

Geographic Information and Public Participation: Research Proposal from a French Perspective

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Abstract: *This article intends to show how the latest evolution of public policies by the French government shapes a new context for land-planning activities in France, oriented toward more cooperation between different levels of government and more public participation using Geographic Information. The development of formal participatory approaches, especially at the local level, is not a process that is grounded in the French planning culture, and very little research has been done on this topic in France. We developed some research questions on Geographic Information and participation issues based on recent calls for tender launched by the main French funding organisations (Ministries and the National French Research Council).*

Introduction

The ability to analyse problems in a relevant way was discussed in four position papers presented at the European Science Foundation/National Science Foundation (ESF/NSF) Workshop on Access to Geographic Information and Participatory Approaches Using Geographic Information that took place in Spoleto, Italy, December 6-8, 2001 (Carver 2001, Craglia and Masser 2001, Niles and Hanson 2001, Weiner et al. 2001). On the one hand is access to Geographic Information (GI) (especially by citizens), and on the other hand is potential stimulation of public participation using GI (and possibly associated Information and Communication Technologies (ICTs)). This ability seems to be strongly related to the level of knowledge of social, spatial, political, and cultural features from the local to the national scale.

Keeping this in mind, we intend to shed new light on the situation in France regarding access and use of GI by citizens. First, the French context is analysed by focusing on political and institutional aspects that have a direct impact on the use of GI for public participation in land planning. Second, the main institutional responses given by research and academic councils are presented to better understand the state of the art in France on these topics and its recent evolution. Finally, some key points are proposed to link societal evolution and GI in a way that could stimulate and facilitate participation through the use of GI.

The French Context Regarding Participation Using GI

The French Spatial Organisation: Complexity and Redundancy

Since the Territorial Decentralization Law in 1982, decision making at the local level has undergone profound changes. The responsibilities of the French National State, known for its

centralization of power, have been decentralised into four levels of territorial administration (Grubert 1992): 1) commune (municipality); 2) municipal groupings such as the “Communauté de communes” and the “Syndicats” or “districts intercommunaux;” 3) “Département” (the county); and 4) “Région.” Each has statutory responsibilities and tax-raising powers, and each is accountable to regulatory bodies such as the regional audit office (Roche and Humeau 1999).

A result of this law is that the French spatial organisation is characterised by the overlapping of local administrations; governments share the responsibility and power of management and planning in a very complex way. In some instances, levels of power are shared at the same scale regarding different issues (e.g., “communes” and “communautés de communes” sharing competencies concerning various issues of municipal planning), and in other instances, levels of power are shared at different scales for only one issue (e.g., competencies about public transportation are assumed both by “communautés d’agglomération,” town, and “département”).

Other interesting aspects of the French spatial organisation are the high number of local and regional governments and especially of “communes” (about 36,000). Since these 36,000 French municipalities have become too small due to the increase in mobility of urban and rural populations (residential, professional, social, cultural ...) (Beteille 1995), it has been necessary for inter-municipal cooperation to increase. For instance, the Law on Territorial Planning (1992) recommends and financially encourages modern inter-municipal structures such as the “Communautés de communes” and “Pays” (Roche and Humeau 1999).

For local communities and citizens, spatial organisation is often perceived as complex and redundant. The increasing number of elections for local and regional representatives contributes to a decrease in the level of interest and participation by the citizens. Paradoxically, at the same time, citizens ask for more elected representatives to justify their decisions and produce relevant argu-

ments. Carver (2001) discussed this in a general way in a position paper. Actually, at the local level, citizens and local councillors are drifting apart because of this complexity. Moreover, most decisions that have a direct impact on the citizens' everyday life (for instance, those related to environment, urban planning, and school transportation) are made by inter-municipal organisations instead of by local councillors, even though citizens still consider the councillors to be responsible for these issues. This complex situation, increased by embedded localisation and globalisation processes, limits the ability of citizens to identify themselves with the places where they live and their inclination to participate.

