

Publishable Summary



SIMON

ASSISTED MOBILITY
FOR OLDER AND IMPAIRED USERS



CONTENTS

Executive Summary

Project Objectives

Facts and Figures

The Consortium

Main results

1. Reference Architecture
2. Information Model
3. The SIMON platform
4. SIMON APPS

5. Indoor Navigation feature

6. The specification of an ICT-enhanced EU parking card for the disabled

7. Guidelines for cities

8. Validation in pilot cities

Project Impact

- Demonstration and evaluation results
- Dissemination actions
- Exploitation

EXECUTIVE SUMMARY

SIMON (asSisted Mobility for Older aNd impaired users) is a demonstration project with four large scale pilots in Madrid, Parma, Lisbon and Reading **aiming to use ICT services to promote the independent living and social participation of mobility impaired people in the context of public parking areas and multiple transport modes.**

It focuses on the reduction of fraud in the pre-ICT implementation of the European Disabled Badge for public parking areas and the use of specific navigation solutions for elderly and people with disabilities.

SIMON proposes a mobile application to support impaired citizens in the use of public and private transport modes. To reduce fraud, **SIMON enhances the European parking card for disabled people** with contactless technologies and **integrates mobile solutions** to support user unique identification in existing park meters whilst preserving privacy.

SIMON final results in short

- A common **architecture and data models for mobility inclusive smart cities**
- The **SIMON platform** integrating with different mobility infrastructures
- **SIMON Mobile app**, available for Android and iOS
- **SIMON Authority Operator Tool** to allow access rights management
- The specification of an **ICT-enhanced EU parking card for the disabled**
- A **hybrid indoor-outdoor navigation model**
- Validation in four pilot sites: **Madrid, Lisbon, Parma and Reading**





EXECUTIVE SUMMARY

The Challenge

Accessibility is a broad concept that addresses the **removal and prevention of barriers** that cause problems for persons with disabilities when using products, services and public infrastructure. Successful actions can enable those persons with disabilities to live more equally alongside those without disabilities

The accessibility challenges facing society today are most visible in **urban areas**. The solutions for improving accessibility are most in evidence in those forward-thinking cities that are demonstrating commitment and innovation in changing the urban environment to allow all people to fully enjoy city life.

People with reduced mobility are often described as a single homogeneous group, however it is a **heterogeneous group of people** that differ in age and life styles, physical and mental characteristics, or travel patterns and transport needs.

Even if the accessibility barrier may be the same, the response to overcome such barrier should attend the specific needs of each end-user. **SIMON** – relying on its extensive User Group - has identified the requirements of each targeted type of citizen with reduced mobility in order to improve their mobility capabilities through public and private transport modes.

Motivation

This challenging scenario has motivated the implementation and deployment of new solutions based on an inclusive mobility approach which relays on concepts such as accessibility, design-for-all and privacy of data, that has to result in an innovative system which has to provide:

1. A mobile application and web platform as an open communication channel with citizens, including specific navigation features supporting mobility disable people.
2. The capability for authorities to promote inclusion policies –e.g. coordinated advantageous transport tariffs - whilst fighting against fraud –e.g. univocal identification of user and disable parking badge.
3. Specific IT solutions for specific targeted end-users. Mobile applications for navigation, e-payment, e-id, etc...; smart cards for e-ticketing and e-id; or combination of both when required. Always with a focus on usability and user-friendliness.
4. New mobility schemas supporting the access of elderly and disable people to the same opportunities as the rest of citizens.

The final system

SIMON can be considered as a platform supporting several services feeding different applications which are accessible for citizens or parking controllers through mobile devices. Furthermore, the whole system is managed through a backoffice and a web application allows the public authority to carry out management actions.

SIMON integrates external elements which are part of urban mobility infrastructures, like park meters, barriers or parking sensors, and get information from many different sources. All these data will form the City Data Repository where **SIMON** centralised information is stored.





Project Objectives

The main project objectives are as follows:

- **Enhance older and impaired user experience through ICT services** which can be packed as four different services and that will be specifically instantiated in each of the four pilot sites.
- **Integration/interoperability of SIMON with multiple transport operators and public bodies:** in this way, SIMON services will be able to roam and operate across different transport modes and will be transferable to other European cities.
- **Integration/interoperability of SIMON with other associated ITS infrastructure:** this will enable a smooth, seamless experience for the traveller. Furthermore, this will help complement and boost public transport, introducing the use of private vehicles as key element on the personal mobility of disabled people.
- **Promote accessibility by means of incentives:** incentives schemas including information services, reduced fares, and exclusive access to special areas - e.g. the city centre- will be devised and deployed in SIMON pilots in order to foster a higher quality of life for citizens.
- **Protect accessibility by means of penalties:** abusing the system is a problem affecting in the long-term to the sustainability of fair inclusion policies. SIMON will fight against fraud, especially in the misuse of the European parking card for disabled people.
- **Support and contribution to standards, use of open architecture:** SIMON will follow the relevant ITS, 3GPP, NFC, ISO standards and report its results into national and international standardization bodies.
- **Execution of four large scale pilots in Madrid, Lisbon, Parma and Reading:** these pilots will definitely push forward the already substantial work on accessibility that these sites have conducted, consolidating their pioneering positions at the forefront of EU and international fair mobility policies addressing impaired users needs.
- **Several types of transport modes:** SIMON services will not be limited to specific types of transport modes; in fact they will be demonstrated on private and public transport solutions.
- **Pilots designed to form a scalable base for long term deployment:** this is achieved at two levels. On the one hand, SIMON pilots already consider accessibility as a long-term commitment with full political and institutional backing; on the other, the consortium will produce a Roadmap for deployment at European level, where milestones, barriers and actions to overcome them are identified in order to make SIMON a fully deployed reality within the next decade.
- **Reduce total cost of operation:** it is expected that the penalties introduced by the pilots and the operational advantages offered by SIMON to transport operators and authorities will reduce considerably the costs of operations and incentives.

Facts and Figures

The project is financially supported by the European Commission under the Competitiveness and Innovation Framework Programme (CIP)

Project Coordinator

Name: Antonio Marqués
Institution: ETRA I+D

e-mail: amarques.etraid@grupoetra.com

Integration Management

Locoslab

Dissemination and Communication:

Instituto Biomecánica de Valencia

Pilot cities:

Madrid, Lisbon, Parma and Reading

Partners:

ETRA I+D, Ayuntamiento de Madrid, Consorcio Regional de Transportes de Madrid, LocosLab, Instituto de Biomecánica de Valencia, EMEL – Empresa Pública Municipal de Estacionamiento de Lisboa, Infomobility SpA, Universidad Politécnica de Madrid, Reading Borough Council

Duration:

January 2014 – March 2017

Budget: 3.983.998€

Funding: 1.991.999€

Contract Number: 621041

Project website:

<http://simon-project.eu>





SIMON Consortium

- **ETRA Investigación y Desarrollo, S.A. (Spain)**

ETRA is the project coordinator, being one of the main technology providers of the consortium. Key contributions have focused on the pilot site in Madrid, as technology provider for the parking management and public bus network operator. Moreover, ETRA has also supported the instantiation of the SIMON solutions in the other three sites and has provided the infrastructure for the backoffice system.



- **IBV –Institute of Biomechanics of Valencia (Spain)**

IBV has led the formulation of the technical requirements of the project end-users (citizens, public authorities and public transport and parking operators). IBV has a long experience in the involvement of citizens – especially people with reduced mobility – in the pilot phases of innovative projects. IBV team has also led the dissemination and communication activities of the project.



- **Madrid City Council (Spain)**

Madrid City Council has led the pilot demonstrations in Madrid. The city is responsible of issuing the EU-disabled badges, establishing the access-rights, promoting inclusion policies, organising mobility and establishing the reserved and regulated public parking areas. They have established the links with the older and disable group of users, identifying the requirements – both for the city and the citizens – and evaluating the impact of the project.



- **Locoslab GmbH (Germany)**

The team at Locoslab has focused its research and technological development on the integration of its existing software systems into SIMON providing localization services that can be used to extend and set the properties of data gathered by different sensors, also including the novel indoor navigation system. Therefore, this technologies has been used to develop the citizen mobile apps.



- **Consortio Regional de Transportes de Madrid (Spain)**

The CRTM has participated as part of the pilot in the city of Madrid, together with Madrid City Council to ensure the availability of data from public transport networks in Madrid and to provide an scenario for the indoor navigation proof of concept.



- **Infomobility SpA (Italy)**

Infomobility has participated as pilot leader in the city of Parma. Infomobility is the body responsible for the distribution of the EU parking cards with RFID for disables in the city. Thus, Infomobility main role has been to lead the transferability of the already existing know-how on ICT-enhanced EU badges to the other four pilot sites.



- **EMEL –Empresa Pública Municipal de Mobilidadee Estacionamentode Lisboa (Portugal)**

EMEL has participated as pilot leader in the city of Lisbon. As a public company, they have been the main interface with the municipality, providing access to the parking management systems running in the city.



- **Universidad Politécnica de Madrid (Spain)**

UPM and concretely the Ontology Engineering Group (OEG) has been working with Consorcio Regional de Transportes de Madrid (CRTM) on the preparation of the technological and semantic infrastructure that will be necessary for the provision of Linked Data from CRTM's data sources.



- **Reading Borough Council (UK)**

Reading has been one of the cities acting as a pilot site for SIMON. Focusing on navigation services and the deployment of a parking monitoring solution for the disabled drivers, Reading has also trialled the access-rights in close contact with the disabled users.



