Abstract:
This deliverable defines and develops the most relevant use cases for the SIMON system. The goal of the use case analysis is to specify the main features of the SIMON system in real situations. These will form the main input for WP6 (pilot test). The use cases cover all major aspects of the access-right management for public parking spaces and reserved areas of a city, specifically applied to the fraud-free use of the European parking card for disabled. The use-cases complement the analysis of requirements performed in T2.1 and, in this sense, are also a valuable tool for the development and adaptation of the system features.

Keywords:
Use cases, pilot, system structure, scenarios
## Revision History

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<th>Revision</th>
<th>Date</th>
<th>Description</th>
<th>Author (Organisation)</th>
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<td>V0.1</td>
<td>19/05/2014</td>
<td>First version (scheme, list of use cases and template)</td>
<td>Alberto Ferreras (IBV)</td>
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<td>Alberto Ferreras (IBV) Eva Muñoz (ETRA I+D)</td>
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1. INTRODUCTION

A use case is a written description of how the different users will perform tasks on the system. It outlines, from a user’s point of view, a system’s behaviour as it responds to a request. Each use case is represented as a sequence of simple steps, beginning with a user’s goal and ending when that goal is fulfilled (1).

Use cases add value because they help explain how the system should behave and in the process, they also help brainstorm what could go wrong. They provide a list of goals and this list can be used to establish the cost and complexity of the system. Project teams can then negotiate which functions become requirements and are built (1).

Thus, there is a high interaction between the use cases and the definition of requirements (D2.2 and D2.3):

- Basic use cases are outlined considering the definition of the functional requirements. The development of a complete list of use cases includes the deployment of functionalities of the system.
- Use cases express the interaction between user and product. Therefore, the definition of the user (capabilities, needs, constraints) is crucial for the development of use cases.
- The information gathered through the use cases (D2.1) and the initial definition of requirements (D2.2), will be combined and cross checked in order to define the final list of requirements and to detail specific requirements for the product.

In SIMON, use cases will be applied to guide and develop the pilot activities (WP6). In this sense, specific information about priority and differential application at the pilot sites will be considered.

Scope of The purpose of this document is to define the most relevant use cases in order to specify all the possibilities of the SIMON system, to obtain a usable set of features for the development and to extract best scenarios to be deployed and demonstrated.

1.1. PURPOSE OF THE DOCUMENT

The purpose of this document is to define the most relevant use cases in order to specify all the possibilities of the SIMON system, to obtain a usable set of features for the development and to extract best scenarios to be deployed and demonstrated.

1.2. STRUCTURE OF THE DOCUMENT

The document starts with the use case definition and purposes. The use case methodology here is adapted to the particular needs of the SIMON purposes.

Next, a table with all the use cases is presented, including the classification, relation with the SIMON components and association with the pilot sites. The relation of these use cases is shown at the use case diagram.

Finally, the description of use cases is presented. Each use case is extensively developed using a specific sheet.

A summary on the main conclusions will end the document.
2. USE CASE DEFINITION, GOALS AND COMPONENTS

2.1. USE CASE DEFINITION AND GOALS

A use case is a series of related interactions between a user (or more generally, an “actor”) and a system that enables the user to achieve a goal. To phrase this definition in another way, a use case describes the system’s behaviour as it responds to a series of related requests from an actor (2).

Use cases are a good way to capture functional requirements of a system. The development of the use cases for the SIMON system has been done interactively with the initial compilation of the requirements (D2.2). Use cases and initial requirements are going to be used for the compilation of the requirements specification document (D2.3).

In addition, the development of use cases in SIMON has another central goal: the description of the main functionalities of the system (transformed in specific actions) that are going to constitute the main input for the deployment of the system in the pilot tests.

2.2. ELEMENTS AND COMPONENTS OF A USE CASE

Use cases define interactions between external actors and the system to attain particular goals. There are three basic elements that make up a use case (3):

- **Actors**: Actors are the type of users that interact with the system.
- **System**: Use cases capture functional requirements that specify the intended behaviour of the system.
- **Description/goals**: Use cases are typically initiated by a user to fulfil goals describing the activities and variants involved in attaining the goal.

These basic elements can be extended to offer a better description of the use case, to help in the development of functions and requirements, and to prepare all the possible scenarios for field testing. For the SIMON system, we have selected the following elements (4; 1; 3; 5; 6):

- **Use Case ID**: An identification code (e.g.: CI_01) composed of the following elements:
  - CI: Use Case
  - Nr: Order number
- **Use Case Name**: Descriptive name/title of the use case.
- **PILOT in**: Cities in which this user case can be tested (Madrid, Lisbon and/or Parma). This information is provisional, as in some cases the cities are negotiating with external stakeholders (e.g.: parking companies) or are studying the technical feasibility.
- **Actors**: Anyone or anything that performs a behaviour (who is using the system). A use case defines the interactions between external actors and the system under consideration to accomplish a goal.
- **Description**: Brief explanation of the use case development.
- **Stakeholders and Interests**: A person, group or organization who affects or is affected by the software system. In most cases, the stakeholders are the ‘secondary actors’. Actors are always stakeholders, but not all stakeholders are actors, since they never interact directly with the system, even though they have the right to care how the system behaves.
- **Trigger**: This is the event that causes the use case to be initiated.
- **Preconditions**: A precondition is the state of the system and its environment that is required before the use case can be started. It can be helpful to use preconditions to clarify how the flow of events starts.

- **Post conditions**: Post-Conditions are the states the system can be in after the use case has ended. It can be helpful to use post-condition to clarify how the flow of events ends.

- **Normal Flow**: The description of the normal, expected path through the use case. This is the path taken by most of the users most of the time; it is the most important part of the use-case narrative.

- **Alternative Flows**: An Alternate Flow is a step or a sequence of steps that achieves the use case’s goal following different steps than described in the main success scenario. But the goal is achieved finally. The main success scenario describes the most likely way a user may take to achieve the business goal. Nevertheless, there may be other ways to perform a particular step or a sequence of steps. Those different paths are called Alternate Flows or Alternatives.

- **Exceptions**: An Exception is anything that leads to not achieving the use case’s goal.

- **Includes**: An include relationship is a relationship in which one use case (the base use case) includes the functionality of another use case (the inclusion use case). The include relationship supports the reuse of functionality in a use case model.

- **Frequency of Use**: How often will this Use Case be executed. Frequency tells which tasks are frequently performed, which are seldom performed, and which occur regularly though not often. It also includes the time constraints or requirements of the use case.

- **Special Requirements**: The description of all the requirements on the use case that are not covered by the flow of events. These are non-functional requirements that will influence the design model.

- **Assumptions**: An assumption is any system requirement that is neither a specific step that must be performed immediately prior to the execution of this Use Case (a pre-condition) nor a step included in this Use Case’s Flow(s) of Events, but which is nevertheless a state that must be achieved at some time before the execution of this Use Case. An assumption is not a testable item, and will not be tested during unit or system testing.

- **Notes and Issues**: List of any additional comments about this use case or any remaining open issues or TBDs (To Be Determined) that must be resolved. Relation with functional requirements is also included.

Not all these elements must be completed for a specific use case. Only those elements that are useful for the description of requirements and/or for the definition of the situations to be tested at the pilots will be fulfilled. Nevertheless, all use cases will include the basic elements: **Name, pilot, priority, actors, description** and **normal flow**.
<table>
<thead>
<tr>
<th>Use Case ID:</th>
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<tbody>
<tr>
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<td>PILOT in</td>
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<tr>
<td>Actors:</td>
<td></td>
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<td>Description:</td>
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<td>Post-conditions:</td>
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<td>Alternative Flows:</td>
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<td>Assumptions:</td>
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<td>Notes and Issues:</td>
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</table>

Table 1 – Table of Use Case
2.3. USE CASE DEVELOPMENT METHODOLOGY

The following steps have been followed to build the SIMON use cases:

- Description of the system and its components, including the development of functional requirements (see D2.2).
- System breakdown into basic actions.
- Transformation of the basic actions in a use case list.
- Revision and discussion by the whole consortium, including:
  - Add and remove use cases.
  - Prioritize.
  - Value the possibility of testing the use case in each pilot site.
- Classify the use case according to the SIMON system structure:
  - Application (SIMON Leads, Controls, TSM)
  - Platform (SIMON Says, Books, Answers, Opens)
- Final list of use cases.
- Develop the elements of each use case.
### 3. LIST OF USE CASES

<table>
<thead>
<tr>
<th>Nr</th>
<th>USER</th>
<th>USE CASE</th>
<th>APP</th>
<th>PLATFORM</th>
<th>device</th>
<th>CITIES</th>
</tr>
</thead>
<tbody>
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<td>CI_00</td>
<td>Citizen</td>
<td>LEARNING PROCESS TO USE THE SYSTEM</td>
<td>SIMON LEADS</td>
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<td>ALL</td>
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<td>CI_01</td>
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<td>PLAN TRIPS USING PUBLIC TRANSPORT</td>
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<td>Smartphone</td>
<td>Parma, Lisbon, CRTM*</td>
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<td>CI_02</td>
<td>Citizen</td>
<td>RECEIVE INFORMATION ABOUT ACCESSIBLE PUBLIC TRANSPORT IN REAL TIME</td>
<td>SIMON LEADS</td>
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<td>Parma, Lisbon, CRTM*</td>
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<td>CI_03</td>
<td>Citizen</td>
<td>LOCATE FREE PARKING SPOTS IN PUBLIC PARKING SPACES AND RESTRICTED AREAS</td>
<td>SIMON LEADS</td>
<td>BOOKS</td>
<td>Smartphone</td>
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</tr>
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<td>CI_04</td>
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<td>IDENTIFY THE OPEN RESERVED SPACES AND GET TO THE PLACE</td>
<td>SIMON LEADS</td>
<td>ANSWERS</td>
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<td>Madrid*</td>
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<td>PLATFORM</td>
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<td>WHEN THE USER RESPONSES THE CHALLENGE AND HE IS VALIDATED, A TICKET IS PRINTED BY THE PARK METER TO BE LEFT IN THE VEHICLE</td>
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<td>REVISE AND UPDATE THE LIST OF USERS</td>
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<td>controller mobile device</td>
<td>Parma</td>
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<td>SAYS</td>
<td>web</td>
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<td><strong>OP_04</strong></td>
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<td>RECEIVE INFORMATION ABOUT THE PARKING SPACES IN USE IN REAL TIME (MONITORING)</td>
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<td>SAYS</td>
<td>web</td>
<td>Parma, Lisbon</td>
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<td><strong>OP_05</strong></td>
<td>Operators</td>
<td>RECEIVE INFORMATION ABOUT INCIDENCES</td>
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<td>web</td>
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<td>VALIDATE THE PARKING REQUEST OF A CITIZEN</td>
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</table>

* - In study / Negotiations with stakeholders and third parties / Proof of concept test
4. USE CASE DIAGRAM

While a use case itself might drill into a lot of detail about every possibility, a use-case diagram can help to provide a higher-level view of the system. The diagram provides the simplified and graphical representation of what the system must actually do.

