Norway

**International Programme
Requirement Specification
For "The Visitor's Guide"**

Version <1.0>

Revision history

Date	Version	Description of change	Author
08/03/12	1.0		Norwegian team

Content

Requirements Specification

1. Introduction

This document includes software requirements for the Trondheim Tourist application. The application is to be built for use on smart phones and tablet computers, and preferably issued as open source.

The application is meant to give the user access to multimedia and information concerning ten specific tourist attractions in Trondheim, Norway. The application will also have integration with Google Maps or a similar map-service, for the intent of showing the location of these specific attractions to the user.

The document is written by the Norwegian students participating in the Intensive Programme (IP). The intended audience is the student participants from Hogeschool van Amsterdam, who will be developing the actual application.

1.1 Document objective

The objective of this document is to give an overview of the intended system, including functional requirements. The applications' intended functions will be described in text and with the use of Use-Case-diagrams.

1.2 Scope

The segment which this application is intended for consists of families with children. The application is to be scalable, and will in the future also include attractions suitable for backpackers and handicapped people.

The scope of this document is limited to the system which will be built now, and does not include requirements for future upgrades.

The application will consist of information pages regarding the different attractions, with informative texts and pictures. All pages will be accessible from the front page (the initial screen) of the application. The front page will also give access to a map of the different attractions, and will also include a function which directs the user to the information page of the closest attraction.

2.   Project background

The application development and the surrounding work is a part of the Intensive Programme 2012 – a cooperation between the six universities – Mittuniversitetet, Sweden, Hogeschool van Amsterdam, Netherlands, Høgskolen i Sør-Trøndelag, Norway, Universidad Politécnica de Valencia, Spain, Yeditepe Üniversitesi, Turkey, and Metropolia Ammattikorkeakoulu, Finland.

The application's intended users are tourists visiting Trondheim, more specifically families with small children. The application is meant to be a simple tool which shows directions and information about the most important, family-friendly attractions in the city.

The application is to be built for smart phones and tablet computers running the Android Operating System. We assume that the devices have embedded GPS functionality and Internet access.

3.   Constraints

The final version of the app should be delivered within the 22nd of April. The estimated workload for development is 40 hours per group member which totals at 400 hours per group.

4.   Additional information

All content (information as text, images and audio files) will be attached to the requirement specification as a .zip file. The material is written / read in English.
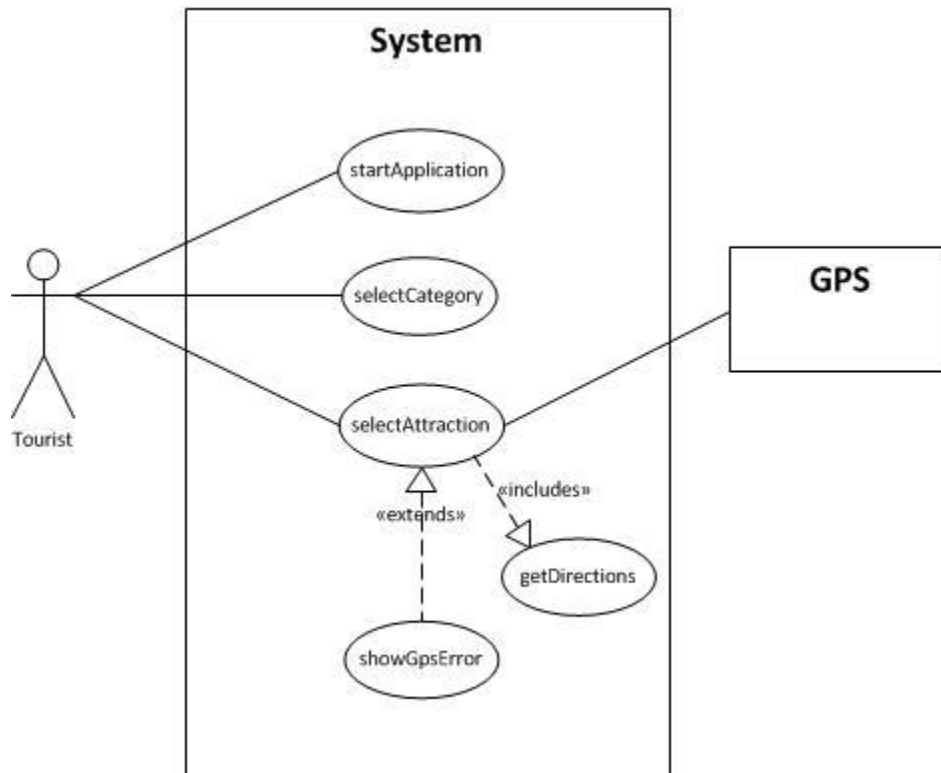
5.   Requirements

Under this section of the requirement specification it is described functional and technical requirements which include Use case, system sequence diagram and technical details.

