



# MOBIWALLET: MOBILITY AND TRANSPORT DIGITAL WALLET.

Current status & achievements

30/09/2015

# MobiWallet Project



<b>Start date:</b>	<b>01/02/2014</b>
<b>End date:</b>	<b>31/07/2016</b>
<b>Cost:</b>	<b>4,311,468.00 €</b>
<b>Funding:</b>	<b>2,154,991.00 €</b>
<b>Estimated effort:</b>	<b>592 PM</b>
<b>Call identifier:</b>	<b>CIP-ICT-PSP-2013-7</b>

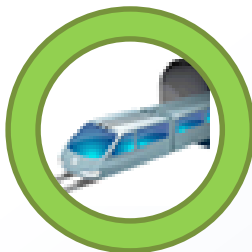
MobiWallet addresses:

# Interoperable Fare Management (IFM) solutions for sustainable urban transport



Focused on offering seamless intermodal mobility to entire cities and regions. These IFM services will deal with multiple modes across **great geographical areas** and **interoperate with disparate passenger transport services.**

**Mission:** to create a unified transport market for enhanced and more sustainable mobility across Europe



- MobiWallet Objectives
- Consortium
- WP Structures
- Pilots
- Updates from the pilots
  - Spain, Italy, UK, Serbia
- Technologies and transports modes
- Pilot evaluations
- Current achievements and future work

# Objectives



# MobiWallet Approach



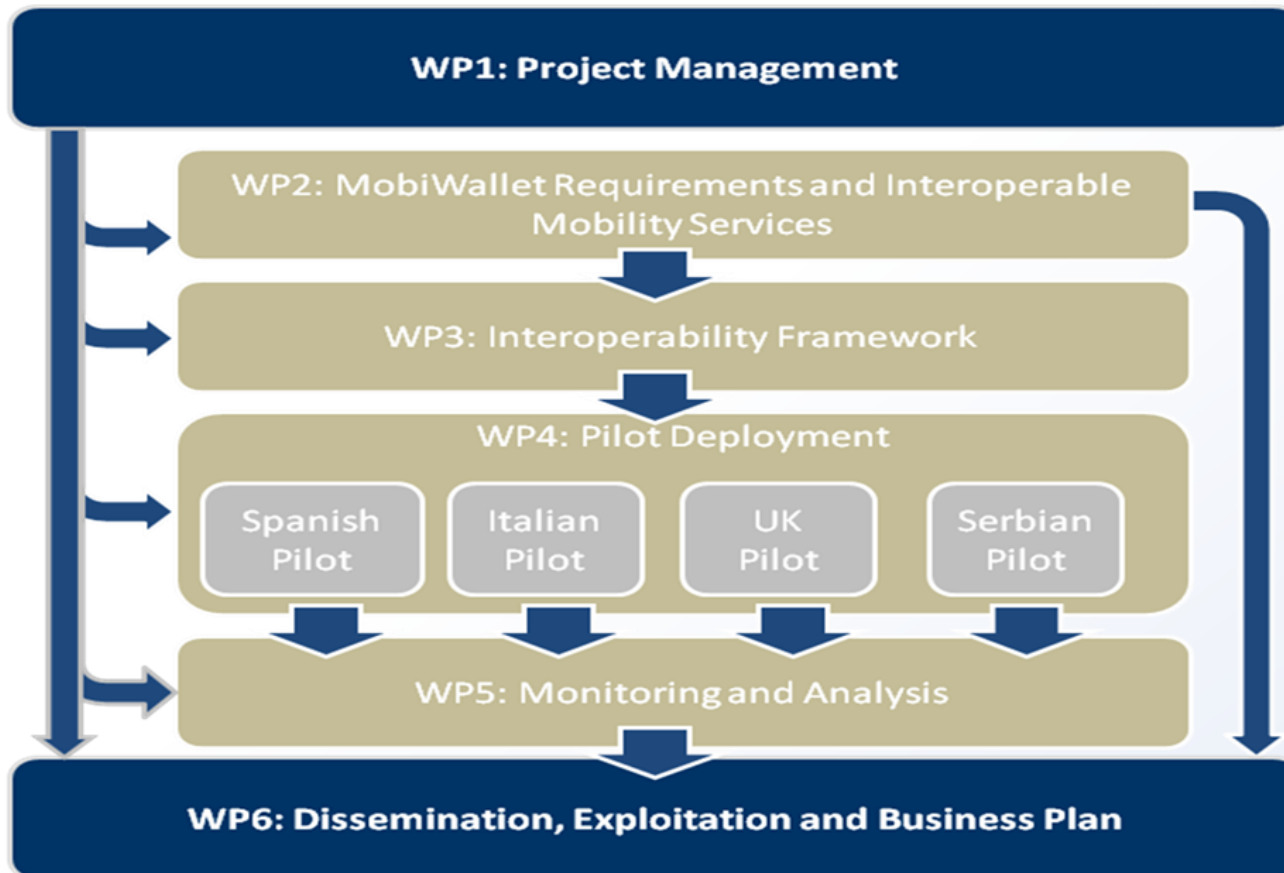
Design and provision of a **mobile fare management system** with unparalleled intelligence and functionalities, encompassing:

- a **unified scheme seamlessly integrating various payment methods** suitable for a wide range of transport services
- **enhanced travel functionalities** such as a personalized trip planning service

# Project Structure



MobiWallet will be organized in **6 Work Packages**





# Consortium



**15** companies and government bodies from **4** different European countries, all playing a significant role in:

- transport domain
- ticketing solutions
- embedded systems

As a whole, the consortium will carry out **4 pilots** to test the developed solutions in:

**Spain, Italy, United Kingdom** and **Serbia**

All the necessary **stakeholders in the value-chain included** to ensure:

- effective deployment in each pilot
- sustainability beyond the pilot phase

**Project's coordinator:**



**indra**

# Consortium



MobiWallet will include the participation of hundreds of users in **4 pilot cities** across Europe



...because **the protagonist** in any smart transportation system is **the citizen** and it is improbable that any IFM system will ever succeed without their input!