To some political decision makers, geo-information technology (GIT) appears as a solution to the increased expectations from the population. GIT integrates the logic of various stakeholders' (each one according to their duties) as the instrument enabling greater influence by the decision-making process and giving more "formal" arguments to justify decisions. This is particularly the case for local authorities, but also for some planners at a strategic level who are charged with showing, explaining, and defending municipal projects to citizens (Roche 1999). Roche and Humeau (1999) demonstrated the extent to which the specific French spatial organisation affects the diffusion and use of GI at the local level. Based on several local case studies, they argued that a common language (i.e., a negotiated spatial and conceptual framework) between experts, elected representatives, and even citizens is necessary to enable Geographic Information Systems (GIS) to foster inter-municipal cooperation. In a different way, Miellet (1996) noted that these French particularities (especially multiple levels of power in planning and decentralisation acts) have been of huge importance in the French GIS diffusion process (spatially as well as socially speaking).

Evolution in Laws Regarding Planning and Local Governance

First, it is important to mention that the developing of formal participatory approaches, especially at the local level, is not typically grounded into the French planning culture. French citizens or local communities participate essentially when they are concerned about a specific project. Actually, participation is often reduced to militancy or opposition ("not in my back yard," grassroots membership, etc.). Nevertheless, since the end of the 1990s, the French context regarding land planning and local governance has been deeply modified, and these modifications will probably have some huge consequences, not only in public participation to local planning, but also in public access to public sector information (and especially GI) and the role of ICTs in participatory approaches developed locally. Three new laws will have a direct impact on these processes.

In 1999, a law on inter-municipal cooperation (called "Chevenement" from the name of a recent Minister of the Interior) was enacted that established new rules regarding the process and conditions to create "communautés de communes" and has provided the latter with extended competencies in local manage-

ment and planning to the detriment of communes (especially relating to economical development and taxes collected from private firms – "taxes professionnelles"). Particularly relating to huge urban areas, a new form of municipal gatherings have been created, called "communautés d'agglomération," which are to replace "districts urbains." Also, decision-making centres regarding planning now make up these new inter-municipal organisations. The problem is that the local governments are too far from the citizens, and the representative process into the inter-municipal council is not clear enough to be understood by the citizens. There are no direct elections, and each commune is represented by a number of elected councillors determined partly according to the number of inhabitants. There are some specific and complex regulation mechanisms so as to avoid too great of inequality between the bigger municipalities and the smaller ones.

In 1999, the "Loi d'Orientation sur l'Aménagement et le Développement Durable du Territoire" (LOADDT), called Voynet (from the name of the last French minister for Environment and Planning), was enacted to find solutions to this problem. This law has created "contrats de villes" and "contrats d'agglomérations," some new forms of state financial incentives designed to help rural and urban municipalities that want to develop extensive public consultation and public participation processes for specific development and planning projects.

The "Loi Solidarité et Renouvellement Urbain" (SRU), which was enacted in 2000, has gone even further. This law extensively modifies processes and forms of urban and rural planning, creating the "Schéma de Cohérence Territorial" (SCOT) and the "Plan Local d'Urbanisme" (PLU), which are new tools by which to make local governments (communes, "communautés de communes," and "communautés d'agglomération") formalize global and coherent planning projects at the inter-municipal level. However, two areas of this law are quite relevant from the point of view of public participation using GI. The first point is that SRU, to develop the different steps of SCOT and PLU development, requires local governments to find and investigate public consultation and public participation solutions adapted to local features. Contrary to the Voynet law, SCOT and PLU are mandatory. Therefore, in the next few years, we can assume that many initiatives in public participation will be developed in France, and it is probably the right time to begin research projects on this issue. The second point concerns the role of GI. The mechanism imposed by the SRU to create and frequently update SCOT and PLU implicitly forces local governments to mobilize and use more geo-referenced information relating to various topics (spatial, social, technical, economical, etc.). It does not seem to be compatible with paper data and needs specific geographical data. So indirectly, the SRU will probably increase the use of digital GI and force local governments to improve their ability to manage and make the most of ICT and especially of GIT (Roche and Hodel 2001).