Figure 1 shows the diagram that includes all the considered use cases, the flow of actions, the interactions between use cases and the actors involved (citizens, controllers and operators).
Figure 1 – SIMON use cases diagram
## 5. DESCRIPTION OF USE CASES

<table>
<thead>
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<th>Use Case ID:</th>
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<tbody>
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<td>Use Case Name:</td>
<td>LEARNING PROCESS TO USE THE SYSTEM (CITIZENS)</td>
</tr>
<tr>
<td>PILOT in:</td>
<td>Madrid, Lisbon, Parma</td>
</tr>
</tbody>
</table>
| Actors: | Primary: User/citizen (SIMON LEADS)  
Secondary: system administrator (SIMON TSM) |
| Description: | The citizen learns how to use the system and all functions. |
| Stakeholders and Interests | System administrator, public transport authorities, private parking companies, user associations. |
| Trigger: | First approach to the system by the citizen. The learning process can occur in parallel with the use of the system. While the system is being executed, the citizen can access online training content (manuals, contextual help and interactive materials). The citizen may also have access to printed training material. |
| Preconditions: | The citizen must have Internet connexion (mainly at the smartphone, although computer access could be also possible for some help documents). The citizen must be registered in the system, he will have a user id + password available. The system offers tutorials showing how to use each function. The system provides a user manual and online help in each screen. The system allows remote technical support (phone assistance and/or e-mail/instant messaging). |
| Post conditions: | This is a continuous case (learning through real use). After the training period, the citizen has received information, feedback and examples and it’s able to perform the basic tasks of the system (plan trips, book a parking space, locate free parking spots, receive information, etc. The citizen has received a username and a password. The citizen can receive contextual help whenever needed. |
| Normal Flow: | 1. Citizen logs in at the SIMON platform (web / app)  
2. At the home page, the citizen can follow tutorials of the system functionalities.  
3. Citizen accesses to his/her profile. All screens provide help options, showing how to activate each function (graphic format)  
4. Citizen performs trial activities, while receiving contextual help when needed:  
   - Create profile  
   - Plan a trip using private vehicle  
   - Plan a trip using public transport  
   - Book a parking space  
   - Locate free parking spots in public parking spaces and restricted areas  
   - Receive information about the status (occupied, free) of the private parking and about accessible public transport  
   - How to be validated in the system for parking or control accesses. |
| Alternative Flows: | The citizen attends to a training course based on the use of the SIMON System |
| Frequency of Use: | The first time the system is used. Intense use during the first week. Occasional use (continuous). |
| Notes and Issues: | Development of training materials for the SIMON system |
### Use Case Specification Document

**Use Case ID:** CI_01

**Use Case Name:** PLAN TRIPS USING PUBLIC TRANSPORT

**PILOT in:** Madrid (CTRM)*, Lisbon, Parma

**Actors:**
- **Primary:** User/Citizen (Using SIMON LEADS with SIMON ANSWERS)
- **Secondary:** system administrator

**Description:** The citizen plans a trip using public transport. The system offers information about the schedule, arrivals in real time and routes.

**Stakeholders and Interests**
- System administrators and operators.
- Public transport operators.

**Trigger:**
- The user wants to reach a destination using public transport (e.g. urban bus) and needs information on the availability of accessible transport, the best route and the schedule.
- The citizen uses the mobile application.

**Preconditions:**
- The citizen must have an Android smart phone with:
  - Internet access (3G, WiFi)
- The system offers comprehensive and updated information about public transport in real time: routes, stops, pending time until arrival, accessibility issues, etc.

**Post-conditions:**
- The system offers information about the accessible public transport (see also CI_02).
- Using the system, the citizen has been able to:
  - Identify the best route to his destination
  - Know the time needed for the journey
  - Reach a destination using public transport
  - Know the incidences at a route or stop
- The resulting route should take the mobility restrictions of the user into account.

**Normal Flow:**
1. Citizen starts the app installed in his mobile phone (SIMON LEADS)
2. The citizen selects the function "plan trip" in the “public transport” option
3. The citizen introduces the destination data
4. The display shows the route of different transport means to his destination
5. The citizen selects the transport line
6. The display shows the route
7. The display shows the stops in the route and details the pending time until the arrival to the nearest stop
8. When the citizen selects any stop, a window shows the pending time until the arrival at this point
9. The citizen can set a warning to report the passing of a specific transport mean in the area at a certain time.

**Alt. Flows:**
- CI_02

**Includes:**
- The possibility that citizens rate the service is provided.

**Freq. of Use:**
- The system is available 24 hours a day and can be used by request

**Assumptions:**
- All devices and services are synchronized

**Notes and Issues:**
- This is a special use case, mainly intended for pilot testing.
- Relation with requirement F_001, F_011, M.1_002, M.1_003, M.1_004
**Use Case ID:** CI_02  
**Use Case Name:** RECEIVE INFORMATION ABOUT ACCESSIBLE PUBLIC TRANSPORT IN REAL TIME  
**PILOT in:** Madrid (CRTM)*, Lisbon, Parma  
**Actors:**  
Primary: User/citizen  
Secondary: system administrator (Platform ANSWERS)  
**Description:** The citizen consults information about public transport: routes, stops, schedule and accessibility services/issues (accessible routes, elevators, info points, etc.)  
**Stakeholders and Interests:**  
System administrator  
Operator  
**Trigger:** The citizen wants to receive information about accessible public transport in real time.  
**Preconditions:**  
The citizen must have an Android smartphone with:  
- Internet access (3G, WiFi)  
The system offers integrated information about accessibility to public transport: accessible transport, elevators, special services, etc.  
The system offers direct data showing the route, features and incidences.  
**Post-conditions:** Using the system, the user has received information related to:  
- Know the accessible options of public transport in real time  
- Reach a destination using a public transport  
- Identify the best line and stop to his destination  
- Know the time necessary for the journey  
- Get informed about the incidences (delays, accessibility issues, …)  
**Normal Flow:**  
1. The citizen starts the app installed in his mobile phone (SIMON LEADS)  
2. The user selects the function "real time information" in the "public transport" option.  
3. The user selects the different options:  
   3.1. Accessibility services in an area or stop.  
   3.2. Accessible routes to reach a destination  
   3.3. Schedule of accessible routes  
   3.4. Elapsed time of a route  
   3.5. Incidences at a route or stop  
4. The display shows the information requested, including the accessibility services and issues.  
5. The user is able to plan a trip using public transport (see CI_01)  
**Alternative Flows:**  
Directly plan the trip (CI_01)  
**Frequency of Use:** The system is available 24 hours a day and can be used by request  
**Includes:** The use of the app is supported by context help and online user manuals.  
The possibility that citizens rate the service is provided.  
**Assumptions:** All devices and services are synchronized  
**Notes and Issues:** Relation with requirement F_001, F_005, F_007, F_009, F_010, F_011, M.1_002, M.1_003, M.1_004
<table>
<thead>
<tr>
<th>Use Case ID:</th>
<th>CI_03</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Case Name:</td>
<td>LOCATE FREE PARKING SPOTS IN PUBLIC PARKING SPACES AND RESTRICTED AREAS</td>
</tr>
<tr>
<td>PILOT in:</td>
<td>Parma, Lisbon</td>
</tr>
<tr>
<td>Actors:</td>
<td>Primary: Citizen (Using SIMON LEADS with SIMON BOOKS)</td>
</tr>
<tr>
<td></td>
<td>Secondary: system administrator</td>
</tr>
<tr>
<td>Description:</td>
<td>The citizen wants to know the availability of public parking spaces in the street.</td>
</tr>
<tr>
<td>Stakeholders and Interests:</td>
<td>System administrator</td>
</tr>
<tr>
<td></td>
<td>Operator</td>
</tr>
<tr>
<td>Trigger:</td>
<td>The citizen has arrived near his destination and wants to park in the area</td>
</tr>
<tr>
<td></td>
<td>The citizen starts to use the mobile app, the action is supported by integrated information in real-time.</td>
</tr>
<tr>
<td>Preconditions:</td>
<td>The citizen must have an Android smart phone with:</td>
</tr>
<tr>
<td></td>
<td>• GPS activated</td>
</tr>
<tr>
<td></td>
<td>• Internet access (3G, WiFi)</td>
</tr>
<tr>
<td></td>
<td>The system offers comprehensive and real-time updated data showing the available open parking places in public and restricted areas</td>
</tr>
<tr>
<td></td>
<td>The system provides real-time geo-location</td>
</tr>
<tr>
<td>Post-conditions:</td>
<td>Using the system parking allows keeping better tracking of parking places.</td>
</tr>
<tr>
<td></td>
<td>The citizen has been able to:</td>
</tr>
<tr>
<td></td>
<td>• Find an available parking place using the app</td>
</tr>
<tr>
<td></td>
<td>• Reach to the parking space using the app navigation instructions.</td>
</tr>
<tr>
<td>Normal Flow:</td>
<td>1. Citizen starts the app installed in his mobile phone</td>
</tr>
<tr>
<td></td>
<td>2. The citizen selects the function &quot;search available parking spaces in the area&quot;</td>
</tr>
<tr>
<td></td>
<td>3. The display shows the available places</td>
</tr>
<tr>
<td></td>
<td>4. The citizen filters the results by selecting “public parking” and/or “restricted areas”</td>
</tr>
<tr>
<td></td>
<td>5. The display shows the route to the selected place (see CI_05)</td>
</tr>
<tr>
<td></td>
<td>6. The citizen accesses to the available place</td>
</tr>
<tr>
<td></td>
<td>7. The citizen parks and validates the parking (see use cases CI_06 to 12)</td>
</tr>
<tr>
<td></td>
<td>8. The system recognizes that the area is busy and no longer appears as free for the next citizen (see use cases CI_06 to 12)</td>
</tr>
<tr>
<td>Alternative Flows:</td>
<td>Correlation with other actions (see “Includes”)</td>
</tr>
<tr>
<td>Exceptions:</td>
<td>Possible actions linked with other use cases:</td>
</tr>
<tr>
<td></td>
<td>• Planning the trip using private vehicle (CI_05)</td>
</tr>
<tr>
<td></td>
<td>• Validate the parking (CI_06 to 12)</td>
</tr>
<tr>
<td></td>
<td>The use of the app is supported by context help and online user manuals.</td>
</tr>
<tr>
<td></td>
<td>The possibility that citizens rate the service is provided.</td>
</tr>
<tr>
<td>Frequency of Use:</td>
<td>The system is available 24 hours a day and can be used by request</td>
</tr>
<tr>
<td>Special Requirements:</td>
<td>When the citizen returns to the car, the system can show how to get to the location of the vehicle.</td>
</tr>
<tr>
<td>Assumptions:</td>
<td>All devices and services are synchronized</td>
</tr>
<tr>
<td>Notes and issues:</td>
<td>Relation with requirement F_003, F_004, F_012, F_013, M.1_001, M.1_005</td>
</tr>
<tr>
<td><strong>Use Case ID:</strong></td>
<td>CI_04</td>
</tr>
<tr>
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</tr>
<tr>
<td><strong>Use Case Name:</strong></td>
<td>IDENTIFY THE OPEN RESERVED SPACES AND GET TO THE PLACE</td>
</tr>
<tr>
<td><strong>PILOT in:</strong></td>
<td>Parma, Madrid, Lisbon</td>
</tr>
<tr>
<td><strong>Actors:</strong></td>
<td>Primary: Citizens (using SIMON LEADS with SIMON ANSWERS)  Secondary: System administrator, Controllers</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>The citizen wants to know where to find reserved parking spaces near his destination.</td>
</tr>
<tr>
<td><strong>Stakeholders and Interests:</strong></td>
<td>System administrator / Operators  Municipality  Police</td>
</tr>
<tr>
<td><strong>Trigger:</strong></td>
<td>The citizen is near a destination and wants to park at the area</td>
</tr>
<tr>
<td><strong>Preconditions:</strong></td>
<td>The citizen must have an Android smart phone with:  - GPS activated  - Internet access (3G, WiFi)  The citizen is registered in the system and has logged in at the mobile app.</td>
</tr>
<tr>
<td><strong>Post-conditions:</strong></td>
<td>The citizen parks (if there are free spaces)  The citizen marks that the space is occupied (maps update automatically).</td>
</tr>
<tr>
<td><strong>Normal Flow:</strong></td>
<td>1. Citizen starts the app installed in his mobile phone  2. The citizen selects the function &quot;search existing reserved parking spaces in the area&quot;  3. The display shows the existing places  4. The citizen filters the results by selecting “public parking” and/or “restricted areas”  5. The display shows the route to the selected place (CI_05)  6. The citizen drives to the selected area, following the indications (CI_05).  7. The citizen parks and validates the parking (see use cases CI_06 to 12)</td>
</tr>
<tr>
<td><strong>Alternative Flows:</strong></td>
<td>If the user can see whether the parking spaces are occupied or free (between steps 3 and 4), then the use case would be: CI_03</td>
</tr>
<tr>
<td><strong>Exceptions:</strong></td>
<td>This use case is for information of existing reserved spaces only, does not guarantee the availability of the parking space.</td>
</tr>
<tr>
<td><strong>Includes:</strong></td>
<td>This use case is for information of existing reserved spaces only, does not guarantee the availability of the parking space.  The possibility that citizens rate the service is provided.</td>
</tr>
<tr>
<td><strong>Frequency of Use:</strong></td>
<td>The system is available 24 hours a day and can be used by request</td>
</tr>
<tr>
<td><strong>Special Requirements:</strong></td>
<td>Assumptions: All devices and services are synchronized  Citizen id and status is updated at the databases</td>
</tr>
<tr>
<td><strong>Notes and Issues:</strong></td>
<td>Relation with requirement F_003, F_004, F_012, F_013, M.1_001, M.1_005</td>
</tr>
<tr>
<td>Use Case ID:</td>
<td>CI_05</td>
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<tr>
<td>Use Case Name:</td>
<td>PLAN TRIPS USING PRIVATE VEHICLE</td>
</tr>
<tr>
<td>PILOT in:</td>
<td>Madrid*, Lisbon, Parma</td>
</tr>
</tbody>
</table>
| Actors: | Primary: User/Citizen (Using SIMON LEADS with SIMON ANSWERS)  
Secondary: system administrator. |
| Description: | The citizen plans a trip using private vehicle. A wizard navigation it’s available to reach the destination. |
| Stakeholders and Interests | System administrator, Parking controller and operators |
| Trigger: | The citizen wants to reach a destination.  
The citizen uses the mobile application (SIMON LEADS) that has data about directions, available parking areas and wizard navigation. |
| Preconditions: | The citizen must have an Android smart phone with:  
• GPS activated  
• Internet access (3G, WiFi)  
The citizen is registered in the system and has logged in at the mobile app.  
The system offers a integrated wizard navigation that tells the user how to get to the target area with online route and real-time geo-location  
The system offers direct data showing the available parking places (SIMON BOOKS, see CI_03, CI_04 and CI_14)  
The system provides real-time geo-location |
| Post-conditions: | The system offers a route to navigate to a selected destination. Additionally availability of parking spaces, booking is available when the citizen has arrived (SIMON BOOKS, see CI_03, CI_04 CI_14 and CI_15).  
Using the system, the user has received the indications on to reach to a destination.  
After the use, the citizen can rate the service using the application. |
| Normal Flow: | 1. Citizen starts the app installed in his mobile phone.  
2. The citizen selects to the function "wizard navigation".  
3. The citizen introduces the destination data using different input possibilities.  
4. The display shows the route and the available parking spaces in the nearby (see CI_03).  
5. The citizen selects the GPS with speech output, the system tells him how to access to destination. |
2. The citizen accesses to the function "wizard navigation".  
3. The citizen introduces the destination data using different input possibilities.  
4. The display shows the route.  
5. The citizen selects the speech output, the system tells him how to access the destination.  
6. The citizen looks for parking availability (SIMON BOOKS, see CI_03, CI_04 and CI_14):  
   • The citizen accesses to the function "look for available parking spaces in the area.  
   • The display shows the available spaces.  
   • The display shows the route to the selected place  
   • The citizen selects the GPS with speech output, the system tells him how to access the destination |
| Exceptions: |  |
| Includes: | Possible actions linked with other use cases:  
• Locate available parking spaces (see CI_03, CI_04 and CI_14) |
- Validate the parking (Cl_06 to Cl_12)
  The use of the app is supported by context help and online user manuals
  The possibility that citizens rate the service is provided.

