Shift2Rail

WEBINARS

Moving around Europe seamlessly

WELCOME!

COHESIVE

CONNECTIVE

MaaSive

My-TRAC

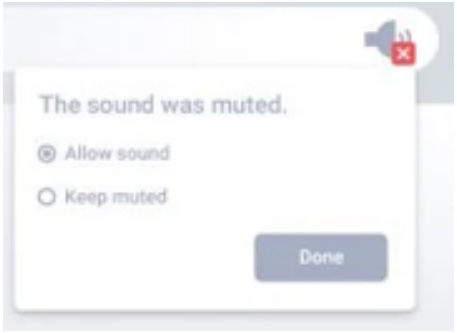
ShiftMaaS

sprint

Check your audio

If you can’t see or hear anything please:

- Reload the page
- Check if the tab is muted and if a pop-up window appears make sure to click ‘allow’ (as per images below)



- If the audio is not working smoothly, close unnecessary programmes and browsers.

Please listen only first (and talk later)

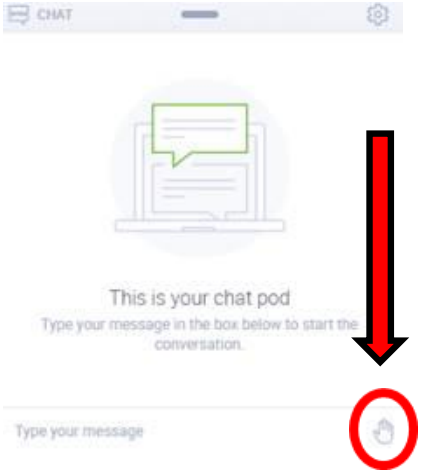
- While the moderator and speakers are presenting, it will not be possible for attendees to speak (to avoid technical interference).

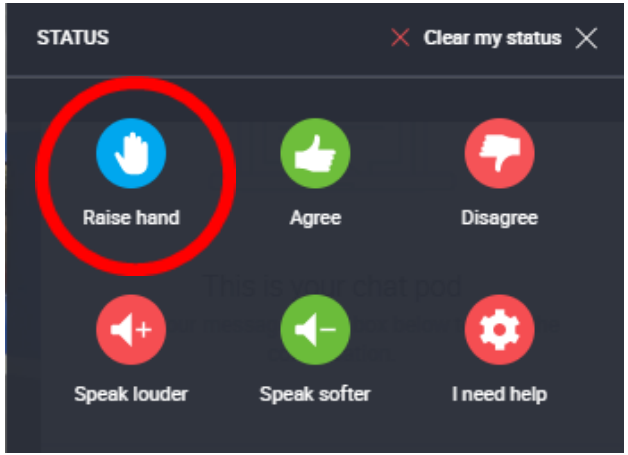
- You can however write any comments or questions in the chat box during this ‘listen only’ time.

Ask a question

When the moderator goes to a Q&A session you can ask a question by:

- Raising your hand by clicking on the hand icon on the right hand bottom corner of the chat box, and then on the blue hand icon (see images below)



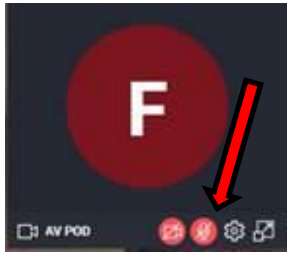


- The moderator will then select an attendee with their hand raised and allow them to speak

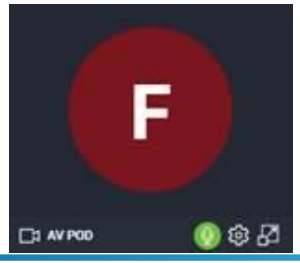
Ask a question

If you are granted permission to speak:

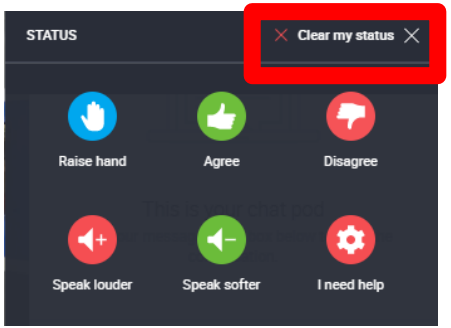
- Click **ALLOW** if a pop up message appears asking for permission
- Click the red microphone icon (see image below)



- When the microphone icon turns green, you are ready to talk (see image below)



- If your question has been answered, click on the hand on the right hand bottom corner of the chat box again, and select 'clear my status' (see image below)



- If you prefer not to speak, you can alternatively write your question in the chat box.