5.1   Functional requirements

5.1.1   Use-case UML-diagrams

The Unified Modeling Language-diagram, use case, is a visualized context in software engineering, which intends to define the interactions between the system and the related actors. The system in this use case is the Android tourist-application and the related actors are the Tourist who intends to use the application and the GPS-function on the device. The purpose of this use case is to display an overview description of the application and its main functions, not a numbered sequence of steps (a list of steps is described in section 4. sequence-diagrams).In addition to the use case diagram, section 3 (Use case descriptions) explains the main event with includes and extends.

5.1.2   Use-Case descriptions

The following tables are text-based use case descriptions for each of the use cases in the diagram (2.1), startApplication, selectCategory and selectAttraction. The non-functional requirement which naturally belongs to the use cases is also included.

Name	UC 1: startApplication
Purpose	Initiate the application
Actor	Tourist
Trigger	The need to find attractions
Pre-condition	The app must be downloaded and installed on the device
Post-condition	The app is started and the user is presented with category choices
Main event	The user starts the application
Include	
Extends	
Related information	

Name	UC 2: selectCategory
Purpose	To choose preferred category of travelling groups
Actor	Tourist
Trigger	To find an appropriate category
Pre-condition	The app is started
Post-condition	The user is presented with an attraction menu

Main event	1. The user is presented with three categories
	    1.1 wheelchair-bound persons
	    1.2 backpackers
	    1.3 family with young children
	2. The user selects preferred category

Include	
Extends	
Related information	

| Name	UC 3: selectAttraction
Purpose	Get information and directions to the chosen attractions
Actor	Tourist, GPS

Trigger	Desire to experience an attraction
Pre-condition	Preferred category is chosen by the tourist. GPS is enabled
Post-condition	The user gets directions, information and audio/video related to the chosen attraction

Main event	1. The user is presented with the following choices:
	   1.1 View full attraction list
	   1.2 View attractions nearby
	   1.3 view attractions on an overview map
	   1.1.1 If "Full attraction list": A list with all attractions available in Trondheim will be displayed
	   1.2.1 If "View attractions nearby": A nearby section on the map with close range attractions will be displayed
	   1.3.1 If "View attractions on an overview map": An overview map of Trondheim with all attractions marked will be displayed
	2. The user selects preferred attraction
	3. The user gets information and audio related to the chosen attraction
	4. The user can go back to main menu (pt. 1)

Include	The user can chose to get directions to the selected attraction
Extends	GPS is not working/disabled. GPS error message is displayed
Related information	

5.1.3   System Sequence diagram

The system sequence diagram is meant to show messages sent between the application, the tourist and the GPS system, to realize the use case described in 2.1 and 3.1. The diagram includes all three operations described in the use case diagram in one. The user (the tourist) sends a request to start application, and once the application is running the user is asked to select a preferred category (wheelchair-bound persons, backpackers or families with young children). When selected, the user is presented with a menu of three choices shown in the "alt-box". The communication between the actors depends on which choice is selected by the user (presented in each "alt-box"). When the preferred attraction is selected, the user has two options, either to get directions from his or her location, or to go back to main menu.

