GEOGRAPHICAL COLLECTIONS IN GREEK ACADEMIC LIBRARIES: CURRENT SITUATION AND PERSPECTIVES

Ifigenia Vardakosta and Sarantos Kapidakis
Department of Archive and Library Sciences, Ionian University
Ioannou Theotoki 72, Corfu 49100, Greece
{ifigenia,sarantos}@ionio.gr

Abstract: The paper aims at exploring the existence of geospatial collections and the GIS services in Greek academic libraries through a research in their websites. The initial hypothesis is that Greek academic libraries are not familiar with geographical information and services and therefore they have not developed efficient collections and services for their patrons regarding geospatial data. Thus, a research was conducted in various Greek Higher Education Institutions for departments affiliated with geographic information and the use of GIS and those specific libraries websites were scrutinized for the existence of any geographical collection. The findings indicate that only three academic libraries and one Technological Education Institute's Library offer geospatial information to their users and this specific investigation confirms the hypothesis that Greek university libraries haven't developed geographical collections and services in spite the fact that Greek Universities sustain an efficient number of departments related to the subjects of geography, geology, environmental studies etc. However, these findings should be considered within the wider context of geospatial information in Greece and how this particular kind of information is spread. This is the only available work providing an overall investigation and appoints the lack of digital geospatial collections and GIS services in Greek academic libraries.

Keywords: *geographic collections, geospatial data, academic libraries, digital libraries, GIS services*

Introduction

Geospatial information is vital for economic growth and social interaction and today is recognized as a basic infrastructure of a developed society; knowing where things are located forms the basis of spatial analysis and it has been recognized at the policy level as deserving much attention (Boxall, 2006). The proliferation of digital geographic information publication from the public and private sector and the rapid development of powerful and low cost computers, when coupled with the expansion and popularity of GIS, provide libraries and information services with new challenges and new opportunities. The opportunities for these organizations include the ability to present map information in more dynamic forms than previously possible; the increased information query, the interpretation, and display capabilities; and the access to more current information. GIS technology consists one of the analog to digital material transform that have been occurring in libraries recent years and furthermore a way to provide new services to their patrons (Boisse & Larsgaard, 1995). The intention of the paper is to overview the current situation in Greece concerning the geospatial data collections. Although GIS are used in a great range of applications (Institute for Mediterranean Studies: "Digital Crete", Institute for Byzantine Research: "Byzantine Monuments of Attica" e.a.) in Greece, and a great amount of institutions and information services[1] are using it for providing information services to the public, the implementation in academic libraries[2] has not been developed sufficiently.

[1] Institute for Mediterranean Studies: "Digital Crete" [http://digitalcrete.ims.forth.gr/index.php?l=1], Foundation of the Hellenic World: "Cultural Portal of the Aegean Archipelago" [http://www.egeonet.gr/index_en.html], Institute for Byzantine Research: "Byzantine Monuments of Attica" [http://www.eie.gr/byzantineattica/view.asp?lg=en], etc.

[2] We insist on academic libraries as the type of libraries that first put into practice every new technology.

This article, which constitutes part of a PhD regarding geospatial collection development policies, presents the findings of the research in Greek academic community and attempts to demonstrate the current situation of geospatial data in Greek academic libraries.