Participation Using GI?

Even if GI is not always explicitly mentioned in this new participatory framework, it is quite clear that certain legal obligations regarding local and regional planning policies cannot be achieved by local governments without the expertise of management and the use of digital geo-information. This reveals the paradox of the French situation: The most recent legislative evolution described above put GI rather explicitly at the heart of new methods of management and land-planning systems. This can be illustrated, for instance, by the amendment¹ to the Voynet law proposed by Deputy Caillaud or even by the national project to develop a Wide Scale Referential (Référentiel Grande Echelle). These evolutions emphasized the major role that GI as well as associated technologies can play within the functioning of these new land-planning systems. Indeed, the potential contributions of GI to the understanding of the functioning of territories and to increasing the knowledge of the citizens are often underlined.

GIT constitutes a specific variation of ICT, just as it leans on their network infrastructure (Internet, Intranet, etc.). However, GIT typically fills two types of use that cover the entire field of urban management (town planning, network and infrastructure management, land management, transport, environment, etc.): 1) to acquire, structure, manage, and update geographic data, and 2) to analyse, formalize, and spread (in graphic or cartographic form), which is to say to generate and share representation. This is precisely the reason that GI and GIT are so pivotal. GIT generates and conveys space representation; it is, in a way, the expression of the relationship between a society (of which they are the product) and its territory (of which they have to be the reflection), while having the ability to modify these relationships. Therefore, the choices made by local governments in this field are of major consequence, and the stakes are quite high. The ability of local governments to integrate and master these technologies (especially the data they could process) and their capacity to meet social requirements in this field are decisive with regard to the territories involved. Conversely, the non-mastery or the impossibility to have access to these tools, questionable choices, or abortive thoughts can lead to marginalization of the local actors (Roche 2000). The dialectic is similar at the level of the individual and the social group.

In actual practice, however, national decision-makers struggle to make use of the necessary means to face these new obligations. There is a discrepancy between what is said regarding the usefulness of GI and GIT at the highest level of national decision-makers versus what is actually done by the various ministries and administrations to ensure the diffusion and use of GI and GIT down to the local level.

The pattern described by Argyris and Schön explains this situation. They define a difference between the theory espoused (what we profess about our way to act regarding technology) and the theory in use (what our real actions and methods on the field reveal about our way to act and our representation). Argyris and Schön (1978, 1995) showed that there is often a contradiction between the two theories. This decoupling between the two

levels (theory espoused and theory in use) limits the potentially positive effects of technology. Indeed, while it is important to assess the overall social efficiency of a technology, it is less the actors' commitment in principle to it than the ordinary use of technology in the field.

In reality, GI is still not considered a major stake in planning activities by the French State, even by the most involved ministries, although GI stands out at the local level as providing an answer to the stakes induced by the public policies. For instance, France must face recurrent crucial problems of dissemination and public access to GI (Sureau 2001), particularly related to data pricing and data sharing as mentioned in the Lengagne Report (2000) or in different report studies from the Centre National de l'Information Géographique (CNIG) (<http://www.cnig.fr>). The problems of pricing and dissemination constitute a real slow down in the use of GI by citizens (and even by local authorities of the smallest communities). Actually, these problems affect not only GI, but also every type of public sector information (e.g., census data provided by the Institute National de la Statistique et des Etudes Economiques (INSEE)). Other political questions regarding the use of GI are linked to the overlapping of various levels of decision making. This situation gives rise to disagreements in such areas as power conflicts and competency conflicts.

It is quite clear that this situation must be studied more closely, especially concerning the impact of legal and institutional evolutions on the increase in various forms of participatory approaches inside the local governments. In the middle and long term, it will be interesting to analyse the social and spatial consequences of consultation and public participation in local planning in France. However, in the short term, there must be a better understanding of the new needs of local governments (and also citizens) regarding the access and use of GI. This is probably why the main French research funding organisations recently developed specific new programs.