Microphone

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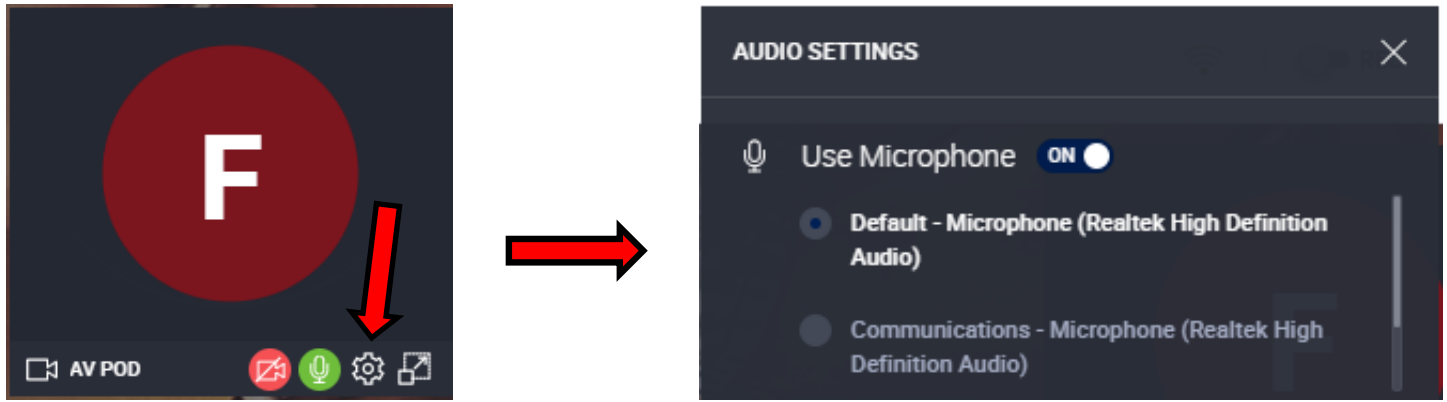


Shift2Rail innovations from the travellers' perspective

Joint dissemination action

12th May – Webinar

Agenda

Agenda

Shift2Rail Innovation Programme 4	Juan Castro, Indra
Shift2Rail Innovation Programme 4: Technical architecture and functionalities	Marco Ferreira, Thales
Q&A session	
Scenario 1: Alpha release Corridor Barcelona-Madrid	Marco Ferreira, Thales
Scenario 3: DRT scenario in Hannover	Achim von der Embse, HaCon
Scenario 6: Creation of an LBE experience on the Hololens	Souheir Mili, DIGINEXT
Q&A session	
Shift2MaaS introduction	Daria Kuzmina, UITP
Scenario 7: Malaga - Madrid to Malaga corridor	Daria Kuzmina, UITP
Scenario 8: Lisbon - Journey from university to the airport	Marco Comerio, Cefriel
Q&A session	
My-TRAC introduction	Ismini Stroumpou, Sparsity Technologies
Scenario 10: Lisbon - Eleni is an Erasmus student	Ismini Stroumpou, Sparsity Technologies
Scenario 12: Barcelona - Going to concert with friend	Ismini Stroumpou, Sparsity Technologies
Q&A session	

Introduction

Shift2Rail – Innovation Programme 4

Juan Castro – Indra

Shift2Rail initiative

Shift2Rail is the first European rail initiative to seek focused research and innovation (R&I) and market-driven solutions by accelerating the integration of new and advanced technologies into **innovative rail product solutions**.

S2R OBJECTIVES

+50% **INCREASE** RELIABILITY & PUNCTUALITY **BY 50%**

x2 **DOUBLE** RAILWAY CAPACITY

HALVE LIFE-CYCLE COSTS OF RAILWAY TRANSPORTS

CONTRIBUTE TO **REDUCTION OF NEGATIVE EXTERNALITIES**, SUCH AS NOISE, VIBRATIONS, EMISSIONS & OTHER ENVIRONMENTAL IMPACTS

