GALILEO FOR MOBILITY

Advisory Group meeting #2

Paris, February 21st 2019

GALILEO, an enabler for improved MaaS

GALILEO FOR MOBILITY

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GALILEO FOR MOBILITY

GALILEO is Europe's own global navigation satellite system, providing a highly accurate, guaranteed global positioning service under civilian control. Currently providing Initial Services, GALILEO is interoperable with GPS and Glonass, the US and Russian global satellite navigation systems.

BENEFITS FOR MaaS:

- Increased availability
- Better accuracy
- Lower Time-To-First-Fix

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OBJECTIVES

GALILEO FOR MOBILITY

1 UNDERSTAND, DEFINE AND VALIDATE THE REQUIREMENTS FOR GALILEO IN MOBILITY AS A SERVICE (MAAS)

2 DEVELOP THE KEY ELEMENTS TO EXPLOIT GALILEO BENEFITS

3 DISSEMINATE THE PROJECT RESULTS AND SUPPORT THEIR EXPLOITATION AFTER THE PROJECT LIFETIME

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5 PILOT DEMONSTRATIONS IN EUROPE IN BARCELONA, PARIS AND THESSALONIKI.

GALILEO FOR MOBILITY

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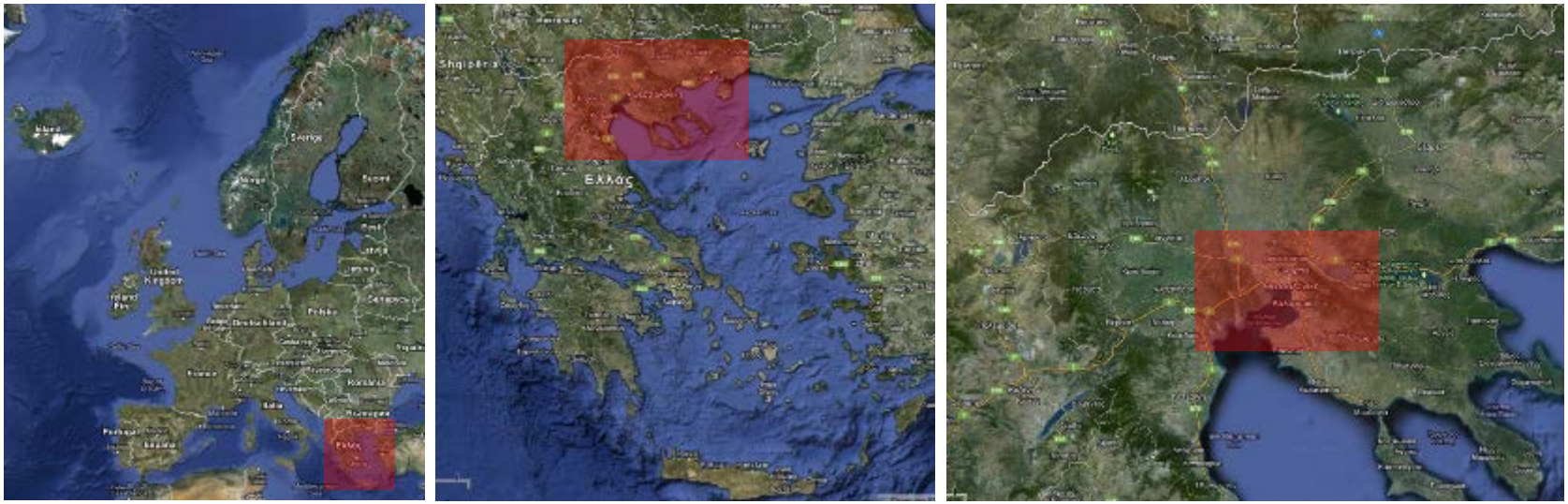
PILOT 1

Shared Taxis (Thessaloniki)