Responses from Research Funding Organisations

ICTs, Information, Space, and Society: The Latest Research Programs

Because of the societal evolutions mentioned above (especially those related to spatial organisational, environmental, and planning issues and information society issues), the major French research funding organisations have developed a new program specifically to encourage research focusing on the study of the relationship between information and society. Three of these programs are presented below because of their strong links with problems at stake regarding access to GI and public participation.

First, a call for tenders "ACI-Ville" (Action Concertée Incitative) in the Spring of 2001 from the French Ministry of Research and Technologies asked questions about the effects of diffusion, implementation, and appropriation of ICTs to social

and spatial features of urban areas (<http://www.recherche.gouv.fr/recherche/aci/villeb.htm>). This program is organised around four main axes. Three of these axes are related to the issue discussed in this article:

- The societal implications of ICTs, in particular the way in which differing abilities to access and use information among local communities could produce social segregation and/or spatial differentiation. For example, research is encouraged to get a better understanding of why some people access information and integrate it into their everyday life and why others do not.
- Technical networks and their implications on town management, planning, and services offered to citizens by urban local government.
- The problems at stake with the concept of citizenship and its evolution according to public policy modifications and the new functioning of the civil society. Critical analyses of new forms of urban governance and local democracy have been primarily supported.

Even though there is nothing explicit in the program about GI and associated technologies, it is quite clear that most of the problems at stake mentioned in the call for proposals could be applied to geo-information and, more precisely, to public participation using GI. Generally speaking, this call strongly encourages research proposals based on interdisciplinary teams aiming at developing international and cross-cultural comparative research or critical analyses of foreign experiences, and at comparing it to the French context. The call for tenders assumes a general lack of interest for this question by the French research communities compared with other European or North American countries.

Second, another call for tenders was made in the Fall of 2001 by the French Research Council (<http://www.cnrs.fr/cw/fr/prog/index.html>) and more precisely by the new research directorate, which was created in 2000, entitled STIC (Sciences et Technologies de l'Information et de la Communication). This call for tenders is named "Programme Interdisciplinaire: Société de l'Information" (STIC-SHS). The program seeks to anticipate the usual steps of the actual technological revolution – technological rupture, technical innovation, new economic organization, evolution of the practices and use, and social and political reconfigurations – by including researchers from the human and social sciences (SHS) and ICTs (STIC) from the very beginning in the phases of technical innovation in order to bring people into the loop of technological innovation. This will help create the bases for durable interdisciplinary research, allowing a certain form of control on these evolutions. This program consists of three research axes:

- The first is dedicated to the problems at stake regarding knowledge and multimedia content management, especially when it is a question of working on data warehouse and data mining.
- The second is the largest and focuses on interaction between people and information systems. This area emphasises the

social interactionism paradigm (Campbell 1999).

- The third encourages research aimed at building an information economy and society. One of the five identified issues of the second axis is entitled "Geographic Information." Next, proposals focusing on data quality, simulation and modelling, spatial analyses, and research proposals studying social interactions between human and geo-information are supported.

Third, in November of 2001, the French Ministry of Environment and Land Planning launched a call for proposals entitled "Concertation, Decision et Environnement (CDE): Quelles Places et quels Impacts pour les NTIC?" (<http://www.environnement.gouv.fr/actua/proposit/2001/concertation-decision-envir-ntic.htm>). This program shows interest in various questions such as: How do ICTs impact the role and relationship between stakeholders? To what extent could public concerns and reactions be better taken into account using ICTs? To what extent could ICTs modify access to information by citizens and local communities? How is information about environmental issues appropriated by citizens and local communities with ICTs as intermediary?

All of these programs are quite new in the context of French research. It is interesting that, even though geo-information is not directly at the heart of the program (except for CNRS), the main questions and issues are strongly linked with public access to information (and GI is a particular kind of information) by using ICTs (and GIT is a specific type of information technology) in order to improve public participation approaches.