Systems Sequence-diagram
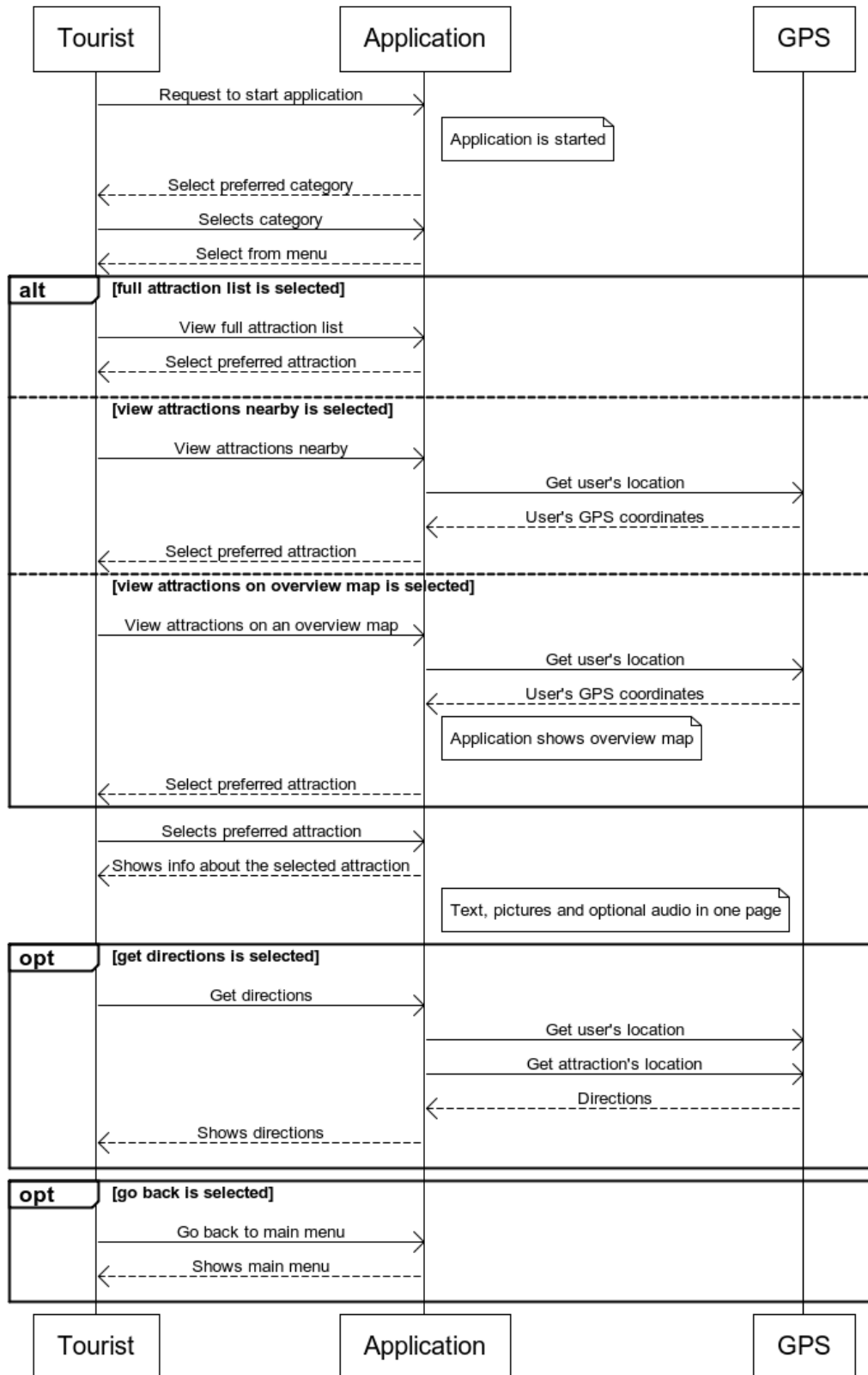
5.1.4   Problem Domain Model

The (problem) domain model describes the connections between the different objects relevant to solving the system delivering information about attractions in Trondheim.

A tourist who is either a backpacker, disabled or family member, belongs to one category. The tourist visits one or more attractions. A category contains one or more attractions. The attraction contains one or several information objects that could be a text string, picture or sound clip. The attraction also has one GPS coordinate, that's located at one map. The map can contain several GPS coordinates (attractions).
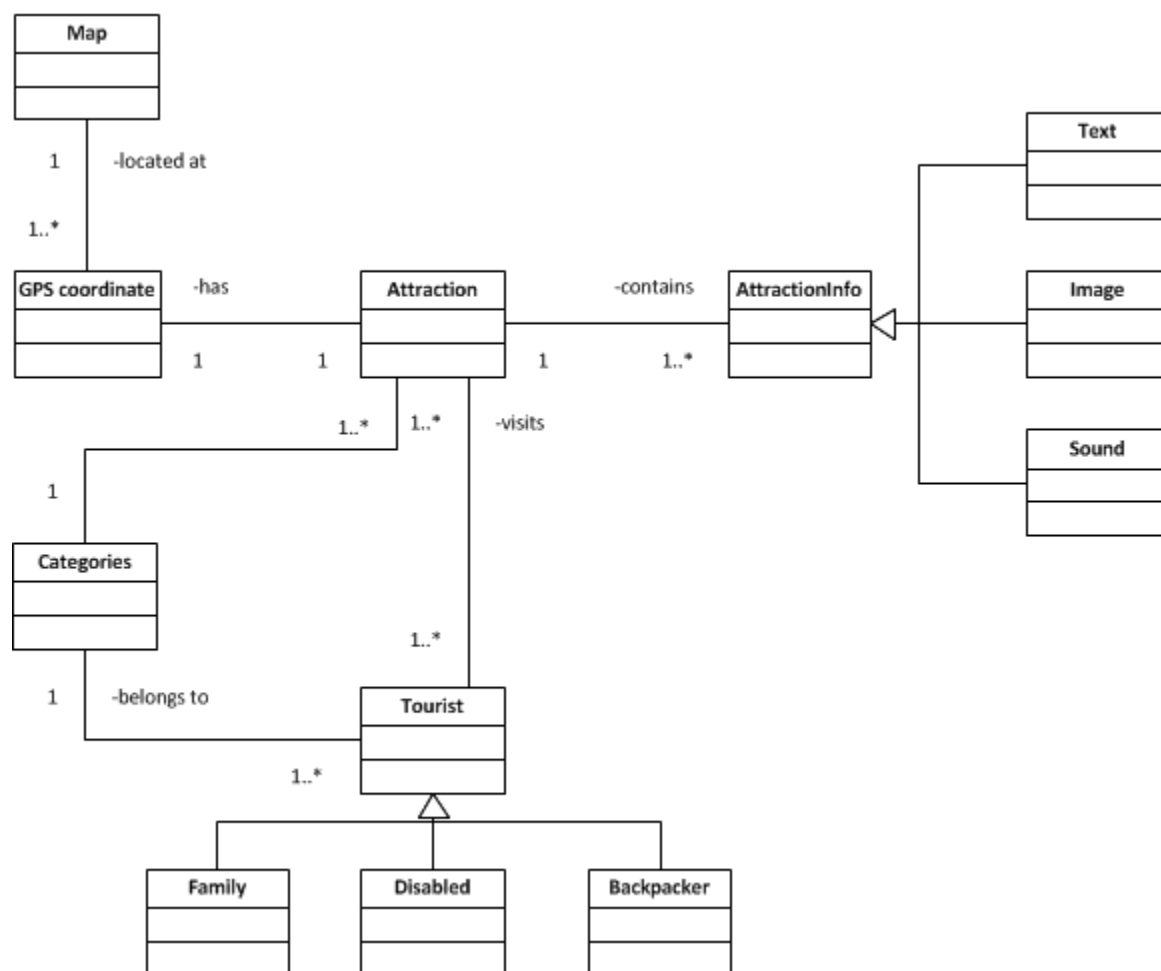
5.2　Technical requirements and constraints

