Proceedings of the 6th AGILE
April 24th-26th, 2003 – Lyon, France

LOCAL DATA POLICIES AND NSDI : COMPLEMENTARITY OR ANTAGOSISM?

Stéphane Roche

CARTA - CNRS UMR ESO, Université d'Angers, 35 rue de la barre - F49000 Angers, e-mail: stephane.roche@univ-angers.fr

Claude Caron

Laboratoire de GéoBusiness, Département SIMQG, Faculté d'administration, Université de Sherbrooke, Sherbrooke (Québec), CANADA, J1K 2R1, e-mail: ccaron@adm.usherb.ca

1. INTRODUCTION

Issues related to access public sector information, particularly to geographic information are nowadays crucial for all kind of local governments. In this context, the work leaded by the French National Council for Geographic Information that aims at building a national large scale geodata infrastructure (Référentiel à Grande Echelle – RGE) is fundamental for the French Spatial Data Infrastructure (SDI) project.

Nevertheless, for those of local governments which are already involved in GI activities, the RGE project actually seems too slow and complex. Therefore, some of them have in parallel launched their own local data policies in order to build a kind of local spatial data infrastructure (LSDI).

This phenomenon raised some questions related to the relationships between local and national data infrastructures, more specifically about their complementarities or antogism. To what extend the LSDI could contribute to build the basis of a NSDI? Is it possible to link the bottom-up approach developed by local governments, typically grounded within local specificities, with the top-down oriented approach of the NSDI project?

Some other relevant questions are also raised about the LSDI projects themselves? What are the local factors that contribute to the success of a LSDI project? What could be the benefits of a LSDI project, in terms of GI (and T) adoption by local governments (municipalities and inter-municipal organisations for instance)?

These questions constitute the departure point of the research project presented in this paper. This project based on two master thesis researches was funded by the regional scientific program in social and human sciences (2H2S program). More practically, this paper aims at identifying and better understanding at the local (départemental) level the actors network involved in LSDI, and secondly, analysing the level and type of connections between LSDI and NSDI.

2. THEORETICAL FRAMEWORK AND RESEARCH METHODOLOGY

The research presented in this paper is essentially based on a theoretical framework grounded on two literature branches: the diffusion and adoption of geospatial technologies (GIT), and the development of spatial data infrastructures.

Actually, this research deals with the diffusion and adoption of geospatial technologies and information itself at the local level. The theoretical framework which has been developed in order to achieve this research is strongly linked to the work conducted by Onsrud and Pinto (1991) and, Campbell *et al.* (1996). We assume here, for instance, that the local (organizational) context shapes the GIT diffusion process. About the adoption of GIT, researches about organisational issues are central to this study (Caron 2000, Masser and Campbell 1995, Roche 2000 for example).

The theory of adoption developed by Argyris and Schôn are also really relevant to the way we have followed to explore the research questions mentioned above. Argyris and Schôn (1974 , 1978 in particular) distinguishe the "theory espoused", that formalize what people say about their way of choosing and acting, versus the "theory in uses", that formalize the people's real practices in the everyday life. Argyris and Schôn's works show that most of the time these two theories are contradictory. This contradiction between these two levels (adhesion versus practical use) limits the social impact of technological adoption. The most relevant in order to evaluate the real role of GIT is not only the engagement of principle of actors, but rather the real use of technology in the everyday life.

This research also deals with the spatial data infrastructure issues. More precisely, the data policy component of SDI is quite central to the work presented in this paper. Close to the global studies leaded by Masser (1999) or Onsrud (1998), the survey made by Francis Harvey (2000) has constituted a very good basis for our research.

The methodology used for this research is based on two comparative case studies: one into the "département de Maine et Loire" (Ray 2002), and the other into the "département de la Vendée" (Rosa 2002). These two "departments" are located in the western part of France, in the administrative region called "Pays de Loire".

