Participatory Development of Technologies as a Way to Increase Community Participation: the Cidade de Deus[1] Web Portal Case.

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Abstracts: This article aims to discuss the process of development and improvement of a community web portal from the perspective of references such as social capital, solidary technology, local development and community organizing. As a case study we used the Cidade de Deus web portal (www.cidadededeus.org.br), result of a project of the Technical Solidarity Lab (Soltec / UFRJ) with community-based organizations (CBOs) of Cidade de Deus. Our main hypothesis is that more important than the technology itself, the process of developing this technology in a participatory manner can encourage community participation.

Keywords: Community portal, Local development, Community development, Solidarity technology, Action research.

Introduction

It is fundamental to think about development models that originate from each place's specificities, which are built on the local actors' demands and not imposed from outside. But for such it is necessary that these actors articulate and establish clearly what their demands and proposals are.

Information and communication technologies (ICTs) may help a great deal in this articulation process. They facilitate integration, establish a greater communication dynamic, permit a record to be kept of the historical process, increase transparency, and allow for a broader debate. However, one point to be emphasized is that, ICTs work as distance-human-relations mediators, and they will strongly influence the way in which these relations will take place.

For ICTs to contribute effectively to people's articulation in a democratic way, they have to be thought out, adapted or developed so as to permit a collective and horizontal dynamics. Otherwise, they will only help establish other unequal power relations, other hierarchies, in the opposite way to the democracy sought.

The objective of this article is to discuss the development and improvement process of a community web portal as an attempt to establish a link between community inhabitants' and organizations based on a concrete example. The Cidade de Deus Community Web Portal (www.cidadededeus.org.br) was used as a case study in this article. This Web Portal was developed as a university extension project by the Technical Solidarity Lab (SOLTEC/ UFRJ)[2] in partnership with Cidade de Deus' community based organizations (CBOs). This portal was developed beginning in January 2008 and was officially on-line on April 18, 2009. As a theoretical approach, we will use references to Social Capital, Solidarity Technology, Local Development, and Community Organizing.

Our main hypothesis is that, more important than the technology itself, such a technology construction process undertaken in a participatory way (using, in this case, a methodology called Action Research) can encourage community participation. This process would also foster, as a result the main aspects of social capital – the strengthening of intra-community relationships (bounding) and the increase of mutual trust and reciprocity.

2. Local Development and Community Organizing

2.1. Local Development

The local development concept arose from criticism of the centralized planning models and those models built by developed countries, imposed on developing countries through international financing institutions. These models aimed almost exclusively at economic growth and, in many cases, brought few effective results in the countries where they were implemented. Even when these models were able to enable economic development, this was not followed by income distribution nor improvements in the population's social conditions (Furtado, 1998, p. 20).

In this sense, the local development concept aims to integrate the social aspect to the economic one, in the belief that they are inseparable. The communities live immersed in habits and cultures, and any economic model should be in dialog with and fit with them if they are to be implemented. The attempt to transfer a development model that does not respect local experiences will be rejected or transformed in the local realm (Zaoual, 2006, p. 125).

The decentralization of public authority and management at the community level is essential for adapting economic assumptions to social ones. No one is more capable than the community to recognize their main social problems and to identify which barriers an economic solution could face, in response to the local population's habits and culture. At the local level, the economic and social aspects merge and all solutions built at this level need to consider both of them in an integrated way.

Democracy is seen by many authors as an essential element for local development. In the case of local development, which can only take place in an environment that encourages participation, its value is conferred by the importance of the collective construction of objectives and actions. Otherwise, what happens is that top-down decisions are made, without taking into account what the inhabitants think is most important.

But electoral democracy does not necessarily permit the solutions to the problems to be built at local level unless there is also power decentralization. Institutions at the local level must have the power to plan and carry out their own solutions (Batterbury; Fernando, 2006).

Another important point is the existence of popular and open communication channels. It is no use only to decentralize as a form of electoral democracy with local representatives. Channels such as councils and open forums are important, through which the population can discuss government actions. However, more important than the existence of these channels, is the fact that these have the tools and power to really influence political decisions.

The network configuration also has fundamental importance in the democracy process, mainly in communities where there is a presence of drug trafficking or other actors who may have influence on the basis of coercion. The network configuration, different from the representative configuration, permits a depersonalization of collective decisions. Despite a neighborhood association being a representative entity that uses meetings to make decisions, there will always be the figure of the representatives (president, directors, etc.) as central elements, subject to being corrupted or pressured to act according to interests different from the community. In the case of the organization acting through committees, forums and networks, there is no an element that represents the group as a whole, preventing coercion and permitting greater participation of the people in the decisions.

2.1.1 Integrated and Sustainable Local Development

Integrated and Sustainable Local Development (known as DLIS in Brazil) is a local development methodology that has been widely applied in Brazil. It was promoted mainly by the Educational Agency for Development (AED)[3], in the period of 2001 to 2006. This methodology has as its basis the strengthening of social capital in small regions (Franco, 2004, p. 15), usually in small municipalities or big city neighborhoods. One of the base-principles of the DLIS methodology is the expansion of the democratic and participatory process at the local level. Thus, an objective is that the solutions are produced or, at least, have strong participation by the local inhabitants.