Evolution of the French Research Network in GI Sciences – GDR SIGMA

The most specific geo-information research being done in France is led by some members of the French Research Network CASSINI/SIGMA. The new version of the CASSINI, called SIGMA (Geographic Information Systems, Methodologies and Applications), was begun in 2000 and is headed by Robert Laurini and Pierre Dumolard. It is attached to the new department of "Sciences and Technologies for Information and Communication" of the French National Research Council. SIGMA is a network of 17 computing labs, 22 labs in Geography, 3 additional labs, and 8 other public research organizations. The research initiatives of SIGMA are organized around five main themes: Theme 1: Management of Environment; Theme 2: Spatial Analysis; Theme 3: Quality; Theme 4: Interaction; and Theme 5: GI Systems and Mobility (<http://www.univ-lr.fr/cassini/>).

Theme 4 includes questions about visualization, interaction, cooperative decision making, and participation GI systems; it also considers problems at stake relating to human, cognitive, and social aspects of decision making as important issues and intends to take this into account so as to be able to design and develop more relevant GI solutions to support public participation. This point is quite new compared with CASSINI, which was totally technically oriented. The other new point is the explicit reference

made to the concrete environmental and land-planning context. SIGMA tries to have closer links with real-world applications (e.g., urban planning approach created by SRU), which seems quite important for the relevance of research at this time, as mentioned by Carver (2001).

Only a few studies and research works have been produced in France on the GI (and GIT) diffusion and appropriation process during the last 10 years (e.g., Miellet 1996, Pornon 1997, Roche 2000). Most of these works essentially concern experts (technical and planning professionals or elected representatives) and none is really interested in the relationship between population and GI. It is definitely time to make progress on this issue...

Key Points To Link The Potential of Societal Evolution and GI

This part of the article intends to underline research questions, according to the French situation, aiming at linking more relevant societal evolution and potential of GI in a “social interactionism” point of view. The text focuses on human and social issues regarding access to GI and the participatory approach, and avoids the technical issues. It deals more with “GI and Participation” than with “GIT and participation.”

GIT and the Participatory Approach: An Impossible Marriage?

On the one hand, according to the low level of maturity of local communities and citizens regarding GI expertise and training (especially in France), and on the other hand, the complexity of even the simplest GIT (e.g., Web-based GIS), a marriage between GIT and public participation (that is, making GIT usable by non-professionals including citizens) seems to be unrealistic in the short term and probably in the middle term. Carver (2001) gave some very convincing evidence of this. Carver explained that the few examples of existing participatory approaches directly using GIT are prototypes, and most of the time they are carried out by scientists (e.g., Public Participation GIS from the United States). Typically, in France, even when local organisations are equipped with GIT, technology is not directly run to improve public participation.

With this in mind, and with the need to improve citizens' awareness and give them access to GI and teach them to use it properly for public participation, we need to find solutions that are not only (and necessarily) technically oriented.

GI for (to Improve) Public Participation: The Process is the Result

To allow oneself to spend a lot of time and effort to increase public participation, citizens or local communities must have the ability to integrate information (and especially GI in the case of planning issues) into their own way of thinking and behaviour. To reach this complex aim, in addition to access to information, there must

be access to the knowledge required to interpret the information and possibly (for, in my opinion, it is not necessary) to accede to tools to analyse and manipulate the data (either directly or mediated via facilitators), to finally have access to power (the ability to participate in GI). Citizens must also understand GI (which is probably the most difficult task) and be able to use it in the end. At this period of time, I am not sure that this long and complex process is realistic. My hypothesis is that a missing link exists in those who do not have enough expertise and training in GI; this knowledge can only be acquired through participation using GI. Actually, this problem is not specific to GI. Indeed, the question relating to citizens' ability to have access and to understand information crops up regardless of the type and nature of information. However, since it has to do with the problem of land planning and management, the spatial dimension raises specific questions: on the one hand, questions linked to the difficulty to formalize and to represent information (which also goes back to the spatial cognition problem) and, on the other hand, questions linked to the citizens' culture (the latter usually having no cartographic culture, and to have recourse to this type of representation raises specific problems).

