

Virtual Peradeniya :A GIS System for the University of Peradeniya

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Introduction

Geographic Information System (GIS) matters, and currently universities, businesses, governments, schools and hospitals, nonprofit organizations, and natural resource management experts are taking advantage of it. Today, all around the world, people and institutions are working more efficiently and effectively because of GIS. Information that was limited to offices, spreadsheets, and databases is being unleashed in new and exciting ways all using the GIS. Currently, traditional cartography has been motivated into "Virtual GIS" to explore the environment more efficiently and support spatial decision-making more vigorously.

The combination of GIS and remote sensing (RS) provide a virtual model to Peradeniya University. The digital mapping exercise emphasizes the potential of remote access to Peradeniya University resources for undergraduates, graduates, parents, well-wishers, local and international communities. Using historical maps and modern geoinformatics technologies, land use patterns, academic departments, administrative information, and other infrastructural resources are captured and integrated within the World Wide Web (WWW) for easy access and communication to local and remote communities.

Spending nearly one year in GIS and GOOGLE EARTH methodologies, and participatory methods a group of GIS experts from the Center for Environmental Studies were able to develop this virtual model for spatial decision-making. This study will present some of the key developments of the virtual GIS stand point.

Although the value of traditional technological approaches (such as 2D GIS, cartography, survey maps, etc) have been clearly illustrated by a number of projects for Peradeniya University mapping, newer techniques in Virtual GIS offers significant enhancement to display cartographic information and solicit

input from university as well as outside communities. The ability to move toward virtual systems and to embed multimedia within an Internet GIS environment promises significant advances in publicizing and provide access to information about Peradeniya University.

This research employs Virtual GIS methodology to develop a model for Peradeniya University. In the past, there were a number of times cartographic technologies have been adapted to develop a land use map for Peradeniya University. On the one hand it is vital to appreciate the traditional mapping technologies that were used to capture the past of Peradeniya University. On the other hand these technologies are limited in their ability to facilitate spatial decision-making. In addition, it is noted that the traditional mapping technologies are static practices for dynamic decision-making. The proposed "Virtual Peradeniya University" model employed GIS on a high scale to develop land use patterns, administrative departments, information, and other infrastructural systems of the university. The digital Virtual Peradeniya University model would support the university administration to make better decisions.

Virtual GIS helps to identify university resources such as faculties and departments, staff quarters, security facilities, medical amenities, transportation networks, sports facilities, open spaces, recreational services, and other land information. The Virtual Peradeniya University project not only supports university communities but also integrates international communities who are interested in exploring this higher education facility at Peradeniya.

Case study

Peradeniya University and its land premises were selected for case study. The proposed Virtual Peradeniya University model covered the entire university land premises which extend from the north (the current Dental Faculty at Peradeniya Road) to the south (to

Mahakanda Gal-bungalow). From the east it covers the Hantana Mountain peak to the west up to the Gampola – Kandy railway line (behind the Faculty of Engineering).

Methodology

Under the broad methodological approach of Virtual GIS there are five methods that have been adapted to develop the Virtual Peradeniya University. These methodologies are:

1. Introduction of the latest digital image technology on the World Wide Web of Google Earth as base information for the Virtual University of Peradeniya.
2. Integration of Global Positioning Systems, GIS, and Google Earth for land use mapping.
3. Integration of participatory GIS approach into university land use mapping.
4. Introduction of the technology of digital image processing (GIS and Remote Sensing) for future land use monitoring.
5. Development of a Virtual GIS technology to publish Faculty of Arts and its departmental information through WWW for wider audience data access such as staff members, outsiders, international community, and students around the world using Web-GIS.

Project objectives

There are a number of project objectives that were identified. These are, to:

1. Develop Virtual Peradeniya University Maps for the Faculty of Arts to support monitoring future land-use changes, updating data of, and to enhance spatial decision-making procedures within and outside the faculty
2. Develop an integrated database with GIS for the entire university administrative system
3. Develop spatial knowledge on location of university premises and provide university community and outside community to search and explore university facilities through Web-GIS.
4. Expose Peradeniya University to a wider community through WWW.

Discussion, relevance and result of the study

During the last one year four members team engaged in a variety of map development, data collection, and model development of the Virtual Peradeniya University from the Center

for Environmental Studies. This project has integrated participatory mapping method to integrate local knowledge in the Virtual Peradeniya University. The GIS mapping and participatory mapping techniques include very comprehensive spatial layouts of university land information with infrastructure conditions.

Currently, there is no GIS mapping system exist in the university to explore and access of the administrative or physical infrastructural information. The lack of spatial information on the university limits many stakeholders to participate in the correct decision-making. The study also highlights that it is not the lack of expertise or facilities which limited such model development rather it is the lack of interests and VISION of people to build such robust virtual model of Peradeniya University. Therefore, it is suggested that it is vital to develop a virtual model of the university where not only locally but also globally interested people can participate in higher education.

Result of Virtual Peradeniya University

The GIS mapping project has gathered necessary basic information from diverse sources. The information includes remote sensing images using GOOGLE EARTH technology, Global Positioning System for locational information, Survey Department Maps, ground truth information from the GIS team, administrative knowledge from the university communities, university map archives, and information from maintenance department. The project developed two large scale digital maps for the wider community access and two other large scale analogue maps for university community use.

Future training and discussion

It is expected to have a preliminary training and discussion with the key members from the Faculty of Arts to share ideas and comments for further development of the GIS mapping. Once we receive comments and suggestions from the Arts Faculty, then the second level project (university mapping) will be submitted to the Vice Chancellor and other senate level decision-makers' opinions. Subsequently, with a small training session the virtual GIS mapping will be handed over to the Dean Arts and Vice Chancellor to display in the relevant buildings for public access.

Conclusions

Currently, a comprehensive GIS database and information system of Peradeniya University is limited. The lack of spatial information limits diverse stakeholders from progressive decisions about Peradeniya University. The proposed Virtual Peradeniya University is a comprehensive digital GIS database about the

university system and it has great potential to improve stakeholders to communicate and participate in spatial decision-making from different part of the world. The Virtual Peradeniya University mapping project could be a GATEWAY to a wider audience to publicize the prestigious university.