CONTRIBUTE TO THE **ACHIEVEMENT OF THE SINGLE EUROPEAN RAILWAY AREA (SERA)**

UNIQUE PARTNERSHIP

28 MEMBERS

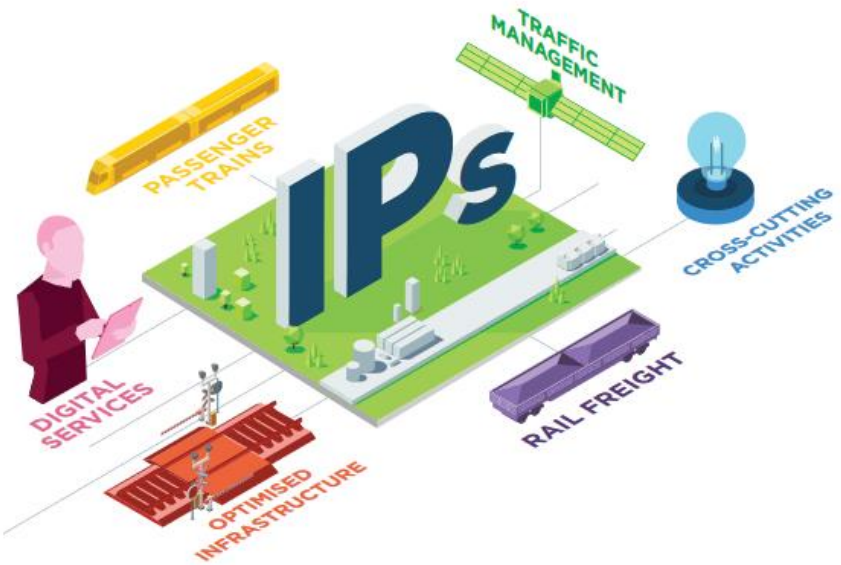
412 PARTICIPANTS

29 COUNTRIES

109 SMEs

113 RESEARCH CENTRES AND UNIVERSITIES

Shift2Rail Innovation Programmes



IP1 **Passenger trains**
Cost-efficient and reliable trains, including high-capacity trains and high-speed trains

IP2 **Traffic management**
Advanced Traffic Management and Control Systems' Solutions

IP3 **Optimised Infrastructure**
Intelligent Asset Management and High Capacity Infrastructure

IP4 **Digital services**
Towards "mobility as a service" engineered by railway

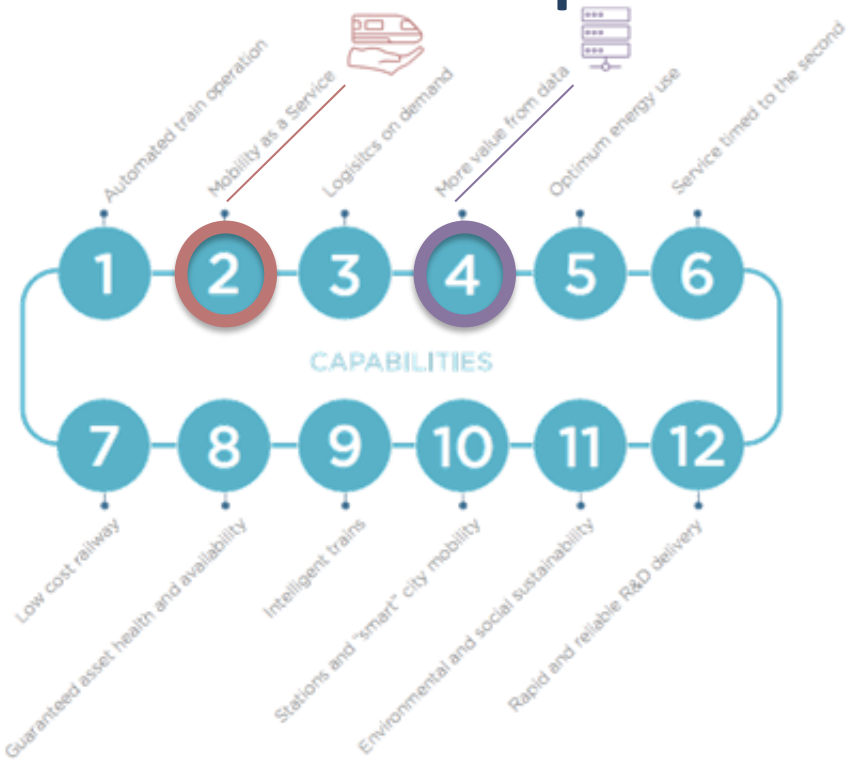
IP5 **European Railway Freight**
Technologies for sustainable and attractive European Rail Freight

CCA **Horizontal Innovative Solutions for Railway**
Cross-cutting activities

IP4 Overview and Objectives

- Put the traveller back at the centre, ease access to rail, increasing its attractiveness
- Complete multimodal travel offer connecting the first and last mile to long distance journeys
- Give access to all multimodal travel services (shopping, ticketing, and tracking) through its travel-companion
- Build an open framework providing full interoperability whilst limiting impacts on existing systems

S2R Innovation Capabilities



Shift2Rail Innovation Capabilities

IP4 Catalogue

Multimodal eco-system

- Seamless Multimodal Travel (IP4 Orchestrators)
- Interoperability Framework (IF)

Travel experience

- Travel Companion-Personal Application (TC IP4)