4. Literature Review

Larsgaard (1998) reports, geographical collections in US and Canada include maps, air photogtaphs, satellite images, atlases, gazetteers and miscellaneous other materials, while several researches (Kinikin & Hench, 2005; Kinikin & Hench, 2005a; Gabaldon & Replinger, 2006) indicate how the ARL GIS Literacy programme in 1992 was determined for the implementation of GIS services in US academic libraries, although there was a compilation of fundamental aspects that affected libraries in developing geographical collections. A research conducted by authors (Vardakosta and Kapidakis, 2011) to 133 websites of US academic libraries determined that 95 (71%) of academic libraries appeared to sustain GIS services. The increased use of geographic information, was a great motive for numerous researchers to get involved in various projects (e.g. "Alexandria Digital Prototype", "Perseus", "DIGMAP", "INSPIRE", "GEOMIND" e.a.) which developed to use standard internet technologies, such as forms written in the Hypertext Markup Language (HTML), Perl scripts, Java (Toctermann e.a., 1997), investigate the digital gazetteers (Hill, 2000), disambiguate geographical names (Smith & Grane, 2001), and pay special attention in metadata use (Gluck and Lu, 2000; Steinhardt, 2006) and architecture as well (Weaver, 2003). Janee (2009) points out that geospatial information is defined by a number of characteristics which differentiates it from other digital content, Boxall (2006) states that within information science field, policies for such kind information format is a useful tool.

Although in Greece digital collections are rapidly growing up in all aspects of sciences and by different kinds of libraries and organizations, our research indicates that geographical digital collections have not been developed by academic libraries. The research is therefore exploratory and goes some way to address the research gap in how academic organizations have managed their GIS development. Another factor that highlights the uniqueness of the study is that it suggests some specific actions that should be taken and some notable characteristics that should be carefully addressed from any library or information service that wants to provide efficient GIS services.

Methodology and Results of the study

As geographic collections consist a particular kind of information which is expressed with the use of GIS initially Greek universities were investigated in order to locate those ones that offer studies related to Geography, Geology, Topography etc in other words studies to sciences which traditionally and mostly in practice, use GIS for gathering and analyzing geospatial information. Among 23 Universities and 15 Technological Educational Institutions (TEI)[3] (n=38), 11 Universities and 3 TEI (14) (36.8%, 14/38) offers affiliated studies. Specific information regarding the examined questions was recorded and stored in a Microsoft Excel spreadsheet.

Results of the study regarding our three main questions are as follows:

1) How many libraries provide geographic collections?

Out of 11 Universities of Greece and 3 Technological Educational Institutions that offer studies regarding Geography, Geology, Topography, Geoinformatics, Natural resources, Natural disasters etc only 2 libraries offer digital geospatial data and digital maps (14.2%, 2/14).

2*) What kind of services do they offer to their users?*

[3] http://www.ypepth.gr/el_ec_category131.htm Ministry of Education Lifelong Learning and Religious Affairs [access 29.5.11]

In particular the Agricultural University of Athens provides geospatial data and the ability to use them either in local or network basis. University of Aegean has developed digital map services while Harokopio University of Athens provides evaluated links in digital context and finally the Technological Educational Institute of Serres has developed a subject portal related to history of cartography (28.6%, 4/14)

3) Do they have collection development policies related to geospatial collections?

Despite the fact that collection development policy is a familiar internal work of librarians, however, none of the above four Institutional libraries sustain collection development policies for geospatial data.

4) *Do they sustain an institutional repository?*

Institutional repositories appeared to be developed by the overall examined academic libraries holding GIS services (28.6%, 4/14).

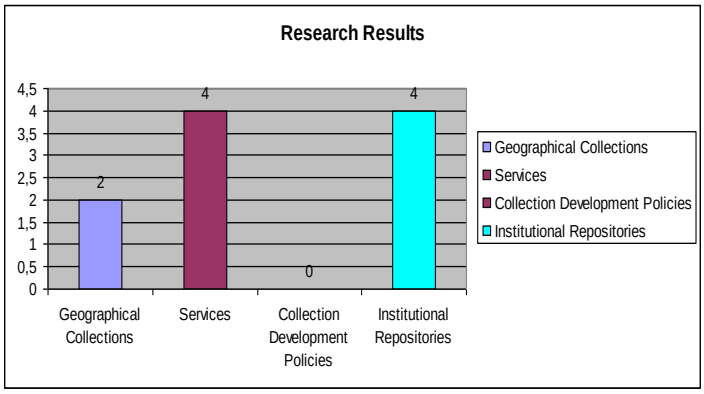

Fig.1: Research results in each category

Main findings of the research

The initial hypothesis that Greek academic libraries are not familiar with geographical information and services and therefore have not developed efficient collections and services for their patrons regarding geospatial data, emerged from the research's results, although there are university departments which could benefit from such established services while according to Johnson and Phoenix (2003) *"GIS is an interdisciplinary tool that can be used in all university departments"*.