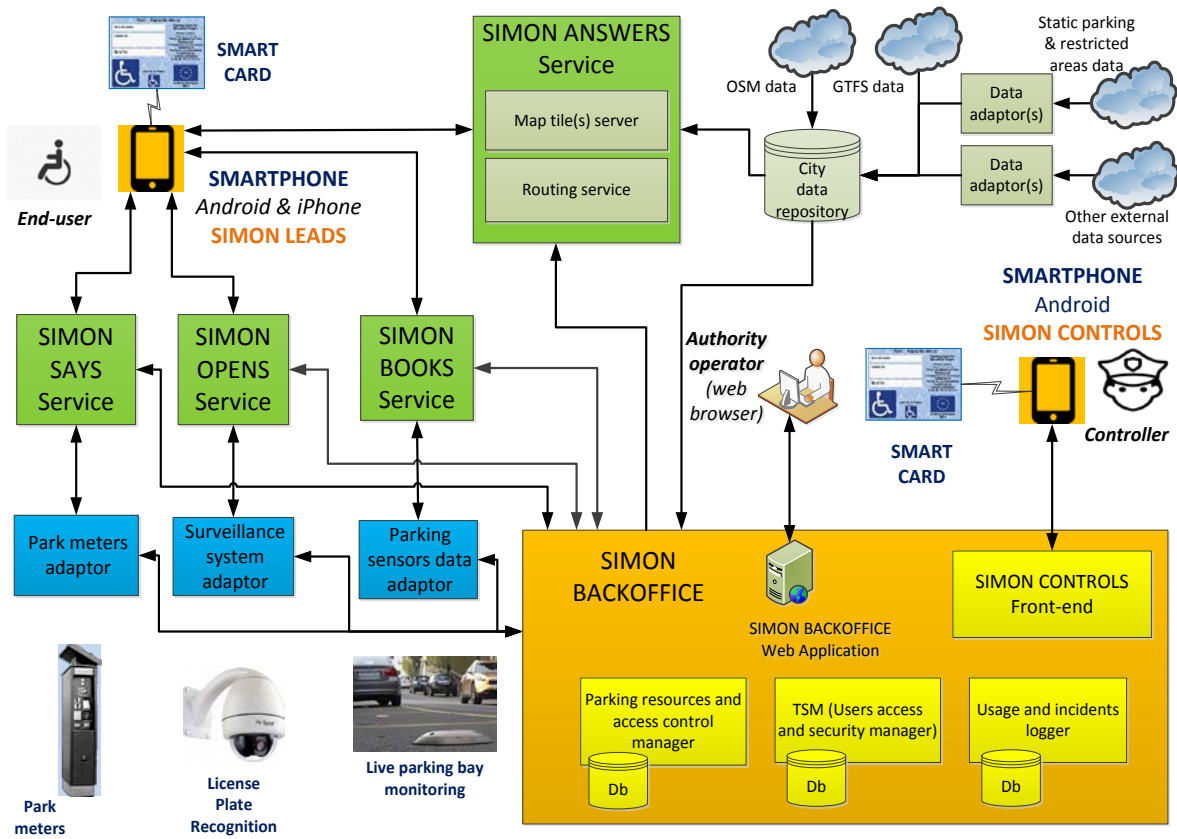


MAIN RESULTS

1. Reference Architecture

The **SIMON** system is a platform supporting some services that feed different applications, all of them accessible through different mobile devices. A backoffice also provides the access through a web application to manage the whole system.

Some adaptors are needed to connect external elements –park meters, barriers – to the services, as well as data adaptors will serve to get the information from several sources: static parking and restricted data, and other external sources in general. All data types will form the City Data Repository where **SIMON** centralized information is stored. Different blocks are used to define **SIMON** architecture.



Service	Functionalities
SIMON SAYS	<ul style="list-style-type: none"> • Authentication of users • Validation of the user badges (NFC, RFID, certificates, QR codes) • Parking permission control, fraud control
SIMON OPENS	<ul style="list-style-type: none"> • Identification of users • Interaction with infrastructures to allow access to restricted areas (Open barriers when necessary, provide a plate to be contrasted on white lists in ALPR based systems)
SIMON BOOKS	<ul style="list-style-type: none"> • Information on the status (occupied, free) of a certain reserved parking space.
SIMON ANSWERS	<ul style="list-style-type: none"> • Routing and navigation (both outdoor and indoor) specifically oriented to facilitate the mobility of disabled people, integrating relevant resources for them, including car park facilities and access to restricted areas.



MAIN RESULTS

1. Reference Architecture

Applications	What is it?
SIMON Mobile app	<p>Mobile phone application for elder and disabled citizens using SIMON</p> <ul style="list-style-type: none"> Provides the HMI (Human Machine Interface) with the citizen user Includes the interaction with the parking smart cards Makes use of the services offered by SIMON SAYS, SIMON OPENS, SIMON BOOKS and SIMON ANSWERS (see Table 5).
SIMON CONTROLS	<p>Mobile application for the interaction of controller agents with SIMON system</p> <ul style="list-style-type: none"> Provides the HMI with the controller user Includes the interaction with the parking smart cards Makes use of the specific front-end service offered by SIMON BACKOFFICE
SIMON BACKOFFICE	<p>It comprises the set of data repositories and data access services provided to the other components. It is composed by the following sub-modules:</p> <ol style="list-style-type: none"> TSM: Data repository and data access service devoted to the management of security, user authentication and user access rights management. Parking resources and access control manager: central data repository and data access service managing the parking resources and access control information. Usage and incidents logger SIMON CONTROLS front-end: specialised service facilitating the interaction of SIMON CONTROLS application with the SIMON BACKOFFICE, and hiding its internal complexity. SIMON Authority Operator Tool: this Web Application for the Authority operators is displayed at the users' web browser.

Device/ Device adaptor	Description
SMART CARD	It is used as a security token together with the smartphones of users and controllers. NFC codes, QR codes and User ID are set up to univocally identify the badge holder.
SMART PARK METERS	This is an access-right management device, in charge of some user interaction, emission of physical tickets and validation of cards. It can be accessed through a specific adaptor that interacts either with the park meter or with an existing control system that acts as an intermediary.
BARRIERS	This device is used to open and close access to restricted areas. It can be accessed through a specific adaptor to the barrier control device or with an existing control system that acts as an intermediary. Restricted areas or Residential Priority Areas can also be managed by a vehicles identification system.
SENSORS	They can be used for monitoring parking places occupancy. They are accessed to communicate with SIMON BOOKS through specific adaptors.



MAIN RESULTS

2. Information Model

The **SIMON** information and data models and the specification of the system interfaces must provide overall interoperability, and they will enable and cover the principles and the architecture requirements previously identified, as well as the functional requirements.

Interoperability and interface specification include three main aspects:

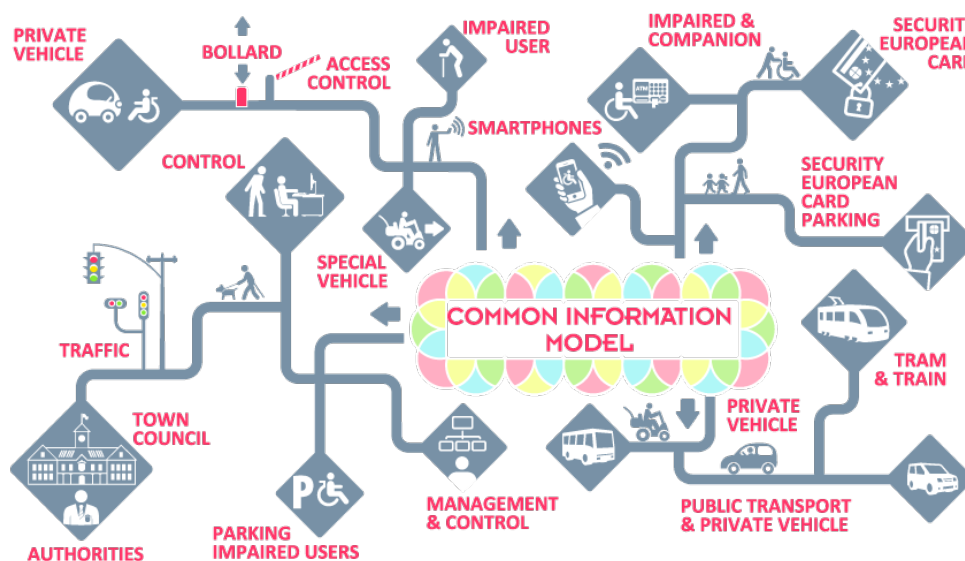
- Communications and data exchange among the actors identified in the SIMON architecture.
- Communications and data exchange between the services proposed by the project and current infrastructure in each of the cities.
- Communication and data exchange between the services proposed by the project and the new applications to be developed.

Technical solutions rely on the assumption that all the components involved in each interaction have a **common understanding** on the semantics of the information exchanged and use a common representation, what implies the adoption of a set of **common information models**.

Such information models need to fit with the requirements associated to the SIMON functionality, namely:

- Route planning, guidance and navigation across the city using different transport modes
- Guidance inside buildings
- Real time information about the availability of car park spaces
- Booking of car park spaces
- Verification of the identity of users (mobility impaired citizens and parking controllers) by means of appropriate security elements (EU badges, NFC tags, etc.), to reduce fraud in the usage of parking spaces and the access to controlled areas.

