
CGIS Map Production Software Requirements Specification

Compiled By

Siyabonga Magubane - u15289347

Bernard van Tonder - u15008992

Boikanyo Modiko - u15227678

Cian Steenkamp - u15095682

Robert Trankle - u15092454

2017

#include

1 Introduction

1.1 Purpose

The purpose of this document is to put forth a description detailing the **CGIS Map Production**. It will explain the main purpose of the system, as well as additional subsystems, the interface of these systems, and what they will and will not do, as well as the constraints. Providing a detailed requirement specification of the system as a whole. It is intended for the Client, as well as developers who will integrate the system.

1.2 Scope

The CGIS Map Production will be a web-based application. It will create Statistical Maps(Thematic Maps), based on different attributes specified by a user. The maps will cover the Tshwane, and the different wards within Tshwane.

The system will provide a list of attributes,from a database, that the user may select. The selected attributes will allow the system to generate different types of Thematic Maps (Choropleth, Dot Density etc.) The system must be able to generate a minimum of 3 different Thematic maps.

The Standardisation sub-system will be the core of the system. It will take the information(data) from the database and standardise it in order to quantify the data for different regions.

This document aims to identify and outline various aspects of the CGIS Map Production system. The interfaces and operations will be discussed. It will also address the functional and non-functional requirements of the system, as well as the data requirements. This will outline the system, which will be used to derive a series of Use Cases.

1.3 Definitions, Acronyms, and Abbreviations

Term	Definition
UI	User interface
CRUD	Create, Read, Update and Delete
FR	Functional Requirement
GIS	Geographic Information System
CGIS	Center for Geographic Information System
UC	Use Case

1.4 References

IEEE Recommended Practice for Software Requirements Specifications

1.5 Overview

2 Overall Description

2.1 Product Perspective

2.1.1 System Interface

User Interface:

Functionality:

The functionality of the user interface is to allow the user to interact with the system. Through this aspect of the system the user can perform all the functions necessary to create and display a map. Through the interface the user will be able to create and display various thematic maps using the large geospatial dataset.

How functionality achieves requirements:

The user interface allows the functionality of the application to meet the requirements. The user is able to add geo-spatial database reference that has the source dataset using the UI. The user may select the display map option where three different maps will appear. The user may select the type of map they want to view and the map will be viewed in full, fulfilling the view automated map requirement.

Hardware Interface:

Functionality:

The functionality of this system interface is the physical hardware that allows software operation. The hardware in this case is specifically the mobile devices upon which the NavUP application will be installed.

How functionality achieves requirements :

This hardware will allow the achievement of the requirements by facilitating the operation of the application. The user will be able to press the physical device screen in order to operate the navigation and other such features of the application. The networking hardware of the components such as the wireless fidelity infrastructure within the device allows for communication to the system server. It is through this communication that the user's location can be determined and the system can function.

Software Interface:

Functionality:

The functionality of the software interface is to facilitate the communication between the hardware infrastructure of the devices running the application and the actual CGIS Map Pro=5u application. An example of this would be the operating system of the device in use. The operating system would allow the application to make use of the Wi-Fi infrastructure and communicate the necessary information to the application. This would enable the device to communicate with the server and perform the necessary requests.

How functionality achieves requirements :

This would allow the achievement of the requirements as the communication of the application to the system server is vital to the operation of the NavUP system. By allowing communication over Wi-Fi the user's location can be determined, accounts can be logged in or created, information regarding heat mapping and general information can be retrieved by the user, fulfilling this requirement. Notifications can also be received by the users application through the Wi-Fi communication , fulfilling the this requirement .

2.1.2 Communications Interface

2.1.3 Memory

2.1.4 Operations

2.2 Product Functions

2.3 User Characteristics

2.4 Assumptions and Dependencies

3 Specific Requirements

3.1 Functional Requirements

- a Generate three different types of thematic maps.
- b Allow the user to select attributes, that are available in the database, to generate the map.
- c Display the three different types of thematic maps.
- d Manipulate the scale of the map, to introduce

3.2 Quality(non-functional) Requirements

- a Performance.
- b Availability.
- c Scalability.
- d Identify (Intelligently) the best three maps to be displayed, based on attributes.
- e Provide security (confidentiality) for the database and locations.

Detailed Description:

- a Performance: Data will be input, maps rendered and displayed within a reasonable time. The software will immediately respond to user input. The process from input to output will endure for less than one minute.
- b Availability: The software will be functioning on demand with no obstructions to users who have sufficient permission.
- c Scalability: Any complete dataset in the required format can be processed and displayed.
- d Intelligence: Using artificial intelligence, the best three thematic maps for optimal information communication will be generated based on the input attributes.
- e Security: Sensitive data will be protected. Only those with sufficient permission will be able to access sensitive data contained in the dataset.

