

Document: Final Year Project (Rough Requirements Draft)
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Project: "Development of a GIS for RADS" Project No: 3850
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Informal Document – Rough Requirements

1. Introduction

This document describes the informal and rough requirements for the CS3101 project (No: 3850) entitled "Development of a GIS for RADS". Note that this documents only give the main functional requirements of the project. It is the duty of the student to also gather more detailed and specific requirements that will improve the final project deliverables. (Some suggested methods: use cases and feature-list-brainstorming.)

2. Background

The RAS-Group headed by Dr Leong Hon Wai recently developed a prototype system for giving general route advisory to commuters in Singapore. The system, RADS, has efficient solution engines that answers two types of queries: (a) multi-modal route advisory for public transport by buses/MRT, and (b) dynamic route planning for drivers on Singapore roads. These solution engines are developed with C++. The RADS currently has a "black-box" GUI+GIS which is not extendible. The current GUI+GIS is implemented in Java.

The RAS-Group urgently needs to develop a custom GUI+GIS for the RADS to **replace** the current "black-box" GUI+GIS. In addition, we urgently need to extend the functionality of the GUI+GIS so that new features can be added to the RADS. A basic version of this GUI+GIS is needed for integration with the RADS solution engine -- with the deadline for the integrated system to be tested and ready by December 1999. This makes the development of the GUI+GIS a very urgent deveopment task. This "Development of a GIS for RADS" project aims to develop a basic GIS for the RADS in preparation for the December launch of RADS V1.0.

2.1 Current RADS GUI+GIS

The current RADS GUI+GIS is a "black-box" system as we do not have access to the source code of the GUI+GIS. The GIS currently supports some basic functions such as display of the map, zooming, panning, returning the location of the mouse on mouse-clicks. The GUI is also very basic in supporting only one use-case, namely, that of planning a route from source to destination via public transport (bus+MRT). Therefore, the RAS-Group would like to develop its own GUI+GIS.

2.2 Reference Materials

The main sources of reference material are

- some high level design documentation of the RADS system
 - the source code of the GUI (written in Java) for this project,
 - an Honours Project Report by Lao Yizhi [Lao99] on the RADS-MM solution engines,
 - an Honours Project Report by Lam Nah Peng [Lam99] on the RADS-Dyn solution engines.
- Several people as resource person (including FooHM, LaoYZ, LeongHW, YangSF).

3. Main Requirements

The aim of this project is to design RADS-GIS, a GIS for the RADS to be integrated with RADS-GUI, and RADS-MM to form RADS V1.0. RADS V1.0 will be a standalone system (like the existing RADS system). However, its GIS features will be written largely from scratch and have some enhanced features to support more user-friendly usage of RADS V1.0.

There are three major deliverables for this project --

- **RADS-GIS:** The RADS-GIS that will have features described in a separate document on RADS-GIS feature list.
- **Software Technical Documentation on RADS-GIS:** These will include at least the following: (a) OOD diagrams for the RADS-GIS generated by BOOST and enhanced by the project team, (b) the documentation output of RADS-GIS that is (automatically) generated by DOC++/JavaDoc -- with comments for each class (according to the RAS standards on DOC++/JavaDoc documentation), and (c) a technical reference manual that describes the major components and their interaction, the design decisions made during the development, and some discussion on future enhancements and their preparation thereof.
- **RADS Manual:** A good user manual for RADS that includes several sample uses of the RADS system. (***Note:** This portion will be done in cooperation with other members of the RADS Development Team.*)

4. Starting Point for the RADS-GIS Software Team