In addition to this, the models need to include also concepts managed by the infrastructure controlling system to be integrated, such as park meter devices and parking control system and barriers, number plate readers and access control systems.



As a result, **SIMON** has adopted the OpenStreetMap (OSM) for city outdoor maps and General Transit Feed Specification (GTFS) standards both for static information (definition of stops, routes and time tables) and dynamic information (real updates of the status of the routes, delays, etc.). For other aspects of **SIMON** functionality, no suitable existing models were found and the decision was to produce new models tailored to **SIMON** requirements: it is the case for indoor city maps, parking spaces, access controlled areas, users and security tokens and, partially, for event logging.



MAIN RESULTS

3. The SIMON platform

SIMON can be considered as a **platform** supporting several **services** feeding different **applications** which are accessible for citizens or parking controllers through mobile devices. Furthermore, the whole system is managed through a backoffice and a web application allows the public authority to carry out management actions. **SIMON** integrates external elements which are part of urban mobility infrastructures, like park meters, barriers or parking sensors, and get information from many different sources. All these data will form the City Data Repository where **SIMON** centralised information is stored.

SIMON services are classified into:

- Validation services:** SAYS and OPENS deal with the user authentication and validation. Two main situations have been considered: validation at the parking spaces and access to restricted areas. Several security tokens are combined in different ways: mainly personal enhanced ID card (blue badge), smartphones, standard mobile phones or park meters.
- Navigation services:** SIMON ANSWERS enable multi-modal as well as hybrid (outdoor-indoor) navigation in the cities by exposing several service endpoints to the citizen application, namely geographic services and navigation services. The setting up of different user profiles determines how the routes will be computed, based on walking speed or accessibility needs.
- Information services:** SIMON BOOKS provides the functions to determine availability of parking places, by offering and endpoint with methods that allow querying the available parking spaces near a given position. Occupancy status (free, occupied, all) is provided to the users in the map of parking places. SIMON ANSWERS provides also information services about city elements, accessibility, etc that are closely related to the navigation functions.

SIMON applications act as human interface of these services:

- SIMON Mobile app** enables users to navigate through the target cities in a multi-modal fashion that is adapted to their preferences and abilities, also allowing validation of authorized parking cards. Towards this end, it integrates navigation services, validation services and information services related to mobility in a single application that is adapted to the needs of mobility-impaired persons.
- SIMON CONTROLS** is the mobile application used by the authorized controller to check the validity of parking rights of end users. It is responsible for verifying that a user has been correctly validated in the system for occupying or leaving a parking space. In case of not validation or fraud, the controller is able to notify and impose a penalty to the user through the application.
- SIMON Authority Operator Tool** is the web-based application that allows the Public Authority the management of authorized parking badge holders as well as to obtain statistics and reports of the use drivers do of reserved parking places.





MAIN RESULTS

4. SIMON APPS

•SIMON Mobile app

SIMON Mobile is an application for navigation, orientation and parking designed for persons with reduced mobility. In Madrid, Parma, Lisbon and Reading, it provides access to important accessibility information such as the location of disabled parking spots or the location of elevators and ramps to access subway stations. With SIMON Mobile, it is possible to compute walking, driving and transit routes and use step-by-step navigation during a trip.

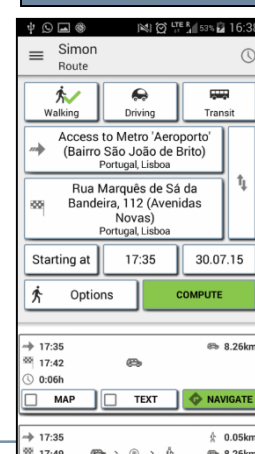
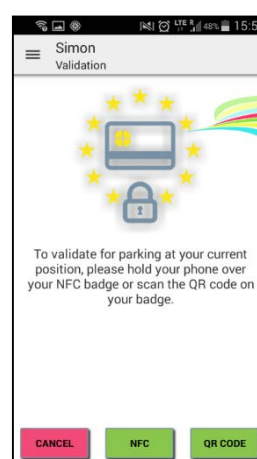
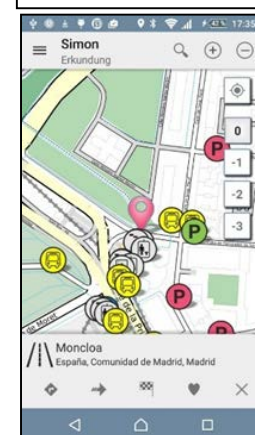
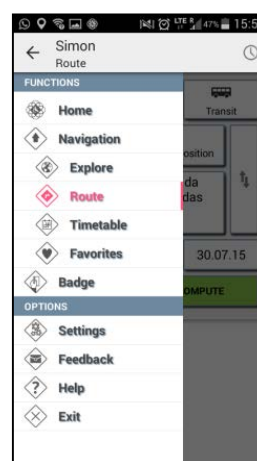
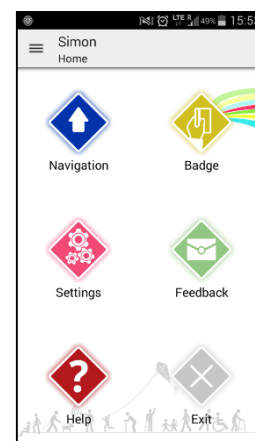
SIMON Mobile integrates with a new concept of the EU parking card for the disabled (commonly known as Blue Badge) that has been tested in a large-scale pilot running at several European cities. The goal of this ICT-enhanced badge is to reduce the fraudulent use of disabled parking bays to ensure that they are available to the persons that really need them. Combined with a **SIMON** disabled badge, disabled citizens can use Simon Mobile to validate for parking and to view the usage history of their badge.

The application is currently available in the Android and iOS versions and it can be downloaded free from the Google Play and Apple Stores.



Features included:

- Route planning considering private and public transport (different transport means available depending on the city).
- Visualization of transport information: accessible metro stations, bus stops, parking places for mobility impaired users.
- Validation of the parking card for the disabled (only for holders of the ICT-enhanced parking card) when parking or accessing to restricted areas.
- Historic of the use of the parking card.
- Inclusion of pedestrian and cycle roads to the cities maps.
- Availability of stairs and other accessibility issues present through the route.
- Routes to parks, tourist attractions, shopping areas, industrial areas
- Improvements to the tracking view and indoor navigation.
- Visualisation of real-time information on parking availability: the parking spots will be shown in green (available), red (unavailable) and white (no information).
- Capability to display indoor maps on top of the outdoor maps: when moving the map to an area where a building plan is available, the app will show additional buttons to switch between the floor plans of different levels.
- Indoor navigation (only if the navigation infrastructure is deployed)





MAIN RESULTS

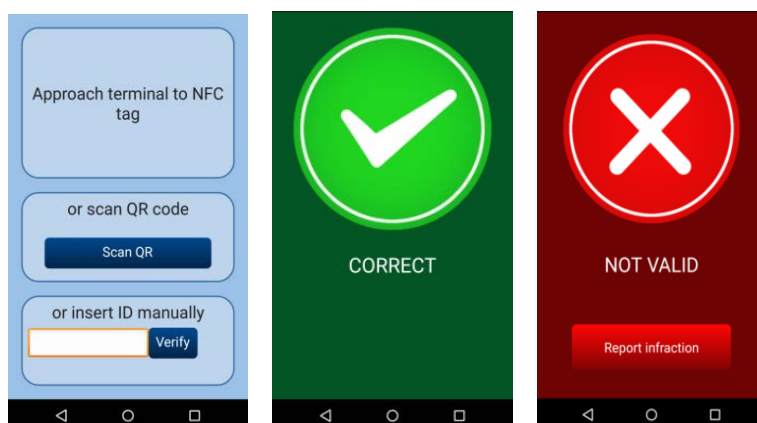
4. SIMON APPS

•SIMON CONTROLS

SIMON CONTROLS is the mobile application used by the authorized controller to check the validity of parking rights of end users. It is responsible for verifying that a user has been correctly validated in the system for occupying or leaving a parking space. In case of not validation or fraud, the controller is able to notify and impose a penalty to the user through the application.

The main functionality of the application is to check whether a user has been validated in the system to make use of a specific parking space or not. In case that the user hasn't validated or has no rights to park in that place, the controller can notify the infraction and act according the municipality law. This operation is very important for the parking service management in order to keep control of the parking area and also to offer the citizen the best quality of service.

Developed only for Android operative system.

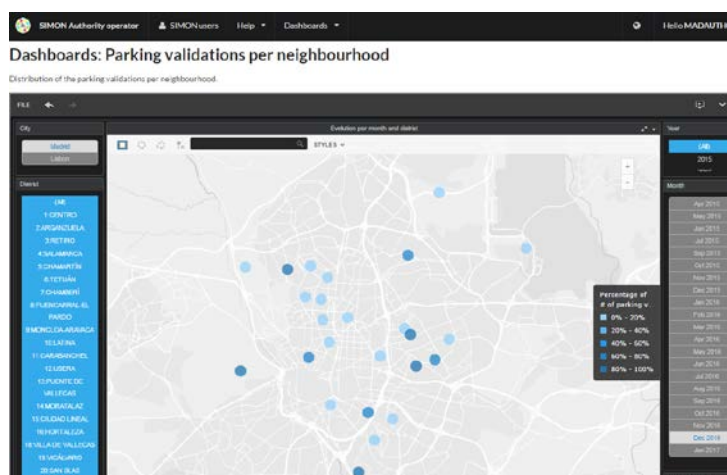


• SIMON Authority Operator Tool

SIMON AOT is the web-based application that allows the Public Authority the management of authorized parking badge holders as well as to obtain statistics and reports of the use drivers do of reserved parking places.