<table>
<thead>
<tr>
<th>Frequency of Use:</th>
<th>The system is available 24 hours a day and can be used by request</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Requirements:</td>
<td>When the citizen returns to the car, the system can show how to get to the location of the vehicle.</td>
</tr>
<tr>
<td>Assumptions:</td>
<td>All devices and services are synchronized</td>
</tr>
<tr>
<td>Notes and Issues:</td>
<td>Relation with requirement F_005, F_007, F_009, F_010, M.1_001, M.1_009</td>
</tr>
<tr>
<td>Use Case ID:</td>
<td>CI_06</td>
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</tr>
<tr>
<td>Use Case Name:</td>
<td>CITIZEN IDENTIFICATION AT A PARKING SPACE USING SMART PHONE AND PARK METER</td>
</tr>
<tr>
<td>PILOT in:</td>
<td>Madrid*, Lisbon</td>
</tr>
</tbody>
</table>
| Actors:              | Primary: Citizens (using SIMON LEADS with SIMON SAYS)  
                        Secondary: System administrator (SIMON TSM) |
| Description:         | The citizen uses his smart phone to be identified in the parking area by the smart park meter. The user has to resolve a challenge. |
| Stakeholders and Interests | System administrator / Operator  
                        Municipality  
                        User associations |
| Trigger:             | The citizen parks at a parking space. The citizen wants to validate the parking. |
| Preconditions:       | The citizen must have an Android smart phone with:  
                        • Internet access (3G, WiFi)  
                        The citizen has installed the SIMON app (SIMON LEADS) in his smart phone.  
                        The citizen is registered in the system and has logged in at the mobile app.  
                        The system is able to communicate with the central database and offer updated response in real time. |
| Post-conditions:     | When the citizen is validated, the system stores the information (OP_06).  
                        When the citizen is validated, a ticket is printed by the park meter to be left in the vehicle (CI_13). |
| Normal Flow:         | 1. The citizen approaches the park meter  
                        2. The citizen uses the park meter to:  
                           • Request the parking space.  
                           • Identify himself  
                        3. The system sends the challenge (e.g.: a word or a code) to the smartphone.  
                        4. The citizen enters the answer to the challenge in the park meter and validates the operation.  
                        5. The park meter provides the parking ticket to the citizen (CI_13) |
| Alternative Flows:   | Other means of identification:  
                        • Using a NFC phone with the park meter (CI_07)  
                        • Using a smart phone without interacting with the park meter (CI_08)  
                        • Identification of the position of the citizen by the park meter (CI_09 and 10)  
                        • Identification using a RFID EU badge and the park meter (CI_11)  
                        • Identification using a RFID EU badge and a smart phone (CI_12) |
| Exceptions:          | Possible actions linked with other use cases:  
                        • Trip planning (CI_05)  
                        • Check parking availability (CI_03)  
                        • Consequences of the identification (CO_01 and CI_13)  
                        The use of the app is supported by context help and online user manuals  
                        The possibility that citizens rate the service is provided. |
| Frequency of Use:    | The system is available 24 hours a day and can be used by request. Limitations in the time of use can be applied depending on the operating hours of the reserved parking spaces (e.g.: at orange or blue zones). |
| Special Requirements:| All devices and services are synchronized.  
                        Citizen id and status is updated at the databases. |
<p>| Notes and Issues: | Relation with requirement F_004, F_012, F_015, M.1_008, M.1_011, M.1_012 |</p>
<table>
<thead>
<tr>
<th>Use Case ID:</th>
<th>CI_07</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Case Name:</td>
<td>CITIZEN IDENTIFICATION AT A PARKING SPACE USING NFC SMART PHONE AND PARK METER</td>
</tr>
<tr>
<td>PILOT in:</td>
<td>Madrid*, Lisbon</td>
</tr>
</tbody>
</table>
| Actors:       | Primary: Citizens (using SIMON LEADS with SIMON SAYS)  
                Secondary: System administrator (SIMON TSM) |
| Description:  | The user uses his smart phone with NFC to be identified in the parking area by the smart park meter. The challenge is the NFC connection. |
| Stakeholders and Interests | System administrator / Operator  
                            Municipality  
                            User associations |
| Trigger:      | The citizen parks. The citizen wants to validate the parking. |
| Preconditions:| The citizen must have an Android smart phone with:  
                      • NFC technology available and activated  
                      • Internet access (3G, WiFi)  
                      The citizen has installed the SIMON app (SIMON LEADS) in his smart phone.  
                      The citizen is registered in the system and has logged in at the mobile app.  
                      The system is able to communicate with the central database and offer updated response in real time. |
| Post-conditions: | When the citizen is validated, the system stores the information (OP_06).  
                      When the citizen is validated, a ticket is printed by the park meter to be left in the vehicle (CI_13). |
| Normal Flow:  | 1. The citizen approaches the park meter  
                      2. The citizen places the phone near the park meter  
                      3. The park meter validates the operation.  
                      4. The park meter provides the parking ticket to the citizen (CI_13) |
| Alternative Flows: | Other means of identification:  
                      • Using a common smart phone with the park meter (CI_06)  
                      • Using a smart phone without interacting with the park meter (CI_08)  
                      • Identification of the position of the citizen by the park meter (CI_09 and 13)  
                      • Identification using a RFID EU badge and the park meter (CI_11)  
                      • Identification using a RFID EU badge and a smart phone (CI_12) |
| Exceptions:   | Possible actions linked with other use cases:  
                      • Trip planning (CI_05)  
                      • Check parking availability (CI_03)  
                      • Consequences of the identification (CO_01 and CI13)  
                      The use of the app is supported by context help and online user manuals.  
                      The possibility that citizens rate the service is provided. |
| Frequency of Use: | The system is available 24 hours a day and can be used by request.  
                      Limitations in the time of use can be applied depending on the operating hours of the reserved parking spaces (e.g.: at orange or blue zones). |
| Special Requirements: | |
| Assumptions:  | All devices and services are synchronized.  
                      Citizen id and status is updated at the databases. |
| Notes and Issues: | Relation with requirement F_004, F_012, F_015, M.1_008, M.1_011, M.1_012 |
### Use Case ID: CI_08
### Use Case Name: CITIZEN IDENTIFICATION AT A PARKING SPACE USING ONLY SMART PHONE
### PILOT in: Parma, Lisbon*, Madrid*
### Actors:
- **Primary:** Citizens (using SIMON LEADS with SIMON SAYS)
- **Secondary:** System administrator (SIMON TSM)

### Description:
The citizen uses his smart phone to be identified in the parking area with no interaction of the smart park meter. The citizen has to resolve a challenge. The challenge is directly proposed through the smartphone.

### Stakeholders and Interests
- System administrator / Operator
- Municipality
- User associations

### Trigger:
The citizen parks at reserved parking space. The citizen wants to validate the parking.

### Preconditions:
The citizen must have an Android smart phone with:
- Internet access (3G, WiFi)
The citizen has installed the SIMON app (SIMON LEADS) in his smart phone.
The citizen is registered in the system and has logged in at the mobile app.
The system is able to communicate with the central database and offer updated response in real time.

### Post-conditions:
The citizen has validated the parking.
The citizen receives an electronic receipt in his smart phone.
When the citizen is validated, the system stores the information (OP_06).

### Normal Flow:
1. The user requests the parking space by using the mobile phone
2. The system sends the challenge (e.g.: a word or a code)
3. The citizen enters the answer to the challenge in the application and validates the operation.
4. The systems send an electronic receipt of the operation to user’s smart phone.

### Alternative Flows:
- Using a common smart phone with the park meter (CI_06)
- Using a NFC phone with the park meter (CI_07)
- Identification of the citizen position by the park meter (CI_09 and 10)
- Identification using a RFID EU badge and the park meter (CI_11)
- Identification using a RFID EU badge and a smart phone (CI_12)

### Exceptions:
- Includes: Possible actions linked with other use cases:
  - Trip planning (CI_05)
  - Check parking availability (CI_03)
  - Consequences of the identification (CO_01)

The use of the app is supported by context help and online user manuals.
The possibility that citizens rate the service is provided.

### Frequency of Use:
The system is available 24 hours a day and can be used by request. Limitations in the time of use can be applied depending on the operating hours of the reserved parking spaces (e.g.: at orange or blue zones).

### Special Requirements:
- Assumptions: All devices and services are synchronized.
  Citizen id and status is updated at the databases.