According to Franco (2004, p. 30), one of the barriers for a community to promote its own development is the mutual lack of trust, which impedes collective action. For this author, social capital is exactly what is missing in these communities. In this sense, social capital is "social power", that is, the capacity to act and cooperate collectively. According to Franco (2004, p. 39), social capital can be understood as "socially expanded cooperation" or as the result of "replicable interaction patterns" generated by cooperative relations (Franco, 2004, p. 107).

To encourage collective cooperation, the creation of social networks and the existence of democratic arenas and processes are necessary. The social networks permit people to be connected among themselves to exchange information in a horizontal way, with no hierarchies. The democratic processes enable them to have the power to act (Franco, 2004, p. 32).

For Franco, the political-social structure is decisive for the formation of social capital. The ways a community organizes itself, how it solves its conflicts and its mechanisms of self-regulation are essential factors for the understanding of social capital. Thus, there are three major barriers to social capital development: centralism; welfarism; and clientelism (Franco, 2004, p. 37). Violence also contributes to diminishing social capital, since it hampers cooperation and trust. In the case of communities controlled by the drug traffic or any other form of parallel power that uses violence to coerce inhabitants, it is difficult to picture collective actions.

The DLIS methodology consists of three major phases. The first is Participatory Diagnostics. In this phase, an Actives Map and a Needs Map are drawn. The Actives Map is the human resources (humans, materials, etc.) which the community possesses and can be used for its development. The Needs Map consists of resources that need to be obtained or created for the community to develop.

The second phase is the Local Development Plan. This plan is built from the Actives and Needs Maps, indicating the actions to be developed and goals to be reached in a period of ten years. In this plan, priority goals are defined, indicating future means to overcome needs, mainly from the use of the community's actives.

The last phase is the Priority Actions Agenda. This agenda is a short-term plan, usually to be carried out in the period of one year, and can be divided into endogenous and exogenous investments. In the first case, the actions are to be carried out by the community itself. In the second case, actions and investments are to be carried out by public authorities, businesses or organizations outside the community. For the second agenda to be put into effect, it is necessary to make a pact with these external actors, ensuring their commitment to the community (Franco, 2004, p. 113-118, Franco, 2007).

2.1.2. Community-Based Organizations (CBOs)

An important actor in the discussion on local development are the non-governmental organizations (NGOs). They are an institutional form of local organization. However, there is a great difference between the large organizations which operate in regional, national and even international realms and the small organization which operate locally (Devine, 2006, p. 522). These small organizations, known as community-based organizations (CBOs) or community organizations, have their own characteristics particularly through having a strong relation with their population. These have a fundamental role in the endogenous development process.

In relation to the size of these organizations, they are usually small, since they act in the local realm only. They have almost no employees and very few volunteers (Kellogg, 1999, p. 447), since they are usually inserted into poor communities, the population is not able to devote time to non-paid activities. Despite the necessity for a council to formalize (make official) the organization, such a council is practically non-existent or figures only on paper. It is generally the organization's founder who makes the decisions, playing the role of both the council and the president.

The main criteria for differentiating a CBO from an NGO would be their local characteristics. This means that these organizations are created by the communities' inhabitants in the very community where they act, and barely participate in other communities (Marwell, 2004, p. 270). This is the criteria which differentiates them from the other organizations, as their mission is not act on a specific theme, but solve the problems in their regions (Kellogg, 1999, p. 447).

The important characteristic of these organizations that differentiate them from the others is the fact that they are organizations that, first and foremost, know very well the place where they operate, their real problems and the people who live there. For the most part they do not have a strong conceptual or methodological basis, as their work is highly based on the tacit knowledge and not on theoretical knowledge. They are usually generalists, as in their regions the problems are not compartmentalized and, this way, end up having to act in all ends (sport, culture, health and others activities). Contrary to large social organizations, they do not specialize in one specific theme.

They usually form partnerships with large social organizations (these are focused on a specific theme) to get resources and work as executing branches. Some financing operations from large international organizations, development agencies and banks demand base organizations' participation, since, in most cases, the ones which have access to these funds are regional or national NGOs. Thus, large NGOs are forced to articulate with these community organizations and transfer the funds so that they can carry out actions in the field, being up to the large NGOs only monitor, evaluate and systematize information and result indicators (Pratt, 2004, p. 2).

2.2. Community Organizing

According to Alinsky (1989), community organization can be seen as a strategy to mobilize inhabitants of a small community (a neighborhood or a small town) to solve their problems autonomously through protest or advocating actions. The main problem is how those who do not have power can take it from the hands of those who have it.

For Alinsky, society is divided in three groups: The Haves – those who have the power (whom we could refer to as the rich); The Have-Nots – those who do not have power (the poor/ excluded); and the Have-a-Little, Want Mores – those who have little power but want more (these would be the middle class). Those who do not have power, due to their inaction, are conformed. However, in case there is an external stimulus, they can react, as they have nothing to lose. Thus, they would be the focus of the community organization.