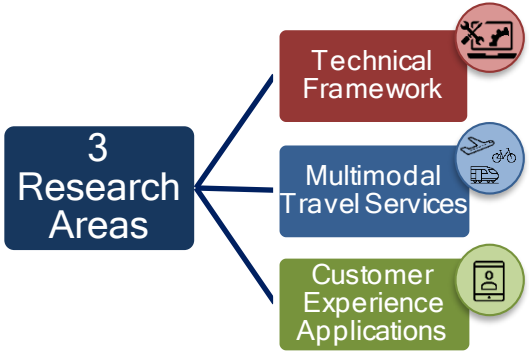
Travel provider tools

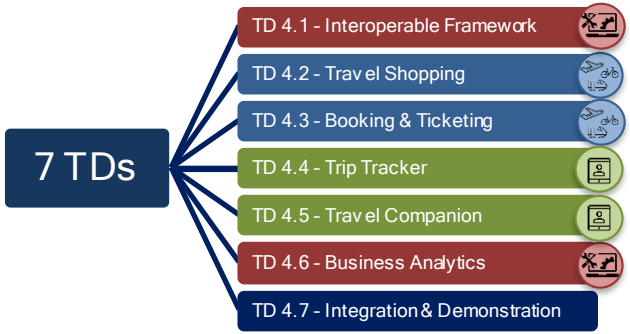
- Operator Portal
  - Contractual Management Market Place (CMMP)
  - Business Analytics for Transportation (BA)
  - Asset Manager (AM)

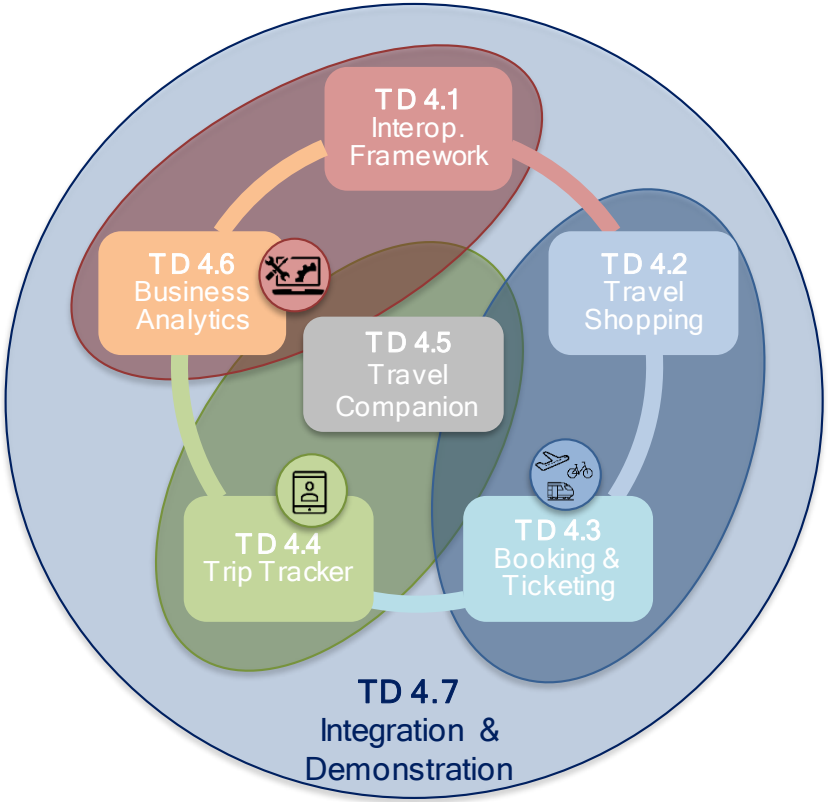
S2R-IP4 – Expected Key Results

Challenges:

- European Level
- To transform travel interactions into a fully integrated and customised experience, across all transport modes, local and long-distance.
- To support modal shift and make rail more attractive, offering a personalised experience in every step of the travel
- One-Stop-Shop to access multimodal services
- Ease integration of the TSPs in the Platform
- Advance beyond the state of the art: location Based Experience, Contract Management, Business Analytics, MaaS

