WIKI BASED INTERNET RESOURCES AND DATASETS DATABASE UPDATING SYSTEM

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Commission VI, WG VI/4

KEY WORDS: Education, Web Based, Interoperability, Teaching, Training, Database, System

ABSTRACT:

There are quite many Internet resources related to Geoinformatics on the Internet. ISPRS also owns web publishing services such as event calendar. With increasing the number of Geoinformatics related information, collecting and updating such information regularly becomes very difficult by limited number of peoples as Geo-Informatics covers wide variety of fields. We propose to develop a new WIKI portal site to collect and update information related to the various educational contents on Geo-Informatics under the WG VI of ISPRS COMMISSION VI. In this paper, firstly existing ISPRS web system is briefly reviewed. Then identification, collection, evaluation and dissemination of information on Internet resources, and datasets which are useful for education in the field of remote sensing, photogrammetry and spatial information sciences especially for education is discussed. Also identification, promotion, and organization (in cooperation with educational and research institutions) of educational material (courses, tutorials, glossaries etc.) in electronic form is discussed. Finally assessment and evaluation of the ISPRS web site for further enhancement.

1. BACKGROUNDS

1.1 Internet

Conceived by the U.S. government in 1969 with the aim to create a network that would allow researchers to 'talk each other' from different universities, the Internet today is a public, cooperative and self-sustaining facility accessible to hundreds of millions of people. The Internet is at once a broadcasting capability in the entire world, a mechanism for information dissemination and a medium for collaboration or interaction between individuals and their computers without regard for geographic location. Sometimes called simply "the Net," it is a world-wide system of computer networks, a network of networks in which a user with his computer can get information from any other computer. Nobody owns the Internet but there are some no-profit organizations that define how we use and interact with the Internet. The most widely used part of the Internet is the World Wide Web, created in 1990 as user-friendly face of the information available on the Internet and, together with e-mails and search engines, provides efficient access to an increasing amount of information.

After 39 years of developments and improvements, nowadays there are more than 1319 million people online [Internet Stats]. Everyday more people use an online computer to find information, learn, educate and communicate. But the presence and the access to the Internet are not well distributed in all the countries as there is still part of the world were the use of Internet has yet to grow because it was politically repressed or the infrastructures are still in development.

1.2 ISPRS and the Internet

Inside this big electronic world, ISPRS is present since 1994 with the goal of providing information, coordination and activities of its structure. ISPRS homepage contains infect information regarding the structure of the society, its Events Calendar and its members but also a wide gamma of educational material and software for Photogrammetry, Remote Sensing and GIS available on the Internet as well as job opportunities and Academic Sites for Geomatic Engineering. After 14 years of 'online information', nowadays there are more than 900 HTML pages available on the ISPRS web site. ISPRS server has an average of 600,000 requests per month, serving ca. 180 domains (~country) world-wide and has contacted ca. 60,000 distinct hosts (~users). The ISPRS homepage will remain inside this big e-word improving its appearance and providing always more information to its users and we will continually strive to increase the available resources and expand ISPRS online services. 'ISPRS Highlight', the official bulletin of the ISPRS exclusively appears starting from June 2006 as 'e-

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Highlights' in digital form, in order to save the costs and on the other hand more members can reach it.

In September 2000 the ISPRS server has been moved (back) to ETH-Zürich after a short period in T.U. Delft. As May 2002, there are about 500 HTML pages with approximately 160'000 lines of information available on the ISPRS web site, i.e. ca 130 Megabytes of data. Considering ISPRS Commissions and WG, all TC have a personal homepage while only about 50% of the Working Groups provide information on their own webpages. Besides this fact, ISPRS WG VI/4 (1996-2000) created guidelines for preparation and maintenance of related webpages [Chen and Felkner, 1998] and basic downloadable template are available at http://www.isprs.org/sample.html with related logos and icons.

The ISPRS Events Calendar is one of the most important parts of ISPRS on Internet. The ISPRS Events Calendar is frequently updated by the Events Calendar Editor on the ISPRS Web Page, and is also linked by the ISPRS e-Highlights. The Calendar contains a list of all ISPRS sponsored and co-sponsored congresses, conferences, symposia, workshops, tutorials and other meetings. It also contains details of all international and national events on topics related to the activities of ISPRS, including those in photogrammetry, remote sensing, spatial information systems, geomatics, surveying, mapping, machine vision, image processing and similar areas.

The purpose for ISPRS is to allow Commissions and WGs to identify open dates or events which they may link up with or avoid conflicting with. This avoidance of conflicting with other events externally and definitely internally is a major responsibility of ISPRS. We publish the calendar to encourage other sister societies to do likewise. It is important that we cover events which are on the interdisciplinary boundaries of ISPRS so that our Commissions and WGs are aware of who and how they can interface with related organizations. Please refer to the Appendix 3 of ISPRS Orange Book, too.