First and foremost, community organization is a pragmatic strategy. According to Alinsky, tactics means reaching objectives with the available means. Thus, he questions means and ends with the affirmation that, what matters is analyze whether a certain end justifies a certain means. Those who do not want change, usually those who have power, will always use the argument that agree with a certain end, but not with its means.

A fundamental concept is power, which according to Alinsky (1989) means the ability/ capacity to act. There is no society without power; the choice that we can make is a society with organized or disorganized power. That is, we can fight for equity of power among people or accept an unequal power relation.

Another important concept is conflict, which is always present in society: on the one hand, there are those who have power and do not want to lose it and, on the other hand, there are those that

do not have power, but wish to acquire it. Thus, the conflict is imminent, once for the Have-Nots to obtain power, it is necessary that the Haves lose it.

As far as the community organizer is concerned, he does not necessarily need to belong to the community, but it is important that he acquires legitimacy and respect in the community. His role is much more of a mediator than a leader. He should encourage and guide debate, but always letting the inhabitants themselves find the answers and ways to solve their problems. He must be capable of inserting himself in his interlocutors' areas of expertise to be able to communicate.

In his book Rules for Radicals, Alinsky presents some rules for those who want to organize a community in fighting for their interests. One of the essential elements is to begin with small, tangible causes, possible to be won in the short term, so that the organized community can envision that they have the power to change the current situation. However, it is important to have many causes, because as soon as one is solved, they can focus attention on another one. This is an ongoing, growing and endless process, with small victories leading to bigger fights.

The movement of community organizing had strong force from the 1940s to 1960s, being Saul Alinsky one of the most renowned community organizers. At this time there was a strong work with low income groups, as black, Latin and indigenous people. Later, it was noticed that to seek greater changes it is necessary to organize communities and middle class groups, as even mobilizing all these low income groups, they would still be minority and would not have power to demand greater changes. Despite Alinsky having died in 1972, the movement of community organizing continued through the work of his students and the people influenced by his teachings.

The community organization usually focuses on small mobilizations, but it can also acquire a broader nature. The community organization can also involve the identification of question, the mobilization around them and the formation of a long lasting organization. Besides, it can serve as the basis for the formation of wider processes such as social movements (Stall & Stoecker, 1998, p. 730). In this sense, some community organizing networks were formed to expand the movement at national level.

3. Social Capital

Social capital is a term widely used at present, in general referring to the networks in which an individual is inserted and that can bring him/ her some advantages. Despite being considered a new concept, the idea of the importance of group participation and the relation with other individuals dates back to Durkheim and Marx (Portes, 1998). However, the first utilizations of the term social capital are recent and credited mainly to Pierre Bourdieu and James Coleman.

For Bourdieu (1986, p. 241-258), the capitalist economic theories reduced the exchanges only to their mercantile meaning. However, to understand the social structure, it is necessary to analyze the capital in all its forms. According to Bourdieu, besides the economic capital, there are the cultural capital and social capital. Economic capital are all those whose material assets can be directly converted in money. Cultural capital would be related to the formation and education which each individual has and confers him a higher status in society.

Social capital would be the set of available resources in a network of social relations, in which there is mutual recognition among their members. For Bourdieu, an individual's volume of social capital depends on the size of the network in which he/ she is inserted and the quantity of resources capable of mobilizing on his/ her behalf in his/ her network. For this reason, we

presuppose that there is a minimum of homogeneity of objectives inside the network, so that it is possible to mobilize an individual's resources on behalf of another.

Bourdieu also affirms that the existence of relations network is not something natural or spontaneous, but a product of investment strategies (conscious or unconscious) which can generate return in a short or medium term perspective. To establish and maintain a relations network, it is necessary a continuous sociability effort and a series of exchanges among the members of a network that continuously affirm and reaffirm the recognition among its members.

On the other hand, social capital can be treated under an institutional perspective. According to Putnam (1993, p. 167), "social capital here refers to features of social organization, such as trust, norms and networks, that can improve the efficiency of society by facilitating coordinated actions". In his book, Putnam relates the institutional performance of regions in Italy to what he calls civic community. The civic community is formed by citizens who, despite their own interests, are sensitive to the collective interest. The role of social capital is that of strengthening the ties of solidarity, trust, tolerance and reciprocity which permits to form citizens of the civic community.

As the main indicators for evaluating the existence of the civic community, Putnam makes use of the following indicators: the quantity of local associations and the population's participation; the existence and reading of local newspapers and periodicals; the participation of the population in politics and the way in which they relate to their representatives; participation in unions and parties; the presence of values such as solidarity, cooperation and honesty.