### Notes and Issues:
Relation with requirement F_004, F_012, F_015, M.1_001, M.1_008, M.1_011, M.1_012
<table>
<thead>
<tr>
<th>Use Case ID:</th>
<th>CI_09</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Case Name:</td>
<td>CITIZEN IDENTIFICATION AT A PARKING SPACE SHARING THE POSITION WITH THE SMART PHONE</td>
</tr>
<tr>
<td>PILOT in:</td>
<td>Madrid*, Lisbon*</td>
</tr>
<tr>
<td>Actors:</td>
<td>Primary: Citizens (using SIMON LEADS with SIMON SAYS) Secondary: System administrator (SIMON TSM)</td>
</tr>
<tr>
<td>Description:</td>
<td>The citizen uses his smart phone to be identified in the parking area. The smart phone shares the position of the user. The citizen does not need to resolve a challenge.</td>
</tr>
<tr>
<td>Stakeholders and Interests:</td>
<td>System administrator / Operator Municipality User associations</td>
</tr>
<tr>
<td>Trigger:</td>
<td>The citizen parks. The citizen wants to validate the parking.</td>
</tr>
</tbody>
</table>
| Preconditions: | The citizen must have an Android smart phone with:  
- GPS activated  
- Internet access (3G, WiFi)  
The citizen has installed the SIMON app in his smart phone.  
The citizen is registered in the system and has logged in at the mobile app.  
The system is able to communicate with the central database and offer updated response in real time. |
| Post-conditions: | The citizen has validated the parking.  
When the citizen is validated, the system stores the information (OP_06).  
When the citizen is validated he receives an electronic receipt in his smart phone. |
| Normal Flow: | 1. The citizen parks.  
2. The citizen requests the parking space by using the mobile phone  
3. The system captures the position of the user (GPS)  
5. The system sends an electronic receipt of the operation to citizen’s smart phone. |
| Alternative Flows: | Other means of identification:  
- Using a common smart phone with the park meter (CI_06)  
- Using a NFC phone with the park meter (CI_07)  
- Using a smart phone without interacting with the park meter (CI_08)  
- Identification of the position and entering the plate (CI_10)  
- Identification using a RFID EU badge and the park meter (CI_11)  
- Identification using a RFID EU badge and a smart phone (CI_12) |
| Exceptions: | Possible actions linked with other use cases:  
- Trip planning (CI_05)  
- Check parking availability (CI_03)  
- Consequences of the identification (CO_01 and CI_13)  
The use of the app is supported by context help and online user manuals  
The possibility that citizens rate the service is provided. |
| Frequency of Use: | The system is available 24 hours a day and can be used by request. Limitations in the time of use can be applied depending on the operating hours of the reserved parking spaces (e.g.: at orange or blue zones). |
| Special Requirements: | All devices and services are synchronized.  
Citizen id and status is updated at the databases. |
<p>| Notes and Issues: | Relation with requirement F_004, F_012, F_015, M.1_001, M.1_008, M.1_011, M.1_012 |</p>
<table>
<thead>
<tr>
<th>Use Case ID:</th>
<th>CI_10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Case Name:</td>
<td>CITIZEN IDENTIFICATION AT A PARKING SPACE SHARING THE POSITION WITH THE SMART PHONE AND ENTERING THE PLATE</td>
</tr>
<tr>
<td>PILOT in:</td>
<td>Madrid*</td>
</tr>
<tr>
<td>Actors:</td>
<td>Primary: Citizens (using SIMON LEADS with SIMON SAYS) Secondary: System administrator (SIMON TSM)</td>
</tr>
<tr>
<td>Description:</td>
<td>The user uses his smart phone to be identified in the parking area. The smart phone shares the position of the user. The user has to enter the plate. The citizen does not need to resolve a challenge.</td>
</tr>
<tr>
<td>Stakeholders and Interests</td>
<td>System administrator / Operator  Municipality  User associations</td>
</tr>
<tr>
<td>Trigger:</td>
<td>The citizen parks at reserved parking space. The citizen wants to validate the parking.</td>
</tr>
<tr>
<td>Preconditions:</td>
<td>The citizen must have an Android smart phone with:  • GPS activated  • Internet access (3G, WiFi)  The citizen has installed the SIMON app (SIMON LEADS) in his smart phone.  The citizen is registered in the system and has logged in at the mobile app.  The system is able to communicate with the central database and offer updated response in real time.</td>
</tr>
<tr>
<td>Post-conditions:</td>
<td>The citizen has validated the parking.  When the citizen is validated, the system stores the information (OP_06).  When the citizen is validated, he receives an electronic receipt in his smart phone, see CI_08.</td>
</tr>
<tr>
<td>Normal Flow:</td>
<td>1. The citizen parks.  2. The citizen requests the parking space by using the mobile phone.  3. The system captures the position of the citizen.  4. The citizen enters the plate number through the app  5. The systems send an electronic receipt of the operation to citizen’s smart phone.</td>
</tr>
<tr>
<td>Alternative Flows:</td>
<td>Other means of identification:  • Using a common smart phone with the park meter (CI_06)  • Using a NFC phone with the park meter (CI_07)  • Using a smart phone without interacting with the park meter (CI_08)  • Identification of the position of the citizen by the park meter (CI_09)  • Identification using a RFID EU badge and the park meter (CI_11)  • Identification using a RFID EU badge and a smart phone (CI_12)</td>
</tr>
<tr>
<td>Exceptions:</td>
<td>Possible actions linked with other use cases:  • Trip planning (CI_05)  • Check parking availability (CI_03)  • Consequences of the identification (CO_01 and CI_13)  The use of the app is supported by context help and online user manuals  The possibility that citizens rate the service is provided.</td>
</tr>
<tr>
<td>Frequency of Use:</td>
<td>The system is available 24 hours a day and can be used by request. Limitations in the time of use can be applied depending on the operating hours of the reserved parking spaces (e.g.: at orange or blue zones).</td>
</tr>
<tr>
<td>Special:</td>
<td></td>
</tr>
</tbody>
</table>
### Requirements:

<p>| Assumptions: | All devices and services are synchronized. Citizen id and status is updated at the databases. |
| Notes and Issues: | Relation with requirement F_004, F_012, F_015, M.1_001, M.1_008, M.1_011, M.1_012 |</p>
<table>
<thead>
<tr>
<th>Use Case ID:</th>
<th>CI_11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Case Name:</td>
<td>USE OF AN EU BADGE WITH RFID TO BE IDENTIFIED IN THE SMART PARK METER.</td>
</tr>
<tr>
<td>PILOT in:</td>
<td>Madrid*, Lisbon</td>
</tr>
<tr>
<td>Actors:</td>
<td>Primary: Citizens (using SIMON LEADS with SIMON SAYS) Secondary: System administrator (SIMON TSM)</td>
</tr>
<tr>
<td>Description:</td>
<td>The citizen uses his EU badge with RFID to be identified in the parking area by the smart park meter.</td>
</tr>
<tr>
<td>Stakeholders and Interests:</td>
<td>System administrator / Operators Controllers</td>
</tr>
<tr>
<td>Trigger:</td>
<td>The citizen parks at reserved parking space. The citizen wants to validate the parking.</td>
</tr>
<tr>
<td>Preconditions:</td>
<td>The citizen owns a RFID EU badge The RFID badge has been activated and validated by the SIMON administration (see OP_01) The smart park meter can receive and send information</td>
</tr>
<tr>
<td>Post-conditions:</td>
<td>The citizen has validated the parking. When the citizen has been validated, a ticket is printed by the park meter to be left in the vehicle (see CI_13). When the citizen is validated, the system stores the information (OP_06).</td>
</tr>
<tr>
<td>Normal Flow:</td>
<td>1. The citizen approaches to the smart park meter. 2. The citizen places the EU badge near RFID reader in the park meter. 3. The park meter recognizes the badge and displays the information and the parking conditions. 4. The citizen confirms the operation with the keyboard of the park meter. 5. The park meter prints a ticket (see CI_13).</td>
</tr>
<tr>
<td>Alternative Flows:</td>
<td>Other means of identification:  • Using a common smart phone with the park meter (CI_06)  • Using a NFC phone with the park meter (CI_07)  • Using a smart phone without interacting with the park meter (CI_08)  • Identification of the position of the citizen by the park meter (CI_09)  • Identification of the position and entering the plate (CI_10)  • Identification using a RFID EU badge and a smart phone (CI_12)</td>
</tr>
<tr>
<td>Exceptions:</td>
<td></td>
</tr>
<tr>
<td>Includes:</td>
<td>The possibility that citizens rate the service is provided.</td>
</tr>
<tr>
<td>Frequency of Use:</td>
<td>The system is available 24 hours a day and can be used by request</td>
</tr>
<tr>
<td>Special Requirements:</td>
<td></td>
</tr>
<tr>
<td>Assumptions:</td>
<td>All devices and services are synchronized</td>
</tr>
<tr>
<td>Notes and Issues:</td>
<td>This is the case with the lowest security level. Relation with requirement F_004, F_012, F_015, M.1_008, M.1_011, M.1_012</td>
</tr>
</tbody>
</table>
**Use Case ID:** CI_12  
**Use Case Name:** CITIZEN IDENTIFICATION AT A PARKING SPACE USING NFC SMART PHONE AND A RFID (NFC) EU BADGE  
**PILOT in:** Parma, Lisbon, Madrid*  
**Actors:**  
Primary: Citizens (using SIMON LEADS with SIMON SAYS)  
Secondary: System administrator (SIMON TSM)  
**Description:** The citizen uses his NFC smart phone to be identified in the parking area with interaction with the RFID badge attached to his windscreen (no interaction of the smart park meter). The citizen has to resolve a challenge.  
**Stakeholders and Interests:**  
Controllers  
System administrator / Operator  
Municipality  
User associations  
**Trigger:** The citizen parks at reserved parking space. The citizen wants to validate the parking.  
**Preconditions:** The citizen must have an Android smart phone with:  
- NFC technology available and activated  
- Internet access (3G, WiFi)  
The citizen has installed the SIMON app (SIMON LEADS) in his smart phone.  
The citizen is registered in the system and has logged in at the mobile app.  
The citizen must have a EU Badge adapted with RFID tag attached to the windscreen of his car.  
The system is able to communicate with the central database and offer updated response in real time.  
**Post-conditions:** The citizen has validated the parking.  
The citizen receives an electronic receipt in his smart phone  
When the citizen is validated, the system stores the information (OP_06).  
**Normal Flow:**  
1. The user is going to validate the parking space by placing the phone near the RFID sticker  
2. The system recognizes the RFID tag and sends the challenge (e.g.: a word or a code)  
3. The citizen enters the challenge in the application (SIMON SAYS) and validates the operation.  
4. The system sends an electronic receipt of the operation to citizen’s smart phone.  
**Alternative Flows:** Other means of identification:  
- Using a common smart phone with the park meter (CI_06)  
- Using a NFC phone with the park meter (CI_07)  
- Using a smart phone (no NFC) without interacting with the park meter (CI_08)  
- Identification of the position of the citizen by the park meter (CI_09 and 10)  
- Identification using a RFID EU badge and the park meter (CI_11)  
**Exceptions:** Includes: Possible actions linked with other use cases:  
- Trip planning (CI_05)  
- Check parking availability (CI_03)  
- Consequences of the identification (CO_01)  
The use of the app is supported by context help and online user manuals  
The possibility that citizens rate the service is provided.  
**Frequency of Use:** The system is available 24 hours a day and can be used by request. Limitations in the
<table>
<thead>
<tr>
<th>Use:</th>
<th>time of use can be applied depending on the operating hours of the reserved parking spaces (e.g.: at orange or blue zones).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Requirements:</td>
<td></td>
</tr>
</tbody>
</table>
| Assumptions: | All devices and services are synchronized.  
Citizen id and status is updated at the databases. |
| Notes and Issues: | Relation with requirement F_004, F_012, F_015, M.1_008, M.1_011, M.1_012 |
### Use Case Specification Document