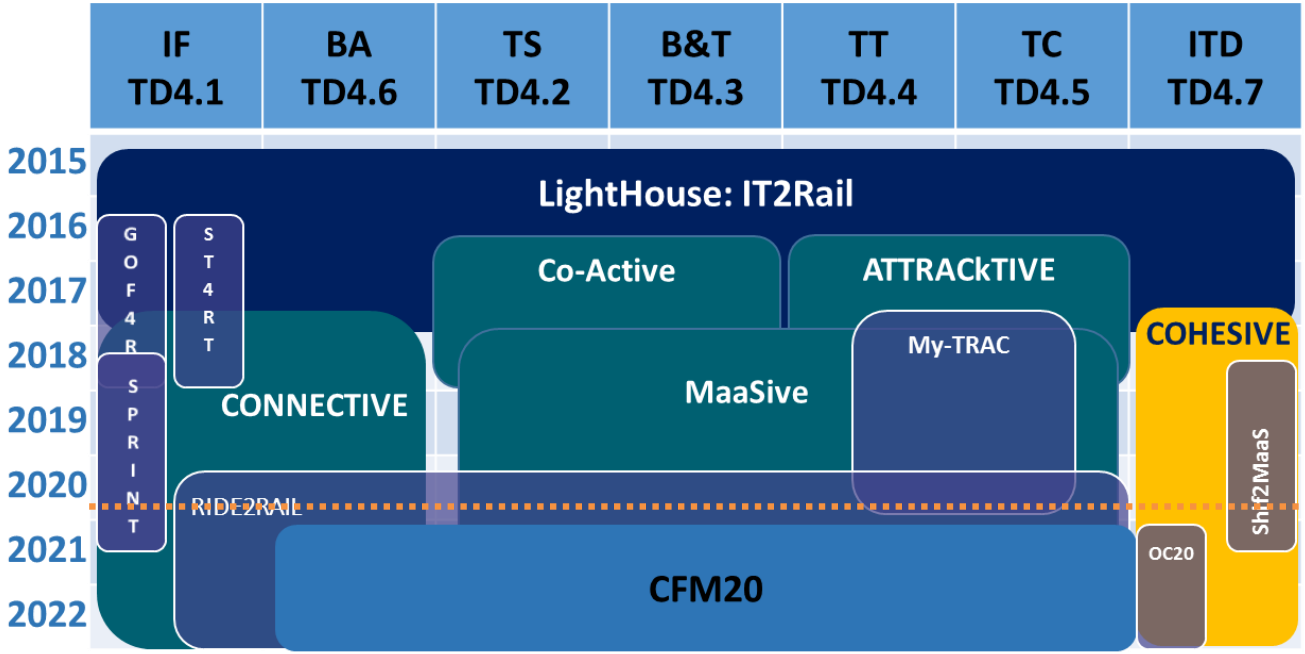

3 Research Areas
Technical Framework
Multimodal Travel Services
Customer Experience Applications


7 TDs
TD 4.1 - Interoperable Framework
TD 4.2 - Travel Shopping
TD 4.3 - Booking & Ticketing
TD 4.4 - Trip Tracker
TD 4.5 - Travel Companion
TD 4.6 - Business Analytics
TD 4.7 - Integration & Demonstration


TD 4.1 Interop. Framework
TD 4.6 Business Analytics
TD 4.2 Travel Shopping
TD 4.5 Travel Companion
TD 4.4 Trip Tracker
TD 4.3 Booking & Ticketing
TD 4.7 Integration & Demonstration