4 Use Cases

UC: Map Display and Scaling

Precondition: The user should have generated the 3 maps by clicking "Generate Maps"	
Actor: General User	System: Navigation
	0: System displays 3 types of thematic maps and a button for scaling each map
1: The user scales the 3 maps by clicking on the appropriate "scaling" button	2: System displays scaled map(s)
Postcondition: None	

Table 1: Find Current Location Use Case Narrative

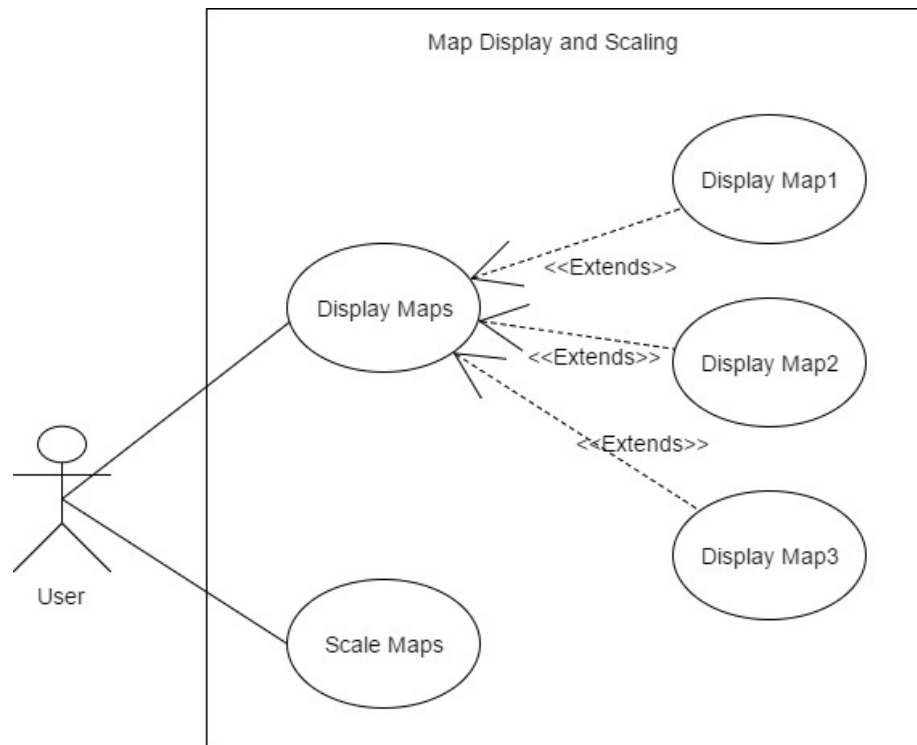


Figure 1: Graph Display and Scaling

UC2 Generate thematic maps

Precondition:	
Actor: User	System:
	0. System displays attributes for user to select
1.TUCBW user specifies the attributes they would like to use to generate the maps	2. System generates 3 different types of thematic maps
3. TUCEW user clicks the Exit button	
Postcondition:	

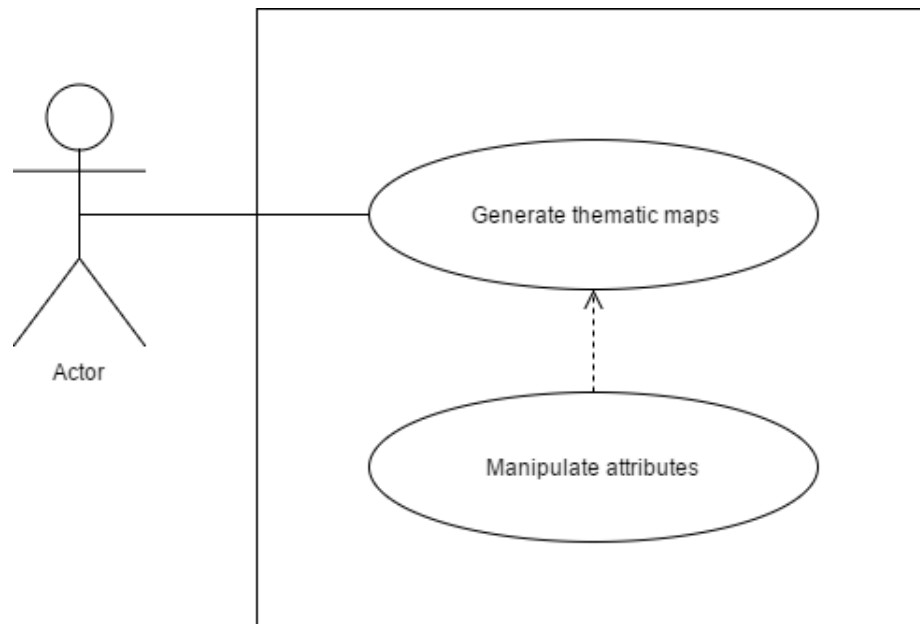


Figure 2: Use case diagram for generating thematic maps

4.1 Performance Requirements

4.2 Design Constraints

4.3 Software System Attributes