Public authorities can manage the use of the public space for parking purposes, and get real-time information on the use of the public parking areas, reducing in this way the fraud and enabling the establishment of policies promoting the sustainable use of all modes of transports.

Public Transport Operators and Parking Facilities Managers can enhance their payment and access right gateways in order to support the adoption of a common EU disable badge. Furthermore, the open data hubs supporting the use of multimodal navigation tools will be populated with information to enhance the mobility experience of impaired users. It provides support for the SIMON services, the validation of user identification security tokens, the Parking Resources and Access Control Management and also the possibility of additional features like statistical analysis of the registered events and reports generation, allowing the evaluation of the performance and impact in terms of service quality and the fraud control.



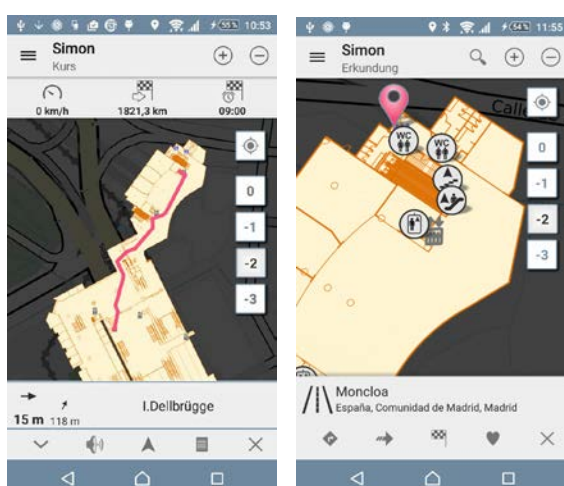


MAIN RESULTS

5. Indoor Navigation feature

Indoor navigation is integrated seamlessly with the outdoor world and the multimodal routing in all the cities in only one application. Provided through the SIMON Mobile app. Location and guidance algorithms are developed in order to enhance the user experience, over all if they are mobility impaired, when moving through transport facilities.

To support indoor navigation, the navigation services were extended with an additional routing algorithm that operates on the maps indoor model. This routing algorithm has then been integrated with the transit and street routing algorithm that previously computed routes such that walking routes may start and end in buildings and that transit routes may start, end or pass through buildings. Thus, the application can simply query for a route from an origin to a destination point and the resulting route outputs will consider not only the GTFS and OSM data but also the indoor models that are available for an environment. If a part of a route passes through a building for which a model exists, the resulting route will contain the necessary route instructions to traverse it.



The **indoor navigation feature** not only provides a visualization of the user's position but also includes the computation of end-to-end routes as well as the automatic trip tracking with step-by-step voice instructions.

Preliminary testing of the indoor location and navigation in Moncloa metro station (Madrid) has been very useful for refinement of this functionality, which is going to be demonstrated as a proof of concept in the next weeks. The routing algorithm and the app have been extended with the necessary features to achieve a good output, as mobility impaired people need in this scenario.

The visualization considers stairs, checkpoints, entrances, escalators, etc. and the "general direction" of travel. The model has been extended with the "travel directions" so that we know when and how to generate "walk in the direction of the center of the corridor" statements.

To be suitable for mobility impaired users, the wheelchair access routing function in the routing options has been integrated with the computation of routes such that users which enable this option will not be guided onto stairs or escalators. Similarly, a new route option has been included for vision-impaired users which will result in the generation of different paths that consider the floor markings of the building.

The last updates have focused improvements of **accessibility of the user interface**, including map visualization and use. Now we can directly handle touch events which we have used to implement additional gestures and we can use hardware-accelerated rendering which saves battery power and looks nicer. Moreover, we are able to rotate the map either based on gestures or based on the readings from the magnetometer or gps.





MAIN RESULTS

6. The specification of an ICT-enhanced EU parking card for the disabled

Two main problems have arisen after the implementation of the EU parking card for the disabled:

- Misuse and fraud of the badge by non-authorized holders or under conditions that are not those specifically defined in the Blue Badge schema.
- Almost all the EU countries have its own national scheme or regulations, and implementation is handled at local level. Mutual recognition of the parking card is part of the recommendation but real implementation is not always successful.

Aiming at solving the problem of misuse and fraud of the badge by non-authorized holders, **SIMON** project proposes the ICT implementation of the badge in order to ensure different mechanisms of user validation and authentication.

In this regard, the **SIMON** Consortium has agreed that the parking badge for mobility impaired people must include a set of security tokens to be used in the authentication of users. **SIMON** information model must allow interoperability of the proposed solution in order that a same model of the parking card can be used and security tokens are recognized as a non-isolated solution.

The **SIMON** parking card has been proposed as a modification of the original paper card already in use that must incorporate some elements for the authentication of users. As a basic approach, the existing cards can be modified according to that, regardless that the public authority decides to change the model and starts issuing a new one which also includes the **SIMON** elements in a different manner.

These elements that make the paper card become a smart parking card are the following:

1. A **user identity (USER ID)** associated to each user, to be printed in the card.
2. **QR code images (QR Code)** to be glued or printed in the card. It is recommended to have one in the front and a copy of it in the back.
3. **NFC tag** to be incorporated in a sticker or by any other mechanism (one per badge). The NFC Code, which is provided by the manufacturer of the NFC tag, shall be not-modifiable.

For the card design, it was decided that the **USER ID** would be printed under the QR code, in order to make it easy to identify and visually relate both codes with **SIMON**.



SIMON pilot cities, according to their respective national rules, have adopted the parking card format recommended by EU. One of the main innovations achieved in the **SIMON** project has been the proposal and demonstration of a technology necessary to be incorporated to this card to reduce and prevent the risk of fraud. Therefore, each parking badge has been equipped with NFC tags, QR codes and ID numbers following different approaches, depending on possibilities or limitations of the pilot cities. Two main objectives have been tackled: proposing a simple and easy-to-use mechanism for the citizen, to validate the parking card, and on the other hand making it easier and more effective the work of controllers to verify such validation.


The process of preparation of the parking card and the information model regarding the security tokens focusing interoperability and scalability are part of the guidelines that provide information enough to an entity interested in adopting this model.



MAIN RESULTS


7. Guidelines for cities

Brochure “what you need to know” for cities




SIMON

ASSISTED MOBILITY
FOR OLDER AND IMPAIRED USERS




European
Commission



cip
competitiveness and innovation
framework programme
2007-2013

Date of issue
January 2017



Data model and formats required for integration of data sources

What you need to know to integrate your data about mobility in the city in the SIMON system to offer advanced solutions for mobility impaired users

The **SIMON** platform consists basically on the integration of set of diverse applications, services and infra-structure controlling systems involved in the urban mobility of impaired citizens. Those heterogeneous software components shall intensively interoperate between them, exchanging information about the city and the requests made by the users.


The main functionalities in **SIMON** are:

- Route planning, guidance and navigation across the city using different transport modes
- Guidance inside buildings
- Real time information about the availability of car park spaces
- Access rights management of the parking card for the disabled

Requested data formats

- **Outdoor city map model:** OSM (OpenStreetMap) standard is adopted for describing the city road network and infrastructure, including outdoor facilities and points of interest.
- **Indoor city map model:**
 - **floor plans:** bitmap-based images at different resolutions to be embedded into the global GPS coordinate system
- **Public transport information:** General Transit Feed Specification (GTFS)
- **Parking facilities and restricted areas:**
 - **GIS formats:** ArcGis or KML
 - **Data tables:** CSV format or easily converted to CSV (XLS)
- **Users and security tokens for disabled parking badges:** NFC codes and QR codes need to be associated to a user ID, CSV format can be uploaded to system.

TOWN COUNCIL



AUTHORITIES



MAIN RESULTS

8. Validation in pilot cities

The SIMON services and applications have been piloted in four cities as large scale demonstrations.

An incremental approach was followed to test the different services in a progressive way validating them and proving its scalability – by increasing the number of users testing the services at each site- and transferability - of the services among the different sites-

Madrid pilot is the most complete and complex of the sites. The availability of its Regulated Parking System allowed the large experiment of different strategies proposed for the validation and verification of access rights. The pilot also benefits of the large open data hub and in general the existing ITS infrastructure in Madrid for the navigation solutions.

Public transport data sets are available and an innovative indoor navigation system has been demonstrated in Moncloa station, enabling hybrid outdoor-indoor and multimodal navigation.



Lisbon pilot is oriented to the demonstration of large scale deployment of NFC tags to adapt the EU parking card for disabled people, furthermore the solutions based on the processing of the non-occupied reserved parking spots, thus allowing the user to be guided to the free reserved parking spaces, is of special interest. Lisbon officers have the SIMON CONTROLS functionality integrated in their apps for parking enforcement.

Parma pilot is relevant due to its already existing urban restricted area where the access of authorized vehicles is completely monitored. This demonstration focuses in the control access to these areas as well as in the validation of the reserved parking spaces for impaired users.



Reading pilot has focused on on-street park spaces occupancy monitoring, in order to give accurate indication of parking places availability. Enhancing the navigation information services for pedestrian and some trials on the feasibility of NFC enhanced badges are also part of this demonstration. Trials with end users have been conducted to assess the feasibility of further actions to revise the Blue Badge schema.