S2R-IP4 - Projects Roadmap

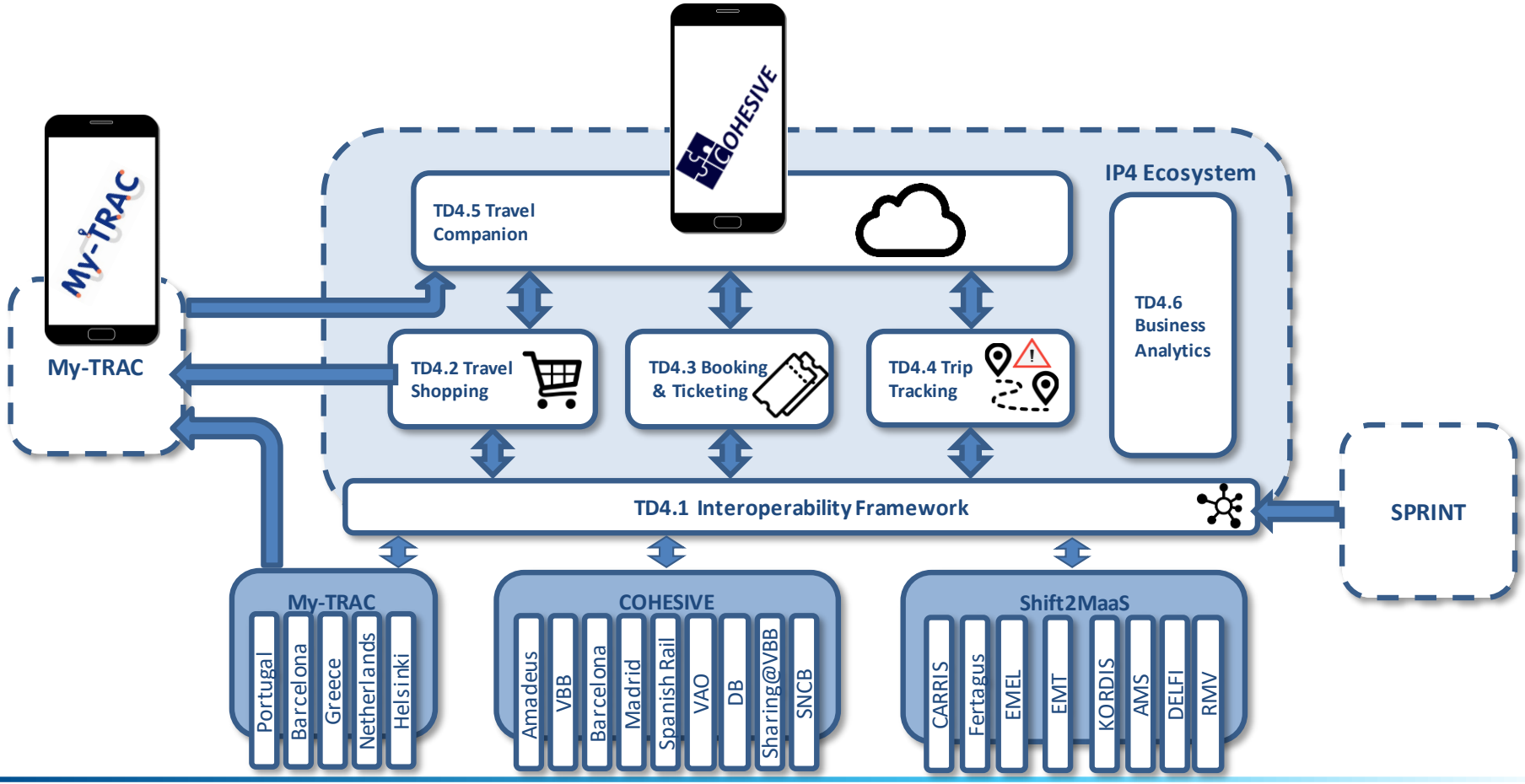
Lighthouse Project:	IT2Rail	**OC15/16:**	GoF4R and ST4RT
CFM15/16:	Co-Active and ATTRACkTIVE	**OC17:**	My-TRAC
CFM17:	CONNECTIVE and COHESIVE	**OC18:**	Shift2MaaS and SPRINT
CFM18:	MaaSIVE	**OC19:**	Ride2Rail
CFM20:	TD4.1-4.5	**OC20:**	iTD7



S2R-IP4 – Technical Architecture and Functionalities

Marco Ferreira – Thales

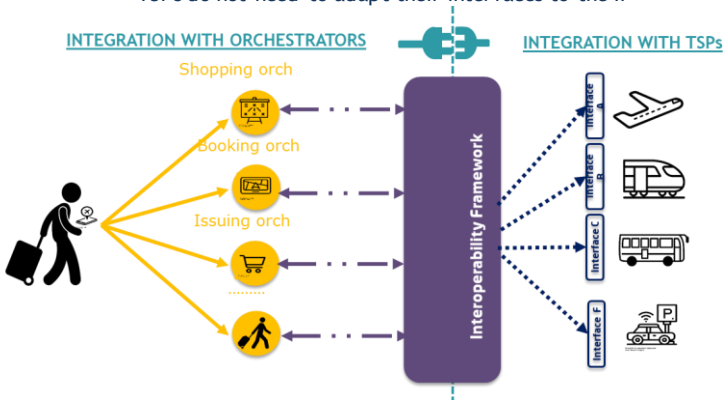
Technical Architecture



TD4.1 **Interoperability Framework** functionalities

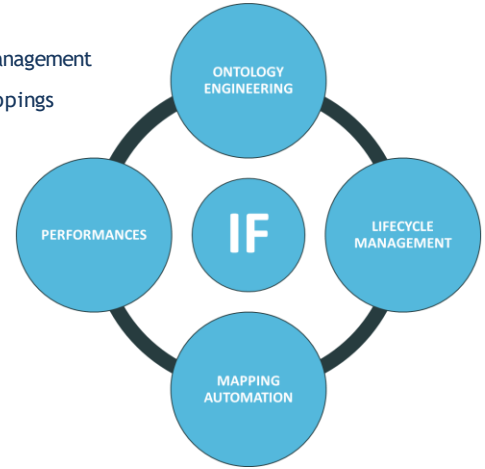
CONNECTIVE

- Development of Interoperability Framework, the component that allows interoperability in the ecosystem:
  - Allows exchanges among heterogeneous systems using different interfaces that guarantees the interoperability ;
  - Access point for the services of the TSPs that are available to the ecosystem
  - Provide components that simplify the connection among the different actors, applications and TSPs
  - TSPs do not need to adapt their interfaces to the IF



sprint

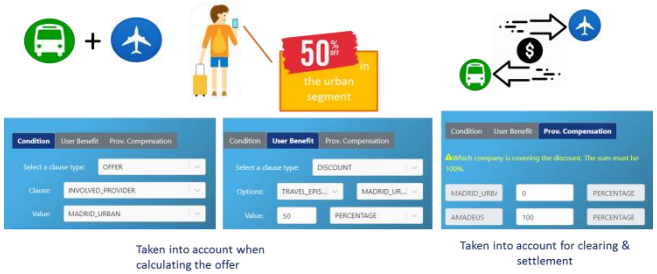
- Provides a tool to manage publication of assets in the IF ecosystem
  - Lifecycle management to support Governance
  - Integration with CI / CD to automate low level tasks
  - Provides a framework to speed up the integration of new TSP services
- Provide tools improving the performances of the IF
  - Ontology creation
  - Collaborative Ontology management
  - Simplified creation of Mappings



