

Chapter VI

Geoportals and the GDI Accessibility

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ABSTRACT

The vision of “created once, used many times” has been spread out across the globe through the development of geospatial data infrastructure (GDI) initiatives, including their geoportals. Within the GDI, a geoportal facilitates discovery of and access to geospatial data. This chapter discusses some key considerations for the success of a geoportal in facilitating users to exploit the GDI potentials. The top priority is to offer a usable interface that facilitates visual thinking when users search and browse metadata items. Advanced support to enable geospatial and non geospatial web content integration and to advance group work activities through the geoportal are also considered of high importance.

1. INTRODUCTION

A Geospatial Data Infrastructure (GDI) offers a set of institutional, technical, and economical arrangements for communities at local, national, regional, and global levels to access and use

geospatial resources (data, services, sensors, and applications) in support of decision making processes (Groot & McLaughlin, 2000). This infrastructure is intended to promote, among others, sustainable environment, economic development, better government and disaster awareness.

Geoportals, defined as gateways that facilitate discovery of and access to geospatial resources, have been considered crucial in sustaining the existence of the GDIs (Maguire & Longley, 2005; Nebert, 2004).

Such portals are often a collection of geospatial metadata describing the resources available on which users can decide their fitness for use. The resources here refer to offline data and to what the Open Geospatial Consortium (OGC) distinguish as geospatial web contents, including data services such as Web Mapping Services (WMS), Web Feature Services (WFS), Sensor Web Enablement (SWE) and processing services (WPS). Hence, metadata in this respect are data or an information summary describing the substance, quality, currency, and accessibility of offline data, geospatial Web contents, and services. In addition to improving the accessibility of a large variety of geospatial resources, geoportals can enhance the data exchange and sharing between organizations to prevent redundancy and improve the coordination of efforts in collecting data and offering them via the web.

Through metadata organized in geoportals, users of the aforementioned communities have the possibility to search, for example, road data, or browse, for instance, available WFS in the “transportation” category. Further, they have possibility to load and cascade WMS as well as to access other resources available in the GDI. This chapter will go through the underlying principles of geoportals and afterwards will discuss some key considerations for the success of a geoportal in support of the existence of the GDI.

2. GEOPORTALS: MAKING DATA DISCOVERABLE AND ACCESSIBLE

Geoportals are primarily concerned with providing catalog services (Maguire & Longley, 2005). In this regard, geo information users might have been familiar with some web catalog years before

the rising of the GDI, where they could search for products of earth observations and satellite images through the web sites of specific data providers. In the GDI context, geoportals are functioned not only to publish products (i.e., resources) related to one specific provider, but to publish resources offered by various providers participating in the infrastructure, and to facilitate discovery of and access to the resources. As resources and providers can be very diverse in their content and level of authority, geoportals can therefore be classified as: (a) national or regional geoportals, such as the U.S. Geospatial One Stop – GOS¹, GeoConnections², Inspire Geoportal³ and (b) thematic geoportals, such as Food and Agriculture Organization (FAO) portal⁴, the European Protected Areas portal (Nature GIS)⁵, or Earth-Sun system gateway⁶.

Catalog services facilitate the publication and discovery of collections of geospatial resources, which are mostly offline and online data services. For publishing data, the data providers need to create metadata describing the data and, afterwards, publish them through the catalog client. This registering process can be done either by manual inputs or metadata harvesting. The metadata to be published should be encoded as a specific standard-conformant metadata (e.g., using ISO 19115 standard). For data discovery, the catalog services are equipped with tools to query and present metadata records as users initiate searches for data or required services (see Figure 1). The OGC specification for Catalog Services for the Web (CSW 2.0) defines the framework, interfaces, and bindings required for providing catalog services to geospatial community. Currently, several solutions of catalog services based on the CSW 2.0 specification are available (see e.g., Red Spider⁷, Terra Catalog⁸, GeoNetwork⁹).

To find and access the data or map services via geoportals, users must first provide at least one of many possible search terms related to location, attribute or time of the required data. Therefore, the common strategy is to offer users options that ask “where”, “what”, and “when” about the

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