PROJECT IMPACT: DEMONSTRATION AND EVALUATION RESULTS

The **SIMON** services and applications have been piloted in four cities as large scale demonstrations and different metrics have been registered according an Evaluation Plan. The data gathered during the pilots have been used to assess the results of the project.

The description of the monitoring procedure as well as the evaluation focuses not only on the system operation but also in the user acceptance and satisfaction; this is why several questionnaires and templates were defined in order to gather the user feedback.

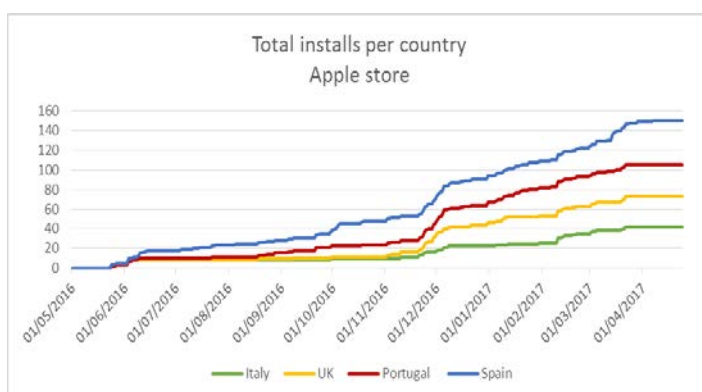
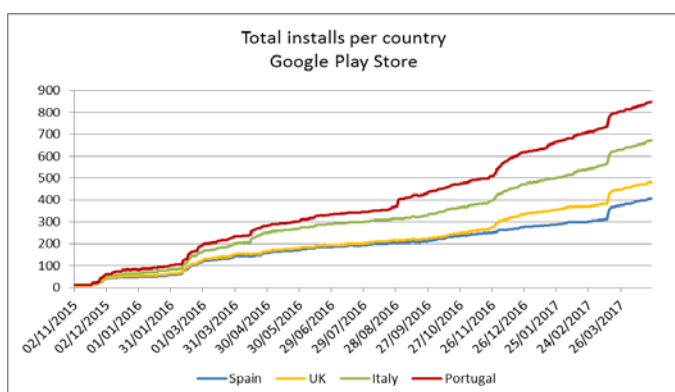
Three big groups of impact indicators were defined in order to have a clear picture on how (a) the project performed (b) the system was really as expected and results are of impact, and (c) the user was really experiencing an improvement in his /her quality of life. These three groups are the **system performance indicators**, the **project performance indicators** and the **user experience indicators**.

Indicators related with the **system performance** are quantitative and calculations/aggregations must be done from the parameters registered or collected. **Project performance** indicators can be classified as quantitative (“number of”) or qualitative (“index of”). Finally, indicators related with the evaluation of the **user experience** will be usually defined as qualitative. Collected indicators are evaluated on a monthly basis when possible, which helps to understand the evolution of the users activities and also to detect if there is an “abandon” effect probably due to a lack of interest of the user participating, or on the contrary how effective is a possible event in the attraction of new users for the system. On the other hand, this also allow to have some useful information regarding scalability of the system, if users of the system are increasing while their operations are maintained. Indicators are also analyzed per pilot site.

Users and badges: final figures

- ✓ **Madrid:** 498 users of apps, 6000 ICT badges issued
- ✓ **Lisbon:** 407 users of apps, 700 ICT badges issued
- ✓ **Parma:** 295 users of apps, 779 ICT badges issued
- ✓ **Reading:** 158 users in the Reading pilot, no badges issued

A critical mass of users for demonstrating the SIMON system has been reached for the SIMON Mobile app, which had more than 1000 installations for Android and 350 for iOS by the end of the project (March 2017) and is still increasing day by day even after the project finalization. The app is mature enough, it is robust and no reports of crashing or malfunctioning are reported.



From the point of view of the badge holders, the number of participants has been certainly lower. Nevertheless, the representatives in associations support the parking card and validate the approach decided for its implementation. The same support is provided by the municipalities in charge of the management of the parking card.



PROJECT IMPACT: DEMONSTRATION AND EVALUATION RESULTS

Looking at the deployment of badges in Madrid, they have started a large scale deployment which indicates that they are confident with the result of SIMON parking card as a tool to fight fraud and to enhance the mobility of disabled users. Nevertheless, engaging users to activate their cards is resulting a hard process. During 2016, mobility officers have carried out a campaign for controlling fraudulent use of parking cards, which has very successful in terms of results: more than 2000 drivers were fined for this reason. In March 2017 the full operation of mobility officers started to verify SIMON validations, and they have detected that the parking cards that have the SIMON security tokens have not been validated. It is now the decision of the Madrid City Council to take the decision of regulating about this, because probably this is the only way to make the users do their part. Madrid City Council has already declared that among the municipal proposals for these cards they can pose the question of elevating their regulation to decree, in addition to establishing a sanctioning regime that allows the City Council to fine the improper uses.

Parma has also the purpose to deploy at large scale their badges and they have already been produced integrating the SIMON QR code (together with the Parma RFID). The main problems Parma is facing regarding the involvement of users is the age (a high percentage of them are >70 year old) and they are not used to technology. Parma Municipality will address this problem by promoting technology literacy and training for their elderly.

Finally, in Lisbon they have used a complementary card which is associated to a valid parking badge. Lisbon authorities are very interested in this new model of parking badge, even thinking in exporting the model to some other areas related to mobility. Thus, this interest is reflected in the higher relation (badges issued/active users) among the three cities. The main issue for Lisbon authorities when it comes to recruit users is not the age of them but in this case, the lack of access to smartphones. It seems users in Lisbon are not very used to this kind of devices.



System performance

Many efforts have been put to contact relevant associations and interested stakeholders that have no doubt about the need, the current situation and the expectations about disability, mobility and concretely the problem of fraud in the use of the parking card.

When it came to directly engage users to demonstrate the validation functionality, it resulted very complicated to effectively achieve a commitment. Several reflections can be made after three years of project and some lessons learnt can be evident:

It is difficult to change habits of most of the people. A small percentage will have the curiosity to test or the sufficient initiative to test something new, but overall users want to remain as they are. Some comments were received at this regard, questioning why to change the system.

Probably citizens can be reached more successfully at a neighbourhood level, and not starting from the “umbrella” associations or federations encompassing a large number of organizations. That was thought to be the correct approach, but recruitment was much more effective when addressing small, social entities working directly with citizens. But due to institutional relations (City Councils and Associations of Disabled) it was also important to keep the contact at that level.

Probably the only way to achieve a modification in the citizens behaviour is to regulate and start applying incentives (when possible) or sanctions in the use of an IT parking card. SIMON is proposing several options to validate the card and all of them are technologically feasible, do not imply a complicated deployment, and basically the results will be always better than the option of doing nothing.



PROJECT IMPACT: DEMONSTRATION AND EVALUATION RESULTS

SIMON Key Performance Indicators

Measurable Indicator	Method of measurement: reported from...	Target / expected impact	Value Achieved
Number of services adapted in open architecture and instantiated at pilots (summation of services)	WP5 (D5.3)	14	14
Minimum number of services deployed in each site (Madrid, Lisbon, Parma, Reading)	WP5 (D5.3) WP6 (D6.1)	4, 3, 4, 3	3, 3, 4, 3
Minimum number of applications deployed in each site (Madrid, Lisbon, Parma, Reading)	WP5 (D5.3) WP6 (D6.1)	3, 3, 3, 2	3, 3, 3, 3
Number of third bodies which whom SIMON operates (summation of bodies)	WP6 (D6.1) WP8 (D8.2)	8 (2 each)	17
Coverage of accessible metro stations	WP4 (D4.2) WP5 (D5.3)	2	1
Number of Public transport modes considered at each city (Madrid, Lisbon, Parma, Reading)	WP5 (D5.3)	4, 2, 2, 1	4, 5, 2, 0
Number of interfaced external ICT infrastructure (summation)	WP5 (D5.3)	2, 2, 2, 2	5, 3, 5, 4
User satisfaction index (controllers)	WP7	>8, in a rank 0 to 10	Qualitative (interviews)
User satisfaction index (citizens)	WP7	>7, in a rank 0 to 10	3,68 in a rank 1 to 5.
User satisfaction index (public authority)	WP7	>8, in a rank 0 to 10	Qualitative (interviews)
Number of SIMON reserved parking spots	reported from WP6	1500	10.000
Number of types of access tokens	WP6	4	4
Number of types of access challenging strategies	WP6	3	3
Creation of Roadmap for Deployment	WP8	M39	M39
Use of relevant standards	WP8	Defined in D3.2	As defined in D8.2
Number of standards bodies and public legislators to which results are sent	WP8	5	5
Reduce economic negative impact of abuse	WP7	15%	As defined in D8.2, D7.2
Reduce operational costs for parking managers and public authorities	WP7	10%	As defined in D8.2, D7.2
Number of 1:1 / focus group interviews with app users to record their experiences	WP5, WP7	6 per site	40
Number of questionnaires to users with email addresses on SIMON system	WP7	30 per site	98
Number of 1:1 interviews with the Parking Enforcement team (on street) to record their experience of using SIMON CONTROLS	WP7	5 per site (except Reading)	11
Number of 1:1 interviews with the Parking Enforcement manager to record the potential of SIMON SAYS to effectively reduce fraud	WP7	1 per site	4
Number of user associations in the User Group		8	38



PROJECT IMPACT: DEMONSTRATION AND EVALUATION RESULTS

Demonstration of Use Cases

Most of the proposed **use cases have been demonstrated**. Only those related to the booking of parking spaces were not finally implemented, since none of the cities has the infrastructure for it. Moreover, a new and interesting use case was included for a proof of concept of indoor navigation.