TD4.2 **Travel Shopping** functionalities

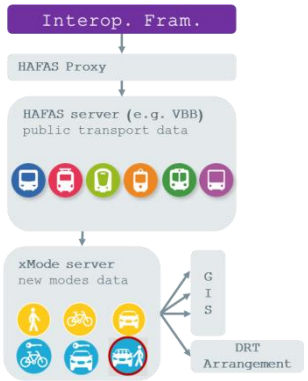
Co-Active

- Journey Planning / Offer Building
  - Modes: Urban PT, Rail, Private Car, Park, Car-Sharing, Bike-Sharing
- Meta-Network
  - Pan-European routing management
- Contractual Management Market Place (CMMP)
- Provision of Ancillary Services



MaaSive

- Journey Planning / Offer Building
  - New Modes: DRT service
  - Multi-User travel management
- Contractual Management Market Place (CMMP)
  - Mobility Packages



My-TRAC

- Social Market
  - Web based and mobile interface
  - Get offers and discounts from 3rd parties (e.g. cafes near the station, museum) with points gained by using the app
  - Transactions based on blockchain
  - Generation of a QR code
  - Two types of Users, providers and travellers

Coupon manager

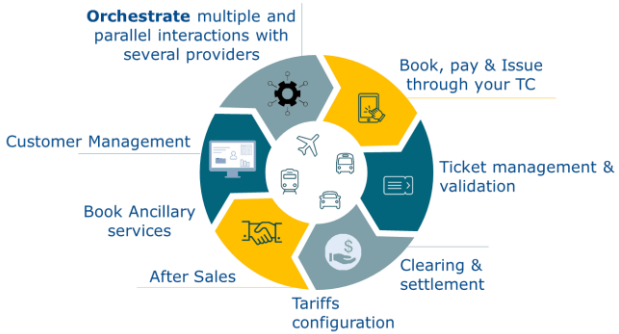
Coupon's information and QR coder

Transaction in the blockchain explorer

TD4.3 **Booking & Ticketing** functionalities

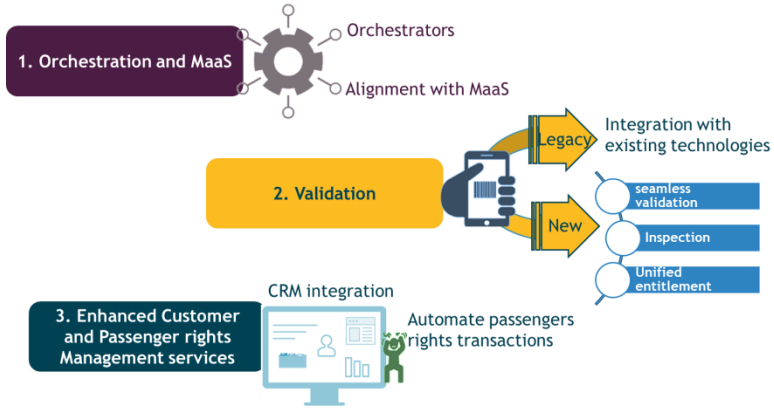
Co-Active

- Booking
- Issuing (Entitlement/Token/Embodiment)
- Payment
- Buy Ancillary services
- Clearing & Settlement
- After-Sales (Cancelation and Refund)



MaaSive

- Improve Co-Active developments
- Validation and Inspection
- Mobility Packages Issuing and usage
- Best-Price calculation
- Customer Relation Management
- Passenger rights and claims management



TD4.4 **Trip Tracking** functionalities

ATTRACkTIVE

- Trip Tracking
  - Tracking Orchestration, partial Trip Tracker and Event Sources
- Re-accommodation
- Standard pTT (GTFS/RT, SiRI-SX, VDV)
- Mobile pTT (Movement analysis and reports)
- Prognosis pTT

MaaSive

- Trip Tracking
  - Interoperability Framework integration (pTTs and data sources)
  - Group travelling management
  - Trip Tracking rules configuration
- Traveller behaviour analysis