Thessaloniki – Shared Taxis



~ 1.400.000 inhabitants & ~ 1.300.000 daily trips

~450.000 private cars & ~ 20.000 motorcycles

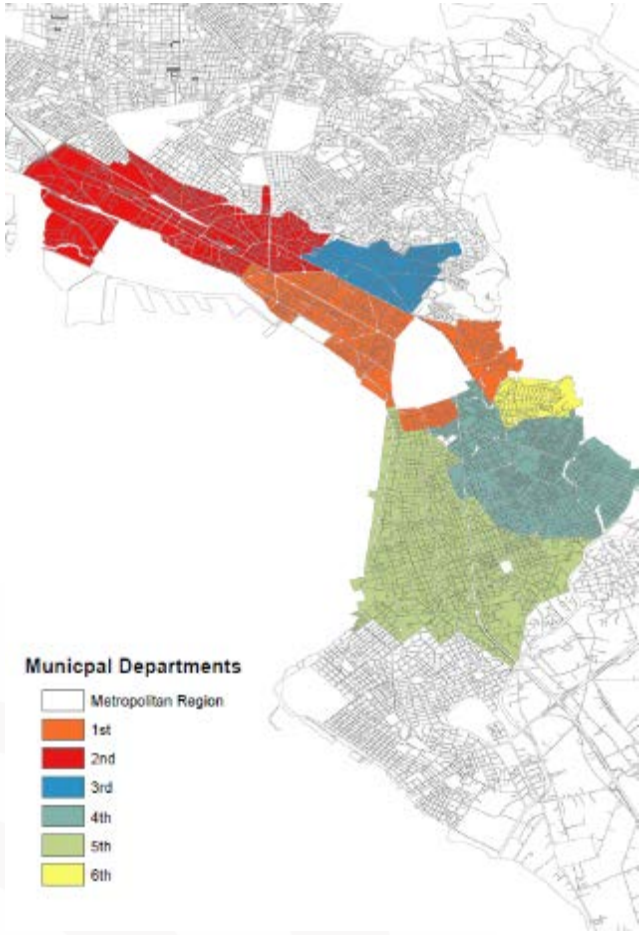
1 (+1) public transport operator for urban trips & 1.950 taxis

~35 public transport operators for extra-urban trips

6.433 kms of streets - 8,8 kms of dedicated bus lanes - 89,4 kms of ring road

197.696 parking places

Thessaloniki – Shared Taxis



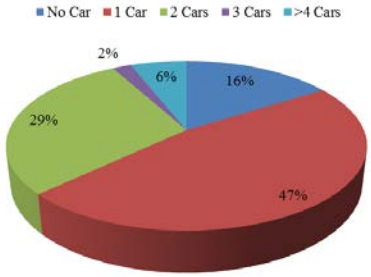


Fig. 1: Car ownership in Thessaloniki

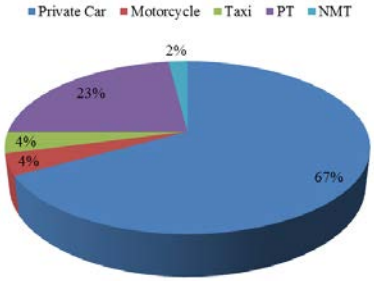


Fig. 1: Modal split in Thessaloniki

Zone	Trips (thousands)	
MD 1	132	10,1%
MD 2	76	5,8%
MD 3	41	3,1%
MD 4	101	7,7%
MD 5	155	11,9%
MD 6	10.8	0,8%

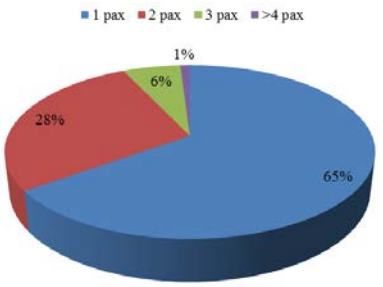
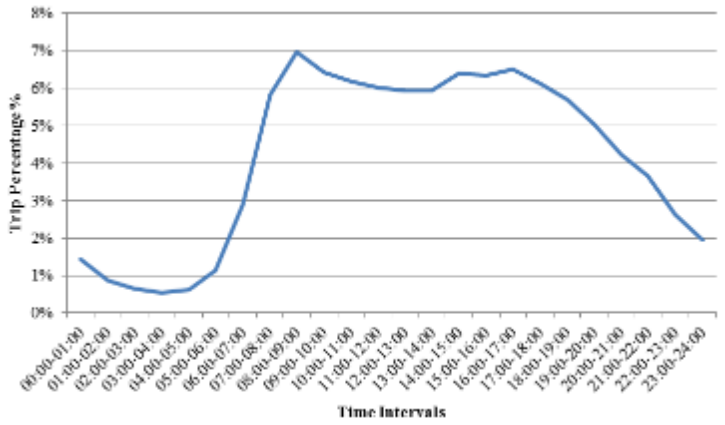


Fig. 1: Vehicle occupancy in Thessaloniki



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Thessaloniki – Shared Taxis

Description of the service / Scope of the pilot

Reduction of commuting trips

Taxi/ride-sharing service (20 vehicles)

2 daily trips, 50-100 citizens (morning / evening)

Users engagement campaign focusing on PrT users

Municipality	External	Exurb	Suburb	Urbancore (C)	Total
Thermi(A)	206	1.786	2.461	**1.504**	5.957
Kalamaria(B)	204	800	7.295	**3.021**	11.320
Total	**410**	**2.586**	**9.756**	**4.525**	**17.277**

	Thermi	Kalamaria
Bicycle	0%	1%
Walk	0%	4%
Codriver/Lorry/Motorcycle	8%	7%
Car Trips Core	72%	37%
Bus Trips core	20%	50%

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Thessaloniki – Shared Taxis

Description of the service and the pilot

Start Date of the pilot: April 2019
Total Duration: 4 months (+2 if a second period is executed)
1st phase of the pilot: April 2019-July 2019 (4 months)
2nd phase of the pilot: October 2019-November 2019 (2 months)

The **Taxi sharing service** will provide a comfort and cost-effective "home to work" solution to residents of the Municipalities of Thermi and Kalamaria.

