Chapter XL
DL and GIS:
Path to a New Collaboration Paradigm

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ABSTRACT

A new collaboration paradigm is in order between Digital Libraries (DL) and Geographic Information Systems (GIS). These important Information Technology (IT) fields have witnessed great progress in the last few years, only to be surpassed by even greater expectations. Nonetheless, this extraordinary advance has come at a cost: the very proliferation of different representation formats, proprietary standards, protocols and platforms in which information is published or served is hindering the further development of these fields. One discouraging and generally ignored aspect of this situation is that both DL and GIS practitioners have been trying to deal with these problems in an isolated fashion, blind to each others' achievements and approximations. The result is a lack of synergy and duplication of efforts. In this chapter, the authors share their experience in the GIS field to propose a collaborative approximation to solve some of the most recurrent problems both in DL and GIS.

INTRODUCTION

In 1938, H.G. Wells—the English novelist famous for his works in science fiction—envisioned a world encyclopedia in which all human knowledge would be available for everyone, a "complete planetary memory for all mankind." Pretentious as it was at the time, nowadays, that exciting dream is within the reach of our hands. Nonetheless a lot of arduous work remains to be done as it is indicated

by the recurring frustration of many users of DL and Geographic Information (GI) services. The proliferation of different representation formats, proprietary standards, protocols, and platforms in which information is published or served pose a multiplicity of barriers both to end users and information professionals.

The response to these obstacles should be organization and collaboration. We could be much further along the road to success if only a more constructive and collaborative interrelation among the different IT fields were achieved. If we consider, for example, the case of Spatial Data Infrastructures (SDI), we observe that the research and development of these systems have been performed mostly by researchers outside the DL community, circumstance that in many occasions has led to the oversimplification of library issues. Besides, many advances in the GI domain could be of great help for the DL practitioners. In this contribution, the authors—active practitioners in the SDI field—share some of the lessons learned during architectural design and standardization activities carried out in the GI domain.

BACKGROUND

Digital libraries hold great expectations. Their projected role is to serve as an access point to a vast set of information sources and services: they should offer new opportunities to assemble, organize, and access large volumes of information from multiple repositories. Nonetheless, and according to the Digital Library Federation (DLF) Service Framework Working Group, "the research library community has not yet transitioned to a shared understanding of how a library and its services are organized in an increasingly networked environment" (Dempsey & Lavoie, 2005, p. 1). The primary reason adduced is the weak and inconsistent adoption of interoperability standards.

The DL field is a far embracing one. For example, it is possible to define a digital library that specializes in GI resources. Usually, this kind of digital library is called a geolibrary (Goodchild, 1998). In conjunction with Geographic Information Systems (GIS), geolibraries constitute the technology base for the development of Spatial Data Infrastructures (SDI). The concept of SDI originated in 1994 as the framework for the optimization of the creation, maintenance and distribution of geographic information. The main components of a SDI include data providers, end-users, data networks, technologies, databases and metadata, institutional arrangements, policies, and standards (Coleman & Nebert, 1998).

SDIs, with their integrated geolibraries, could have bridged the gaps between the GI and DL communities. Unfortunately this has not been the case. As was noted by Boxall (2002), "even the recently released Cookbook for Global Spatial Data Infrastructures (GSDI) makes almost no mention of libraries, and those few instances tend to be quaint" (p. 4). Even the activities of ISO TC 211 and other standards development organizations (SDO) tend to involve more nonlibrarians than DL practitioners. This lack of collaboration represents another obstacle on the development of these two fields. A more collaborative relationship could bring about mutual benefits: for example, the transition of SDI to GSDI is a continuous source of valuable know-how which could help DL along the road to a more networked and interoperable environment.

A new collaborative paradigm is called for between the DL and the GI domains, a paradigm whose goal must be to engage research beyond the boundaries of specialized core areas in order to find solutions and strategies that can yield greater knowledge integration and synthesis (Balramand & Dragievi, 2006). There is no need to duplicate effort: librarians can contribute to geography and geographers to librarianship, for we have common goals and similar backgrounds.