Finally, **accessibility** has been probably what makes the difference in this project, proposing a new approach for inclusive mobility. Experts in accessibility have validated the app itself, and a proof of concept for indoor navigation has been done in Moncloa station (Madrid), being this the other big innovation –together with the ICT parking card- in this project.

Nr	USER	USE CASE	MAD	PAR	LIS	RED
CI_00	Citizen	LEARNING PROCESS TO USE THE SYSTEM	X	X	X	X
CI_00B	Citizen	LOGIN AND USER PROFILE	X	X	X	
CI_01	Citizen	PLAN TRIPS USING PUBLIC TRANSPORT	X	X		X
CI_02	Citizen	RECEIVE INFORMATION ABOUT ACCESSIBLE PUBLIC TRANSPORT IN REAL TIME	X	X		X
CI_03	Citizen	LOCATE ON STREET PARKING SPOTS IN PUBLIC PARKING SPACES AND RESTRICTED AREAS	X	X	X	X
CI_04	Citizen	LOCATE RESERVED PARKING SPOTS IN PUBLIC PARKING SPACES AND RESTRICTED AREAS	X	X	X	X
CI_05	Citizen	PLAN TRIPS USING PRIVATE VEHICLE	X	X	X	X
CI_06	Citizen	CITIZEN IDENTIFICATION AT A PARKING SPACE USING MOBILE PHONE AND PARK METER	X			
CI_09	Citizen	CITIZEN IDENTIFICATION AT A PARKING SPACE SHARING THE LOCATION WITH THE SMART PHONE	X	X	X	
CI_11	Citizen	USE OF AN EU BADGE WITH RFID TO BE IDENTIFIED IN THE SMART PARK METER	X			
CI_12	Citizen	CITIZEN IDENTIFICATION AT A PARKING SPACE USING NFC SMART PHONE AND A RFID (NFC) EU BADGE	X	X	X	X
CI_12B	Citizen	CITIZEN IDENTIFICATION AT A PARKING SPACE USING SMART PHONE AND A QR CODE ATTACHED TO THE EU BADGE	X	X	X	X
CI_13	Citizen, controller	WHEN THE USER RESPONDS TO THE CHALLENGE AND THE RESPONSE IS VALIDATED, A TICKET IS PRINTED BY THE PARK METER TO BE LEFT IN THE VEHICLE	X			
CI_13B	Citizen	CITIZEN SIGNALS THE AVAILABILITY OF A FREE PARKING SPACE	X	X	X	X
CI_14	Citizen	STATUS (OCCUPIED, FREE) OF THE PRIVATE PARKING SPACES				
CI_15	Citizen	BOOKING A PARKING SPACE IN PRIVATE PARKING AREAS				
CI_19	Citizen	CITIZEN IDENTIFICATION TO A RESTRICTED AREA USING SMART PHONE AND SHARING LOCATION (II)	X	X		
CI_20	Citizen	APPLICATION RATING AND COMMENTS	X	X	X	X
CI_21	Citizen	DISPLAY REPORT OF USAGE OF USERS BADGE	X	X	X	X
CI_22	Citizen	LOCATION AND NAVIGATION INSTRUCTIONS IN INDOOR ENVIRONMENTS	X			
CO_00	Controller	LEARNING PROCESS TO USE THE SYSTEM	X	X	X	
CO_02	Citizen, controller	THE CONTROLLER CHECKS IF A CAR IS CORRECTLY PARKED: EU BADGE ENHANCED WITH RFID TAG	X	X	X	
CO_05	Controllers	MANAGEMENT OF MISUSE OR FRAUD	X	X	X	
OP_00	Operator	LEARNING PROCESS TO USE THE SYSTEM	X	X	X	X
OP_01	Operators	REVISE AND UPDATE THE LIST OF USERS	X	X	X	
OP_04	Operators	RECEIVE INFORMATION ABOUT THE PARKING SPACES STATUS	X	X	X	X
OP_07	Operators	DATA ANALYSIS	X	X	X	X



PROJECT IMPACT: DEMONSTRATION AND EVALUATION RESULTS

The project have interacted with the following public bodies and companies operating in the cities:

- **Municipalities:** Madrid City Council – General Direction of Traffic Management and Control, for the deployment of the parking cards and the validation service, and also to involve the Mobility officers in charge of controlling parking validations. Reading Borough Council – to manage the trials, the deployment of parking sensors, the meetings with users. Besides those two, which are already part of the SIMON Consortium, both Comune di Parma and Camara Municipal de Lisboa have been interacted by the SIMON partners Infomobility s.P.a. and EMEL.
- **Transport operators** have been engaged in Lisbon, where initially was not foreseen to have the information of public transport and finally an agreement was achieved: Carris (bus and tram) and Metropolitano de Lisboa (metro). In Parma also the bus and the metro operators have been contacted to provide the data sources to be integrated in SIMON. In Madrid, the information about the whole network of urban buses (EMT) is offered as open data. Furthermore, EMT was also contacted to provide support in the promotion of the SIMON app –now recommended in the EMT Open Data Portal-. Metro Madrid has been interacted to deploy the indoor navigation system in one of its stations.
- Finally, some **other associations and public bodies** have been interacted. The most important ones are highlighted:
 - ✓ In Lisbon: Secretary of State for inclusion of people with disabilities, the National Institute for Rehabilitation (INR, I.P.) and The Institute for Mobility and Transport (IMT, I.P.) (this is the entity issuing the parking cards)
 - ✓ In Madrid: the associations FAMMA-Cocemfe and ONCE have actively collaborated to evaluate the system and to disseminate information about the project through their channels.
 - ✓ In Parma, the University of Parma has been involved since the beginning.
 - ✓ In Reading, trials have been supported by the Physical Disabilities and Sensory Needs Forum



Use of standards and results to be sent to public legislators /standardization bodies

SIMON project uses extensively adopted standards when possible:

- in the pilots involving the use of NFC (Madrid, Lisbon, Reading) and RFID (Parma)
- for some data sets in the adopted information model: OpenStreetMaps (OSM) for outdoor geometry and GTFS for transit information.
- In Madrid, the local regulation has been modified in 2016 in order to allow the use of technology in the parking cards for people with reduced mobility (PRM). This modification has allowed the large scale deployments of the new model of the parking card.
- SIMON project has as one of the main outcomes the proposal of a specification of the new model for the EU IT-parking card for disabled people, which is delivered as D8.3.

This outcome is presented to the public authorities of the four pilot sites: Furthermore, both Lisbon and Reading does not have a local regulation for the parking card but depend on a national entity for issuing the badges instead. Lisbon has the intention to prepare its own recommendation –based on the specification for the SIMON IT card- to be proposed to the national body. Reading will explore this possibility too.



PROJECT IMPACT: DEMONSTRATION AND EVALUATION RESULTS

Impact on fraud situations

The negative impact of abuse in the use of parking badge is a key economic indicator. Economic costs associated to the non-detection of the infraction can be estimated depending on the mobility policies applied by the public authority in the city.

In Madrid, as in the rest of cities, specific conditions apply for parking badges of disabled users. In particular, for owners of a Disabled Card, current regulation also indicates that they are allowed to:

- a) Parking on the specifically marked places for that purpose.
- b) Parking for unlimited time in reserved zones for loading and unloading.
- c) Parking for free and unlimited time in controlled parking zones.
- d) Parking in places where parking is prohibited by signs, adjusting in all cases to the indications of Mobility Officers and Municipal Police.

For a big city as Madrid, where also mobility policies are focusing sustainability and reduction of emissions, it is important to promote and encourage the use of public transport and on the other hand, try to dissuade drivers of getting the car to move in certain areas, that is why on street parking is regulated in an extended area and mainly in the city center. The same approach is followed by most of European cities, this also including the rest of SIMON pilot cities.

The situations in which SIMON system is effective to fight fraud in the use of the EU parking card can be analysed as follows:

- *Fraud situation 1:* a user has duplicated / produced a copy of his/her parking badge so it can be used in additional car by some other person when parking (various copies could be produced). Both the original card and the copy (ies) will be placed simultaneously in several cars when parking.

SIMON solution: the use of the ICT parking card together with the validation functionality of SIMON Mobile app will register as “validated” the User ID associated to the parking card. In the system, only a valid authentication is allowed so in case that a forged card would be circulating, two simultaneous validations would not be possible, in consequence this situation can be certainly avoided.

- *Fraud situation 2:* a non-authorized user is using a legal badge. Two possibilities can occur at this point:
 - The non-authorized user has installed the SIMON Mobile app on his/her smartphone and knows both the user ID and the password to associate the parking card to the smartphone. This situation is possible, since SIMON has been thought to offer the possibility of being installed in several devices in order to allow relatives or carers to drive a disabled user who is entitled to use the parking card. In this case, a non-authorized user will be validating the parking operation and this will be registered in the system. Only a parking controller or enforcement officer would be able to detect the fraud situation if the identification of the user is required.
 - The non-authorized user is not able to validate the parking card when parking because he has not access to the validation functionality of SIMON Mobile app. This user would try that the holder of the parking badge does the validation remotely which is not possible because parking card and smartphone have to be located together in the same place to produce the validation. In the alternative case that a copy of the card was available to produce a remote validation, the GPS position allocated to the validation does not correspond to a parking place and it is not valid, in this sense the user validation is not accepted.