# Spanish Pilot: general view



The Spanish pilot will take place mostly in the city's Urban Zone of **Santander**, but it will also include some outlying areas, particularly those covered by the private ferry available from the city centre to nearby towns in the metropolitan area

Specific objectives:

- to provide for an IFM solution that can **cover an entire city**, involving up to 5 different modes of transportation
- to exploit the **synergies between NFC contactless payment systems and smartphone technologies**





# Spanish Pilot: core elements implemented



MobiWallet



MobiWallet APP

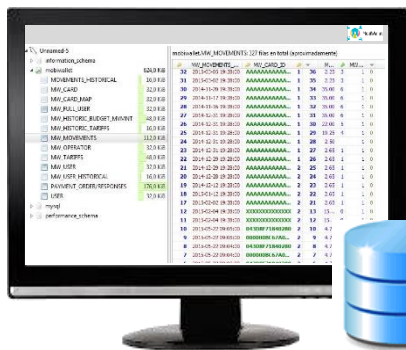


NFC Sticker  
MIFARE  
CLASSIC 1K



## Allow users to....

- Register/Log in
- Manage and recharge their MobiWallet virtual account
- Acquire and validate travel entitlements & access the transport system
- Access additional services



Information centre:  
WebServices+DataBase



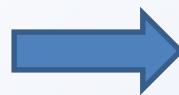
**Core of the Platform:** Stores user's data and transactions. Provides basic operations to users and operators to access and manage this information



Clearing House



Virtual Point of Sale



**Payment gateway and clearing system** to manage user's credit and payments as well as all the transfers to the different operators according to the use of their services.









# Spanish Pilot: specific service deployments

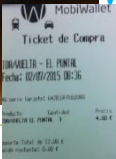





Deployment of solutions based on the core elements developed, but **adapted to the specific requirements** of each mode, in order to co-exist with current solutions, with none/minimum equipment modification in operators' side.



**NFC - reads ID**

Select type/number of tickets and pay with virtual wallet



**NFC-writes on sticker's card map**

**NFC - reads sticker's card map, validates ticket**





**Communication with parking systems**

Provides cost and allows payment with user's virtual wallet





**Taxi driver**



**Generate QR code with payment details**

**User**



**Reads QR's information and validates payment**



# Italian Pilot



Due to the thousands of tourists and commuters which travel each day in the cities involved in the project (**Pisa** and **Florence**), the Italian Pilot aims to increase the efficiency of public transport services in synergy with private transport for a wide region

Specific objectives:

- to **reduce pollution emissions** and to improve urban mobility
- to deploy a **unified payment platform** which provides several interoperable transport services





# Italian Pilot High level architecture



In collaboration with



In collaboration with







# Italian Pilot transport services and payment modes



City	Touristic/urban bus	Car pooling	Bike sharing	Car parking	Tram
Pisa	x	x	x		
Scandicci (Florence)		x		x	x

Payment mode	Tram	Car parking	Touristic bus	Car pooling	Bike sharing	Urban bus
Cash	x	x	x	x		x
Credit cards	x	x	x		x	
Other electronic payment options (i.e. qr code, PayPal)		x				
Mobile (via SMS)	x					x



# Italian Pilot Deployment in Pietrasantina Park - Pisa



- Intermodal area (car-parking, urban bus stop, touristic parking slot and several facilities for tourists).
- Technologies: traffic sensors. M2M GW.
- Scope: Touristic bus traffic flow monitoring for parking occupancy estimation. Parking pass payment via credit card.



# Italian Pilot

## Deployment area in Scandicci (Florence)



- Car parking area near Resistenza tram stop.
- Scope: car parking payment via QR-code credit card. Tram ticket via SMS/PayPal.