The quantity of local associations and the participation of the population indicate a greater capacity to articulate and pressure public representatives to carry out concrete actions in the community, as well as ensuring the availability of more public and private resources. The existence of local newspapers and periodicals permits the dissemination of information within the community, which also results in the population's greater capacity for articulation and organization. The participation in politics and the way their members relate to their representatives enable the election of community representatives and the creation of public policies adapted to the place. Finally, the presence of values such as solidarity, cooperation and honesty make coordinated actions easier.

Woolcock (1998) discusses the relation between social capital and economic development. In his study, he works with social capital in communities or countries and through two base concepts: embeddedness and autonomy. The first concept was developed by Karl Polanyi (1980) and reintroduced by Granovetter (1985). It suggests that all economic action is inseparable from social relations. At a micro level, embeddedness refers to intra-community relations; at a macro level, it refers to State-society relations. Autonomy, at a micro level, refers to extra community relations; at a macro level, it refers to institutional capacity and credibility. Thus, embeddedness and autonomy are two different forms of social capital.

For each of the different forms of social capital, Woolcock gives a different name. Embeddedness, at a micro level, is called Integration. Autonomy, at a micro level, is called Linkage. Embeddedness, at a macro level, is called Synergy. And, finally Autonomy, at a macro level, is called Organizational Integrity.

To achieve development, the four forms of social capitals should be present. At a micro level, as in the case of a poor community, Integration has the role of strengthening solidarity within the community and encouraging local exchanges, whereas Linkage permits the bringing of resources from the outside and having access to information and opportunities that do not exist within the

community. In the macro case, Synergy means a good relation between the State and society, while Organizational Integrity means a strong and efficient State, capable of carrying out the agenda demanded by society.

As his main conclusions, Woolcock points out that, at the local level, community base organizations should act so as to cultivate Integration and Linkage, to be able to bring resources from the outside and permit these to be appropriated in an efficient way. At the macro level, the author points out that a strong State and a strong society are not contradictory, both being necessary for development.

From the perspective of the formation of networks for local development, social capital represents the social relations that take place both among the members of the community and with those from the outside. The balance between relations intra and extra-community can determine how much benefit the community will have from its social capital. While the intra-community relations can establish solidarity ties, the extra-community relations, mainly in poor communities, may enable the establishment of channels that permit resources to flow in from the outside (Wetterberg, 2007, p. 567).

Social capital has a fundamental role in the formation of public policies appropriate to the local issues of a community. On the other hand, public policies can contribute to generating positive social capital effects in the community. Policies that invest in infrastructure (collective assets), which strengthen local networks – so that they can resist private interests – and which encourage the formation of groups and networks open as well to new members, has the effect of directing social capital to the generation of positive effects (Trigilia, 2001, p. 437-439).

At well, social capital, as a result of information exchange networks, also has a fundamental role in the development of public policies. The networks as institutional ways of fighting for rights and citizenship have a great potential in local development. Through these networks, knowledge-flow channels for the needy populations about their rights are created, which in turn can have a decisive role in local development (Marteleto; Silva, 2004, p. 46-48).

4. Solidarity Technology

The development of technologies is not a purely technical process. Economic, social, cultural and political factors are inseparable from technical factors in the decisions made during the construction of a technology (Marques, 2005, p. 15, Oliveira, 2007). In this sense, academic fields such as Socio-technical Studies, Science and Technology Studies (STS) and Social Studies of Science (SSS) have been growing. These have the non-neutrality of technological artifacts, techniques, technology and sciences as a central element. In these fields of study several authors are prominent such as Langdon Winner, Andrew Feenberg, Thomas Hughes, Bruno Latour, John Law, Michael Callon, Annemarie Mole and others.

Following from this, in the sense of promoting another type of development, based on a socially aware, cooperative and collective logic, it is necessary to develop new technologies, different from those already conceived which are impregnated with the current competitive logics.[4] These technologies are called Solidarity Technologies (ST) by some authors to differentiate them from Conventional Technologies (CT).

This concept has been developed in Latin America under the name Tecnologia Social, which can be translated as Technology for Social Inclusion. We chose not to use the term Technology for

Social Inclusion, as the term gives the connotation of charity, a technology geared just for the poor or socially excluded. Thus, we prefer to translate the term as Solidarity Technology, in reference to the Solidarity Economy, that is, a technology that is committed to the construction of another kind of society.

According to the Rede de Tecnologia Social (RTS, 2005, author's translation) the “Solidarity Technology includes products, reusable techniques and/or methodologies, developed in interaction with the community and that represents possible effective solutions for social transformation.” Bocayuva and Varanda (2009, author's translation), affirm that “a Solidarity Technology breaks with the conventional and dominating model, when it includes the centrality of grassroots social actors in the role of productive subjects” and place ST as a “strategies for overcoming inequalities.”

A central issue that comes up in both definitions is the interactions with social actors, and, in this sense, the use of participatory methodologies is fundamental (Thiolent, 2005). In the specific case of ICTs development, the central issue is that the systems are conceived based on the demands of the users and in collaboration with them.