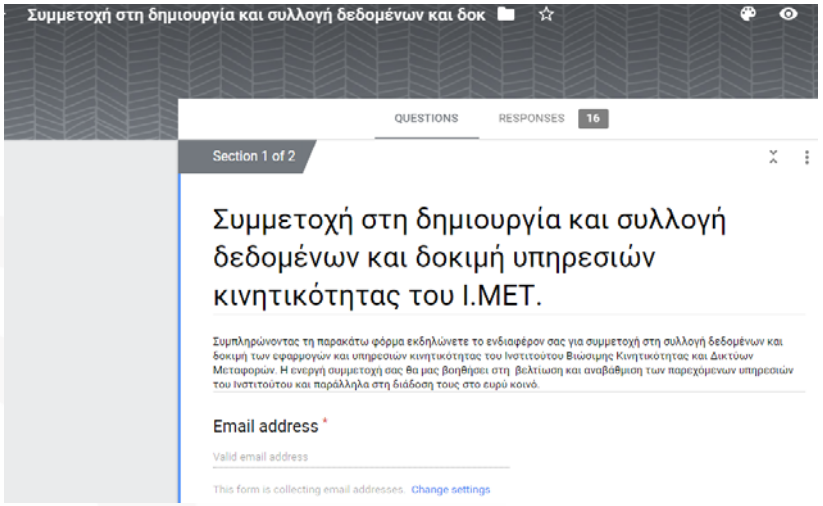
- Through the Mobile application users create a profile stating the days, the hours as well as the origin-destination for the desired trip.
- Taxi drivers receive the trip plan of each customer through their on-board smart devices.
- Users' origins and destinations are clustered based on the trips' starting time.
- Each cluster is assigned to one vehicle which will pick up the users from a starting point and transfer them to their final destination at the city center of Thessaloniki

Thessaloniki – Shared Taxis

Target groups of potential users were identified :
• employees of the municipalities involved
• employees of companies based in the involved municipalities

✓Via emails send by local authorities, Thessaloniki's pilot and the benefits of the G4M service provided is communicated to the target groups.

✓Encouragement of target groups to participate in the pilot.



A participation form for pilot's users is created

Next steps:

✓User's initial assessment (baseline) before pilot's start through a questionnaire which will examine barriers, users' behaviour, preferences and expectations (due date March 2019)

✓Pilot (user surveillance-assistance and user on-going assessment) (April-July 2019)

✓User's final assessment (acceptance of the service) after the end of the 1st pilot period (August 2019)

✓Feedback and lessons learnt from the 1st period to be used in the 2nd pilot period (October-November 2019)

Risks:

✓Low percentage of users participation

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Thessaloniki – Shared Taxis

User engagement strategy

Workshops with the municipalities of Kalamaria and Thermi aiming at organizing the dissemination plan of Thessaloniki's pilot (November 2019)

Dissemination events

- Thessaloniki International Fair (September 2018)
- Open Day HIT (November 2018)