1.3 Importance of sharing information especially for Education

As described in section 1.2 the need for Geoinformatics is increasing in ISPRS community. On the other hand, since Geoinformatics is a field to which technical progress is progressing quickly, even a specialist needs to follow-up the newest information, and such a specialist-oriented e-learning site also exists, whereas it is not new that the science education which used the satellite imagery in elementary school students' stage is performed. So far, sites to collect such website information exist, but the index from the viewpoint of the target level is not performed enough. Moreover, such sites are not updated frequently and there are many broken links. The database of the sites which offers geographic information organized by different agencies is not fully built, either.

1.4 Objectives

To collect and manage such a database is very difficult by limited number of scientists, so under the WG VI of ISPRS COMMISSION VI, we propose to develop new WIKI based website to collect and update information related to the various educational contents and various geographic databases such as satellite imagery catalogue search service exhibited on the Internet. Constructing a procedure for evaluating educational homepages is also under study.

2. SYSTEM DESIGN

2.1 Assessment of existing Internet resources and datasets useful for education in Geoinformatics

To start with collection of the internet resources and development of initial web site for education in Geoinformatics, we reviewed existing ISPRS web site and found "Educational pointers, Tutorials, Proceedings and Software" in the following links:
Educational pointers, Tutorials, Proceedings and Software
http://www.isprs.org/links/tutorial.html

In the above mentioned site, information related to the Geoinformatics on education are categorized into 9 sections, ie., Education, Software, Journal, Libraries, Tutorials, GPS, GIS, Acronyms and Glossary and News. As of April 2008, 123 links are sited. 3 of them are written in local languages except English, 5 of them are PDFs only, 2 of them have access restrictions and 29 of them are broken links.

In the above mentioned site, there is little information related to the R/S and GIS datasets. Only Resources in REMOTE SENSING: Images, Publications, Projects information are listed. Some of which provide sample data for training / e-learning with free software. Also at the top page of ISPRS, free datasets link exist. However, there is very limited information to instruct how to download data the user wants in practical cases. For example, even if a trainee learns how to handle TERRA/ASTER data, there is little information on how to order/obtain the data.

To discover, browse, and query metadata about such RS and GIS data, the OGC Catalog Service defines common interfaces, services, and other potential resources [OGC, 2007]. It will be useful for search the data user wants in the future, but there is very limited practical use in reality.

For that purposes, we decided to re-organize existing information and put one more section entitled "RS and GIS Resources". As for Remote sensing data, not only Satellite Program and Sensor/ Mission Information links, data catalogue search sites are also sited. Sample of that information is illustrated in Table 1.

Satellite Program	Sensor	Mission Information	Search
NOAA	AVHRR	http://noaasis.noaa.gov/NOAASIS/ml/avhrr.html	http://edcsns17.cr.usgs.gov/EarthExplorer/
		http://www2.ncdc.noaa.gov/docs/klm/html/c3/sec3-1.htm	http://ceocat.ccrs.nrcan.gc.ca/cgi-bin/client_acc/ceocate/holdings.phtml

Table 1. RS and GIS Resources [Sample]

User can easily accessible not only to the mission information, but also to the search/download sites. With this kind of information, user can potentially search and download/order the data required. Yet, not all of such sites gives instruction how to access the data that user want. So as to demonstrate and instruct

such procedure, demo movies are also developed. Sample of such movie is illustrated in Figure 1.
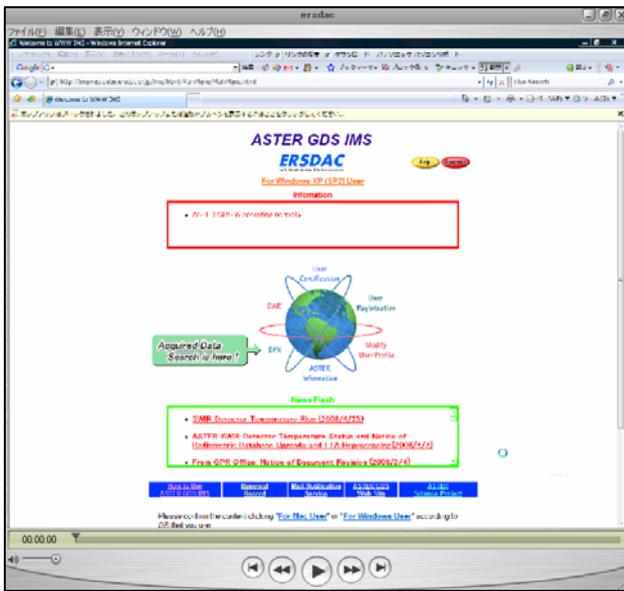

Figure 1. Demo movie how to order ASTER data from ERSDAC [Captured]

To develop such an instruction, we use Free and Open source Streaming Video Software named CamStudio.

