Verbreitungskarten von kulturellen Sammlungen

Show Cultural Collections on a Map

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Zusammenfassung:
Programme zur wissenschaftlichen Dokumentation von Archiv- und Museumsbeständen sind heute sehr weit verbreitet und bieten dem Anwender sehr gute Unterstützung im Arbeitsalltag. Basierend auf IMDAS-Pro wird gezeigt wie nahtlos eine GIS Komponente in einen solchen Arbeitsablauf integriert werden kann und den Benutzer bei der Erstellung von Verbreitungskarten unterstützt.

Abstract:
Archive and collection management systems based on information technologies are nowadays widely in use and have proven to provide valuable support for the management of objects in the cultural heritage domain. Based on the collection management solution IMDAS-PRO, we will demonstrate how easily it is possible to integrate a GIS component into the workflow of managing and analysing geo-referenced collections by an ordinary user.

Introduction

During the last years archive and collection management systems based on information technology found their way into the field of cultural heritage. More than 10 years ago the Institute of Information Systems and Information Management started analysis projects in the field of cultural heritage. The aim was to find out and to document the workflow within cultural institutions regarding the cultural objects they are dealing with. Result of this process was IMDAS-Pro.

The most important contextual element of cultural heritage objects is the location. The location attribute is a natural element of the metadata. It is an important order criterion such as time. Objects are sorted by time or by location, but the result of a location sorting is currently not presented on a map. Connecting and contextualizing cultural information on a geographical level creates a new awareness and interaction with cultural life and heritage.

This paper will focuses on the concepts and principles of cultural heritage collections (especially build with IMDAS-Pro) aiming to provide easier access to geographically relevant views of these objects.

Cultural Heritage and Maps

The IMDAS-Pro software package [1] that was developed at the Institute of Information Systems and Information Management is based on research work in the cultural heritage sector. The great strength of IMDAS-Pro is its flexibility – it can be used to record Roman coins just as well as to catalogue Dali's paintings.

Geographical Information Systems (GIS) provide tools to store, manage, analyse and visualize spatial related data. The power of GIS lies in the ability to link cultural objects on a map to a content management system, combining the graphical display of data with content query and analysis functionality [2]. GIS has left the niche market, and it integrates both data and processes in a mainstream IT environment.

The user is also interested in knowing facts "around" the presented objects (surrounding landscape). Object items can be displayed on a map (e.g. excavation area boundaries). GIS technology helps the scientist to analyse the geo-referenced collections. In addition the usage of a map makes the presentation of items more attractive too.
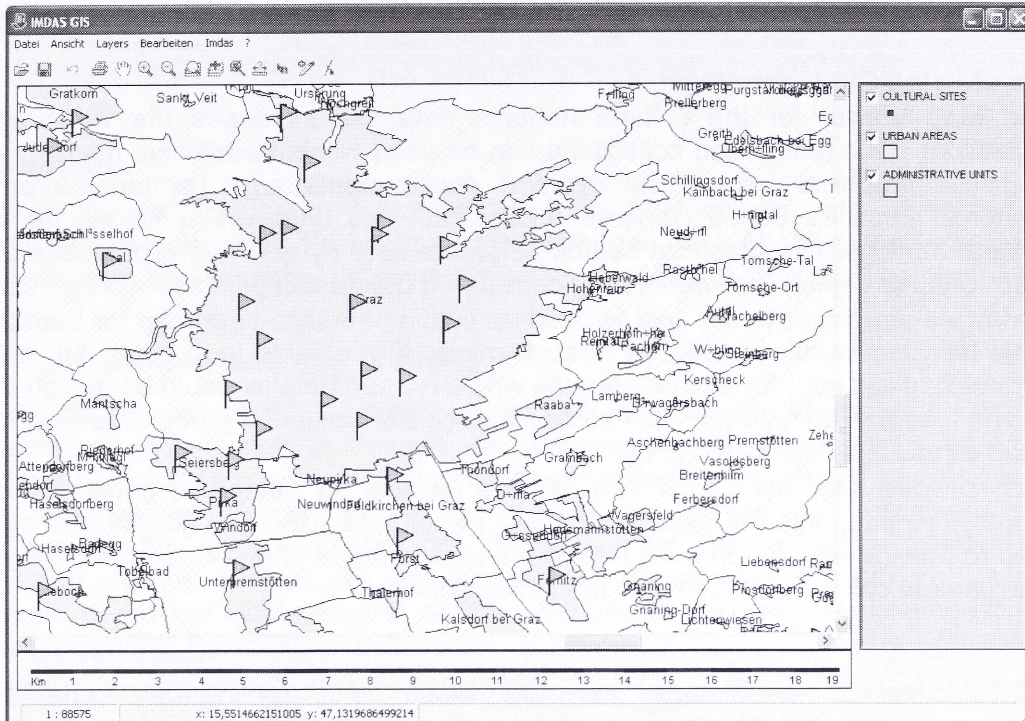
The IMDAS-Pro GIS component is a map viewer with editing capabilities. It is based on the MapObject library from ESRI [4]. The tool supports various background maps in raster and vector format. It can be used for generating geo-referenced object data; it optimally supports the user in the process of data generation and management within IMDAS-Pro. The interface was developed with novice GIS users in mind and does not require additional expert knowledge.

