# Lab2-4 : requirements

Goal of this lab is to practice the techniques to formalize the requirements of a software product.

Consider the RVC case and define the following

# Stakeholders

| Stakeholder name | Description |

| ----------------- |:-----------:|

# Context Diagram and interfaces

## Context Diagram

## Interfaces

| Actor | Logical Interface | Physical Interface |

| ------------- |:-------------:| -----:|

# Functional and non functional requirements

## Functional Requirements

| ID | Description |

| ------------- |:-------------:|

| FR1 | tbc (To be completed) |

## Non Functional Requirements

| ID | Type (efficiency, reliability, .. see iso 9126) | Description | Refers to FR |

| ------------- |:-------------:| :-----:| -----:|

| NFR1 | tbc | tbc | tbc |

# Use case diagram and use cases

## Use case diagram

## Use Cases

### Use case 1, name tbc

| Actors Involved | tbc |

| ------------- |:-------------:|

| Precondition | tbc |

| Post condition | tbc |

| | tbc |

| Nominal Scenario | tbc |

| Variants | tbc |

# Relevant scenarios

## Scenario 1

| Scenario ID: tbc | Corresponds to UC x |

| ------------- |:-------------|

| Description | tbc |

| Precondition | tbc |

| Postcondition | tbc |

| Step# | Step description |

| 1 | |

| 2 | |

| 3 | |

| 4 | |

## Robotic vacuum cleaner

Since several years robotic vacuum cleaners (RVC) are available. An RVC is capable of cleaning the floors of a house in autonomous mode.

An RVC system is composed of the robot itself and a charging station. The charging station is connected to an electric socket in the house, and allows charging the battery on board of the robot.

The robot itself is composed of mechanical and electric parts, a computer, and sensors. One infrared sensor in the frontal part recognizes obstacles, another infrared sensor always on the frontal part recognizes gaps (like a downhill staircase). A sensor on the battery reads the charge of the battery. The computer collects data from the sensors and controls the movement of four wheels. Another sensor on one of the wheels computes direction and distance traveled by the robot.

Finally on top of the robot there are three switches: on-off, start, learn.

The learn button starts a procedure that allows the robot to map the space in the house. With a certain algorithm the robot moves in all directions, until it finds obstacles or gaps, and builds an internal map of this space. By definition the robot cannot move beyond obstacles, like walls or closed doors, and beyond gaps taller than 1cm.

The starting point of the learn procedure must be the charging station. When the map is built the robot returns to the charging station and stops.

The start button starts a cleaning procedure. The robot, starting from the charging station, covers and cleans all the space in the house, as mapped in the ‘learn’ procedure.

In all cases when the charge of the battery is below a certain threshold, the robot returns to the charging station. When recharged, the robot completes the mission, then returns to the charging station and stops.

For the diagrams you can use tools like Argo UML, Astah, Star UML, Plant UML.

Always consider the possible defects in a requirement document (omissions, inconsistencies, ambiguities ..).

Consider that the document must be sufficient to:

* allow another team (not you) design and code the application
* allow another team (not you) to test the application