Info point kiosks in Thermi and Kalamaria

Thessaloniki – Shared Taxis

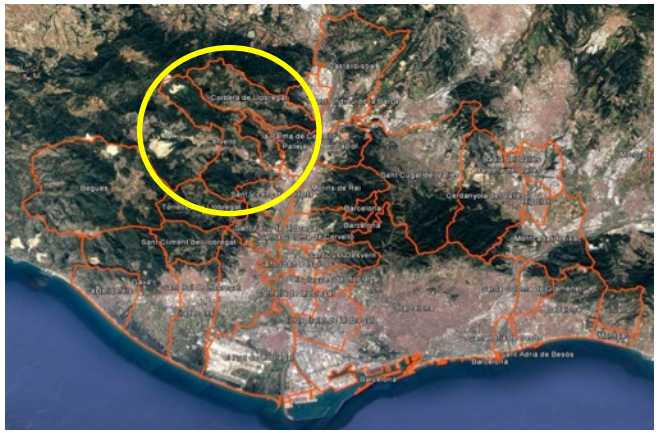
Dissemination material

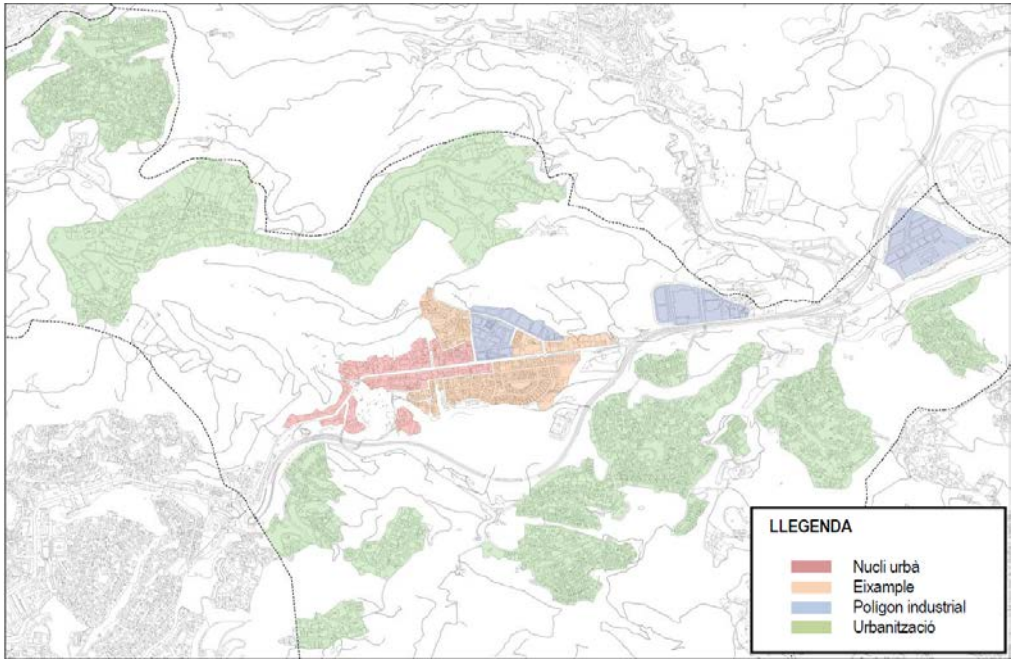
Posts in the website and SM accounts of Kalamaria & Thermi

PILOT 2

Public Transport On-Demand (Barcelona)

Barcelona – Public Transport on-Demand





Context

Cervelló

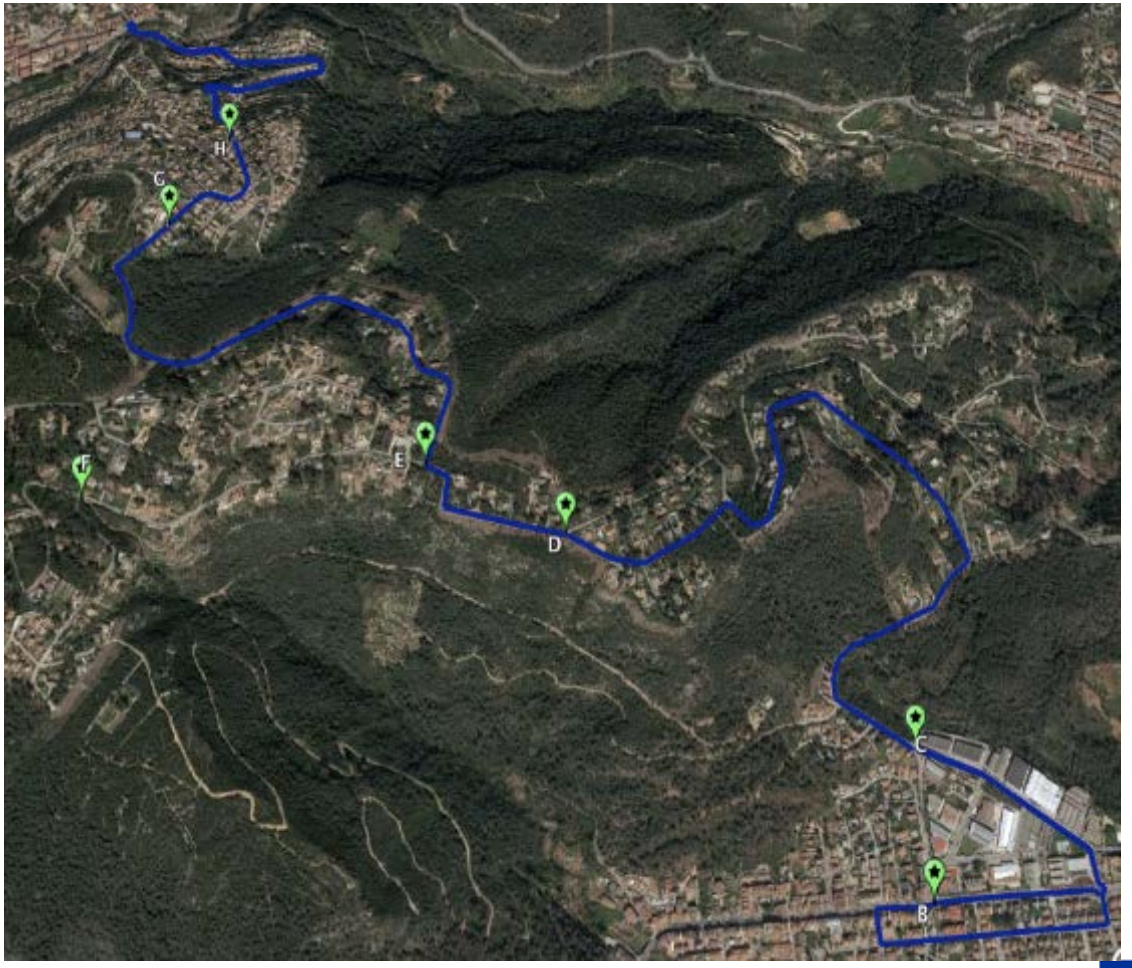
- 9.000 in suburban sprawl low density areas
- All urban services (school, sport center, shops, interurban bus stop, etc.) in the city center
- Low urban public transport supply
  - 3 fixed lines
  - 6 trips per day
  - 4 hours per day.