The IMDAS-GIS module includes basis features such as
- easy-to-use map viewer (zoom in, zoom out, panning);
- distance measurement between two shape objects;
- layer management;
- import and export of geographical data;
- raster (e.g. *.tiff) and vector formats, e.g. *.shp;
- generation of objects (as cultural layer) on the map by using the geographical coordinates of the thesauri. A selection of one or more objects in the map is equivalent to the selection of one or more objects in IMDAS-Pro. Afterwards these objects can be combined to a special IMDAS-Pro group.

GIS technology ran through a standardization process in the last 10 years. The Open Geospatial Consortium (OGC) [3] is an industry consortium aimed at growing interoperability for technologies involving spatial information and location. The OGC's mission is to deliver spatial interface specifications that are openly available for global use. In addition, OGC has a well-defined methodology for updating specifications based on, among other inputs, the results of particular interoperability programs. The relevant standards are e.g. the Web Service interfaces, including Web Feature Server (WFS), Web Map Server (WMS), and Geographical Markup Language (GML). GML enables different geospatial systems (in the commercial or public domain) to communicate. The GML specification defines the features and syntax that GML uses to encode geographic information in XML. GML supports the definition and data exchange between services. GML is a well established format, so sites do not need to support proprietary data formats and GML is extensible and XML-based, which makes it easy to manipulate, change, add to its contents, and integrate into a (web) service infrastructure. IMDAS-GIS is compatible to such an infrastructure.

Main benefits of using GIS technology:

- The Map Viewer for the cultural heritage database increases the value of such collections. Geo-referenced collections can be used without additional manual work in GIS (Geographical Information System) environments e.g. Territorial Information Systems, Location Based Services (LBS), etc. This uncovers a hidden market for cultural heritage. Geographical search helps the user by querying a database using a map. Cultural objects that were rarely considered before can gain attention.
- Today we are closer to our goal to build up cultural heritage item map for Europe. GIS tools help the creations process of such maps. E.g. objects (e.g. coins, spreading of ceramics, glass etc.) for a large area the whole Roman Empire would be of high interest for the research community. This could increase the value of the object catalogues and enables multiple uses of the content.
- GIS software specialists such as ESRI are building up distributed geographical data stores. The integration of external resources such as IMDAS-Pro database is a natural step to provide application providers with a large amount of geo-referenced collections. The content can be used in a new market segment.

Conclusion

IMDAS-Pro offers different modules such as IMDAS-GIS (in a service like manner) which are independent from the documentation system. The system displays all the information in its spatial context and incorporates easy to use mapping functions. This enables a user-friendly access to cultural heritage content and is particularly attractive to those who like to think in spatial relationships.

Cultural heritage institutions are looking for solutions to provide citizens and service providers with innovative and seamless access to cultural heritage in the digital age. The IMDAS-Pro GIS component is one example for a well integrated and easy-to-use solution to access cultural heritage collections.

References

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[3] Open Geospatial Consortium, http://www.opengeospatial.org/. Last access: September 2004.
[4] ESRI, http://www.esri.com. Last access: September 2004.