PROJECT IMPACT: DEMONSTRATION AND EVALUATION RESULTS

- *Fraud situation 3*: the parking badge is stolen to be re-sold to non-authorized users or to be forged to produce additional cards. This situation is quite common in the UK, where parked cars are damaged and windows are broken just to get the parking badge. Pilot cities have described actual situations of black market around this issue, because given the problems that people have to park in a city center and the associated costs of being on a regulated parking infrastructure, as previously described, many people is willing to pay a lot of money just to have a copy of a parking card.

SIMON solution: the fact of having an IT card which is registered in a system allows the public authority to cancel the parking card in the system as soon as the incidence is notified, what means that the User ID associated to it is not valid any more. This makes the parking card “unusable”.

We can estimate that situations of misuse of the parking card (TPMR card) that can be avoided with SIMON system might reach about one half of the previous fraud cases. This has a consequence in the increase of money due to more parking operations in the regulated parking area instead of using reserved places illegally.

A questionnaire was filled by the cities to indicate some figures to estimate fraud and they described different situations that are usual in the parking card schemas.

- Madrid situation describes that the income from parking in the regulated area was expected to be 96 million in 2016. Having 150.000 parking places in this area, income is of 640€/place by year. Estimations are that SIMON controls of fraud situations could mean an income between 450.000€ and 1.150.000€ a year due to people that should have to park in the regulated area instead of making use of reserved places for PMR.

Parking controllers of the Regulated Parking System and the Mobility Officer have been working in a campagne to verify authenticity of parking cards for PMR, which led in 2016 to 2.355 complaints filled with regards to the fraudulent use of the cards. [source: *Madrid City Council*]

- According to the Department for Transport, drivers who misuse blue badges for the disabled are left unpunished by 40% of councils in England.

Blue badges entitle drivers to free parking in pay and display bays and allow them to park in disabled zones. Charity foundations agree on the following: "Abuse of the system creates huge levels of ill feeling and risks bringing into disrepute the whole scheme, which is invaluable for those who really need it."

Official figures show that in 2015 there were 2.39 million blue badge holders in England. Councils in England took legal action against 896 people for abuse of blue badges in the year to the end of March 2016, according to the Department for Transport (DfT), and almost all of the cases involved drivers using another person's blue badge.

Also in 2016, the Local Government Association (LGA) revealed that the number of blue badges stolen in England had trebled in three years: 2.056 cases of theft recorded in 2015 compared with 1.756 in 2014 and 656 in 2013.

Even if councils take blue badge fraud seriously and are working hard to combat it, gathering evidence and mounting a prosecution can be time-consuming and expensive, but councils know their areas and are best placed to decide the most effective way to tackle it. [source: <http://www.bbc.com/news/>]



PROJECT IMPACT: DISSEMINATION ACTIONS

In addition to the technical activities developed within the project, special attention has also been given to the suitable dissemination of results to the most relevant stakeholders: public authorities, people with reduced mobility and associations related with disability and elderly.

KEY FIGURES:

4 “official” press releases (2 foreseen) → 140 impacts in media

Dissemination at 23 events (national and international conferences)

Brochures and leaflets: 13 (2, English; 6 Spanish; 3, Portuguese; 2, Italian) printed and online

6 Newsletters in electronic format with information about the project results:

Sent to 116 subscribers. Distribution by email to user group and database of contacts

Available at the webpage. Additional dissemination through social networks.

Workshops and meetings: 16 SIMON events (Meetings with stakeholders, User workshops, Focus groups)

Publications: 17 articles (sectorial magazines, journals, congress/conference proceedings, etc)

News at partners websites: 52 entries. Also publications at their social networks (Facebook, Twitter, etc.)

YouTube channel: 37 videos

The project has organized **three public User Group workshops**, one for each year of project.

First Users Group Workshop

The city of Lisbon organized on 1st July 2014, the 1st Workshop of SIMON Users Group, which was held at CIUL – Urban Information Center of Lisbon. EMEL as partner of the SIMON Project and within its growing focus in the area of inclusive mobility was the organizer of this 1st International Workshop. This meeting was intended to encourage bigger collaboration between all stakeholders in the area of mobility and accessibility of cities, in order to jointly, strengthen and complement the role of Lisbon in seeking solutions which maximize its impact in improving urban accessibility to all citizens of Europe.

The Workshop was attended by the speakers: João Dias (EMEL Executive Director), Eva Muñoz (ET-RA), Nuno Sardinha (EMEL), Stephan Wagner (LOCOSLAB), Alberto Ferreras (IBV), José Madeira Serôdio (INR), João Carlos Afonso (CML), Oscar Rodrigues (EMEL), Tiago Farias (CML), Sérgio Pinheiro (IMT), Jorge Leite (ACAPO), Sofia Antunes (EMEL).

A wide group of entities and organizations attended the Workshop: ANEA, ASBIHP, ASSOCIAÇÃO SALVADOR, IPCVI, LIGA, ANDAR, FAPPC, APELA, ACAPO, JORNAL i, FAMMA MADRID, AYUNTAMIENTO DE MADRID, COMUNE DE PARMA, POLIS, AGE, FUNDACION ONCE, EYSSA-TESSIS e CARRIS.

In this Workshop the main topics related to the project were presented and discussed. Furthermore a demonstration was carried out to show a first prototype to be used by a controller in the validation of the Parking Badge for people with reduced mobility.





PROJECT IMPACT: DISSEMINATION ACTIONS

Second Users Group Workshop

The SIMON Project Second User Group Workshop was organized by Infomobility S.p.A in Parma (Italy), on June 16th, 2015. In line with the First Workshop that took place the previous year in Lisbon, this workshop aimed to encourage bigger collaboration between all stakeholders in the area of mobility and accessibility of cities, and it was organized to be the launch event of the SIMON Large Scale Pilots. Attendants and participants included public authorities, policy makers, relevant citizens associations, individuals and academics.

The purpose of the workshop was to present the project and the objectives of the SIMON project in Parma, as well as to discuss about their expectations regarding technology and ICT solutions for mobility impairments. Attendees had the opportunity of exchanging their experiences and understand what SIMON project has already developed to offer them a mobile app for validation and navigation in their city.

The event was divided in three sections. In the first one, the project was presented by members of the SIMON Consortium: Eva Muñoz, from ETRA (Project Coordinator) explained the services and applications developed and the objective of the Large Scale Pilot; Alberto Ferreras from IBV spoke about the communication activities and encouraged the audience to participate in the pilot phase.

In the second session, "Accessibility in urban areas", different speakers talked about applications and technology: Paolo Ferecchi, Responsible of the Regione Emilia Romana Network; Jessica Borsi e Matteo Salini, authors of the "Hotel Accessibility Parma & Dintorno" guides; Alessio Garbi, owner of the app "Liberu di muoversi"; Cleto Carlini, Manager of Sustainable Mobility in Comune di Bologna; Nazzaro Pagano, national president of ANMIC; Roberto Massa, Manager of It.City; and finally, Emilia Caronna, Deputy Rector of University of Parma for the coordination of initiatives for students with disabilities and disadvantaged groups.

In the final session, interesting experiences were shared with the audience, with the intervention of Norberto De Angelis, Paralympic champion, who shown a video autobiography about his life, an example of courage for all set between the United States and Africa; Angelo Catanzaro, National President of AIPS Onlus and creator of a new bike-sharing system for to disabled recently inaugurated in Turin; to finish, Benedetta Squearcia, as responsible of Operative Sports Structure in Comune di Parma.





PROJECT IMPACT: DISSEMINATION ACTIONS

Third Users Group Workshop

On March 14th, 2017, more than 100 people gathered at the Palacio de Cibeles in Madrid to participate in the third workshop of users of the SIMON project.

This event had the purpose of presenting the SIMON project results, an other interesting experiences and perspectives about mobility and accessibility, to the interested stakeholders: disabled users, associations, public administrations and companies. This last workshop followed the ones that took part in Lisbon (2015) and in Parma (2016).

Inés Sabanés Nadal, Environment and Mobility Delegate in Madrid City Council (leading the Madrid pilot) and José Antonio Fernández García, CEO of GRUPOETRA (the company acting as Project Coordinator), were in charge of the opening. Both outlined the importance of the human technology that can improve the mobility of the citizenship and that allow the solutions shared by different communities and countries.



The first session was intended to present the features and results of the SIMON Project. Several partners of the SIMON Consortium offered a complete view of SIMON services and applications, as well as the inclusive mobility perspective (the concept Mobility as a Right) and how the users have been the center of the process of design, development, adaptation and testing of the SIMON project. Participatory techniques have been used from the very beginning to ensure that the SIMON products and services are accessible, usable and adapted to the needs of users. The second session presented different perspectives of the technology and policies addressed to improve mobility in cities and the experiences of using SIMON at the four pilot cities.

The Spanish representative in the High Level Group for Disability of the European Commission (representing the Spanish Ministry of Health, Social Services and Equality) highlighted the importance of the modernisation of the European Parking Card in order to allow citizens an accessible mobility through all Europe. The Director of CEAPAT-IMERSO, talked about the social perspective in the development of assistive products. The key idea is that technology must be linked with the accessibility if pretends to be helpful for the users.