Looking at research about GI and society, we can assume that GI is the result of a complex process of social construction characterized by various forms of involvement, adoption, and use (Harvey and Chrisman 1998, Roche 1999, Harvey 2000). Following Harley's works, Crampton (2001) threw light on this social mechanism by focusing on maps. Talking about this issue, Crampton wrote that there is “an epistemic break between a model of cartography as a communication system, and one in which it is seen in a field of powers, between maps as presentation of stable, known information, and exploratory mapping environment in which knowledge is constructed.” To me, what seems very relevant for the issue of public participation using GI in this social construction paradigm is the idea that, actually, the process is the result. By itself, GI as a result (paper or digital maps, graphical models of simulation, etc.) is not important. However, the way in which people can interact (being their own GI producers) is very important. The more that citizens are involved in the construction process of GI (e.g., useful for a specific decision-making problem regarding planning), the more that they can participate in the decision making. On the French side, Lardon et al. (2001) recently explored the role of spatial representation (in the largest meaning, cognitive as well as physical) for land planning and development. These authors considered spatial representation (produced from GI) as intermediate objects that are used for the translation of phenomena in facts, of practices in acts, reasoning in actions, and for the mediation between stakeholders with divergent interests or levels of intervention a priori incompatibility. The problem of spatial representation emphasises the fact that even though GI has many points in common with public sector information, in general it reveals specific particularities.

Carver (2001) wrote in a position paper that “... different stakeholders may hold different world-views leading to focus on different aspects of the available information. This leads to

different perceptions and attitudes to the decision problem and clearly affects the ways in which different people participate in the decision-making process.” In the French context, research based on local case studies has already demonstrated the important role played by varying perceptions and cognitive representations (Denis 1994, 1997, Pornon 1997, Roche 1999) to the way in which people accede to GI, use it, and finally agree (or not) to modify their own behaviour regarding planning activities.

This research confirms the emergence of a new paradigm: the human medium, which was mentioned by Roche (2000). Indeed, planning projects are deeply grounded in a complex process of relationships between people and space (in particular, through spatial perceptions). Citizens and local communities (as well as elected representatives) who do not use GI technologies directly can only mobilise it if it is transmitted and/or accompanied by the human medium. The latter presents and clarifies GI according to the specific local context features and constraints of the decision-making process. This human medium is actually the missing link in the process of social construction of GI; it is likely that this is what is needed to improve awareness by citizens and to allow them to participate by accessing, understanding, and using GI (Roche and Hodel 2001). With this assumption, the message is only the direct information, but also the human medium who presents the information. The human medium is a kind of GI animator and facilitator who knows about the specifics of the local context (social, spatial, human, institutional, etc.) as well as about GI issues. Furthermore, the human medium must be a mediator in order to translate interests and specific world views of each stakeholder in GI that are understandable by all (a reference to Latour’s works, already exploited by such GI scientists as Harvey and Chrisman (1998)).

Toward a Research Proposal...

Even though research has been carried out or is still in progress on Public Participation GI, especially regarding the French context, according to issues mentioned above, there is a real lack of knowledge about GI. Few studies take into account the social stakes noted at the beginning of this article: new prospects for inter-municipal cooperation and public participation or, more specifically, new planning of legal evolutions. In most cases, research focuses on the analysis of the organizational stakes and does not discuss the socio-spatial component of these phenomena. In this direction, even studies on the effects of Public Participation GIS do not really apprehend social differences in their spatial dimensions (Craig et al. 2002). The few French authors dealing with social construction of GI are often more interested in professional stakeholders (technicians, developers, elected officials) than in citizens or local communities, or in the human medium as a specific stakeholder. With some exceptions, research already carried out had been achieved in an Anglo-Saxon scientific, social, cultural, technological, etc., context (especially the United States). Therefore, a critical analysis and a review of the research in the French context is needed.