<table>
<thead>
<tr>
<th>Use Case ID:</th>
<th>CI_13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Case Name:</td>
<td>WHEN THE USER RESPONSES THE CHALLENGE AND HE IS VALIDATED, A TICKET IS PRINTED BY THE PARK METER TO BE LEFT IN THE VEHICLE</td>
</tr>
<tr>
<td>PILOT in</td>
<td>Madrid*, Lisbon</td>
</tr>
<tr>
<td>Actors:</td>
<td>Primary: Citizens (using SIMON LEADS with SIMON SAYS), Secondary: System administrator (Platform SAYS), Controllers</td>
</tr>
<tr>
<td>Description:</td>
<td>System administrator, Operator</td>
</tr>
<tr>
<td>Stakeholders and Interests</td>
<td>Trigger: The citizen answered the challenge correctly and has been validated</td>
</tr>
<tr>
<td>Preconditions:</td>
<td>The citizen has parked and validates the parking by any of the means available (implying interaction with the park meter): CI_06, CI_07, CI_11.</td>
</tr>
<tr>
<td>Post-conditions:</td>
<td>The citizen puts the receipt in the car, visible from outside. Controllers can visually inspect the receipt’s existence.</td>
</tr>
<tr>
<td>Normal Flow:</td>
<td>1. The park meter prints a ticket. 2. The citizen collects the ticket.</td>
</tr>
<tr>
<td>Alternative Flows:</td>
<td></td>
</tr>
<tr>
<td>Exceptions:</td>
<td>Includes: The possibility that citizens rate the service is provided.</td>
</tr>
<tr>
<td>Frequency of Use:</td>
<td>The system is available 24 hours a day and can be used by request.</td>
</tr>
<tr>
<td>Special Requirements:</td>
<td>The ticket will have the technology (specified at the functional requirements) to be readable by the controller.</td>
</tr>
<tr>
<td>Assumptions:</td>
<td>All devices and services are synchronized.</td>
</tr>
<tr>
<td>Notes and Issues:</td>
<td>Related to requirement M.1_011, M.1_012</td>
</tr>
<tr>
<td><strong>Use Case ID:</strong></td>
<td>CI_14</td>
</tr>
<tr>
<td>------------------</td>
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</tr>
<tr>
<td><strong>Use Case Name:</strong></td>
<td>STATUS (OCCUPIED, FREE) OF THE PRIVATE PARKING SPACES</td>
</tr>
<tr>
<td><strong>PILOT in:</strong></td>
<td>Madrid, Lisbon, Parma</td>
</tr>
</tbody>
</table>
| **Actors:**       | Primary: User/citizen  
|                   | Secondary: system administrator (Platform BOOKS) |
| **Description:**  | When the citizen is near destination, can receive information about the status (occupied, free) of the private parking spaces in real time. |
| **Stakeholders and Interests:** | System administrator  
|                   | Operator |
| **Trigger:**      | The user has come near his destination and wants to park in the area  
|                   | The user starts to use the mobile app, the action is supported by integrated information in real-time |
| **Preconditions:** | The citizen must have an Android smart phone with:  
|                   | • Internet access (3G, WiFi)  
|                   | The system offers real time data showing the available parking places in private parking spaces  
|                   | The system offers integrated information about accessibility to private parking facilities: elevators, specific access, incidences, etc. |
| **Post-conditions:** | The citizen has received the following information:  
|                   | - Available parking spaces (with the possibility of filtering the search results and choosing “private parking”)  
|                   | - Parking details (operation hours, price, conditions,...)  
|                   | - Driving instructions to reach the place.  
| **Possible:**      | The citizen can book a free parking space (see CI_15) |
| **Normal Flow:**  | 1. Citizen accesses the app installed in his mobile phone  
|                   | 2. The citizen accesses to the function “search parking” available spaces in the area  
|                   | 3. The display shows the available places  
|                   | 4. The citizen selects the options “private parking”  
|                   | 5. The display shows the route to the selected place (see CI_05) |
| **Includes:**     | May include the following steps (see CI_05):  
|                   | 6. The citizen selects the GPS with speech output for the system tells him how to access  
|                   | 7. The citizen accesses to the available place  
|                   | 8. The citizen parks  
|                   | 9. The system recognizes that the area is busy and no longer appears as free for the next user  
|                   | The possibility that citizens rate the service is provided. |
| **Frequency of Use:** | The system is available 24 hours a day and can be used by request |
| **Special Requirements:** | When the user returns to the car, the system can show how to get to the location of the vehicle |
| **Assumptions:**  | All devices and services are synchronized |
| **Notes and Issues:** | This use case is quite similar to CI_15: the main difference is that the booking option is not available in this case.  
|                   | This use case follows the same procedures as in CI_03: here the user filters by private parking options instead of public parking.  
|                   | Relation with requirement M.1_005, M.1_006 |
**Use Case ID:** CI_15  
**Use Case Name:** BOOKING A PARKING SPACE IN PRIVATE PARKING AREAS  
**PILOT in:** Lisbon, Parma  
**Actors:**  
Primary: Citizen (Using SIMON LEADS with SIMON BOOKS)  
Secondary: System administrator  
**Description:** The citizen looks for an available accessible parking space in private areas and makes the reservation.  
**Stakeholders and Interests**  
Private parking managers  
System administrator  
**Trigger:** The citizen has arrived near his destination and wants to park in the area / The citizen reserves a parking space before starting the travel.  
**Preconditions:** The citizen must have an Android smart phone with:  
- GPS activated  
- Internet access (3G, WiFi)  
The system offers comprehensive and updated data showing the available parking places  
The system can display the reserved parking  
**Post-conditions:** The citizen has been able to:  
- Find an available parking place  
- Book the place  
- Access to the parking facilities using the app navigation instructions (see CI_05)  
**Normal Flow:**  
1. Citizen starts the app installed in his mobile phone  
2. The citizen selects the function "search available parking spaces in the area”  
3. The display shows the available spaces (see also CI_14).  
4. The citizen filters the results by selecting “private parking”  
5. The citizen selects a space and books  
6. At the display, the reserved space change from available to unavailable  
7. The display shows the route to the selected place (see also CI_05)  
8. The citizen parks  
**Alternative Flows:**  
1. Citizen starts the app installed in his mobile phone  
2. The citizen introduces the destination data using different input possibilities.  
3. The display shows the route and the available parking spaces in the nearby.  
...Normal flow...  
7. The citizen accesses (and validates) to the parking by showing his reservation that appears at the phone screen.  
**Exceptions:**  
**Includes:** The use of the app is supported by context help and online user manuals.  
The possibility that citizens rate the service is provided.  
**Frequency of Use:** The system is available 24 hours a day and can be used by request (the booking possibilities can be limited by the working hours of the private parking facilities).  
**Special Requirements:** When the citizen returns to the car, the system can show how to get to the location of the vehicle  
**Assumptions:** All devices and services are synchronized  
**Notes and Issues:** This use case is a specific development of CI_14 (search for the status of the private parking spaces): steps 1-4 are the same at both use cases.  
Related to requirement M.1_001, M.1_005, M.1_006
<table>
<thead>
<tr>
<th><strong>Use Case ID:</strong></th>
<th>CI_16</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Use Case Name:</strong></td>
<td>CITIZEN IDENTIFICATION TO A RESTRICTED AREA USING SMART PHONE</td>
</tr>
<tr>
<td><strong>PILOT in:</strong></td>
<td>Madrid*, Lisbon*, Parma*</td>
</tr>
</tbody>
</table>
| **Actors:** | Primary: Citizens (using SIMON LEADS with SIMON OPENS)  
Secondary: System administrator (SIMON TSM) |
| **Description:** | The citizen uses his smart phone to be identified in the restricted traffic area. The citizen has to resolve a challenge. |
| **Stakeholders and Interests:** | System administrator / Operator  
Municipality  
User associations |
| **Trigger:** | The citizen arrives to the barrier of a restricted urban area with his car. The citizen wants to access to that area. |
| **Preconditions:** | • The citizen must have an Android smart phone with internet access (3G, WiFi)  
• The citizen has installed the SIMON app (SIMON LEADS) in his Android smart phone.  
• The citizen is registered in the system and has logged in at the mobile app.  
• The smart phone must be connected to internet (3G, WiFi,...)  
• The system is able to communicate with the central database and offer updated response in real time. |
| **Post-conditions:** | The citizen has been granted to access to a restricted city area. |
| **Normal Flow:** | 1. The citizen approaches to the bollard / barrier  
2. The citizen requests the access to the restricted area by introducing the ID in the electronic gate  
3. The system sends the challenge (e.g.: a word or a code)  
4. The citizen answers the challenge through the app and validates the operation.  
5. The barriers open. The citizen can access. |
| **Alternative Flows:** | Other means of identification:  
• Using a NFC phone (CI_17)  
• Using a smart phone to share the position (CI_18 and CI_19) |
| **Exceptions:** | Possible actions linked with other use cases:  
• Trip planning (CI_05)  
The use of the app is supported by context help and online user manuals  
The possibility that citizens rate the service is provided. |
| **Frequency of Use:** | The system is available 24 hours a day and can be used by request. Limitations in the time of use can be applied depending on the operating hours of the access system to restricted areas. |
| **Special Requirements:** | |
| **Assumptions:** | All devices and services are synchronized.  
Citizen id and status is updated at the databases. |
<p>| <strong>Notes and Issues:</strong> | Relation with requirement F_008, F_016, M.1_013 |</p>
<table>
<thead>
<tr>
<th><strong>Use Case ID:</strong></th>
<th>CI_17</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Use Case Name:</strong></td>
<td>CITIZEN IDENTIFICATION TO A RESTRICTED AREA USING NFC SMART PHONE</td>
</tr>
<tr>
<td><strong>PILOT in:</strong></td>
<td>Madrid*, Lisbon*, Parma*</td>
</tr>
</tbody>
</table>
| **Actors:**       | Primary: Citizens (using SIMON LEADS with SIMON OPENS)  
|                   | Secondary: System administrator (SIMON TSM) |
| **Description:**  | The citizen uses his smart phone with NFC to be identified in the restricted traffic area. |
| **Stakeholders**  | System administrator / Operator  
|                   | Municipality  
|                   | User associations |
| **Trigger:**      | The citizen arrives to the barrier of a restricted urban area with his car. The citizen wants to access to that area. |
| **Preconditions:**| The citizen must have an Android smart phone with:  
|                   | - NFC technology available and activated  
|                   | - Internet access (3G, WiFi)  
|                   | The citizen has installed the SIMON app (SIMON LEADS) in his smart phone.  
|                   | The citizen is registered in the system and has logged in at the mobile app.  
|                   | The system is able to communicate with the central database and offer updated response in real time.  
|                   | The electronic gate in the access to the restricted area must have a NFC reader. |
| **Post-conditions:** | The citizen has been granted to access to a restricted city area. |
| **Normal Flow:**  | 1. The citizen approaches to the bollard / barrier  
|                   | 2. The citizen requests the access to the restricted area by placing the NFC smart phone near the electronic gate NFC reader.  
|                   | 3. The electronic gate validates the operation.  
|                   | 4. The barriers open. The citizen can access. |
| **Alternative Flows:** | Other means of identification:  
|                   | - Using a smart phone and solving a challenge (CI_16)  
|                   | - Using a smart phone to share the position (CI_18 and CI_19) |
| **Exceptions:**   | Possible actions linked with other use cases:  
|                   | - Trip planning (CI_05)  
|                   | The use of the app is supported by context help and online user manuals  
|                   | The possibility that citizens rate the service is provided. |
| **Frequency of Use:** | The system is available 24 hours a day and can be used by request. Limitations in the time of use can be applied depending on the operating hours of the access system to restricted areas. |
| **Special Requirements:** |  
| **Assumptions:**  | All devices and services are synchronized.  
<p>|                   | Citizen id and status is updated at the databases. |
| <strong>Notes and Issues:</strong> | Relation with requirement F_008, F_016, M.1_013 |</p>
<table>
<thead>
<tr>
<th>Use Case ID:</th>
<th>CI_18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Case Name:</td>
<td>CITIZEN IDENTIFICATION TO A RESTRICTED AREA USING SMART PHONE AND SHARING POSITION</td>
</tr>
<tr>
<td>PILOT in</td>
<td>Madrid*, Lisbon*, Parma*</td>
</tr>
</tbody>
</table>
| Actors: | Primary: Citizens (using SIMON LEADS with SIMON OPENS) 
Secondary: System administrator (SIMON TSM) |
| Description: | The citizen uses his smart phone to be identified in the restricted traffic area. The smart phone shares the position of the citizen. The citizen does not need to resolve a challenge. |
| Stakeholders and Interests | System administrator / Operator 
Municipality 
User associations |
| Trigger: | The citizen arrives to the barrier of a restricted urban area with his car. The citizen wants to access to that area. |
| Preconditions: | The citizen must have an Android smart phone with: 
- GPS activated 
- Internet access (3G, WiFi) 
The citizen has installed the SIMON app (SIMON LEADS) in his smart phone. 
The citizen is registered in the system and has logged in at the mobile app. 
The system is able to communicate with the central database and offer updated response in real time. |
| Post-conditions: | The citizen has been granted to access to a restricted urban area. |
| Normal Flow: | 1. The citizen approaches to the bollard / barrier. 
2. The citizen requests the access to the restricted area by introducing the ID in the electronic gate. 
3. The system captures the position 
4. The system verifies the position of the citizen. 
5. The barriers open. The citizen can access. |
| Alternative Flows: | Other means of identification: 
- Using a smart phone and solving a challenge (CI_16) 
- Using a NFC phone (CI_17) 
- Using a smart phone to share the position and enter plate (CI_19) |
| Includes: | Possible actions linked with other use cases: 
- Trip planning (CI_05) 
The use of the app is supported by context help and online user manuals. 
The possibility that citizens rate the service is provided. |
| Frequency of Use: | The system is available 24 hours a day and can be used by request. Limitations in the time of use can be applied depending on the operating hours of the access system to restricted areas. |
| Assumptions: | All devices and services are synchronized. 
Citizen id and status is updated at the databases. |
| Notes and Issues: | Relation with requirement F_008, F_016, M.1_001, M.1_013 |
### Use Case ID: CI_19
### Use Case Name: CITIZEN IDENTIFICATION TO A RESTRICTED AREA USING SMART PHONE, SHARING POSITION AND ENTERING PLATE NUMBER
### PILOT in Parma
### Actors:
- **Primary:** Citizens (using SIMON LEADS with SIMON OPENS)
- **Secondary:** System administrator (SIMON TSM)

