

# Reconceptualization of User is Essential to Expand the Voluntary Creation and Supply of Spatial Information

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## INTRODUCTION

Recently, we have begun to witness a growing interest in individuals to create and share spatial information through a number of initiatives akin to (formal) spatial data infrastructure (SDI). Some of the examples of these SDI-like infrastructures are Google Earth, Google Map, Common Census, a design exercise in Second Life, wikimapia, openStreetMap (Goodchild 2007; Tulloch 2007). While use of formal SDIs is not encouraging (Nedovic-Budic et al. 2004; Harvey and Tulloch 2006), the emerging SDI-like infrastructures are receiving overwhelming responses from the user community. There is a notion that those who are close to a particular spatial phenomenon have the richest spatial knowledge (Carrera and Ferreira 2007: *Under Review*), and therefore it needs to be captured and utilized. This is increasingly being facilitated by technological development. The potential is promising enough that researchers now call to explore the role of individuals in augmenting the automated means of spatial data collection (Goodchild 2007). However, there are several issues around this emerging trend; one of them is our conception of user.

Within the spatial data community, users have typically been viewed as passive recipients of spatial information. Often referred to as '*end-users*', a term reflecting their marginalized role, they merely receive and use providers' offerings. For instance, national mapping agencies (NMAs) collect spatial data, design maps and then distribute to users. In this process, providers make two assumptions: first, their products/services satisfy users' needs; second, which follows from the first, users employ these products/services in congruence with the providers' intent. This legacy view of the user has continued with the SDIs. Although there have been calls to involve different stakeholders, including users, in the SDI development process (Puri 2006; Craglia and Annoni 2007), these calls are aimed, at best, to ensure the optimum use of what is provided through SDI; efforts to capture the enormous amount of spatial information users already possess, or which they can create, are still missing. The development process thus ignores the funds of knowledge (Moll et al. 1992) held within communities of users and consequently, achieves far less than it might.

The opinion of general public, as Dewey (1954) observes, is often amorphous and unarticulated. In many cases, this is misunderstood as if such opinions do not exist at all. In fact, the silent mass participates meaningfully in discourse under certain circumstances. For instance, people make meaningful contribution in the event of natural disaster and demonstrate how much they care to those whom they do not even know. We continue to observe that people spend hundreds of their precious hours voluntarily in open-source software development. These examples imply that it is possible that individuals serve as the potential source, at least to supplement other sources, of spatial

information, provided that the conditions under which humans are willing to do so are understood and successfully created.

The primary reason why individuals provide free answers to queries in open-source development is that providers receive valuable information, which enhances their own learning (Lakhani and Hippel 2003). Among others, enjoyment of the work itself and reputation have been the motivating factors to some voluntary contributors (Lerner and Tirole 2002). Although fuller review is beyond the scope of this paper, these experiences are useful at least for our initial understanding about why people might be interested to create and share spatial information.

Hippel (2007) shows that users frequently innovate technologies as they are used. One of the reasons why users innovate is that they can create “precisely what they want, rather than being restricted to a set of options on offer that have been created by others” (Hippel 2007, p-310). In the innovation process, users create a network, which Hippel (2007) calls users innovation network, and argues with illustration that users have sufficient incentives to form such a network. In a similar study, Eglash (2004) challenges the traditional one-way production-supply-use view of technology. He discusses several possible routes of technology use along the production-consumption axis: reinterpretation (change in semantic association only), adaptation (change in semantic association and use), and reinvention (change in semantic association, use and structure).

There are several other studies which underscore to shift from supply- to use-centered information services (Dervin and Nilan 1986; Dervin 1989; Bruce 1993). The central tenet of all these arguments is that user needs to be assigned a larger role. This implies that the very notion of user be reconceptualized from passive recipient to active actor. This seemingly small shift in our conception of user brings potentially large change in the way we create, provide and share spatial information. I argue that such a reconceptualization is essential to sustain and expand the enthusiasm currently being demonstrated by individuals in the creation and supply of spatial information.

## **REFERENCES**

Bruce, B. C. (1993). Innovation and Social Change. Network-based classrooms: Promises and realities. B. C. Bruce, J. K. Peyton and T. W. Batson, Cambridge University Press, NY: 9-32.

Carrera, F. and J. Ferreira (2007). "The Future of Spatial Data Infrastructures: Capacity-building for the Emergence of Municipal SDIs." International Journal of Spatial Data Infrastructures Research.

Craglia, M. and A. Annoni (2007). INSPIRE: An Innovative Approach to the Development of Spatial Data Infrastructure in Europe. Research and Theory in Advancing Spatial Data Infrastructure. H. Onsrud. Redlands, ESRI Press: 93-105.

Dervin, B. (1989). "Users as Research Inventions: How Research Categories Perpetuate Inequities." Journal of Communication **39** (Summer): 216-232.

Dervin, B. and M. Nilan (1986). "Information Needs and Uses." Annual Review of Information Science & Technology (ARIST) **21**: 3-33.

Dewey, J. (1954). The public and its problems., Athens, OH: Swallow Press.

Eglash, R. (2004). Appropriating Technology: An Introduction. Appropriating Technology: Vernacular Science and Social Power. R. Eglash, J. L. Croissant, G. D. Chiro and R. Fouche, University of Minnesota Press: VII-XXI.

Goodchild, M. F. (2007). "Citizens as Voluntary Sensors: Spatial Data Infrastructure in the World of Web 2.0." International Journal of Spatial Data Infrastructures Research **2**: 24-32.

Harvey, F. and D. Tulloch (2006). "Local-government data sharing: Evaluating the foundations of spatial data infrastructures." International Journal of Geographical Information Science **20**(7): 743–768.

Hippel, E. v. (2007). "Horizontal innovation networks—by and for users." Industrial and Corporate Change **16**(2): 293-315.

Lakhani, K. R. and E. v. Hippel (2003). "How open source software works: “free” user-to-user assistance." Research Policy **32**: 923-943.

Lerner, J. and J. Tirole (2002). "Some simple economics of open source." Journal of Industrial Economics, **50**(2): 197-234.

Moll, L. C., C. Amanti, et al. (1992). "Funds of knowledge for teaching: Using a qualitative approach to connect homes and classrooms." Theory into Practice **31**(2): 132-141.

Nedovic-Budic, Z., M.-E. F. Feeney, et al. (2004). "Are SDIs serving the needs of local planning? Case study of Victoria, Australia and Illinois, USA." Computers, Environment and Urban Systems **28**(4): 329-351.

Puri, S. K. (2006). "Technological Frames of Stakeholders Shaping the SDI Implementation: A Case Study from India." Information Technology for Development **12**(4): 311-331.

Tulloch, D. L. (2007). "Many many maps: Empowerment and online participatory mapping." First Monday.