

C
9/10/22
Nes

**GIS BASED ARCHAEOLOGICAL DATA MANAGEMENT
SYSTEM FOR ANURADHAPURA**

**A PROJECT REPORT PRESENTED BY
P.B.N. ABEYWARDANA**

**To the Board of Study in Earth Sciences of the
POSTGRADUATE INSTITUTE OF SCIENCE**

*In partial fulfillment of the requirements
for the award of the degree of*

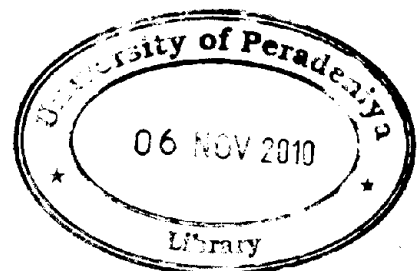
MASTER OF SCIENCE IN GIS AND REMOTE SENSING

of the

**UNIVERSITY OF PERADENIYA
SRI LANKA**

2009

635229



GIS BASED ARCHAEOLOGICAL DATA MANAGEMENT SYSTEM FOR ANURADHAPURA

P.B.N. Abeywardana
Postgraduate Institute of Science
University of Peradeniya
Peradeniya
Sri Lanka

ABSTRACT

Archaeological field, analytical and interpretative studies now utilizes state-of-the-art cutting edge technology in digital application with great success. This technology is applicable in data collection, mapping, data storage, data management, processing and analysis and finally in presentation. Due to the flexibility and precision of this technology, digital application has opened up new frontiers in archaeological studies. A GIS can be used as a tool to aid the recording and preservation of cultural heritage sites by collecting together and presenting site information in an integrated and meaningful way. The intention of this research was to develop a generic integrated information management system for cultural heritage sites at Anuradhapura to support the decision making process and research works.

Ancient city of Anuradhapura has been subject to number of surveys and research projects to identify the cultural heritage resources of the city. In this research an attempt was made to consolidate information from these earlier surveys and researches to a single GIS-based heritage inventory. GIS techniques have been applied in the world heritage city of Anuradhapura, Sri Lanka to create an electronic map and evaluate the surface relics. For mapping cultural and environmental features in the region, variety of surveying, satellite methods and Global Positioning System (GPS) have been applied. As part of the research, a number of hand-drawn survey maps and excavation plans were scanned and geo-rectified, before the data was digitized onscreen to integrate with the heritage feature class in heritage geo-database.

The topographical data of the surface features was superimposed on to the Google images for further interpretation of the archaeological relics and identification of the extent of ancient sites. Ground truthing and registration of the images and accurate positioning of the geophysical grids and parts of the archaeological relics were performed with aids of two GPS satellite receivers. A LEICA TP 100 total station was used in the geodetic surveying.

All the data collected has been integrated in a Geographic Information System which would be incorporated to manage and protect archaeological and environmental resources that are being under the threat of urban development. Within a short time period base data were collected for three major sites name as Citadel, Abayagiriya and Mahavihara and complete heritage survey was conducted in Jethavana site as a pilot programme. In future updation and maintenance will be undertaken in a timely manner and database will be populated with new data. Also this heritage geo-database will be integrate with a web GIS system which allows spatial heritage information to be viewed by planning and environmental management staff in all responsible institutes and researches all over the world.

Finally this research was able to develop a GIS based generic information management system for world heritage city of Anuradhapura to support in decision making process and research works in cultural resource management. Mean time a GIS data model for archaeological field work and analysis focused on the regional, inter-site and intra-site scales has been created.