Another important contribution to distinguishing social technologies from conventional technologies was given by Dagnino (2004), which can be synthesized in the following comparative table:

Conventional Technology (CT)	**Solidarity Technology (ST)**
Segmented: does not permit control by the direct producer;	*Geared towards collective management or promoting collective control;*
Maximizes productivity in relation to the use of labor (it saves labor more than might otherwise be necessary);	Adapted to small physical and financial units;
Alienating: does not use the potential of the direct producer (the pace of production is given by the machines).	Frees the direct producer’s creativity and potential;
Has patterns responding to the high income external market;	Oriented to the mass internal market;
Monopolized by big companies in rich countries (has an always-growing scale of production);	Capable of making self-administrated projects and small businesses economically feasible.
Within a hierarchy: demands the image of the owner, the boss, etc. (has coercive controls which reduce productivity).	Non-discriminating (boss vs. employee).
Environmentally unsustainable (intensive in synthetic inputs).	*Use of local raw material in a sustainable way;*

Table 1 – Comparison between CT and ST according to Dagnino (2004, author's translation)[5]

This table identifies important issues differentiating ST from CT. Perhaps one of the most important points is the issue of control (Feenberg, 1992). Many times, regardless of how participatory the methodology, there is a distinction between what is called client and user, that is, who is the owner of the technology (and has the final say in the decisions) and who is not. In this sense, CT is an instrument for the domination of the user by the technology owner.

Another fundamental issue of the CT is the high cost derived from the specialization of the technologies. This specialization is a consequence of the dominant technology development process, which is always oriented towards a specific problem: the problem of who will pay for it. The development of technologies through logics other than one based on financial ownership such as Free and Open Source Software (FOSS) and Open Source Hardware (OSHW), shows that

another possible direction is possible and one which responds to the needs of a majority of the people.

It is also important to point out that the STs are still at a largely theoretical stage rather than a concrete one. This is so because of the difficulty in conceiving of these technologies within an environment and logic different from that which one is intending to build. For this to be possible it is necessary to develop a different knowledge structure from that already in place as proposed by Dagnino, Brandão and Novaes (2004) as the seven modalities of Socio-Technical Adequacy (STA):

Use	The simple use of technology under the condition that changes the way profits are shared.
Appropriation	Conceived under the condition of collective ownership of the means of production and implies an expansion of the knowledge on the part of the worker, of the productive, managerial aspects and of products and processes without any changes in the concrete use that is made of these products or processes.
Revitalization	Revitalization or power boosting of machines and equipment, but also adjustments, reconditioning and revitalization of these machines and associated work processes.
Work process adjustment	Implies the adaptation of work processes to the form of collective property of the means of production (pre-existing or conventional), the questioning of the division of technical labor and the progressive adoption of workers' control (self-management).
Technological alternatives	The application of alternative technologies to the conventional ones is necessary. The activity generated from this modality is the search and selection of existing technologies.
Incorporation of existing scientific-technological knowledge	This results from the exhaustion of the search for alternative technologies, the development, from that, of new productive processes or means of production, to satisfy the demands for STA. Activities associated to this modality are innovation processes of the incremental type.
Incorporation of new scientific-technological knowledge	This results from the incremental innovation processes are exhausted due to the nonexistence of knowledge susceptible to be incorporated into processes or means of production to respond to the demands for STA. Activities associated to this modality are radical innovation processes which demand a review of R&D centers or universities and that imply the exploration of the frontiers of knowledge.

Table 2 – Socio-technical Adequacy Modalities according to Dagnino, Brandão and Novaes (2004)

These modalities have some intersections and should be used much more as a framework to think out the construction of something new, than as ways in which each experience must fit. The idea is that this reflection eases the deconstruction process of Conventional Technologies, and the reconstruction including other criteria (alternative to the techno-economic ones), involved in redesigning these towards STs.

5. The Development of the Cidade de Deus Community Web Portal

Research concerning network formation among Cidade de Deus' community based organizations, detected that there was little articulation among these organizations, and the creation of a community web portal could be a way to contribute to this and to other issues (Alvear, 2008). Interviews with the organizations indicated that help was required for the creation of web sites for some organizations. From that point, Soltec/UFRJ began an extension project towards developing a web portal for Cidade de Deus (CDD) which could be managed by the organizations themselves.

Thus, it is important to point out that the identification of the necessity to develop a portal arose from research endorsed by the researched subjects and their demands. Stoecker (2005) emphasizes that the order of community projects should be: understand the community, evaluate which information is necessary and, finally, which ICTs better attend to these necessities (that is, the order is Community, Information, and Technology). The development process of the portal followed this pattern.

There had been a previous attempt to articulate several organizations in CDD, which was the creation of a Community Committee in 2002 and a Local Development Agency for CDD in 2003. Both had extensive participation at the beginning, but later there were problems that led to a drifting apart and reduction in participation. One of the possible causes of this was a fragmentation that occurred due to political and religious disagreement, and different world views. Besides that, as concrete and immediate results were not seen, some organizations ceased to participate (Alvear, 2008, pp. 103-104).

