.25].
- Salz, S.R. (2003) *Polling in participation systems: an exemplary integration in DITO*, Sankt Augustin: Fraunhofer Institute for Autonomous Intelligent Systems, [online], Available: <<http://zeno8.ais.fraunhofer.de/zeno/web/Polling+in+Participation+Systems:+An+exemplary+integration+in+DITO?action=openattachment&id=23969&attachmentid=9663&rootid=23963>> [2005.07.25].
- Salz, S.R., Märker, O., Schäfer, A., Voss, A. and Klotz, A. (2003) "Anforderungen an E-Diskurs-Plattformen illustriert am Beispiel Dito". *Informatik 2003. Innovative Informatikanwendungen*, Bonn: Gesellschaft für Informatik, [online], Available: <<http://zeno8.ais.fraunhofer.de/zeno/web/Anforderungen+an+an+E-Diskurs-Plattformen+illustriert+am+Beispiel+Dito?action=openattachment&id=23966&attachmentid=9662&rootid=23963>> [2005.07.25].
- Torras, L. and Díaz, L. (2004) *La participació ciutadana a través de les noves tecnologies. Estratègies per a la utilització de Consensus*, Barcelona: Fundació Jaume Bofill, [online], Available: <[www.fbofill.org/php/publicacions/pdf/393.pdf](http://www.fbofill.org/php/publicacions/pdf/393.pdf)> [2005.07.25].
- Vaz, J.C. (2002) "Administração Pública e Governança Eletrônica: Possibilidades e desafios para a Tecnologia da Informação", in W. Hofmeister, *Governo Eletrônico - os desafios da Participação Cidadã*, Fortaleza: Konrad-Adenauer-Stiftung, [online], Available: <<http://www.sustentavel.inf.br/arquivos/publica/Governo%20Eletr%F4nico.pdf>> [2005.07.25].
- Whyte, A. and Macintosh, A. (2004) *Electronic Democracy European Network (EDEN). Summary of D6.2 Final Tool Validation and E-Democracy Evaluation Report*, Edinburgh: International Teledemocracy Center, [online], Available: <[http://itc.napier.ac.uk/ITC\\_Home/Documents/EDEN\\_D62\\_Summary.pdf](http://itc.napier.ac.uk/ITC_Home/Documents/EDEN_D62_Summary.pdf)> [2005.07.25].
- Ziegenfuss, J.T. (2000) "Building citizen participation: the purposes, tools & impact of involvement", in *XIV Concurso de Ensayos y Monografías sobre Reforma del Estado y Modernización de la Administración Pública. "Administración Pública y Ciudadanía"*, Serie Documentos Debate, Caracas: Centro Latinoamericano de Administración para el Desarrollo, [online], Available: <<http://www.clad.org.ve/fulltext/0038103.html>> [2005.07.25].