University of Aegean Library in cooperation with the Department of Geography Laboratory of Geoinformatics developed through European Commission's funding in 2006 the "Digital Chartotheke"[4]. Faculty of department contributed to this effort and the result is a database in which 55 digital maps are stored. "Aegean Atlas[5]", another application which constitutes digital subject maps of Aegean territory, based on Cruiser (a Java based platform), was also funded by European Union in 2008. Both applications are no longer sustained due to lack of funding and today only provide the initial content. Library of Agricultural University of Athens provides printed maps as digital geospatial data as well in its collection[6]. Data (vector and raster) are in Arc/INFO type so they can be easily retrieved and used by any commercial GIS software (ArcGIS, Geomatica etc). This service can be used by the academic community of Agricultural University of Athens. Harokopio University of Athens sustains a link in the main menu of Library's website (GIS@HUA)[7] which provides evaluated links to a variety of

[4]http://portal.lib.aegean.gr/portal/dt?AegeanLib/Body/Home/HomeBody.setSelected=AegeanLib%2FBody%2FHome%2FHomeBody%2FOnline&last=false#portal_txt.

[5]http://portal.lib.aegean.gr/portal/dt?AegeanLib/Body/Home/HomeBody.setSelected=AegeanLib%2FBody%2FHome%2FHomeBody%2FOnline&last=false#portal_txt.phtml?prnbr=1198054699168

[6]http://library.aua.gr/index.php?option=com_content&view=article&id=89%3A2010-02-16-11-52-24&catid=27%3A2008-11-06-12-42-09&Itemid=16&lang=el

[7] http://www.library.hua.gr

subjects related to GIS. More specifically, it contains links to: open access journals regarding GIS science, portals, organizations in Greece and abroad, GIS applications in Greece, open source software, free geospatial data and finally a catalogue of books in the field of GIS in the library. The Library of Technological Institute of Serres, provides a subject portal called "Geography"[8] with access to web articles and commentaries on specific topics in the history of cartography.

Despite the fact that the last two institutions, Library & Information Centre of Harokopio University of Athens and Library of Technological Institute of Serres do not sustain geospatial data collections, they have developed certain gateways to geographical information, something regarded as a first step of recognizing their patrons advanced needs.

Collection development policies have been considered as an essential process in the library world in which librarians assemble a variety of material in order to satisfy the demands of the users (Evans, 1987, p.). The rapid transformation in how information is prepared, presented and packaged is reflected in collection management librarian's work. Changes in publishing, scholarly communication, technology and budgeting redefined what a library collection is, how it is acquired and how it is used (Nabe, 2011). Moreover, geospatial data collections development require significant policies regarding user demands, budgets, license restrictions, availability, data formats, staffing resources (Longstreth, 1995). Additionally, users of GIS are not necessarily part of the same community as users of printed geographical information while current events influence the use of printed maps they have had little impact on the use of GIS data (Florance, 2006). The research reveals that the above task (collection development policy) either did not use nor was it concerned as an important factor so to be demonstrated in library's website.

Institutional Repositories are used by all researched libraries for collecting, organizing and preserving grey literature and scholarly publishing of their institutions but there is not any significant collection of the geospatial data that institutions produce through these works or any other research projects they undertake.

Discussion

Academic libraries in Greece have proved three main concepts the last decade:

- Efficient administration of their budget (European and government funding)
- Possession and installation of remarkable infrastructure, and finally
- They enhanced with quality staff.