In collaboration with



**SIAK S.R.L.**





# Italian Pilot technological solutions



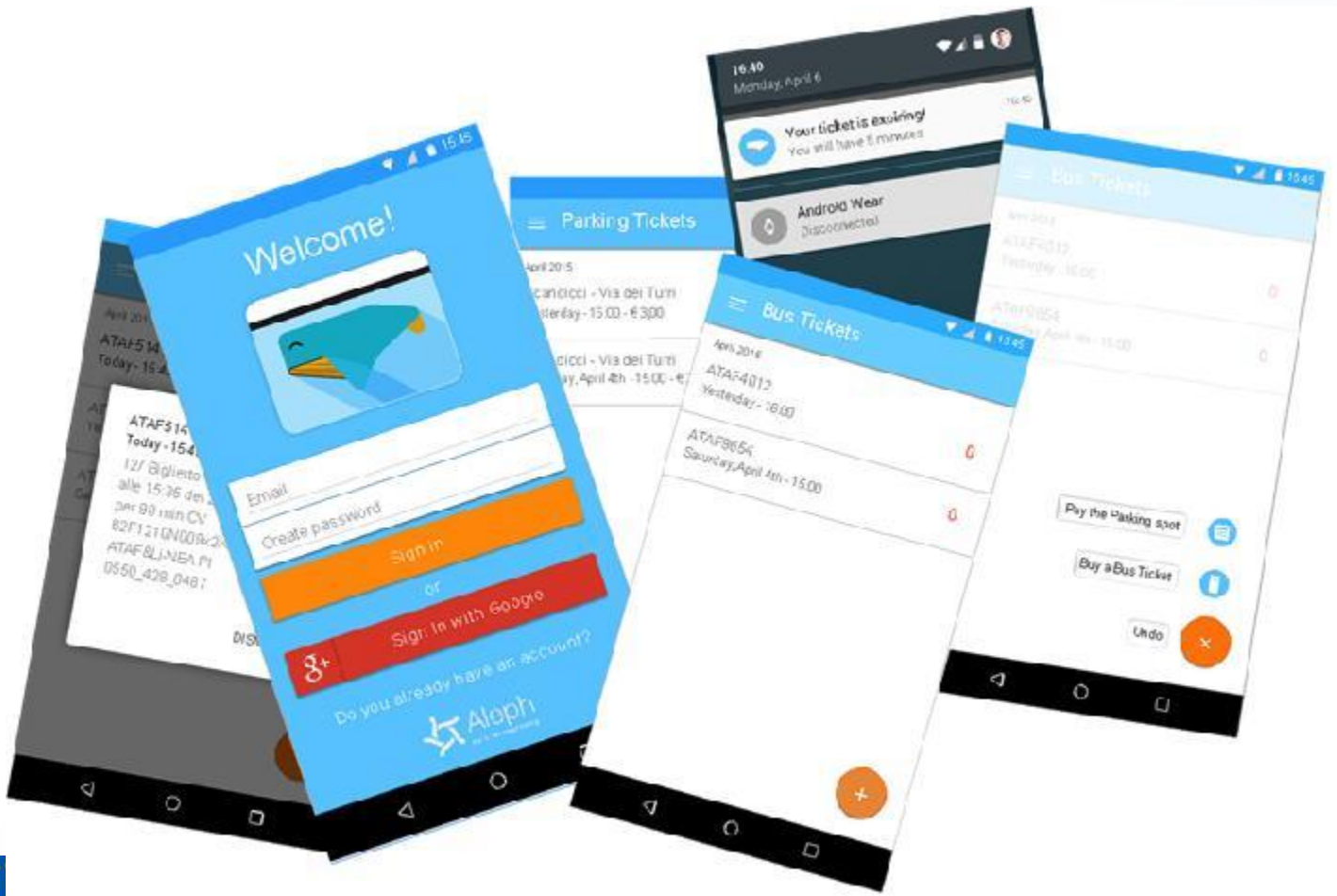
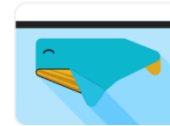
## The PisaBus Android app



