# Annex 2: Software Requirement Specification

# Introduction

The following section provides a specification of the software’s overall requirements. Showing its functions, limitations and user interaction, the catalogue can be considered as a contract between clients and developers. Aside from giving textual descriptions, use case diagrams help to clarify the requirements and interactions in more detail.

# 2. Project Objectives

*(copy and adapt from part 2 – project objectives)*

# 3. Software Requirement Catalogue

This section outlines the software requirements. At first, the participating actors are introduced. Then, the requirements are examined, dividing them into functional and non-functional requirements.

## 3.1 Participating actors

This software has only one main actor, the user. Using the Telegram messenger, it interacts with the chatbot. There are no different user roles, so each user has the same range of features to use.

## 3.2 Functional Requirements

This section describes the software’s full range of features:

* Using the Telegram interface, messages to the chatbot can be introduced which are answered accordingly.
* Using the Telegram interface, a location can be introduced which is used as the basis for the chatbot recommendations.
* The proximity of the recommendations can be specified by the user. If no radius is entered, the default value of 1 km is used as a distance between the user location and examined point of interests.
* The chatbot provides a recommended point of interest within the chosen proximity. The recommendation result contains the name, location and type of point of interest as well as additional descriptions from OpenStreetMaps (if available).
* A desirable feature is the retrieval of additional data from external sources to enrich the POI descriptions. Information can be retrieved from Wikipedia to give the user a first impression or pictures from platforms.
* Recommended points of interests can be rated by the users. The rating is saved and used as a basis for future recommendations.
* To refine recommendations, user chat messages are evaluated using natural language processing and saved in the user profile.

## 3.3. Non-functional Requirements

This section describe the so-called non-functional requirements which contain technical as well as operational requirements.

* To use the chatbot, the Telegram messenger app has to be installed on a smart device (smartphones or tablets). Although Telegram is also available as a desktop application, these versions do not support sending locations and are therefore not suitable.
* The device must be connected to the internet to use the chatbot.
* The device must be capable of receiving GPS information to calculate its current location.
* The chatbot interface should be intuitive, so the user is able to communicate with the chatbot without previously reading an exhaustive tutorial. To facilitate user decisions, mutually exclusive keyboard buttons are used.
* The chatbot should be able to handle user requests adequately. Questions and demands concerning travelling are understood and answered satisfyingly. Other requests are rejected politely.

## 3.4 Limitations

There are multiple limitations present due to the fact that the software can be still considered as a prototype. In a future enhancement, most of these limitations should be remedied.

* The used OpenStreetMaps data was downloaded once and then used offline. To keep the data up-to-date, an automatic update mechanism should be setup.
* Due to performance reasons and sparse user rating data, the prototype only gives recommendations for the city of *Barcelona, Spain*. In a future enhancement, a bigger OSM region should be covered.
* Due to the fact that a chatbot is available to large amount of users at the same time, it should be able to handle multiple user requests. This prototype is capable of handling requests from multiple users at the same time, but will have a delayed response. A desirable feature for a future enhancement would be to integrate concurrent access without significant time delay.