The third session addressed experiences from the users' perspective. FAMMA – COCEMFE Madrid, the Spanish Blind Users Association (ONCE) and the Senior Assessor in Gabinete da Secretaria de Estado da Inclusao das Pessoas com Deficiencia (Minsiterio do Trabalho, Solidariedade e Segurança Social, Portugal), offered their view about mobility for impaired citizens. Finally, the Co-Director of the Ontological Engineering Group of the E.T.S. of Computer Engineers (Universidad Politécnica de Madrid) presented the MobileAge Project, in which public services for elderly are being developed using co-creation techniques.



PROJECT IMPACT: DISSEMINATION ACTIONS

Furthermore, the project also organized **three launch events** at the beginning of the pilot phase,:

Madrid:

The pilot launch event took place in Madrid last October 1st 2015 at the CERMI (the Spanish Committee of Representatives of Persons with Disabilities) facilities. People with mobility impairments attended this workshop in which the SIMON project was explained and the tasks that were going to be part of the big scale pilot were detailed.

Attendants were heterogeneous and diverse, what can be expected in a project with the scope of SIMON. Different concerns arose regarding the effectiveness of using new technologies for fighting fraud and possible limitations of the proposed SIMON system.



Lisbon

The 3rd Conference “Cidades Inteligentes – Cidades do Futuro” (Smart Cities – Future Cities”) took place in Lisbon last December 2nd. This event was taken as a great opportunity to launch the Lisbon pilot site in the presence of an audience really keen to hear new and innovative concepts related to smart cities.

Nuno Sardinha, Senior Technician of the Mobility and Transport Directorate in EMEL presented the SIMON project and activities of the Lisbon pilot. The event was actually a great opportunity to encourage Lisbon potential users to download and install de “SIMON Mobile” app already available at the Google Play Store.



Parma

In June 2015 Infomobility, jointly with the City of Parma and in collaboration with the University, organized the Second SIMON User Group Workshop, which also served as the launch event for the Parma pilot site.

The event was held at the Congress Center Paganini. Room for more than a hundred places overflowing and a succession of a dozen speakers with different backgrounds have maintained a strong pace and never boring for the duration of the conference.



PROJECT IMPACT: DISSEMINATION ACTIONS

Finally, four additional Take-up events by the end of the project.

Coinciding with the completion of the pilot phase execution and evaluation, each pilot site prepared one or two national take-up seminars to present the pilot results. These seminars removed language barriers by organizing the event in the local language, aiming at gathering as much as possible valuable feedback from all stakeholders attending. As such, these seminars paved the way for further take-up and deployment of SIMON – horizontal scalability.

Madrid

Madrid City Council organized a big event on the 14th June 2016 to present SIMON project in Madrid, aiming at making it visible not only to different organizations and institutions in Madrid but also to some other Spanish public entities.

Mobility and inclusion were discussed within the framework of SIMON project and the role of cities and mobility managers. The applications and services proposed by the SIMON project were presented to show how to ease mobility and parking to disabled and elderly people. About a hundred attendants, including public authorities, mobility managers and associations from Spain, participated in this event in which several proposals, initiatives and studies were presented.



Lisbon

The Lisbon Seminar was held on the 15th of December 2016 at Centro de Informação Urbana de Lisboa – CIUL.

EMEL – Empresa Municipal de Mobilidade e Estacionamento de Lisboa organized this local Seminar “Technology at the Service of Citizens with Reduced Mobility” to present the services and products developed at the SIMON Project and also the results obtained so far at the pilot phase in Lisbon. A second purpose of the Seminar was to capitalise on the interest of stakeholders to exchange with them and learn from their peers.





PROJECT IMPACT: DISSEMINATION ACTIONS

Parma

Parma pilot organized two Seminars in order to present and disseminate the results of SIMON project. The first one took place on the 13th of December 2016 and the second one on 19th December 2016 .

First, a round table was held at the Parma City Hall with the participation of different municipalities near Parma, as well as other major local associations and cooperatives. In general, attendants were very enthusiastic about the project. They asked many questions and they made different criticisms, they also gave tips. They were interested in the project and in how to develop and improve the accessibility and the mobility for the people with disability.

Secondly, on the 19th December 2016 there was another Simon Seminar in ANMIC, the Association Head Quarter. After the presentation of SIMON project, the people who attended the meeting were enthusiastic about the project. They asked many questions and they gave several comments and tips.



Reading:

The Reading Borough Council also prepared two small seminars.

Reading Borough Council undertook a final SIMON dissemination event at the ITS-UK, Enforcement Interest Group Meet on the 26th January 2017. The group focuses on knowledge sharing around the field of highway enforcement. The event was attended by over 30 delegates from across the UK with a diverse mixture of public sector and private sector attendees including Highway England and Transport Scotland. The event had a diverse agenda of presentations.

Furthermore, Marian Marsh, Transport Planner at Reading Borough Council gave a presentation about the SIMON Project to the London Branch of Chartered Institute of Logistics and Transport (CILT) on 16th February 2017 in the evening at London Metropolitan University. Twenty five transport professionals attended the event which was divided into 3 approximately even groups of attendees: Professionals in the field of Transport from the London/Reading area, Academics from London Universities and Retired members. There was a strong interest with lots of questions afterwards.





PROJECT IMPACT: EXPLOITATION

The exploitation strategy for the SIMON project results define the way ahead for the further deployment of the applications and services tested within SIMON, but also for the whole SIMON concept and the ICT parking card for the disabled users.

The exploitation plan ensures that the knowledge developed within the project is brought closer to the market and exploited to the best benefit of all partners. The analyses carried out assures that a large share of results will certainly be exploited in the form of applications and IT services final products.

Exploitable product	Type of exploitable foreground	Sector(s) of application	Stakeholders involved	Timetable, commercial or any other use	IPR exploitation (patents, licenses)	Owner
SIMON Platform	Software	<ul style="list-style-type: none"> • Mobility • ICT 	Industry, Local Authorities, Service Providers	Already available	No	ETRA
SIMON Mobile app	Software	<ul style="list-style-type: none"> • Mobility • Accessibility • ICT 	Mobility impaired people (end users), local authorities, service providers	Already available	No	Locoslab, IBV
SIMON Controls	Software	<ul style="list-style-type: none"> • Parking • ICT 	Local authorities, service providers	Already available	No	ETRA
SIMON Authority Operator Tool	Software	<ul style="list-style-type: none"> • Mobility • Parking 	Local authorities, service providers	Already available	No	ETRA
ICT parking card model	Hardware	<ul style="list-style-type: none"> • Parking 	Mobility impaired people (end users), local authorities, service providers	Already available	No	ETRA, cities
SIMON validation services	Software	<ul style="list-style-type: none"> • Mobility • Parking 	Mobility impaired people (end users), local authorities,	Already available	No	ETRA
SIMON navigation services	Software	<ul style="list-style-type: none"> • Mobility • Public transport • Parking 	Mobility impaired people (end users), local authorities, transport operators	Already available	No	LocosLab
SIMON Information services	Software	<ul style="list-style-type: none"> • Mobility • Public transport • Parking 	Mobility impaired people (end users), local authorities, transport operators	Already available	No	ETRA, LocosLab
SIMON indoor navigation	Hardware and software	<ul style="list-style-type: none"> • Mobility • Public transport 	Mobility impaired people (end users), local authorities, transport operators	Already available	No	Locoslab



PROJECT IMPACT: EXPLOITATION

The exploitation strategy for the SIMON project results define the way ahead for the further deployment of the applications and services tested within SIMON, but also for the whole SIMON concept and the ICT parking card for the disabled users.

The exploitation plan ensures that the knowledge developed within the project is brought closer to the market and exploited to the best benefit of all partners. The analyses carried out assures that a large share of results will certainly be exploited in the form of applications and IT services final products.

Exploitable product	Type of exploitable foreground	Sector(s) of application	Stakeholders involved	Timetable, commercial or any other use	IPR exploitation (patents, licenses)	Owner
SIMON Platform	Software	<ul style="list-style-type: none"> • Mobility • ICT 	Industry, Local Authorities, Service Providers	Already available	No	ETRA
SIMON Mobile app	Software	<ul style="list-style-type: none"> • Mobility • Accessibility • ICT 	Mobility impaired people (end users), local authorities, service providers	Already available	No	Locoslab, IBV
SIMON Controls	Software	<ul style="list-style-type: none"> • Parking • ICT 	Local authorities, service providers	Already available	No	ETRA
SIMON Authority Operator Tool	Software	<ul style="list-style-type: none"> • Mobility • Parking 	Local authorities, service providers	Already available	No	ETRA
ICT parking card model	Hardware	<ul style="list-style-type: none"> • Parking 	Mobility impaired people (end users), local authorities, service providers	Already available	No	ETRA, cities
SIMON validation services	Software	<ul style="list-style-type: none"> • Mobility • Parking 	Mobility impaired people (end users), local authorities,	Already available	No	ETRA
SIMON navigation services	Software	<ul style="list-style-type: none"> • Mobility • Public transport • Parking 	Mobility impaired people (end users), local authorities, transport operators	Already available	No	LocosLab
SIMON Information services	Software	<ul style="list-style-type: none"> • Mobility • Public transport • Parking 	Mobility impaired people (end users), local authorities, transport operators	Already available	No	ETRA, LocosLab
SIMON indoor navigation	Hardware and software	<ul style="list-style-type: none"> • Mobility • Public transport 	Mobility impaired people (end users), local authorities, transport operators	Already available	No	Locoslab