40 /day

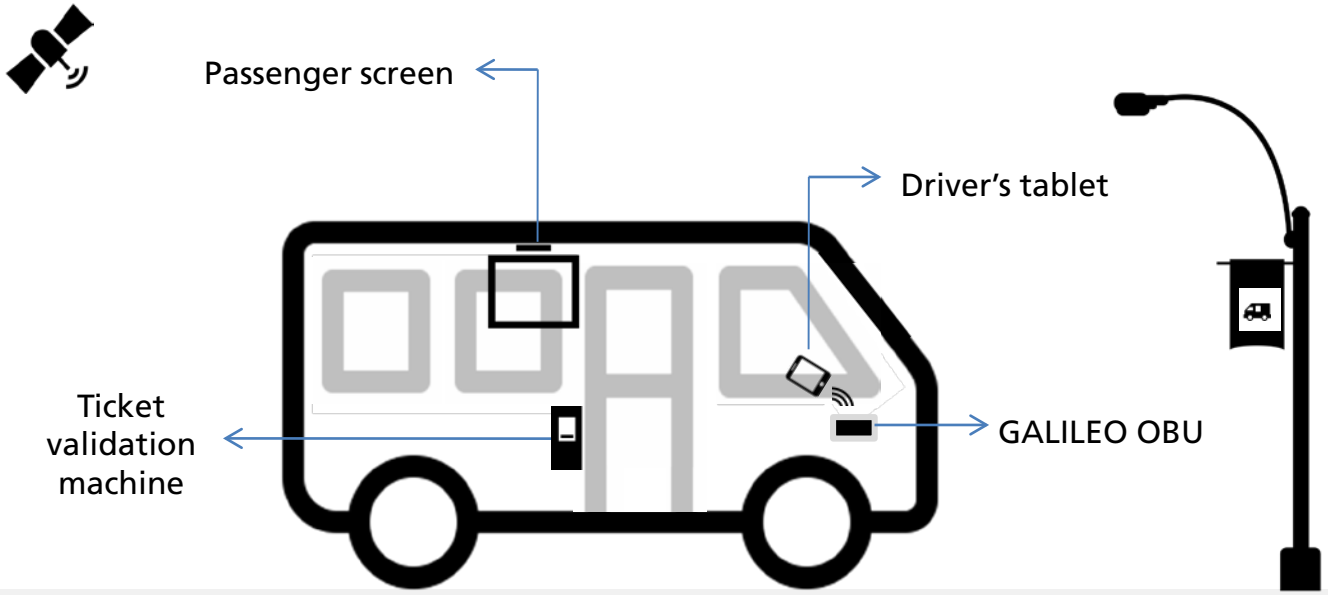
Barcelona – Public Transport on-Demand

On-demand bus is expected to provide:

- ✓Extended schedule (10 h)
- ✓2 lines - new flexible routing
- ✓More than 100 bus stops
- ✓More territorial coverage
- ✓Avoid empty trips
- ✓Increase demand



Barcelona – Public Transport on-Demand



Target users: Commuters and elderly residents going to the center to run errands

Barcelona – Public Transport on-Demand

Barriers, risks and future work

Delay due to:
- AMB as public entity has to choose the operator via public tender
- New service – uncertainty
- New public procurement law has delayed all public tenders

Risks:
- Potential problems with the public tender
- Low participation - the case in Tiana