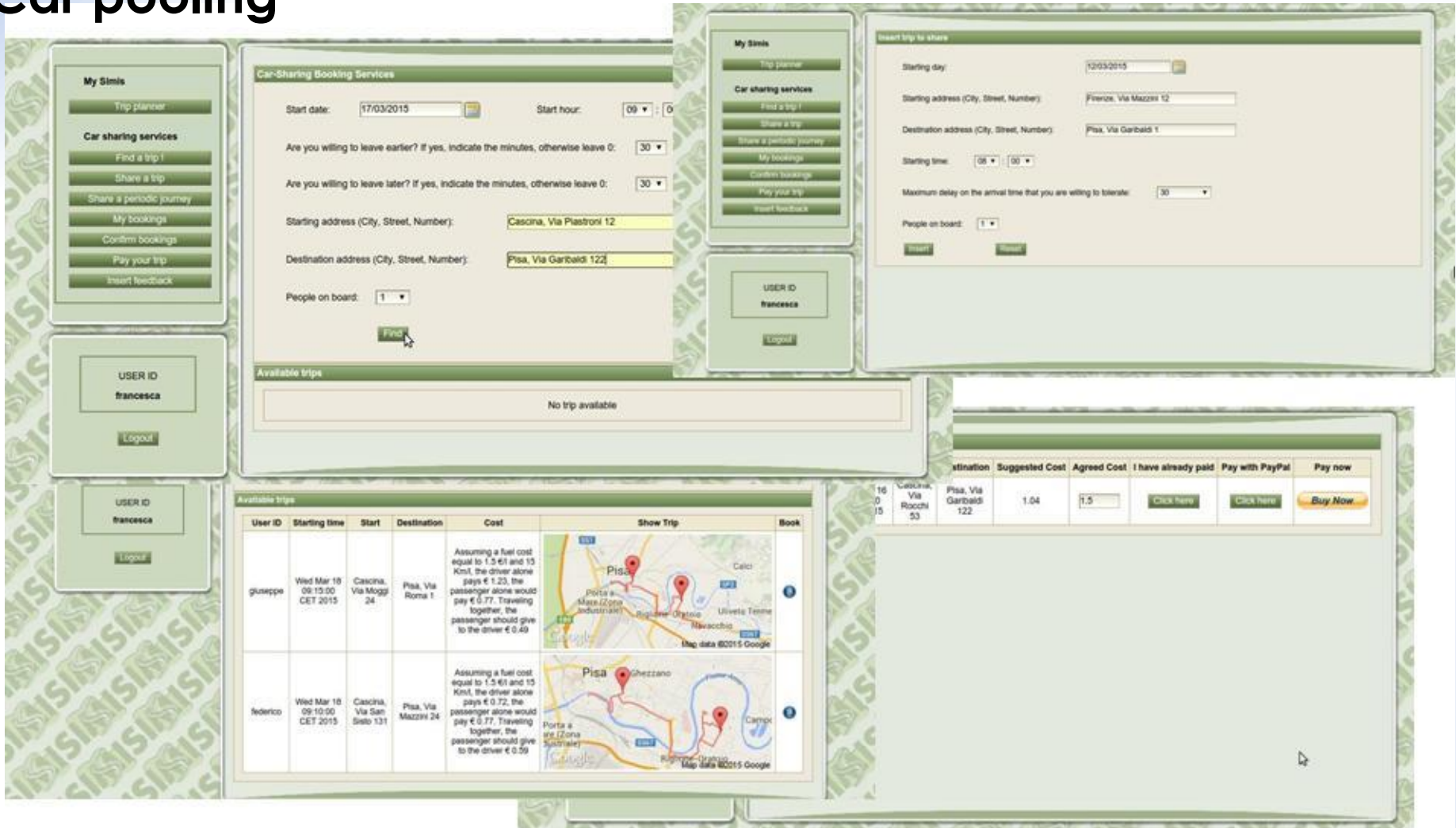
# Italian Pilot technological solutions



## The Mobitickt "Park & Ride" Android app



## Car pooling



**My Simis**

- Trip planner
- Car sharing services
  - Find a trip!
  - Share a trip
  - Share a periodic journey
  - My bookings
  - Confirm bookings
  - Play your trip
  - Insert feedback

**Car-Sharing Booking Services**

Start date: 17/03/2015 Start hour: 09 : 0

Are you willing to leave earlier? If yes, indicate the minutes, otherwise leave 0: 30

Are you willing to leave later? If yes, indicate the minutes, otherwise leave 0: 30

Starting address (City, Street, Number): Cascina, Via Piastroni 12

Destination address (City, Street, Number): Pisa, Via Garibaldi 122

People on board: 1

**Find**

**My Simis**

- Trip planner
- Car sharing services
  - Find a trip!
  - Share a trip
  - Share a periodic journey
  - My bookings
  - Confirm bookings
  - Play your trip
  - Insert feedback

**USER ID**  
francesca

**Login**

**Insert trip to share**

Starting day: 12/03/2015

Starting address (City, Street, Number): Firenze, Via Mazzini 12

Destination address (City, Street, Number): Pisa, Via Garibaldi 1

Starting time: 08 : 00

Maximum delay on the arrival time that you are willing to tolerate: 30

People on board: 1

**Insert** **Cancel**

**Available trips**

No trip available

**Available trips**

User ID	Starting time	Start	Destination	Cost	Show Trip	Book
giuseppe	Wed Mar 18 09:15:00 CET 2015	Cascina, Via Mogg 24	Pisa, Via Roma 1	Assuming a fuel cost equal to 1.5 € and 15 Kml, the driver alone pays € 1.23, the passenger alone would pay € 0.77. Traveling together, the passenger should give to the driver € 0.49		
federico	Wed Mar 18 09:10:00 CET 2015	Cascina, Via San Sisto 131	Pisa, Via Mazzini 24	Assuming a fuel cost equal to 1.5 € and 15 Kml, the driver alone pays € 0.72, the passenger alone would pay € 0.77. Traveling together, the passenger should give to the driver € 0.59		