### Description:
The citizen uses his smart phone to be identified in the restricted traffic area. The smart phone shares the position of the citizen. The citizen has to enter the plate. The citizen does not need to resolve a challenge.

### Stakeholders and Interests:
- System administrator / Operator
- Municipality
- User associations

### Trigger:
The citizen arrives to the barrier of a restricted urban area with his car. The citizen wants to access to that area.

### Preconditions:
The citizen has installed the SIMON app (SIMON LEADS) in his Android smartphone.
The citizen is registered in the system and has logged in at the mobile app.
The smart phone must be connected to internet (3G, WiFi...)
The smart phone must have GPS activated
The system is able to communicate with the central database and offer updated response in real time.

### Post-conditions:
The citizen has been granted to access to a restricted urban area.

### Normal Flow:
1. The citizen approaches to the bollard / barrier.
2. The citizen requests the access to the restricted area by introducing the ID in the electronic gate.
3. The system captures the position and ask for plate number.
4. The citizen enters the plate number in the electronic gate and validates the operation.
5. The barriers open. The citizen can access.

### Alternative Flows:
1. Other means of identification:
   - Using a smart phone and solving a challenge (CI_16)
   - Using a NFC phone (CI_17)
   - Using a smart phone to share the position (CI_18)
2. In step 4, plate number could be automatically verified by cameras or scanners.

### Includes:
Possible actions linked with other use cases:
- Trip planning (CI_05)

The use of the app is supported by context help and online user manuals
The possibility that citizens rate the service is provided.

### Frequency of Use:
The system is available 24 hours a day and can be used by request. Limitations in the time of use can be applied depending on the operating hours of the access system to restricted areas.

### Assumptions:
All devices and services are synchronized.
Citizen id and status is updated at the databases.

### Notes and Issues:
Relation with requirement F_008, F_016, M.1_001, M.1_013
<table>
<thead>
<tr>
<th><strong>Use Case ID:</strong></th>
<th>CI_20</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Use Case Name:</strong></td>
<td>USE OF FORUMS AND PROPOSALS OF GOOD PRACTICE</td>
</tr>
<tr>
<td><strong>PILOT in:</strong></td>
<td>Parma, Madrid, Lisbon</td>
</tr>
</tbody>
</table>
| **Actors:** | Primary: Citizens (using SIMON LEADS)  
Secondary: System administrator, Controllers |
| **Description:** | A registered citizen can rate the different services offered by the SIMON system. Complaints, opinions and request can be also added and shared with other users. The contents uploaded are managed by system administrators. |
| **Stakeholders and Interests** | System administrator  
Operator  
User associations  
Municipalities |
| **Trigger:** | The citizen has used a SIMON service and wants to report an incidence, comment something or rate the service. |
| **Preconditions:** | The citizen must have an Android smart phone with:  
- Internet access (3G, WiFi)  
The citizen has installed the SIMON app (SIMON LEADS) in his smart phone.  
The citizen is registered in the system and has logged in at the mobile app.  
The application provides with an ubiquitous button of “comments/rate/incidences”  
The system is able to communicate with the central database and offer updated response in real time.  
The SIMON system provides a community manager for the forums response and coordination. |
| **Post-conditions:** | The comment has been published  
The citizen has received comments of other users (where available)  
The user has receive an official answer to his comment / request (if pertinent). |
| **Normal Flow:** | 1. The citizen selects the option “comment/rate/forum”  
2. The citizen selects the appropriate action:  
3.1. Rate the service  
3.2. Comment: report about some aspect or issue related with the application.  
3.3. Forum: inform about incidences, events, accessibility issues or other.  
3. The citizen enters the comment. Several options are available:  
- Select the option (e.g.: rating: very good, good, bad,...)  
- Insert an open comment with the keyboard.  
4. The screen shows the final format of the comment.  
5. The user validates the comment.  
6. The comment is published. |
| **Alternative Flows:** | Alternative trigger: the citizen can post a comment at any time (pre-condition skipped).  
The possibility that citizens rate the service is provided. |
<p>| <strong>Freq. of Use:</strong> | The system is available 24 hours a day and can be used by request |
| <strong>Assumptions:</strong> | All devices and services are synchronized |
| <strong>Notes and issues</strong> | Related to requirement M.1_010 |</p>
<table>
<thead>
<tr>
<th>Use Case ID:</th>
<th>CO_00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Case Name:</td>
<td>LEARNING PROCESS TO USE THE SYSTEM (CONTROLLERS)</td>
</tr>
<tr>
<td>PILOT in:</td>
<td>Madrid, Lisbon, Parma</td>
</tr>
<tr>
<td>Actors:</td>
<td>Primary: Controllers (SIMON CONTROLS)</td>
</tr>
<tr>
<td></td>
<td>Secondary: system administrator (SIMON CONTROLS)</td>
</tr>
<tr>
<td>Description:</td>
<td>The controller learns how to use the system and all functions.</td>
</tr>
<tr>
<td>Stakeholders and Interests</td>
<td>System administrator, public transport authorities, private parking companies</td>
</tr>
<tr>
<td>Trigger:</td>
<td>The controller learns the function of the system (via online manual, contextual help and video tutorials) while uses the system in controlled environments.</td>
</tr>
<tr>
<td>Preconditions:</td>
<td>Internet connexion both at a computer and at the mobile device where the system is installed.</td>
</tr>
<tr>
<td></td>
<td>The controller registers to access the platform: as a result receives a login and password for access.</td>
</tr>
<tr>
<td></td>
<td>The system offers tutorials showing how to use each function</td>
</tr>
<tr>
<td></td>
<td>The system provides a user manual and online help in each screen</td>
</tr>
<tr>
<td></td>
<td>The system allows remote technical support (phone assistance and/or e-mail/instant messaging).</td>
</tr>
<tr>
<td>Post conditions:</td>
<td>This is a continuous case (learning through real use). After the training period, the controller has received information, feedback and examples and it’s able to perform the basic tasks of the system in real conditions (Receive information about validated users, check if a car is correctly parked, check the validity of a EU badge, report fraud, etc.</td>
</tr>
<tr>
<td>Normal Flow:</td>
<td>1. Controller logs in at the SIMON CONTROLS platform (web/mobile)</td>
</tr>
<tr>
<td></td>
<td>2. At the home page, the controller can follow tutorials of the system functionalities.</td>
</tr>
<tr>
<td></td>
<td>3. Controller accesses to his/her profile.</td>
</tr>
<tr>
<td></td>
<td>4. Free navigation: every screen provides contextual help, showing how to activate each function (graphic format)</td>
</tr>
<tr>
<td></td>
<td>5. Controller performs trial activities:</td>
</tr>
<tr>
<td></td>
<td>• Revise the location of users that have validated the parking through SIMON.</td>
</tr>
<tr>
<td></td>
<td>• Check if a car is correctly parked (plate or card check).</td>
</tr>
<tr>
<td></td>
<td>• Check the validity of a EU badge.</td>
</tr>
<tr>
<td></td>
<td>• Manage situations of misuse or fraud (e.g. send warning to police and operators).</td>
</tr>
<tr>
<td>Alternative Flows:</td>
<td>The controller attends to a training course based on the use of the SIMON System</td>
</tr>
<tr>
<td>Frequency of Use:</td>
<td>The first time the system is used. Intense use during the first week. Occasional use (continuous).</td>
</tr>
<tr>
<td>Notes and Issues:</td>
<td>This is a special use case, mainly intended for pilot testing.</td>
</tr>
<tr>
<td></td>
<td>Development of training materials for the SIMON CONTROL system</td>
</tr>
</tbody>
</table>
## Use Case Specification Document

### Use Case ID: CO_01

### Use Case Name: THE CONTROLLER REQUESTS AND REVISES THE LIST OF VALIDATED USERS

#### PILOT in
- Parma, Lisbon, Madrid*

#### Actors:
- **Primary:** Controllers
- **Secondary:** System administrator (Platform SAYS), Citizens

#### Description:
The controller revises the list of parked users at an area and thus can optimize the routes for inspection.

#### Stakeholders and Interests
- System administrator / Operators
- Municipality
- Police

#### Trigger:
The controller wants to inspect if there are disabled users parked correctly.

#### Preconditions:
The system is able to communicate with the central database and offer updated response in real time.
The controller device is synchronized with SAYS platform in real-time.

#### Post-conditions:
The system offers the best route to optimize the control task.
The controller has been able to check the parked cars that have been validated using SIMON app (see CO_02 to 04).

#### Normal Flow:
1. The controller requests the list with the location of parked users.
2. The app shows the list of users and their location at a map.
3. The app offers the best route to perform the inspection of the parked cars.
4. The controller starts inspecting the cars (see CO_02 to 04)

#### Alternative Flows:
The controller can inspect the areas without requesting anything from the system.

#### Exceptions:

#### Includes:
The use of the app is supported by context help and online user manuals.
The possibility that the controller informs about bugs, mistakes or malfunctions of the application is included.