March 2019
Public tender Release

April 2019
End of app development

May 2019
App tests start

October 2019
Pilot Start

April 2020
Pilot Ends

Future work
ODB continues for 4 years in Cervelló

PILOT 3

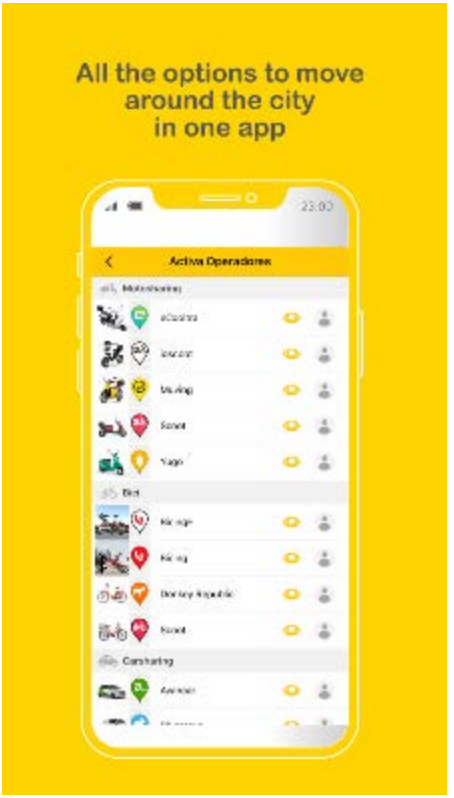
MaaS Aggregator (Barcelona)

Barcelona – MaaS Aggregator

GALILEO FOR MOBILITY

RACC Trips

Mobility Services Aggregator



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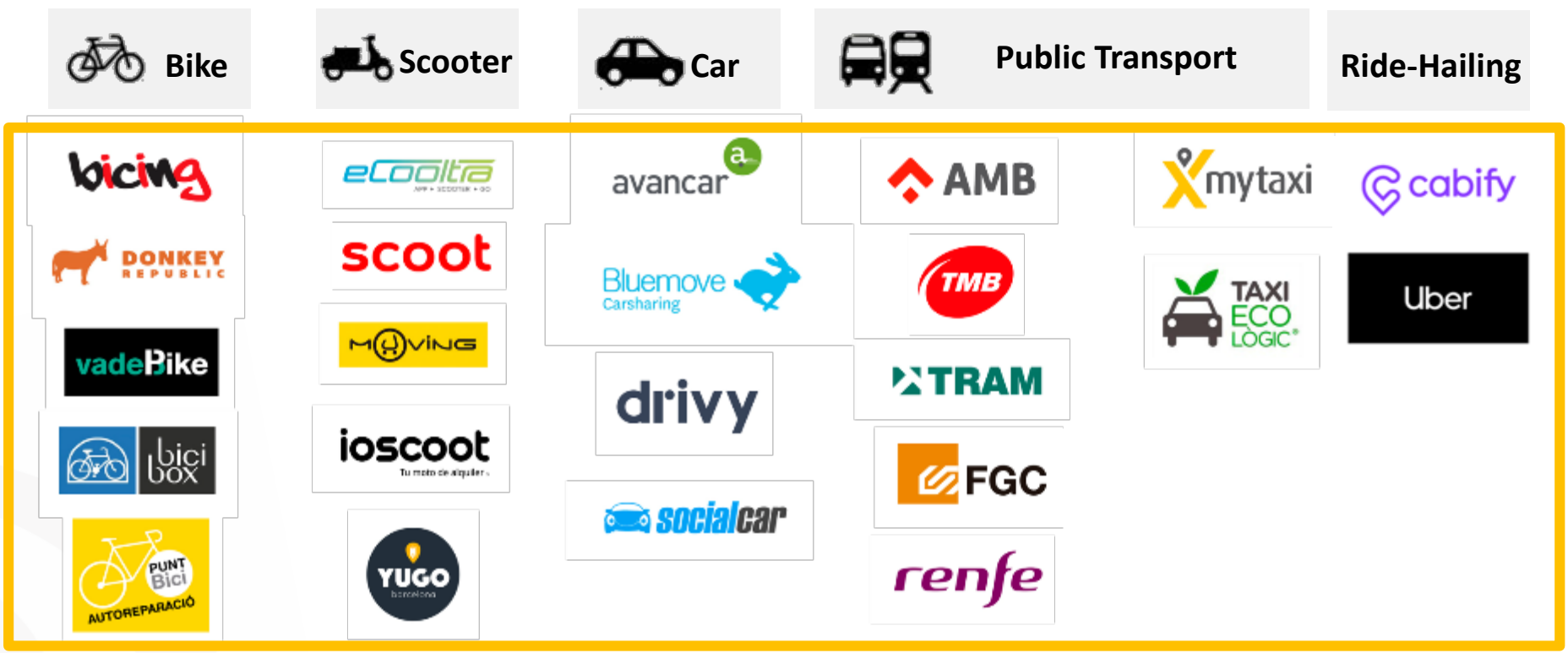
Barcelona – MaaS Aggregator