**Summary Table**

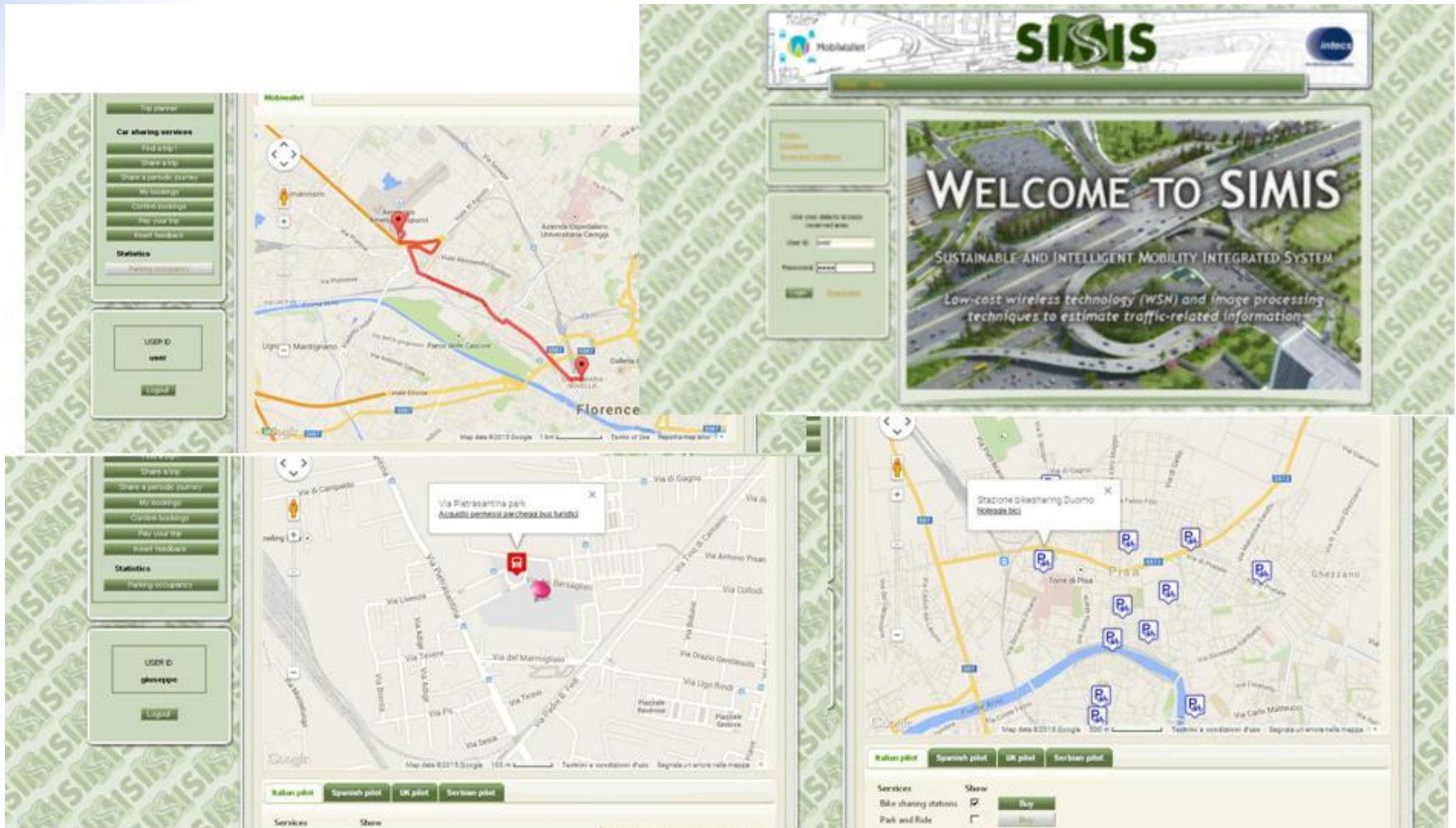
Destination	Suggested Cost	Agreed Cost	I have already paid	Pay with PayPal	Pay now
Cascina, Via Rocchi 53	1.04	1.5	<b>Click here</b>	<b>Click here</b>	<b>Buy Now</b>



# Italian Pilot technological solutions



## SIMIS web server



The image displays four screenshots of the SIMIS web server interface. The top-right screenshot shows the main welcome page with the text: "WELCOME TO SIMIS SUSTAINABLE AND INTELLIGENT MOBILITY INTEGRATED SYSTEM. Low-cost wireless technology (WSN) and image processing techniques to estimate traffic-related information." The other three screenshots show the navigation menu on the left, which includes options like "Find a trip", "Share a trip", "Share a period", "Car sharing services", "Statistics", and "Having company?". The main area of these screenshots shows a map of Florence with various routes highlighted in red, orange, and blue. The bottom-right screenshot shows a map of Pisa with a "Stazione bike-sharing Duomo" marker and a "Services" section at the bottom with options for "Bike sharing stations" and "Park and Ride".



# United Kingdom Pilot



The UK pilot in **Birmingham** will implement a **fare management engine (MobiWallet Engine)**, offering a complete public transport mobility solution for:

- planning a journey in real time
- selecting the most appropriate fare for specific journey needs
- purchasing a travel ticket from a recommended list (intelligent ticket options)
- Fulfil ticket purchases using NFC mobile technology or through remote network readers (ITSO technology)







# United Kingdom Pilot



## UK Pilot Update: Remote Fulfilment

Deployment of our **NFC and Remote Reader** fulfilment services were **completed in May** of this year, these are now in full operation throughout the West Midlands and monitoring of these provisions have commenced;

- New Swift NCF Application
- 100 Remote readers/collector's

Users can transfer their travel ticket purchase onto a Swift card using **NFC technology** through a mobile phone or ITSO technology through remote readers





# United Kingdom Pilot



**UK Pilot Update: Journey Planner Enhancements; ‘MobiWallet Engine’:** System development and build works have been concluded; the enhanced Journey planner now provides intelligent ticket options/results based upon journey’s planned, using a new user friendly front end interface:

**network west midlands** | Saved journeys | My account | Sign out | Search NWM

Home | Plan your Journey | Ways to Travel | Tickets & Passes | Travelling Sustainably | What's On | About NWM | Get in Touch

Home > Plan your journey

### Journey Results

From: Sedgley  
To: [Acocks Green Yardley Road](#)  
Leaving: 02/07/2015 13:00  
Preferences: Using bus, tram, train

Suggested routes | Order by: **Departure time**

Travel time: **1hr 19mins** | £6.40

Depart: 13:52 | Arrive: 15:11

View full details

Save route | Keep me informed

- 8 mins - Walk to Dudley Street Stop SA Market Hall
- 15 mins - Take the bus **Arriva Midlands 229** towards Dudley (W Mids), Dudley Bus Station from Stop SA
- 5 mins - Walk to Tipton Rail Station
- 9 mins - Take the London Midland train towards Smethwick Galton Bridge Rail Station
- 20 mins - Take the London Midland train towards Acocks Green Rail Station
- 4 mins - Walk to Acocks Green Railway Station Yardley Road, Acocks Green

**network west midlands** | Saved journeys | My account | Sign out | Search NWM

Home | Plan your Journey | Ways to Travel | Tickets & Passes | Travelling Sustainably | What's On | About NWM | Get in Touch

Home > Plan your journey

### Journey Results

From: Sedgley  
To: [Birmingham University](#)  
Leaving: 02/07/2015 13:00  
Preferences: Using bus, tram

