

# WEB GIS BASED SPATIAL DECISION SUPPORT SYSTEM (SDSS) FOR THE RAJARATA UNIVERSITY OF SRI LANKA

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## Introduction

Information Technology (ICT) has provided opportunities to overcome many of the limitations of computer-based models in terms of data preparation and visualization. World Wide Web (WWW) is the main platform of the information technology which is the paradise of this era. Web site was originated as a communication tool in order to present own ideas to each other in the e-village. Later, it became as a Decision Support System (DSS). Web application is becoming most powerful tool in the decision making environment in order to make correct decisions in precise time beyond the geographic boundary.

Topological surface and the spatial conditions are directly and indirectly affect to the spatial planner. As a result of this one, decision support system became as a Spatial Decision Support System (SDSS). A spatial decision support system is an interactive, computer-based system designed to

assist in decision making, while solving semi-structured spatial problems. It is designed to assist the spatial planner with guidance in making land use decisions. A system without model could be used to identify the most effective decision path. SDSS is sometimes referred to as a policy support system, and comprises a decision support system (DSS) and a geographic information system (GIS). This entails use of database management system (DMS), which holds and handles the geographical data (Aviva Peeters, 2012).

## Problem Statement

Lack of SDSS leads to several obstacles not only construction sector but also other planning and implementation sectors. There is no proper organized and developed SDSS system to the Rajarata University of Sri Lanka, but there are some SDSS sources in several sections as printed materials. As a result of this, most of the construction can be seen as affected underground water line,

telecommunication line and network line. These mismanagement activities create many issues in academic and administration sector. Also, they have spent extra capital and time to rectify those issues. If there is proper developed and updated SDSS system available, the authorized people will be able to resolve those issues up to some extent. The objective of this research is to introduce such kind of SDSS system to the Rajarata University of Sri Lanka.

### Objectives

1. Primary objective To develop web based spatial decision support system for Rajarata University of Sri Lanka.
2. Secondary objectives
  - i. To publish spatial information through web GIS system.
  - ii. To provide necessary spatial information to the internal and external spatial planners and constructors.

### Methodology

**Study area** –Rajarata University of Sri Lanka- Mihintale premises has been selected as the study area of this research. The Faculty of Social Sciences and Humanities, The Faculty of Management Studies, main administration building, playground and entire lecture hall area of these premises were selected as the study area.

**Data collection** – Both primary and secondary data have been used. Google map class library and Java Script library have been used as main secondary data sources for developing web GIS application. Spatial

information and construction information were collected from responsible sectors and authorized person of the university. In addition to that, printed and web based secondary sources were used based on the requirement. Formal and informal interview were conducted in order to collect necessary information to build the web system and for the success of the research. Global Position System (GPS) locations were collected as location information.

**Data preparation** – KML files were created using following basic data such as construction site information and the other underground construction (pipe line, cable line, network line). GPS location information collected is converted into SQL data and store in MySQL database.

**Bulling and hosting web GIS system** – Web system was created using HTML 5 and PHP language. Google map class library and java script library were used to render the Google map to the web GIS system. Several software packages have been used such as adobe dreamweaver, adobe photoshop, PHP editor, MySQL database, Java, Ajax, Arc GIS, Arc server.....etc.

**Data presentation** – Data is presented as map, table and text based on the requirement and visual interpretation purpose.

### Findings

SDSS system guide prepared to the responsible person or sector has got a correct decision regarding the spatial information. The problem of data redundancy will be resolved by using SDSS and planners will be able to

implement lab based decision, instead of field based decision. Many of the current obstacles which are mentioned under the problem statement will be able to resolve.

### Conclusions and Recommendations

SDSS created provides information via cyberspace not only for the internal planners of the University, but also for the external planners who need spatial information. It needs to host the SDSS system in University server and should be appointed responsible person with Geo-Informatics and web technology background to maintain the system.

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