CamStudio: http://camstudio.org/

CamStudio can freely downloadable from the Internet. So far we already developed one demo movie for searching TERRA/ASTER data from ERSDAC/Japan (http://imsweb.aster.ersdac.or.jp/ims/html/MainMenu/MainMenu.html).

By following the procedure and search site information with this demo movie, volunteers from the world can develop demo movies for other search sites with ease.

2.2 Maintain a comprehensive list of educational material on the web

To maintain a comprehensive list of educational material on the web, eliminate outdated links, complement by proposals to URLs to recent education, e-learning and distance training material, promote this information source in order to achieve a wider recognition for a common use, we propose to use the WIKI system. WIKI is a website that includes the collaboration of work from many different authors. A WIKI site allows anyone to edit, delete, or modify the content on the web.

2.3 Protocols for adding new Internet resources and datasets

A protocol for adding new Internet resources and datasets to the website needs to be ascertained. Those who want to submit a new link; he/she needs to become an authorized editor. By using WIKI like system, authorized editors can share the database and update information on the Internet. Primary editors which composed of WG VI/4 - INTERNET RESOURCES AND DATASETS, promote new volunteer

members from ISPRS WG members. Authorized editors can invite volunteer who can contribute updating the system. To share update information among reviewers, we use mailing list.

2.4 Procedure to review web sites for education

WG VI/4 is setting up a procedure to review web sites for education, selecting reviewers to review recommends of web sites for education, and evaluating their
(1)Category: remote sensing, GIS, photogrammetry, image processing etc.
(2)Type of homepage: tutorials, text book, power point materials etc.
(3)Target user: University Students, high school students, children etc.
(4)Level: basic, medium, high.
(5)Reviewer's comments.

For 9 sections, user can make comments also can change the order of the lists in each section. During the managements of this system, even the sections to be re-organized. These discussions will be done via mailing list among authorized reviewers.

3. IMPREMENTATION AND DISCUSSION

Based on the system design described in chapter 2, we are now developing a new WIKI based site.

MoinMoin is a wiki engine implemented in Python, Distributed under the terms of the GNU General Public License, MoinMoin is free software [MoinMoin].The feature set of fine grained access control, simple user groups, GUI editor, easy install, simple but efficient spam protection, easy theming combined with a simple code base makes it often the wiki of choice for many open source projects.
By using this MoinMoin engine, we initially developed WG VI/4 - INTERNET RESOURCES AND DATASETS WIKI system.

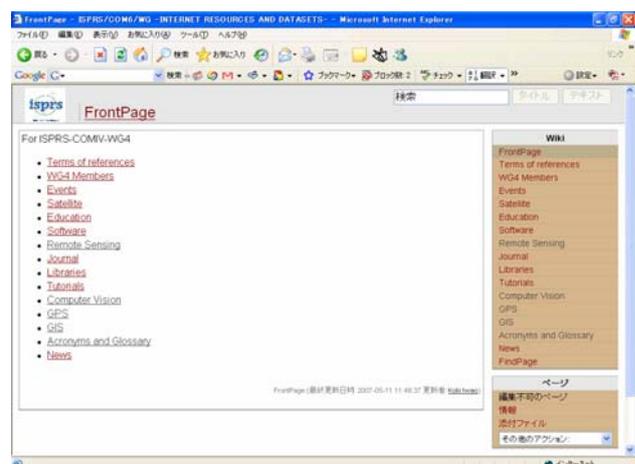Captured image of that site is illustrated in Figure 2.

Figure 2. Sample

This system has a function to invite reviewers as authorized people. In the future, we suggest to implement this system on the main server of ISPRS.

4. CONCLUSION

We proposed to develop a new WIKI based website to collect and update information related to the various educational contents on Geo-Informatics under the WG VI of ISPRS COMMISSION VI.

So far, all the instruction and information are collected in English, but once this system works, we may extend our activities in local languages.

REFERENCES

Chen, T., Felkner, J., 1998. 'Guidelines for preparation and Maintenance of ISPRS Webpages'. Guidelines prepared for ISPRS by ISPRS WGVI/4 http://www.isprs.org/samples/web_guidelines.html (accessed 22 April. 2008)

CamStudio.org - Free Streaming Video Desktop Capture Software, 2007
http://camstudio.org/
(accessed 29 April. 2008)

Educational pointers, Tutorials, Proceedings and Software
http://www.isprs.org/links/tutorial.html
(accessed 29 April. 2008)

Internet World Stats,
http://www.internetworldstats.com/
(accessed 29 April 2008).

MoinMoin,
http://en.wikipedia.org/wiki/MoinMoin
(accessed 29 April 2008).

Open Geospatial Consortium, Inc., 2007. OpenGIS Catalogue Service Implementation Specification.
http://portal.opengeospatial.org/files/?artifact_id=5929&version=2
(accessed 29 April 2008).