The above characteristics lead Greek academic libraries to provide quality services to their users.

On the other hand as it can be identified there is an absence of geospatial collections in Greek academic libraries and some of the reasons are:

1) Academic libraries in Greece have not developed efficient co-operations with their institution's departments familiar to the use of GIS (Geography, Geology, etc) which use geospatial information and technology for educational purposes.
2) Geospatial data so far are produced by specific public organizations[9] for their own use or commercial companies.
3) The cost of geospatial data is quite expensive and that is prohibited for the low budgets that libraries sustain especially during the recent years.
4) There were no national or European programmes which could fund such an initiative in academic libraries (as it happened in US).
5) GIS services require specific infrastructure, hardware (computers, printers, digitizers, scanners, GPS units, and plotters) and software (commercial or open source).

[8] http://lib.teiser.gr/index.php?id=103&cat=19

[9] Hellenic Statistical Authority, Hellenic Army General Staff, Hellenic Navy Hydrographic Service, Institute of Geology and Mineral Exploration, Hellenic Cadastre, OKXE?

6) Greek librarians do not seem to be familiar with geospatial data and probably curricula in Librarian's Schools or seminars should be organized as librarians will be the ones who will educate their patrons in the use of the service.
7) So far, academic libraries in Greece do not collect geospatial data that are developed in their institution in order to proceed in organizing metadata, policy issues etc.

Since GIS is an expensive resource (infrastructure, staff, data, and education) not all institutions can afford it. *Partnerships* are a concept that could be proved crucial in fulfilling this mission and has not been fully examined by researches explorative for GIS in libraries. They may include enhancement of existing relationships with the Geography department or the Computer Centre of the University. Another form of partnership could be with other entities, (Argentati, 1997; Boisse and Larsgaard, 1995; Cox and Gifford, 1997; Steinhart 2006) where each partner contributes what they do best and so each partner benefits[10].

Geospatial data infrastructure has been changing rapidly during the past years and in 2010 the Greek Parliament adopted a law for the creation of a National Geospatial Information Infrastructure. The specific law has to deal with two necessities of Greece: a) the establishment of harmonized practices and rules for collection, production, supply, management and disposal of geospatial data b) the requirement of conformity with INSPIRE that place a frame of technical specifications of interoperability in order to be effective the automated disposal of geospatial data regarding environment (e.g. Natura 2000 areas) among European and National administrative (Nedas e.a., 2010).

Consequently, these recent developments will contribute to the increased use of geospatial data by any citizen, while at the same time it is argued that libraries have a vital role to play for the effectively use of them, as they have a long history in management and organization of knowledge.

Suggestions

A variety of limitations have thus far prevented Greek university libraries from achieving the same level of growth in their GIS services as other academic libraries abroad. However, participation in projects had provided a great step to experiment and engage in GIS activities and broaden awareness of the potential use of this tool to provide access and support digital data resources. Another important factor regarding the digital collection and the use of GIS that should be explored, especially after the successful evolution of HEAL-Link consortium is the possibility of partnerships among libraries and additional contacts with organizations engaged or interested in GIS. Finally, among the above suggestions for exploration further investigation is required to determine if a repository relevant to geographical or spatial information could be successful.

Conclusions

As libraries struggle to retain funding and adjust to changes in technology, GIS can be used in Greece as a marketing tool in getting people into the library and use library resources. Additionally, GIS provides a gateway to information that it is often underused in the library setting like local and state data, demographic, environmental or agricultural data and generally in a broader range of disciplines. That's why GIS field offers a great range of applications in Greek academic libraries and information services and this first investigation of current situation in Greek academic libraries raises issues to be further explored.

[10] An example of this kind of partnership is Newport Beach Public Library [6] which provides direct online access to the city's utility, land parcel and demographic information. The library provides the information access point as well as established information policy, and the city provides the GIS expertise to develop and maintain the database and create the user interface.

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