In order to achieve our research aim, we consider that these two cases create a very relevant research context, mainly because they have two major differences. First, these "departments" are very different in their geodata policies. In Vendée, the VIRGIL project (a kind of LSDI) has been launched for at least seven years (Roche and Humeau 1999), in order to make available digital geospatial data all over the department. A specific GI group (task force) has been created in the organization to help local governments in their own GI project and, to ensure more cooperation, more consistency and interoperability capabilities. On the other hand, in the "département de Maine et Loire", even if a lot of local governments have built their own GI project, there was neither coordination nor cooperation between all of them. Secondly, the two case studies are very different in their spatial organisation. The "département de Maine et Loire" is centred on the agglomeration of Angers (about 250 000 inhabitants), and a few middle towns with polarization effects. Quite differently, the case of the Vendée is a rural area with only a few small towns, without any strong polarization effects. Thus, in order to acquire GI technologies, most of the local governments in Vendée need help (financial, logistical or technical support). This fact has made us able to identify the role of spatial and political context in the diffusion and adoption of GI technologies, as well as the factors that influence LSDI development.

These two cases have been studied between February and June 2002, using the same research framework and methodology. A first round of interviews has been made with the mains actors at the departmental level (data producers, political elected, consultants, land surveyor, etc.). At the same time, an exhaustive survey of local governments (municipalities and inter-municipal structures) has been made. After that, another round of interviews have

been conducted with people especially involved at the local government level (six sub-case studies have been realized).

3. A FEW FINDINGS…

This research allowed us to better understand some of the factors that influence the development of a LSDI. The most important factor is undoubtedly the existence of a local politician involved in GI. For instance, in the case of the Vendée, the deputy Caillaud, who is well known in France by the GI sector, has carried out the VIRGIL project since its beginning. His motivation and personal investment in the project have been key factors for the success of the LSDI project. The characteristics of the geographical context are also a determinant factor for the success of a LSDI project. To be efficient, this kind of project has to be conducted in a non-conflicting political context, on a quite coherent spatial organization (without to much polarization for instance), and on a balanced distribution of power all over the local territory.

Once a LSDI development project is completed, a good connection between the local data policies and the national one may be observed. In the case of the Vendée, the local data policies (normalization, pricing, metadata specification, etc.) include the recommendations developed by the CNIG (Conseil National de l'Information Géographique). The data available in Vendée will be easily RGE (Référentiel à grande échelle) compliant for example. However, in the case where not any LSDI approach is developed, as in the case of Maine et Loire, even if there are some quite important GI projects, there is a lack of coherence and cooperation. In this context, we observe a huge gap between the NSDI specifications and the local applications for the different projects. For example, the DDE (Direction Départementale de l'Equipement) in Maine et Loire, the local administration that represents the Ministry of housing and transportation developed a cadastral data digitizing strategy that is totally different from the national specifications of the CNIG and the DGI - Cadastre (Direction Générale des Impôts, services du cadastre), the French National Cadastral Agency.

In all cases, even when a LSDI approach helps local governments in developing GI projects and allowing them to acquire data, technologies, and human expertise, we observe a gap between, on one hand, what people and organisations say about their level of practice of GI (theory espoused) and, on the other hand, what they really do in daily activities (theory in uses). In the specific domain of GI, our grounded observations nowadays valid what was proposed twenty-five years ago by Argyris and Schôn.

The findings of these two case studies show to what extend the development of a real local data policy (through the VIRGIL project for instance) could efficiently contribute to the very new French SDI initiative. The VIRGIL project could be considered as a large scale experimentation of the future SDI. From this perspective, an effective local data policy appears to be a fundamental component of a more global NSDI. Nevertheless, some other local initiatives could also be in real opposition to the development of a NSDI. The example of "Maine et Loire" is interesting because it shows how the NSDI orientations and the local interpretations could be in opposition. Based on this experience, local data policies and NSDI appears to be more antagonists than complementary.

4. BIBLIOGRAPHICAL ORIENTATION

[1] Argyris, Chris et Schôn, Donald. 1974. Theory in Practice. San Francisco: Jossey-Bass.

[2] Argyris, Chris et Schôn, Donald. 1978. Organizational Learning: A Theory of Action Perspective. Reading, Mass, Addison-Wesley.