Suggested routes | Order by: **Departure time**

Travel time: **1hr 46mins** | £4.20

Depart: 13:15 | Arrive: 15:01

View full details

Save route | Keep me informed

- 8 mins - Walk to Dudley Street Stop SA Market Hall
- 17 mins - Take the bus **National Express West Midlands 1** towards Dudley (W Mids), Dudley Bus Station from Stop SA
- 31 mins - Take the bus **National Express West Midlands 140** towards Birmingham, Colmore Row  
**Roadwork's Notice - Paradise Circus, Birmingham City Centre**
- 2 mins - Walk to Lordswood Road Stop BP Lordswood Road
- 7 mins - Take the bus **National Express West Midlands 11A** towards Acocks Green, Acocks Green Village from Stop BP





# Serbian Pilot

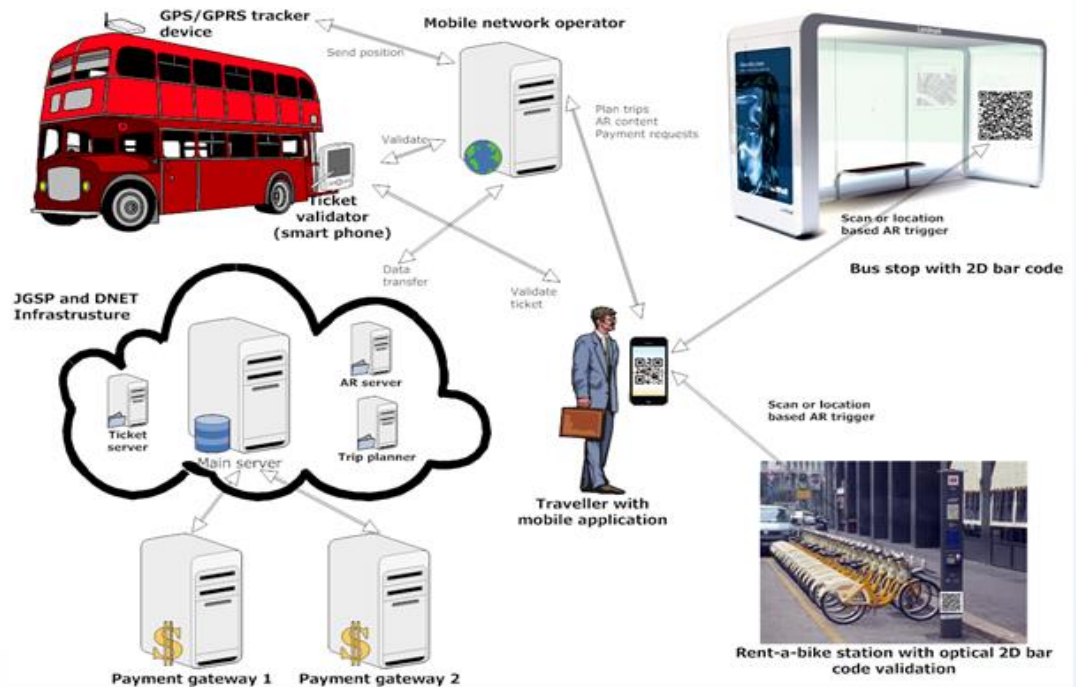


Improve the management of the public transportation network in the city of **Novi Sad**

...starting from the public city bus transport network



the intention is to extend it to other transportation means (such as rental bikes and taxis) and networks, promoting and encouraging the greater use of **alternative transport modes** other than busses





# Current state



MobiWallet

Detailed scenario agreed between all Serbian partners.

About to start testing the pilot by citizens volunteers in real conditions

## Active modes

- City bus transport involving 12 buses with fleetNET (location, speed) and some with ekoNET devices (pollution)

Smartphone app is ready, on google play, to be tested in real conditions

## Pilot implementation kit includes:

- QR code stickers on bus stops for mobile app installation and access to services
- QR code based validators (readers) as stickers in buses
- QR code based cash vouchers for the cash payment option (can be bought at JGSP selling points)



Cash vouchers for 1 and 10 rides

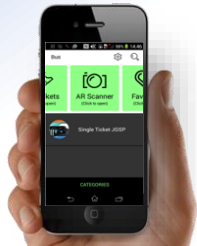




# Key Pilot Elements implemented



Medium



MobiWallet APP



Bus stop located QR code sticker for accessing real time info on busses

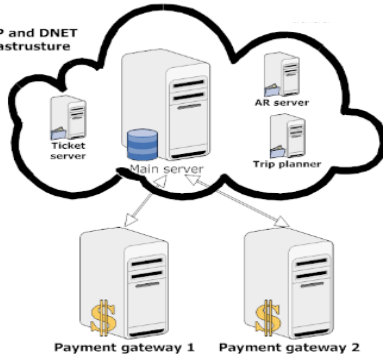


## Allow users to....

- Register/Log in
- Access info on bus arrival times, tourist info, air pollution info
- Select and purchase travel tickets using cash vouchers or credit card
- Validate QR based ticket and access the transport means

Platform

JGSP and DNET Infrastructure



Information centre: WebServices+DataBase

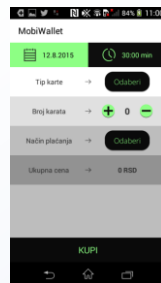


**Core of the Platform:** Stores user's data and transactions. Stores data from devices providing additional services. Provides basic operations to users and operators to access and manage this information.