The portal construction methodology incorporated these issues to avoid facing the same problems. In the first place, the hypothesis which guided the process was that “the articulation of these organizations for the construction of a portal can be a way to establish collective identities, which permit bringing them together on greater issues in the future” (Alvear, 2009, p. 2, author's translation). That is, the frequent and on-site gathering of the several organizations in the portal construction meeting to discuss trivial questions would permit the establishment of a collective identity, through the sharing of values, exchanging opinions, and even nurturing affective relationships. This collective identity would permit these organizations to discuss more structural and controversial issues without causing fragmentation (the development of respect for diverging opinions).

This hypothesis was mainly based on Villasante (2002), who points out the importance of working with less controversial issues until a more appropriate environment is created to discuss more structural themes. Furthermore, it establishes a strong dialog with Granovetter (1973), who points out the importance of fragile relationships (as for example the organizations’ gathering to discuss the creation of a portal) to create communication channels among different networks (some of these organizations have very different views of the world, and would probably not gather if it were to discuss bigger issues such as politics).

Furthermore, the aim was to balance a strategic view in the long run with short term results. Initially, for some organizations, the objective was only to have an internet site. However, to build a Cidade de Deus (community) web portal and not only a portal with sites of organizations a deeper discussion was necessary. The difficulty was to balance this discussion and the pressure for quick results. At some moments the meetings would start to get lag as the members of the organizations seemed unmotivated and wanted more immediate results (besides distrusting the process). At that moment, it was necessary to present prototypes of the web portal, after which, the members would participate in the meetings again.

To develop a portal, a participatory methodology called Action Research was used. This methodology has, as an essential element, the participation of all parties involved in the process (Thiollent, 1985). Another important characteristic of this methodology is the interaction between research and action (which can be seen in this case as the extension of the university project itself) in an ongoing process. Thus, the research served as the starting point for the construction of the portal. During this construction, this research process touched all aspects of the development

process, from the software requirements specification to the project evaluation and improvement phase.

The first phase of a Research Action is the contract. This contract is the moment at which the interested parties and the researcher establish a formal or informal agreement about what will be done. Along with that is established what is called a Seminar in the methodology - a group of participants which will follow the research-action process (Thiollent, 1985, pp. 58-60). In the case of the portal, this group is made up of the institutions which are participating in the portal (Thiollent, 2005).

In the first meeting in CDD, which took place in May of 2008, each organization present was supposed to invite other organizations and advertise the construction of the portal so that it could gather the highest number of organizations possible. At that time the contract was agreed upon, that is, what would be carried out by the group and each person's roles. In addition to that, it was agreed in the first meetings that any organization which carried out social projects in CDD, whether formal or not, could become part of the portal.

Initially, sixteen organizations participated in the portal construction (or made up the seminar). The majority of these organizations were CBOs, as well as one church, one neighborhood association, two small self-managed community groups, and two cultural groups (theater and dance). During the process, this number was reduced to ten institutions, but later it increased back to fourteen.

The first phase was the requirements specification. In this phase, we discussed more deeply the portal objectives, the target audience, its structure, and who could be involved. The second phase was the design of the portal in an interactive way, that is, through the presentation of prototypes and ongoing improvements. Finally, the third phase was the training of people so that they could insert content autonomously. On average, the meetings took place every two weeks, and lasted from 3 to 4 hours.

The design in an interactive way is essential in a case like this. Bourgeois and Horan (2007, p. 7) place importance on what they call Design for Redesign, that is, design thinking that the system will have to be redesigned, because only after the users start to use the system can they express their real needs. And besides that, users' objectives and necessities also change with time. In our case, it was essential to work this way. As the users were not accustomed to working with computing tools, it was difficult for them to engage in this abstraction process, that is, to picture what they would like from and to see in, the tool they were designing. .

An important element of this was the creation of a document on portal policies so as to minimize problems with political and religious disagreements. This document established what could or could not be placed in the portal, how it could be introduced into the portal as well as the sanctions on those who did not respect these collectively agreed policies.

After the official portal release which took place on April 18 , 2009, the greatest focus of the project was on training members of the portal in developing the content. We diagnosed that we had made a mistake in not working from the start with a focus on communication, as we perceived people's difficulty in writing texts and producing articles, that is, generating content for the portal. Thus, during 2009, we alternated meetings on: discussions to define the articles to be written and training on how to develop articles. These articles had as their objective to permit a survey of the CDD problems among the inhabitants and to question the performance of the current government and the impact of big businesses in the territory.

This strategy also had problems, as the people who participated in the meetings are usually coordinators in their institutions. Thus, besides having little time to go to the field and interview people and then write articles, they cannot set this as a priority due to the several other activities they have to carry on in their institutions. This being the case, the portal has been having a very low dynamic in generating new content, having only short reports on projects and events which take place in Cidade de Deus, but without addressing the overall problems that take place in CDD in a critical way.

In meetings that took place at the end of 2009, we decided, as a solution, to make a campaign for inhabitants of CDD to sent texts, articles, poems, songs, videos and other contents, as a way to increase the portal's dynamics, to enhance the CDD people's participation in the portal, and to debate the problems of the community from different points of view. Meanwhile, the role of the institutions would be more towards encouraging debate towards strategic issues for the community and selecting content to be placed in the portal.