Appropriation	<ul style="list-style-type: none"> Deals with the nature of the real use and practices made of technology by the actors concerned, and with their training means (discovery step → utilisation training step → step of transformation of the norms and practices). However, appropriation also has to do with the level of the actors’ support and with what they say about their doings or about what they would like to be doing with technology. (theory espoused versus theory in use).
Representation	<ul style="list-style-type: none"> Deals with the impact (transformation) induced by the use of GIT (particularly the use of GI, of physical spatial representations) on the actors’ cognitive spatial representations – and their knowledge (understanding) of local problems. Reciprocally, cognitive spatial representation constitutes factors that influence the appropriation of GIT (cognitive spatial representation versus physical spatial representation).
Participation	<ul style="list-style-type: none"> Deals with the consequences of the preceding phenomena on the functioning of local life and on the ability of local actors to mobilize themselves and to react to the interactions born from the development of socio-technical systems (the integration effect versus the marginalization effect). Participation is analysed here as a process centred around four steps (information: to inform citizens; consult: to ask them their point of view; dialogue: to start a contradictory debate; and cooperation: to make a decision through dialogue).

Figure1: Research concepts

These facts raise essential problems. The first has to do with a lack of knowledge of the real contribution yielded by GIT to the dialogue between those involved in town planning and public participation. It goes back to the varying abilities of citizens to access the new media as well as to the information that the media are intended to supply them with. The second problem concerns the social and spatial consequences of these phenomena within local governments. The problems that emerge are those of social differentiation and of spatial rebuilding. The research project is centred on an analysis of public participation relating to town planning and the social appropriation forms of GIT. The question of the relationship between cause and effect regarding the differing abilities of appropriation of GIT and the level of citizens’ participation is raised. The effects of these phenomena on the forms and practices of urban democracy and governance, and of socio-spatial differentiations, are at the heart of the suggested reflection. Six specific research questions arise from this around which the projected reflection centres:

- QR1: What are the various forms of social appropriation of geographic information (and possibly associated technologies) by citizens?
- QR2: What are the determining factors of these forms of social appropriations (cognitive, social, geographical, cultural...)?
- QR3: In what respect does the recourse to GIT modify the citizens’ perception, and more precisely, in what respect do they help citizens to better understand local problems regarding management and planning?
- QR4: What are the forms of interaction and participation supported by GIT?
- QR5: What are the real effects concerning the recourse to GIT to support the systems of public participation?
- QR6: Could we characterize the human medium and formalize this role? What kind of new professional could this person be? What kind of specific training is needed to create such a specific geographic information professional?

To improve these questions, it seems relevant to carry out comparative case studies (taking into consideration cultural, political, social, and spatial dimensions involved in GI) from the local to the national scale. This case-study research should be based on a theoretical framework built around three fundamental concepts: Appropriation, Representation, and Participation.

Conclusion... To Continue...

In this article, we show how the evolution of public policies on the French territories will shape a new context for land-planning activities that are oriented more toward cooperation between different levels of local government and more public participation. This evolution has taken place at the same time as the increased use of ICTs; many local governments considered ICTs to be the relevant tools by which to achieve their new mandates and, particularly, geographic information technologies.

Nevertheless, the potential role of GI and associated technologies for public participation is not clear. There have been few studies or research in France reviewing this problem. To encourage research proposals dealing with GI and participatory approaches, the main institutional French Research Councils have developed calls for tenders. In this context, we developed a proposal aimed at better understanding the relationship between social appropriation (especially variables that influence this adoption) of GI by different categories of stakeholders and their levels of public participation. This proposal has been funded by the French Ministry of Research and Technologies (ACI-Ville) and CNRS (STIC-SHS). Our 2-year project was started in February 2002 and will be based on case studies (mainly in France) with comparison to the United Kingdom and North America.

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Footnotes

- 1 More simply, the article specifies that all land-planning developments carried out by public or private organisations have the obligation to lean on cartographic documents geographically linked to the national geodesic referential (Lambert).