#### Frequency of Use:
The system is available 24 hours a day and can be used by request.

#### Special Requirements:

#### Assumptions:
All devices and services are synchronized
Citizen id and status is updated at the databases

#### Notes and Issues:
Related to requirement F_015, M.1_014-16
<table>
<thead>
<tr>
<th>Use Case ID:</th>
<th>CO_02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Case Name:</td>
<td>THE CONTROLLER CHECKS IF A CAR IS CORRECTLY PARKED: EU BADGE ENHANCED WITH RFID TAG</td>
</tr>
<tr>
<td>PILOT in</td>
<td>Parma, Lisbon, Madrid</td>
</tr>
<tr>
<td>Actors:</td>
<td>Primary: Controller, Citizen Secondary: system administrator (Platform SAYS)</td>
</tr>
<tr>
<td>Description:</td>
<td>The controller validates a car parked at a reserved space by means of the RFID EU badge attached at the windshield.</td>
</tr>
<tr>
<td>Stakeholders and Interests</td>
<td>System administrator / Operators</td>
</tr>
<tr>
<td>Trigger:</td>
<td>The citizen parks his car at a reserved space. The car has a RFID EU badge attached at the windshield.</td>
</tr>
<tr>
<td>Preconditions:</td>
<td>The citizen must have a RFID sticker (EU badge) attached to the windscreen of his car. The controller’s needs a mobile device with a RFID (NFC) reader and the CONTROLS app installed to read and verify the data of the RFID sticker.</td>
</tr>
<tr>
<td>Post-conditions:</td>
<td>The controller has verified and validated the identity of the vehicle/citizen correctly.</td>
</tr>
<tr>
<td>Normal Flow:</td>
<td>1. The controller approaches a car parked at a reserved space. 2. The controller verifies the existence of the sticker attached at the windshield. 3. The controller places his device near the EU Badge. 4. The system recognizes the RFID code, the controller receives an OK or NOT OK message. 5. The controller validates the operation by clicking on “user validated”. The information is sent to the administration, recording the date and hour of the control. If the user is not validated, a warning message is sent to the system (CO_05).</td>
</tr>
<tr>
<td>Alternative Flows:</td>
<td></td>
</tr>
<tr>
<td>Exceptions:</td>
<td></td>
</tr>
<tr>
<td>Includes:</td>
<td>The use of the app is supported by context help and online user manuals. The possibility that the controller informs about bugs, mistakes or malfunctions of the application is included.</td>
</tr>
<tr>
<td>Frequency of Use:</td>
<td>The system is available 24 hours a day and can be used by controller request</td>
</tr>
<tr>
<td>Special Requirements:</td>
<td></td>
</tr>
<tr>
<td>Assumptions:</td>
<td>All devices and services are synchronized</td>
</tr>
<tr>
<td>Notes and Issues:</td>
<td>Related to requirement M.1_014-16</td>
</tr>
<tr>
<td>Use Case ID: CO_03</td>
<td>Use Case Name: CHECK IF A CAR IS CORRECTLY PARKED: EU BADGE + TICKET CHECK</td>
</tr>
<tr>
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<tr>
<td>PILOT in Parma, Madrid*, Lisbon</td>
<td></td>
</tr>
<tr>
<td>Actors: Primary: Controllers (using SIMON CONTROLS with SIMON SAYS) Secondary: System administrator (SIMON TSM)</td>
<td></td>
</tr>
<tr>
<td>Description: The controller verifies if a car is allowed to park in a reserved space for disabled (meaning if a car is correctly parked) through the check of the disabled card and the ticket from the smart park meter.</td>
<td></td>
</tr>
<tr>
<td>Stakeholders and Interests Police and other equivalent authorities System administrator / Operator Municipality Citizens</td>
<td></td>
</tr>
<tr>
<td>Trigger: The controller inspects the cars parked in the reserved spaces for the disabled.</td>
<td></td>
</tr>
<tr>
<td>Preconditions: The controller must have installed the app (SIMON CONTROLS) and validated the access. The system is able to communicate with the central database and offer updated responses in real time.</td>
<td></td>
</tr>
</tbody>
</table>
| Post-conditions: The controller receives the information of the adequacy or not of the existing situation:  
  - If the car is correctly parked:  
    - The controller validates the verification  
  - If the car is not correctly parked (more than one option is possible):  
    - The controller sends the incidence to the operators/administrators (see CO_05 and OP_05)  
    - The controller notifies the incidence to the police / authorities  
    - The controller prints a notification to attach at the car. | |
| Normal Flow: 1. The controller reaches the parking space occupied by a car.  
  2. The controller checks visually if the car has the disabled badge visible.  
  3. The controller checks if the user has validated the car parked in that place:  
    - Introducing the number of the EU Badge in the application.  
    - Scanning the disabled badge, in case that the badge incorporates any kind of code to be scanned.  
    - Scanning the ticket from the park meter in case there is one placed next to the EU Badge  
  4. The controller receives information in his device regarding the validation of the car parked in that space (see “post-conditions”) | |
| Alternative Flows: The situation is triggered by a complaint of other citizen | |
| Exceptions: Fines, notifications to the citizen, interaction with the police, etc (see post-conditions) can be included or not in the system. | |
| Includes: Possible actions linked with other use cases:  
  - Check the validity of a disabled badge (CO_04)  
  - Actions when detecting fraud (CO_05)  
  The use of the app is supported by context help and online user manuals. The possibility that the controller informs about bugs, mistakes or malfunctions of the application is included. | |
<p>| Frequency of Use: The system is always updated, nevertheless it must be available during the controller working hours. If the inspection is a result of a complaint, it should be available | |</p>
<table>
<thead>
<tr>
<th><strong>Special Requirements:</strong></th>
<th>24 hours a day, although in this case the primary user would be the police.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assumptions:</strong></td>
<td>All devices and services are synchronized. Databases of plates and cards are updated.</td>
</tr>
<tr>
<td><strong>Notes and Issues:</strong></td>
<td>Related to requirement M.1_014-16</td>
</tr>
<tr>
<td>Use Case ID:</td>
<td>CO_04</td>
</tr>
<tr>
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</tr>
<tr>
<td>Use Case Name:</td>
<td>CHECK THE VALIDITY OF A EU BADGE</td>
</tr>
<tr>
<td>PILOT in:</td>
<td>Madrid, Lisbon, Parma</td>
</tr>
</tbody>
</table>
| Actors: | Primary: Controllers (using SIMON CONTROLS with SIMON SAYS)  
Secondary:  
-Citizens  
-System administrator (SIMON TSM) |
| Description: | The controller verifies whether a disabled badge is valid or not.  
Notes: When the disabled badge is in a parked car, the applicable use case will be CO_03 |
| Stakeholders and Interests: | Police and other equivalent authorities  
System administrator / Operator  
Municipality  
Citizens |
| Trigger: | A citizen wants to park at a reserved area managed by a controller. The controller requires the EU badge to a citizen, in order to check if it is valid or not. |
| Preconditions: | The controller must have installed the app (SIMON CONTROLS) and validated the access.  
The system is able to communicate with the central database and offer updated response in real time. |
| Post-conditions: | The controller receives the information of the adequacy or not of the existing situation:  
-If the badge is valid:  
  -Allows the citizen to park  
-If the car is not valid (more than one option is possible):  
  -The citizen is not allowed to park.  
  -The controller notifies the incidence to the system. Operators/authorities will be able to receive this notification in real time. |
| Normal Flow: | 1. The citizen arrives with his car to the area.  
2. The controller requires the EU disabled badge.  
3. The controller checks the validity of the badge (by scanning with the mobile device)  
4. The system offers the information about the situation (see “post-conditions”) |
| Alternative Flows: | The controller requires the badge when suspects that there’s a possible fraud situation. |
| Exceptions: | Fines, notifications to the citizen, interaction with the police, etc (see post-conditions) can be included or not in the system. |
| Includes: | Possible actions linked with other use cases:  
-Check the validity of a disabled badge (CO_04)  
-Actions when detecting fraud (OP_04-05)  
The use of the app is supported by context help and online user manuals.  
The possibility that the controller informs about bugs, mistakes or malfunctions of the application is included. |
| Frequency of Use: | The system is always updated, nevertheless it must be available during the controller working hours.  
If the inspection is a result of a complaint, it should be available 24 hours a day, although in this case the primary user would be the police. |
| Special Requirements: |  |
| Assumptions: | All devices and services are synchronized. Databases of plates and cards are updated. |
| **Notes and Issues:** | When the disabled badge is in a parked car, the applicable use case will be CO_03 Related to requirement M.1_014-16 |
**Use Case ID:** CO_05  
**Use Case Name:** MANAGEMENT OF MISUSE OR FRAUD  
**PILOT in:** Parma, Madrid, Lisbon  

**Actors:**  
Primary: Controllers (using SIMON CONTROLS with SIMON SAYS)  
Secondary:  
- Citizens  
- System administrator (SIMON TSM)  

**Description:** Management of misuse or fraud (e.g. send warning to police and operators)  

**Stakeholders and Interests**  
- Police and other equivalent authorities  
- System administrator / Operator  
- Municipality  
- Citizens  

**Trigger:**  
The controller identifies a situation of fraud or misuse:  
- A car is not parked correctly (see CO_03)  
- A disabled badge is not valid (see CO_03 and CO_04)  

**Preconditions:**  
The controller must have installed the app (SIMON CONTROLS) and validated the access.  
The system is able to communicate with the central database and offer updated response in real time.  

**Post-conditions:**  
The controller has been able to manage the incidence, according to the established procedures in each municipality.  

**Normal Flow:**  
1. The controller detects a situation of misuse or fraud (see CO_03 and CO_04)  
2. The controller manages the incidence according to the existing procedure in each city.  
3. The system offers feedback about the operation/s accomplished.  

**Alternative Flows:**  
The situation is triggered by a complaint of other citizen.  
The system informs the controller (through the SIMON_TSM) of the existence of an incorrect situation.  

**Exceptions:**  
Fines, notifications to the citizen, interaction with the police, etc (see post-conditions) can be included or not in the system.  

**Includes:**  
Possible actions linked with other use cases:  
- Check if a car is correctly parked (CO_03)  
- Check the validity of a disabled badge (CO_01, CO_04)  
The use of the app is supported by context help and online user manuals.  
The possibility that the controller informs about bugs, mistakes or malfunctions of the application is included.  

**Frequency of Use:**  
The system is always updated, nevertheless it must be available during the controller working hours.  
If the inspection is a result of a complaint, it should be available 24 hours a day, although in this case the primary user would be the police.  

**Special Requirements:**  
Authority to establish fines (if this possibility is allowed).  

**Assumptions:**  
All devices and services are synchronized. Databases of plates and cards are updated.  

**Notes and Issues:**  
Related to requirement F_014, M.1_016
<table>
<thead>
<tr>
<th>Use Case ID:</th>
<th>OP_00</th>
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</thead>
<tbody>
<tr>
<td>Use Case Name:</td>
<td>LEARNING PROCESS TO USE THE SYSTEM (OPERATORS)</td>
</tr>
<tr>
<td>PILOT in:</td>
<td>Madrid, Lisbon, Parma</td>
</tr>
</tbody>
</table>
| Actors: | Primary: Operators (SIMON TSM)  
Secondary: system administrator (SIMON TSM) |
| Description: | The operator learns how to use the system and all its functions |
| Stakeholders and Interests: | System administrator, public transport authorities, private parking companies |
| Trigger: | Initial use of the system by the operator, while learns to use it through printed and online user manuals and interactive integrated materials. |
| Preconditions: | The operator must have Internet connexion.  
The operator must register to access the platform: as a result receives a login and password for access.  
The system provides a user manual and online help in each screen  
The system allows remote technical support (phone assistance or e-mail/instant messaging). |
| Post-conditions: | This is a continuous case (learning through real use). After the training period, the operator has received information, feedback and examples to improve the use of the system.  
The operator has received a username and a password.  
The operator can receive contextual help whenever needed. |
| Normal Flow: | 1. Operator logs in at the TSM platform (web)  
2. On the home page, the operator can follow tutorials of how the system functions.  
3. All screens provide help options, showing how to activate each function (graphic format)  
4. Operator can perform trial activities using the system, while receiving help if needed:  
   - Receive information about the parking spaces in use in real time (monitoring)  
   - Receive information about the incidences (e.g. car parked without validation, misuse of the EU card,...)  
   - Validate the parking request of a citizen  
   - Manage the access rights for parking  
   - Manage the access rights for transport  
   - Validate the use of a NFC smart phone  
   - ... |
<p>| Alternative Flows: | The operator attends to a training course based on the use of the SIMON System |
| Frequency of Use: | The first time the system is used. Intense use during the first week. Occasional use (continuous). |
| Notes and Issues: | This is a special use case, mainly intended for pilot testing. Development of training materials for the SIMON TSM system |</p>
<table>
<thead>
<tr>
<th><strong>Use Case ID:</strong></th>
<th>OP_01</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Use Case Name:</strong></td>
<td>REVISE AND UPDATE THE LIST OF USERS</td>
</tr>
<tr>
<td><strong>PILOT in:</strong></td>
<td>Parma, Madrid*, Lisbon*</td>
</tr>
</tbody>
</table>
| **Actors:** | Primary: Operators (using SIMON TSM with SIMON SAYS)  
Secondary:  
• Citizens  
• Controllers  
• System administrator (SIMON TSM) |
| **Description:** | The system administrator (operator) revises and updates the list of registered users, checking if there are incidences or corrections required. |
| **Stakeholders and Interests:** | System administrators  
Municipalities  
Citizens  
Controllers |
| **Trigger:** | Routine operation (it is also possible that the operator initiates this case when there’s a claim or question from the citizens). |
| **Preconditions:** | The operator has access to the SIMON TSM software: it is installed an running at the computer and the controller has the permissions to access to the system (username and password).  
The system is able to communicate with the controllers and the citizens apps. |
| **Post-conditions:** | The operator has revised the list of users, fixing the incidences if any. |
| **Normal Flow:** | 1. The operator opens the User Management.  
2. The operator updates the list of registered users and checks if there is any change or incidence  
a. The operator solves the incidence or fixes the problem.  
3. The operator saves the changes. |
| **Alternative Flows:** | |
| **Exceptions:** | Possible: Manage of access rights for transport (OP_02)  
The software (SIMON-TSM) is supported by context help and online user manuals.  
The possibility that the operator informs about bugs, mistakes or malfunctions of the software is included. |
| **Frequency of Use:** | Routine operation. The frequency of use is established by the authorities.  
During operator working hours  
Automatic responses (see alternative flows) can be active 24/7 |
| **Assumptions:** | All devices and services are synchronized. Databases are updated. |
| **Notes and Issues:** | The system activates automatically the rights of the user. The automatic activation can also include the access rights for transport. The operator only checks manually if a routine is established if there’s any query or claim by the citizens.  
Relation with requirement F_002. |
## Use Case Specification Document