In this sense, the main action in the 2010 was the teaching of a course on Mass Media Critical Analysis, offered to CDD's inhabitants and free of charge. The objective of this course was to discuss how to make community communication. The objective was to train more inhabitants of CDD so that they could report through the portal what was happening in their community from their point of view – reporting by those who actually live the news. This would be a counterweight to the mass media that usually broadcasts only negative facts about the poor communities, from the point of view of those who do not live these realities.

6. Results

It is important to understand a community portal and its construction process as a local development support strategy. Two elements in this process are fundamental, the articulation/mobilization that this portal generates and the form of organization it encourages. The social actors' articulation around the portal can be analyzed from a social capital perspective including the internal articulations, called integration, and under the perspective of the external articulations, called linkage.

The community portal construction in itself works as a means to establish the community articulation and mobilization (integration), as long as a participatory methodology is applied. As stated by Stoecker (2005), the process of implementing an ICT project in a community is more important than the results, mainly because of the actions of the local actors.

In addition to that, when we talk about community mobilization, we are talking about a territory, a locality, which has problems related to the place itself, but connected to a wider context, the city, the country and the world. Thus, this project is related to the concept of Community Informatics proposed by Campbell and Eubanks (2010):

> Community informatics is a sustainable approach to community enrichment that integrates participatory design of information technology resources, popular education, and asset-based development to enhance citizen empowerment and quality of life.

This can be aligned with Alinsky's ideas, who in 1946 had already defended the importance of the communities' organizing to fight for local power, this definition of community informatics sets forth an objective to establish a local empowerment. If these communities' inhabitants do not have the power to solve their problems individually, together they will have the power to fight for their rights and achieve a better life condition. For this reason, the development of a technology in a

participatory way is important not only to have a technology suitable to their needs and an instrument to support their actions, but also to build confidence as a result of small victories along the process, and to realize that they have the power to achieve greater victories.

According to Pigg and Crank (2004), the ICTs themselves do not create social capital. However, these can help in expanding social capital, but to do that there needs to be intentional actions in that direction. Still according to these authors, ICTs can also reduce centralization and improve the quality of the decisions made in the community. The CDD community portal has been developed since the beginning with the intent of strengthening existing relations or establishing new relations among the organizations in the CDD.

Cordell and Romanow (2005) affirm that it is better to invest in ICTs where there is evidence of positive and strong social capital (that is, where there is already a strong community integration). In the case of the communities that do not have this social capital it is better to invest in projects that do not involve ICTs. Still according to these authors, the ICTs work better for virtual/online communities, and not for geographic communities (place-based). The case of the CDD portal contradicts these affirmations, as it is an ICT project in a geographic community with low social capital (Alvear, 2008). That is, the utilization of a participatory methodology to implement an ICT in a community can be a good way to increase integration among its inhabitants thus expanding social capital in the community.

The portal offers a space called “Speak Community,” where the inhabitants express their problems which run from unlit light poles on their streets, open-sky waste deposits to problems in the free wireless internet project implemented by the government. In this case, the organizations in charge of the portal can help the inhabitants by providing guidance on how to proceed and advocate for their rights directly with government authorities. When it is the case of a complaint made by many inhabitants, the organizations can act directly with the government taking these complaints in an organized way and putting more weight on their demands for a solution. This way, external articulations (linkage) are established which can help bring more resources for the community. Musgrave (2005) speaks exactly about the importance of these community portals in helping in the citizen-government representatives’ direct interaction, defining community portals as:

> Community portal is now viewed as those portal instances developed by activists (i.e. bottom-up driven) within a community network, owned and operated by a non-governmental organization (typically a sub-regional geographic neighborhood group).

One of the important results that corroborates the hypothesis that the construction process of the portal can encourage the participation and increase integration is that, after the beginning of the development of the portal, the organizations have been jointly participating in projects and events. One example is the creation of a major cultural spot for CDD to be coordinated by all the organizations, instead of each one participating individually as occurred previously. In addition to that, they are carrying out a collective projects with Fiocruz, with UNICEF, and fighting jointly for a Health Center in CDD. Despite not being possible to affirm that the portal itself is responsible, the fact is that this integration among the organizations has been happening in a much more frequent way after the portal meetings.

As a way to evaluate the impact of the portal and its dynamics, we have the following indicators between February 24, 2009 and February 23, 2010: 14 organizations making use of the portal; 27 users with accounts making changes in the portal; approximately 30.000 visits to the portal,

including approximately 3.000 visits from outside the country; 120 comments from residents in the forum “Speak Community,” 17 published articles, 90 news articles posted and 139 events listed.

For Granqvist (2005), there are three important questions to be asked in community informatics projects: What kind of use do these technologies permit? What kinds of behavior do they encourage? What social values do they reproduce or support? These questions are in direct dialog with the concern about the control that these technologies can have over those who use them. Some technologies can permit different uses for different people (depending on their position in the organization’s hierarchy). Thus, they encourage a hierarchical organization and reproduce social values such as subordination.