Gateway

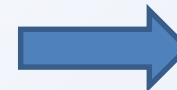


Clearing House



Virtual Point of Sale

Mobile network operators - DCB (Telecom Srbija)  
Cash vouchers  
Payment Cards  
Pay Pal



**Payment gateway and clearing** system to manage user's credit (e.g. cash vouchers) and payments as well as all the transfers to the different operators according to the use of their services.

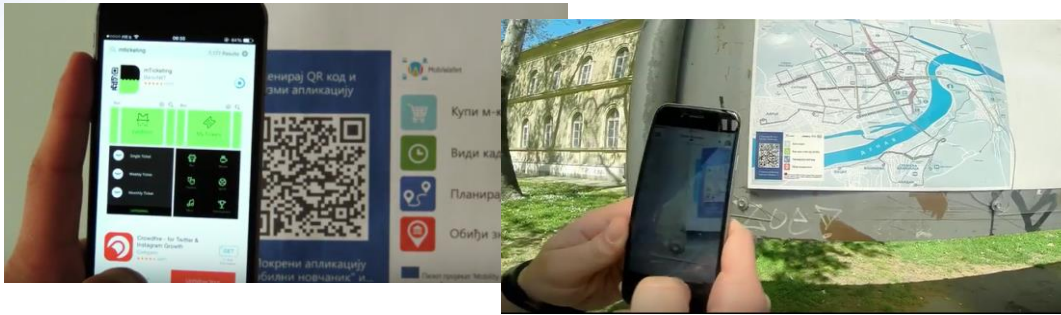




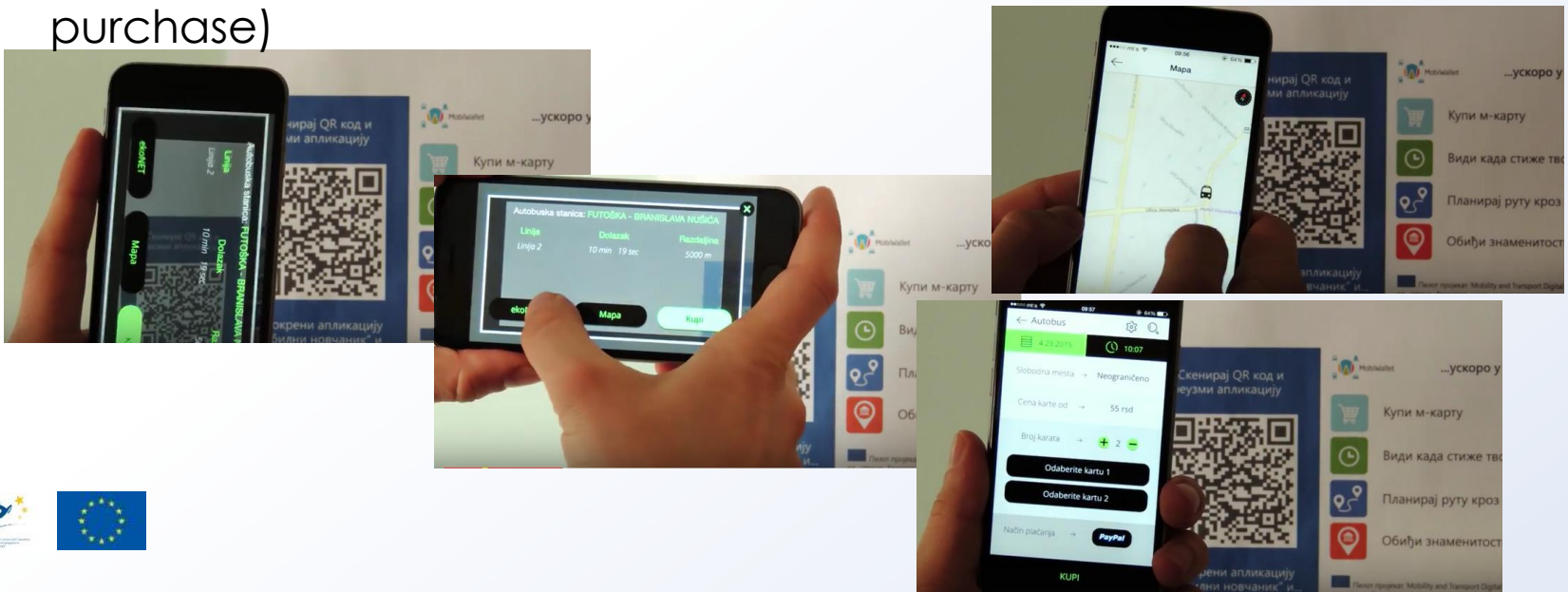
# QR code based technology



QR code based app installation (if not having the app)



QR code initiated augmented reality interface for access to all available services (arrival times, bus positions, maps with buses, ticket purchase)





# QR code based technology

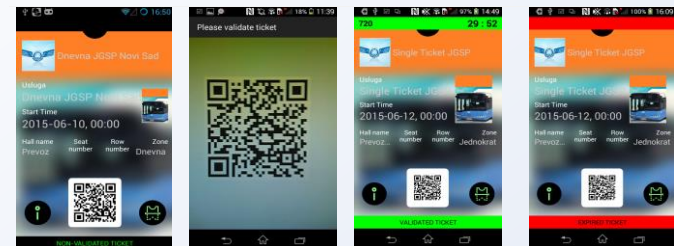


QR code based optical ticket validation (required internet connection)



QR code printed validator when optically scanned, completes the ticket validation

QR code based travel tickets provided in a PkPass format



Non-validated Please validate! Validated Expired



# QR code based technology



MobiWallet



NS BIKE sticker placed on rental bike stations and enables the following services:

- Arrival time for the closest bus (bus stop)
- Planning route through the city
- Tourist landmarks
- Info on other BIKE stations

1. Скенирај QR код и преузми апликацију

2. Покрени апликацију "мобилни новчаник" и...