**Use Case ID:** OP_03  
**Use Case Name:** VALIDATE THE USE OF THE APP CERTIFICATE  
**PILOT in:** Parma, Lisbon

### Actors:
- **Primary:** Operators (using SIMON TSM with SIMON Says)
- **Secondary:**
  - Citizens
  - Controllers
  - System administrator (SIMON TSM)

### Description:
The first time that a citizen installs and uses the SIMON platform at a smart phone, the operator checks that the APP certificate is associated to a unique device.

### Stakeholders and Interests:
- System administrators
- Municipalities
- Citizens
- Controllers

### Trigger:
The citizen uses a service with his NFC smart phone

### Preconditions:
- The citizen has an smart phone, and:
  - SIMON LEADS is installed
  - Internet connection is activated
- The operator has access to the SIMON TSM software: it is installed and running at the computer and the operator has the permissions to access to the system (username and password).
- The system is able to communicate with the controllers and the citizens apps.

### Post-conditions:
The operator has validated the device of a citizen, allowing him the access to the different services covered by SIMON.

### Normal Flow:
1. The operator receives a message of a citizen that is using SIMON with a NFC phone.
2. The operator checks whether the APP certificate is valid and associated to a unique device.
3. The operator sends a message confirming the citizen that the app is valid and has been activated.

### Alternative Flows:
The citizen activates the app prior of the use of any SIMON service.

### Exceptions:
If the results are negative, the controller blocks the use of the SIMON app and sends a message to the citizen.

### Includes:
The software (SIMON-TSM) is supported by context help and online user manuals. The possibility that the operator informs about bugs, mistakes or malfunctions of the software is included.

### Frequency of Use:
During operator and controller working hours

### Assumptions:
All devices and services are synchronized. Databases are updated.

### Notes and Issues:
Use Case ID: OP_04
Use Case Name: RECEIVE INFORMATION ABOUT THE PARKING SPACES IN USE IN REAL TIME (MONITORING)
PILOT in: Parma, Lisbon
Actors: Primary: Operators (using SIMON TSM with SIMON SAYS)
Secondary:
- Controllers
- Citizens
- System administrator (SIMON TSM)
- Municipalities
Description: The operator consults (or receives) real time information about the status of the parking spaces.
Stakeholders and Interests: Controllers
- Police and other equivalent authorities
- Municipality
- Citizens
Trigger: The operator consults the information about the status of the parking spaces.
Preconditions: The operator has access to the SIMON TSM software: it is installed and running at the computer and the operator has the permissions to access to the system (username and password).
The system is able to communicate with the controllers and the citizens apps.
Post-conditions: The operator has been able to check the situation of the parking spaces at a specific area, acting as indicated at the specific procedures, that may include:
- Update / correct information for the citizens.
- Report of an incidence or issue.
- Communicate with the controllers (send instructions, change controlling routes, etc.).
- Collect the data (punctual or historical) to build statistics.
- Etc.
Normal Flow: The operator...
1. Opens the application and enters at the control panel of the parking spaces.
2. Selects an area and other filters (e.g.: time span).
3. Checks the status of the parking spaces.
4. Reports the results (see post-conditions)
Alternative Flows: The system warns about incidences (thresholds for warnings are previously established). See OP_05.
Includes: Possible actions linked with other use cases: OP_04 to OP_06.
The software (SIMON-TSM) is supported by context help and online user manuals. The possibility that the operator informs about bugs, mistakes or malfunctions of the software is included.
Frequency of Use: The system is always updated, nevertheless it must be available during the operator working hours.
Assumptions: All devices and services are synchronized. Databases are updated.
Notes and Issues: Relation with requirement F_004, F_008
**Use Case ID:** OP_05  
**Use Case Name:** RECEIVE INFORMATION ABOUT INCIDENCES  
**PILOT in:** Parma, Lisbon, Madrid*  

**Actors:**  
Primary: Operators (using SIMON TSM with SIMON SAYs)  
Secondary:  
- Controllers  
- Citizens  
- System administrator (SIMON TSM)  
- Municipalities  

**Description:** The operator receives (or consults) real time information about incidences: car parked without validation, misuse of the EU card, etc.  

**Stakeholders and Interests:**  
Controllers  
Police and other equivalent authorities  
Municipality  
Citizens  

**Trigger:** The operator receives an alert about an incidence.  

**Preconditions:**  
The operator has access to the SIMON TSM software: it is installed and running at the computer and the operator has the permissions to access to the system (username and password).  
The system is able to communicate with the controllers and the citizens apps.  

**Post-conditions:** The operator has been able to detect an incidence, acting as indicated at the specific procedures, that may include:  
- Send a message or notification to the controllers  
- Send a message to the citizen  
- Report the issue  
- Collect the data (punctual or historical) to build statistics.  
- Etc.  

**Normal Flow:**  
1. The system sends a warning message of an incidence (e.g.: pop-up message, colour codes in a map, etc.).  
2. The operator access to the specific issue and consults the details.  
3. The operator reports the results and takes the appropriate decisions according to the procedures (see post-conditions).  

**Alternative Flows:**  
Step 1: the operator opens the application and enters at the control panel of the parking spaces to check if there are incidences.  

**Includes:**  
Possible actions linked with other use cases: OP_01 to OP_06.  
The software (SIMON-TSM) is supported by context help and online user manuals.  
The possibility that the operator informs about bugs, mistakes or malfunctions of the software is included.  

**Frequency of Use:** The system is always updated, nevertheless it must be available during the operator working hours.  

**Assumptions:** All devices and services are synchronized. Databases are updated.  

**Notes and Issues:** Relation with requirement F_008, F_014
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<th>OP_06</th>
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<tr>
<td><strong>Use Case Name:</strong></td>
<td>VALIDATE THE PARKING REQUEST OF A CITIZEN</td>
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<td><strong>PILOT in:</strong></td>
<td>Parma, Lisbon, Madrid*</td>
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| **Actors:** | Primary: Operators (using SIMON TSM with SIMON SAYS)  
Secondary:  
- Citizens  
- Controllers  
- System administrator (SIMON TSM) |
| **Description:** | The operator receives and validates real time parking request of a citizen. |
| **Stakeholders and Interests:** | Citizens  
Controllers |
| **Trigger:** | The operator receives an alert about a parking request from a citizen. |
| **Preconditions:** | The operator has access to the SIMON TSM software: it is installed and running at the computer and the controller has the permissions to access to the system (username and password).  
The system is able to communicate with the controllers and the citizens apps. |
| **Post-conditions:** | The operator has validated a parking request.  
After the process the data are available to:  
- Send a message or notification to the controllers  
- Send a message to the citizen  
- Report the result  
- Collect the data (punctual or historical) to build statistics.  
- Etc. |
| **Normal Flow:** | 1. The system sends a warning message of a parking request incidence (e.g.: pop-up message, colour codes in a map, etc.).  
2. The operator access to the specific issue and consults the details.  
3. The operator initiates the procedure to validate the request.  
4. The operator sends the validation to the citizen.  
5. The operator reports the results and takes the appropriate decisions according to the procedures (see post-conditions). |
| **Alternative Flows:** | Steps 1-4 are automatically processed by the system. |
| **Includes:** | Possible actions linked with other use cases: OP_01 to OP_06. |
| | The software (SIMON-TSM) is supported by context help and online user manuals.  
The possibility that the operator informs about bugs, mistakes or malfunctions of the software is included. |
| **Frequency of Use:** | The system is always updated and available. Manual mode must be available during the operator working hours. |
| **Assumptions:** | All devices and services are synchronized. Databases are updated. |
| **Notes and Issues:** | This use case will be, normally, automatically processed by the system, without need of human intervention. The flow of actions described could be useful when it is necessary to check manually a request (because of technical problems, mistakes in the validation process or other issues).  
Relation with requirement F_015 |
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<td>Use Case Name:</td>
<td>DATA ANALYSIS</td>
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<td>PILOT in</td>
<td>Parma, Lisbon, Madrid*</td>
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</table>
| Actors:              | Primary: Operators (using SIMON TSM with SIMON SAYS)  
|                      | Secondary:  
|                      | - Controllers  
|                      | - Citizens  
|                      | - System administrator (SIMON TSM)  
|                      | - Municipalities |
| Description:         | The operators may analyze the data coming from the monitoring activities (real time information) regarding: public transport use, consults to the system, parking activities, incidences, etc. |
| Stakeholders and Interests | Controllers  
|                      | Police  
|                      | System administrator (SIMON TSM)  
|                      | Municipalities |
| Trigger:             | Operators want to track the activities regarding mobility during a specified period of time, in order to support decision making. |
| Preconditions:       | - There is a database in the system where transport information data is recorded  
|                      | - There is a server to store the data  
|                      | - The operator can use the system to exploit data |
| Post-conditions:     | Data can be exported to other formats such as Excel, for statistical analyses  
|                      | Statistical processing performed aims to analyse the use to public transport and parking areas, the incidences and the fraud or misuse |
| Normal Flow:         | The operator:  
|                      | 1. Accesses the system with his login and password  
|                      | 2. Accesses to “Data Exploitation”  
|                      | 3. Access to “Data Monitoring” (screen)  
|                      | 4. Selects variables (data) to analyze:  
|                      | a. Occupation of public parking spaces  
|                      | b. Occupation of private parking spaces  
|                      | c. Occupation of places in restricted areas  
|                      | d. Number of requests for public transport information  
|                      | e. Number of validation requests in parking  
|                      | f. Incidences  
|                      | g. Count of instances of fraud or misuse  
|                      | h. …  
|                      | 5. Selects a period of time to be analyzed: days, weeks, etc.  
|                      | 6. Selects the statistical analysis desired (e.g.: frequency, percentage, mean,…)  
|                      | 7. The system shows data tables and data average graphs  
|                      | 8. The system compare the information in a different period of time  
|                      | 9. The system shows data tables and data average graphs and figures  
|                      | 10. The controller exports data in a excel file  
|                      | 11. Data is exported for statistical analysis |
| Frequency of Use:    | When necessary at the discretion of the system administrator or authorities |
| Notes and Issues:    | To be defined: useful parameters to review and interface visualized by the operators. |
NOTE:

* - In study / Negotiations with stakeholders and third parties / Proof of concept test
6. CONCLUSIONS

In this document, a description of the use cases that might be selected to be demonstrated in SIMON have been presented. They have been developed according to the several requirements already specified for the system in D2.2 and that will be further refined in D2.3. The list of use cases intends to cover all the possible situations and functionalities that SIMON platforms will provide to the main users (citizen, controllers, public authorities) but once the system architecture and the services specifications will be defined, a realistic yet feasible selection of the use cases to be demonstrated might be taken into consideration.
7. REFERENCES AND ACRONYMS

7.1. REFERENCES


7.2. ACRONYMS

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