In the case of the CDD portal, a search in various Content Management Systems[6] was made to evaluate which one would permit a more horizontal management, that is, a more decentralized and collective control – exactly one of the concerns of the Solidary Technologies. To do that, we chose a system that has a complete log of all changes, transparent to all users and with the possibility of undoing the latest changes (called version control). This enabled all the users to have complete access to the portal, because if someone abused his/her privileges they would be able to identify who did it and undo his/her changes. Compared with STA modalities (DAGNINO; BRANDÃO; NOVAES, 2004), we can say that we sought technological alternatives and were able to incorporate some adaptations.

Even with these choices, some limitations were found. In relation to the portal content management, even with the existing technologies, it is possible to make collective use of the system. However, in the case of the system administration, that is, access to the control panel and the more advanced functions (such as to create new user accounts, delete accounts, change passwords, change the portal configurations, etc.), it is not possible to have collective management of the system with the conventional technology – giving administrator’s privileges to all the users, with each one having unlimited power, being able to delete other users or the log.

The existing tools are firmly based on two premises: hierarchical administration and administration by highly specialized people. To change that, it is necessary to develop new technologies with the incorporation of new scientific-technological knowledge, the last modality of STA. A fundamental point is to think over and develop new collective decision processes and tools for information systems. It will be necessary to develop new knowledge, as the collective decision processes on information systems cannot be exactly the same as those for self-managed projects, such as for example through plenary meetings. In that case, all the actors are gathered at the same time to make a decision, besides having more opportunities to communicate among themselves and reflect on their problems. In the case of an information system, its users may have difficulties in holding face-to-face meetings, and even to meet virtually at the same time. In addition to that, many of the decisions on an information system need urgent attention because the information must be quickly entered, or else it will become outdated.

In that case it is necessary to develop a system that permits a more collective administration - a system that offers each member a certain degree of freedom, mainly in the parts that need greater dynamism (those with less sensitive and/or divergent information). On the other hand, this system should provide for forms of collective decisions in its structural and strategic parts. Seeking to integrate a cooperative and self-management logic into information systems, we can design a system with administration based on votes, consensus and plenary meetings, but that also incorporates a time variable. For example, to add a new user to the system, one of the

administrators would propose such action and, if the majority agreed, or even if no one disagreed during a certain period of time (preferably the shortest possible), this user would be added. The case of adding new users is just an example among the several possibilities of an information system directed toward collective management.

7. Conclusions

The Cidade de Deus Community Web Portal is still being developed. Despite its group of institutions having autonomy over many issues, having meetings by themselves, and dealing independently with the portal hosting and domain, they still need the help of Soltec/UFRJ with some actions. As an example, we can mention the production of articles for the initial page and making some more structural changes on the portal.

As was said previously, there are some difficulties in relation to the technology itself which was not developed for collective management. But cultural issues are difficult to change, since all the participants of the portal live under this competitive logic in the current society, which makes a collaborative project more difficult. Thus, conflicts and arguments occur at times, in which an external actor, a mediator like such as the researcher, has an important role, seeking to establish a balance in the group.

The difficulty is that a power imbalance tends to occur, as each person has a different rhythm in relation to technology appropriation, content generation, and management techniques of a community portal, in addition to each one coming from a different initial knowledge point. And it is necessary to always seek to avoid this imbalance; otherwise the community will not be able to fight for a less unequal society, if it is unequal internally in itself.

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[1] Cidade de Deus (City of God) is a neighborhood (favela) or a poor community in Rio de Janeiro which has around 65.000 inhabitants and is adjacent to one of the richest neighborhoods in Rio de Janeiro, Barra da Tijuca, reflecting very well the inequality present in all the big cities of Brazil. It became known outside Brazil through the movie “City of God”.

[2] Soltec (Technical Solidarity Lab) is a laboratory of the Federal University of Rio de Janeiro (UFRJ) which acts mainly in university extension projects aiming to apply engineering knowledge on behalf of poor communities, excluded groups and social movements.

[3] “Educational Agency for Development (2001-2004) was a public program created to increase the management and entrepreneurial capacity of micro and small businesses, local governments and third sector organizations, mainly when engaged in integrated and sustainable local development processes. […] The AED … process should be concluded in 2007.” Source: http://aed.locaweb.com.br/index.php. Accessed on 4/Mar/2007. Author's translation.

[4] This affirmation is in accordance with the strong non-neutrality thesis: “A science and technology generated under the auspices of a certain society and, therefore, constructed in a functional form for that society, is in such a way “committed” to the maintenance of this society and is not necessarily available to be used by another society.” (Dagnino, 2008, pp. 54-55, author's translation).

[5] Excerpts in italics supplemented by the authors of this article.

[6] A Content Management System (CMS) works as a platform on which a portal can be developed and updated through a web browser, without the need of technical knowledge.