GALILEO FOR MOBILITY

RACC Trips

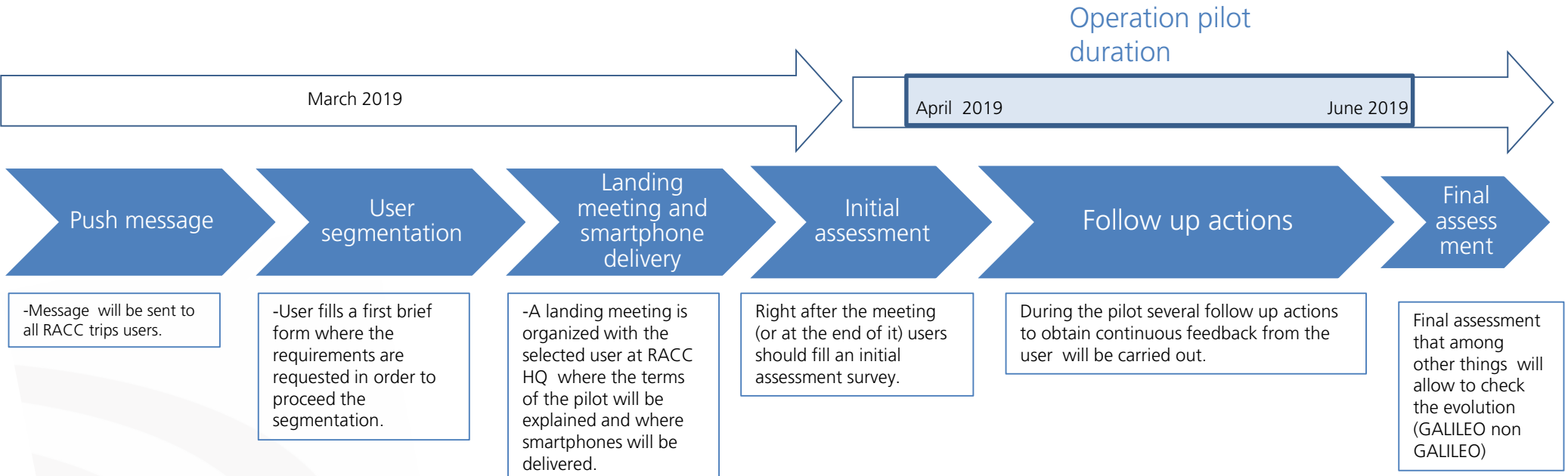
Mobility Services Aggregator

Already integrated



Barcelona – MaaS Aggregator

- Intermodal JP and integration of booking functionalities done.
- Requirement that need to fulfill the users:
  - Use of multimodal functionalities (in particular PT+ Motosharing use case)
  - Using an smartphone with no GALILEO chipset
  - Certain distribution (gender, age) will be searched (if possible)



Barcelona – MaaS Aggregator

INITIAL ASSESMENT

- USER PROFILE
- MOBILITY BEHAVIOUR
- RACC TRIPS USE
- RACC TRIPS & LOCATION
- GALILEO KNOWLEDGE

FOLLOW-UP ACTIONS

FINAL ASSESMENT

- MOBILITY BEHAVIOUR
- RACC TRIPS USE
- RACC TRIPS & LOCATION

GALILEO improvements in MAAS evaluated

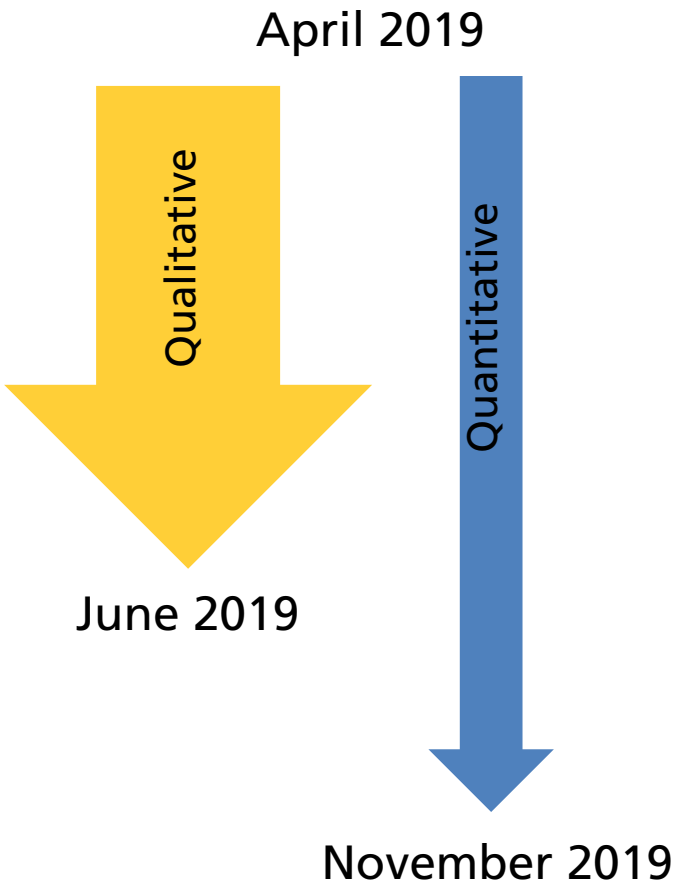
PILOT

Barcelona – MaaS Aggregator

Two different assessments will run on parallel:

-Qualitative: qualitative assessment from the user point of view upon the experience of RACC trips.