NS BIKE станица на Булевару Јована Дучића

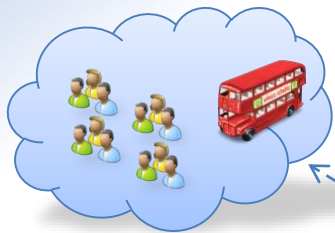
- Види када стиже најближи аутобус
- Планирај руту кроз град
- Обиђи знаменитости
- Пронађи NS BIKE станице

Пилот пројекат 'Mobility and Transport Digital Wallet' је финансиран од стране Европске уније у оквиру програма за конкурентност и иновацију под бројем 621027.

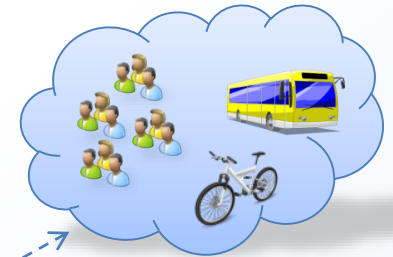




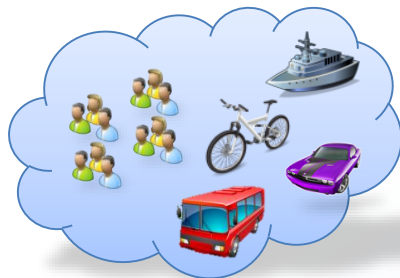
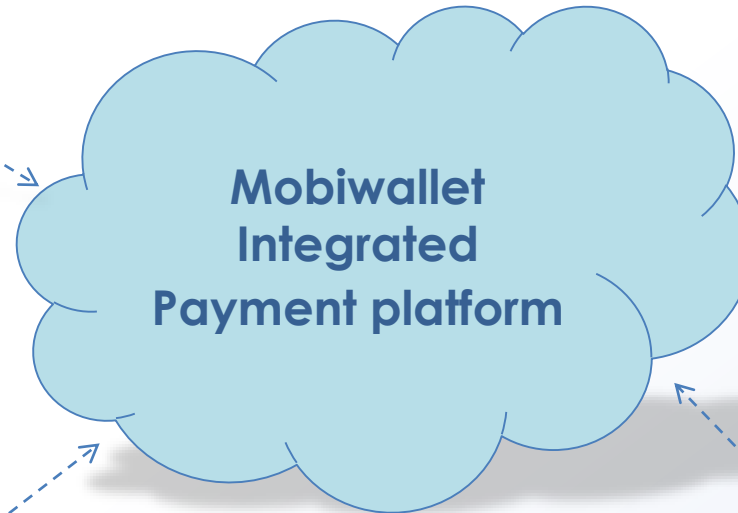
# Rationale: Top up anywhere, travel everywhere!



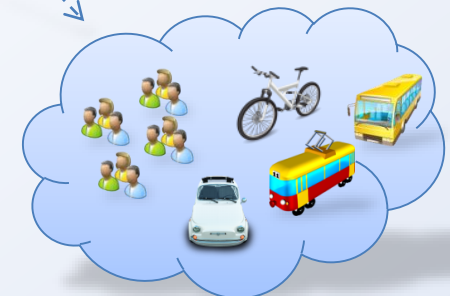
 UK pilot



 Serbian pilot



 Spanish pilot



 Italian pilot

# Pilots Technologies



## MobiWallet Fare Management System



Updated

Fare Management

Collection Mechanism

Transport Modes



INDRA  
iCard

NFC Smart Phone &  
NFC Stickers



SIMIS

Web-Based



SWIFT

NFC  
Smart Card



DunavNET

QR Code



# Evaluating success



- Success is being measured through an extensive **evaluation programme** that is consistently measuring progress across all 4 pilots throughout the project.
- Following an **incremental approach**, first results are being gathered from pilot operation with the first users, while new functionalities and improvements are being sequentially included.
- Evaluation across the cities is **standardised** and based on the results gathered through snapshot surveys, pre, through and post-trial surveys, focus groups, balanced score-cards and analysis of broader base line data
- The objective of the evaluation works package is to provide a detailed understanding of the project with the intention to understand the potential for **full-scale deployment** across European Cities.

# Current achievements



- Main software **components deployed** in each of the pilots, including: APPs, Web-based platforms, payment gateways, information and planner services, fare engines.
- **Installation** of remote readers and validation equipment through the cities and modes involved.
- Systems have been put into operation and the **first volunteers** have registered and started to use them in their daily trips.
- **Feedback** received from users (travellers and operators)
- First achievements towards **interoperability among pilots**

# Future steps



- **User's recruitment and tests** will continue for the next months, in order to evaluate:
  - the performance of the systems
  - the success of the initiative
  - the possibilities of a large scale deployment
- Investigating opportunities for closer **interoperability** among pilots
- Generate **recommendations** for Interoperability, best practices and guidelines
- **Exploitation** and sustainability analysis

# Stay tuned!



[www.mobiwallet-project.eu](http://www.mobiwallet-project.eu)



[info@mobiwallet-project.eu](mailto:info@mobiwallet-project.eu)



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