[3] Campbell, Heather and Ian, Masser. 1995. GIS in Organizations: How effective are GIS in practice. Taylor and Francis, London.

[4] Campbell, Heather J. 1997. "44-Institutional Consequences of the Use of GIS". Geographical Information Systems – Volume 2 – Management Issues and Applications. Second Edition, Edited by P.A. Longley, M.F. Goodchild, D.J. Maguire, & D.W. Rhind, John Wiley & Sons, New York, pp.621-631.

[5] Caron, Claude. 2000. Les projets de géomatisation : contexte social et organisationnel. Revue Internationale de Géomatique. Volume 10. No.2/2000. pp 167 – 192.

[6] Didier, Michel. 1990. Utilité et valeur de l'information géographique. Ed. Économica, Paris.

[7] Harvey, Francis. 2000. Potentials and Pitfalls for Vertical Integration for the NSDI, Final Report of a Survey of Local Government Perspectives. http://www.tc.umn.edu/~fharvey/research/nsdi.html

[8] Masser, Ian, Heather, Campbell and Massimo, Craglia (eds.). 1996. The Adoption and Use of Geographical Information Systems in Local Government in Europe. GIS DATA 3 Series, Taylor and Francis.

[9] Masser, Ian. 1999. All shapes and sizes: the first generation of national spatial data infrastructures. International Journal of Geographical Information Science. 1999. Vol. 13,

[10] Nedovic-Budic, Zorica. 1997. GIS Technology and Organisational Context: Interaction and Adaption. In Geographic Information Research "Bridging the Atlantic" Edited by Massimo Craglia and Helen Couclelis. Taylor and Francis.

[11] Onsrud, Harlan J. and Jeffrey J. Pinto. 1991. Diffusion of Geographic Information Innovations. International Journal of GIS, vol. 5, no. 4, pp. 447-467.

[12] Onsrud, Harland J. 1998. A global survey of national spatial data infrastructure activities. Web Site constantly being upgraded. http://www.spatial.maine.edu/~onsrud/gsdi/surveysum.htm

[13] Ray, Annabelle. 2002. Les Systèmes d'Information Géographique dans les collectivités locales en Maine et Loire : entre isolement et effervescence, Maîtrise de Géographie, Université d'Angers (dir. S. Roche).

[14] Roche, Stéphane et Jean-Baptiste, Humeau. 1999, GIS Development and Planning Collaboration: a few examples from France. Journal of Urban and Regional Information Systems Association, vol.11, n°1, pp. 5-14.

[15] Roche, Stéphane. 2000. Les enjeux sociaux des systèmes d'information géographique. Préface de Nicholas Chrisman. Collection géographie sociale (Paris, France) Paris : L'Harmattan ; Montréal : L'Harmattan Inc.

[16] Rodriguez, Orlando. Roche, Stéphane. Brochu, François. Caron, Claude. Chevallier, Jean-Jacques. 2002. Établissement de la valeur d'une infrastructure d'information géospatial selon la perspective de l'interactionnisme sociale. Actes de la 95e conférence annuelle de l'ACSG sur la géomatique. Juillet 8 au 12, 2002. Ottawa, Canada.

[17] Rogers, Everett M. 1983. Diffusion of Innovation. 3er edition. The Free Press, a division of Macmillan Publishing Co., Inc. New York.

[18] Rosa, Cathy. 2002. Les SIG dans les collectivités locale en Vendée : vers le développement d'une infrastructure départementale d'information géographique, Maîtrise de Géographie, Université d'Angers, (dir. S. Roche).

[19] UCGIS. 1998. Research Priorities Revised White Papers: The future of the spatial information infrastructure. University Consortium for Geographic Information Science. http://www.ucgis.org/research_white/infra.html

[20] Williamson, Ian. Chan, Tai On and Effenberg, Wofgang. 1998. Development of Spatial Data Infrastructures: Lessons learned from the Australian Digital Cadastral Databases. GEOMATICA Vol. 52, No. 2, 1998, pp.177 – 187.