-Quantitative: Quantitative analysis of data of the OBUs (installed on 30 MUVING motorbikes) will be carried thanks to the Middleware that store (and is able to share) the data from the vehicles.



PILOT 4

Vehicle sharing (Paris Saclay)

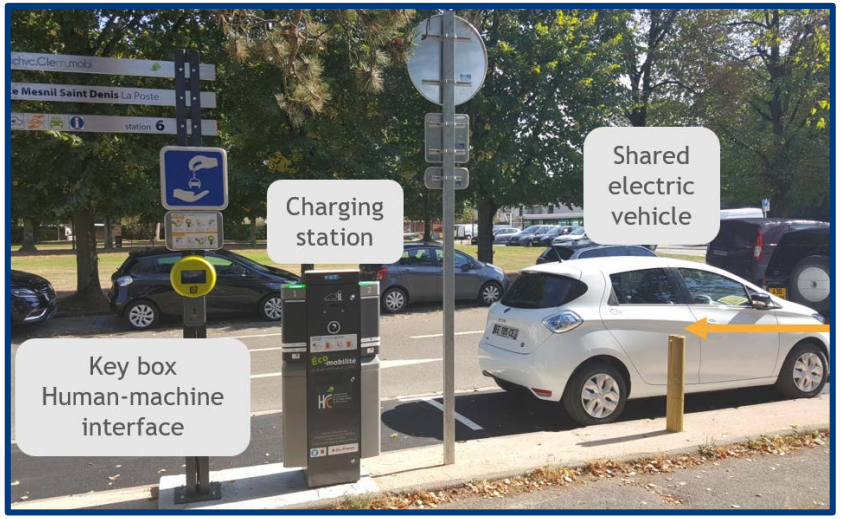
Paris pilot – scope of the pilot

SERVICES AND VEHICLES

E-BIKES SHARING SERVICE

20 bikes
Station-based
On-way
Registration required
Self-service

CAR SHARING SERVICE



10 cars
station-based / Key-box at the station
Round-trip
Registration required
Booking required

1 car
On-board key box
- Lock/unlock car via WIFI
- Key car
- Geolocation

Pilot territory – Descartes Cluster

25% of the French research and development workforce in the field of "Sustainable city"

- 5000 employees et 350 companies
- 34 research units with 1000 professors-researchers and researchers, 500 engineers and technicians et 700 postgraduates

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Paris pilot – geolocation needs

E-BIKES SHARING SERVICE

Operator

- **Real time geolocation (at the station/moving)**

⇒ Billing

⇒ Bike availability at the station

- **Warnings:**

⇒ Non restitution of a bike.

⇒ Bike movement without prior authorization.

- **Service monitoring:**

⇒ Battery swapping planning

⇒ Geolocation information for the technical assistance in case of incidents (theft).

- **Reporting, statistics and mapping.**

User

- Geolocation of the nearest available bike or stand.

CAR SHARING SERVICE

Operator

- **Accurate information about the end of utilization.**

⇒ Ability to bill time overrun

- **Warnings**

⇒ Non-restitution of the car after the end of a reservation.

⇒ Car movement without an associated reservation

- **Service monitoring**

⇒ Real-time geolocation for service monitoring by the technical assistance

⇒ Maintenance schedule based on car turnovers and kilometres travelled.

- **Reporting, statistics and mapping.**

PILOT 5

Autonomous Vehicle (Barcelona)

Barcelona – Autonomous Vehicle

Location: Universitat Autònoma de Barcelona (UAB) Bellaterra Campus

- Surface area: 2.63 km^2
- Layout: distributed along three main roads, with steep secondary roads (up to 12% grade) and many roundabouts
- Potential itinerary: from faculties to the rectorate

Barcelona – Autonomous Vehicle

Vehicle: Westfield POD (4-6 seats, fully electric and autonomous)

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Barcelona – Autonomous Vehicle

Objectives:

- Assess the benefits of Galileo for a mobility service using autonomous vehicles
- Test the possibilities of an autonomous vehicle operating on the open road and coexisting with pedestrians, buses and cars
- Explore the potential to replace cars for trips within the campus

Status of the pilot:

- UAB, AMB, and Catalan road authority have shown interest in the pilot
- A list of questions from the road authority has been sent to Westfield concerning the pod
- The road authority must expel an authorization for the autonomous vehicle to be able to drive on the open road with no dedicated lane
- UAB must approve the service specifications (target users, itinerary, pilot duration...)

QUESTIONS?