This subsection describes specific requirements with regards to platforms used, information included within the application and use cases for the application.

The assumptions and dependencies are as follows:
- The application is to be built for the Android Operating System, version 4.0.
- The application is to have backward compatibility with previous versions of the operating system, going as far back as version 2.1.
- The application functionality is to be coded in the Java programming language.
- The application GUI is to be coded in XML.
- The devices for which this application is to be run on, has embedded GPS functionality and access to the Internet.

Platform

The application is to be developed exclusively for the android platform and we envision that all data is to be included in the application itself, without the need to download additional content from a dedicated server. Our reasoning for this is based on the costs of using a 3G-data connection while abroad. A solution where data could be pre-loaded onto the device could be an acceptable compromise, should it be necessary.

Application capabilities and included information

The application must include
- Feature which utilizes the GPS functionality of the device to guide the user to the location of a selected attraction, displays
- Written and spoken information about the different attractions, images of the location or attraction as well as general information such as opening hours or entrance fees.
- There is a minimum requirement of ten family friendly attractions.
  - o Information about our suggested attractions can be found in appendix 1
- Menu for selection of 'target group of visitors'; wheelchair-persons, backpackers and families with young children.
  - o The only selection which has to be functional is "family with young children"

6. Test Specification

This is a test specification for the above mentioned use cases. We will here try to give a complete guide to the tests that must be completed to check that the application will function properly.

Use case startApplication:
Input: 1. Start App
Completed tests:
1.   Start the application
Expected result:
Ok.

Use case selectCategory:
To complete this test it is a prerequisite that the two categories wheelchair-bound persons and backpackers are dead links. They are not to be implemented in this application.

Input: 1. Wheelchair-bound persons
        2. Backpackers
        3. Family with young children

Completed tests:
1.   Test Use case wheelchair-bound persons
Expected result:
Dead link

2.   Test Use case backpackers:
Expected result:
Dead link

3.   Test Use case family with young children
Expected result:
Ok

Use case selectAttractions:
Input: 1. View full attraction list
        2. View attractions nearby
        3. View attractions on an overview map

Completed tests:
1.   Test Use case view full attractions list
Expected result:
Ok.

2.   Test Use case view attractions nearby with GPS turned on
Expected result:
Ok.

3. Test Use case view attractions nearby with GPS turned off
Expected result:
Error

4. Test Use case View attractions on an overview map
Expected result:
Ok.

5. Test select attraction with GPS on
Expected result:
Ok

6. Test select attraction with GPS off
Expected result:
Error

7. Test The user gets information and audio related to the chosen attraction
Expected result:
Ok

8. Test get directions to the attraction with GPS on:
Expected result:
Ok

9. Test get directions to the attraction with GPS off:
Expected result:
Error