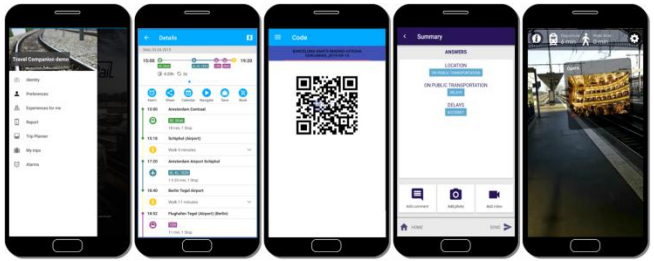
My-TRAC

- Location API google (GPS, wi-fi, network) during traveling
- Verify selection of route with route matching algorithm (post-analysis)

TD4.5 **Travel Companion** functionalities

ATTRACkTIVE

- Personal Application
  - Integrated mobility services interface with the traveller
  - Tickets handling, Alert management, Traveller feedback, Navigation (Smart Watch), Location Based experiences
- Cloud Wallet
  - Manage traveller profiles, preferences and digital tickets
- Location Based Experiences Editor
  - LBE editor for the creation, design, and publication of location based experiences by stakeholders.

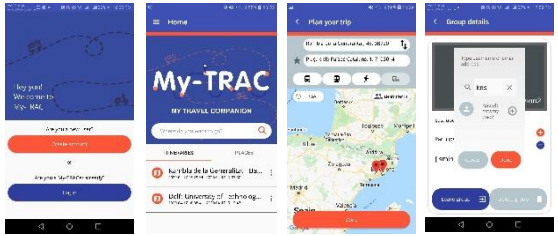


MaaSive

- Personal Application
  - New web-based interface
  - Group travelling interface management
  - Share travel status for both travellers and stakeholders
  - Location based experiences supporting new devices (Watches/Glasses)
- Cloud Wallet
  - Manage electronic payment (entitlements and tokens) for validation and inspection
  - Manage account and preferences through the web browser
- Location Based Experiences Editor
  - LBE Composer for the creation and publication of location based experiences on glasses.

My-TRAC

- Personal Application
  - Models deployed and integrated, running in the backend (mode, time of departure, route, activity and recommendation choice models)
  - Personalized UI/UX low vision and high contrast skins for people with visual disabilities
- User profile
  - Demographics details, travel behavioral analytics, social networks animation
  - Group information

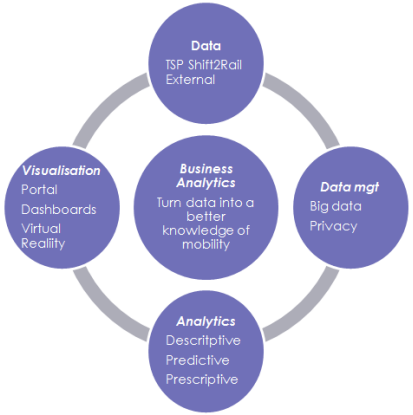


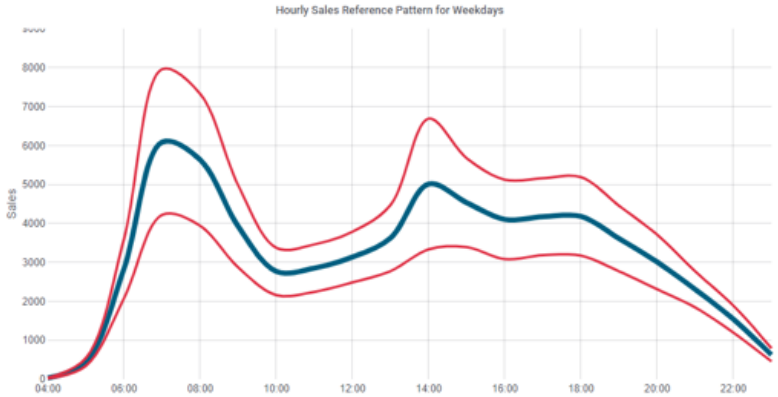
TD4.6 **Business Analytics** functionalities

Shift2Rail

CONNECTIVE

- Provide implementation of architectures for Business Analytics in IP4
- Explore analytics that could be provided: Descriptive, Predictive, Prescriptive Analytics
  - Development of KPIs, prediction algorithms and decision support algorithms
  - Current data provided by operators. Other sources could be considered, such as data obtained from IP4 ecosystem
- Data Visualization
  - Dashboards, Visualization Portal, Virtual Reality
- Privacy algorithms
  - Data anonymization algorithms





S2R-IP4 Functionalities

iTD4.7 Integration and demonstration

COHESIVE

- Coordinate the interfaces amongst IP4 projects, promoting convergence
- Integration and testing of the different TDs, creating demonstration releases
- Dissemination of result and concepts developed in IP4

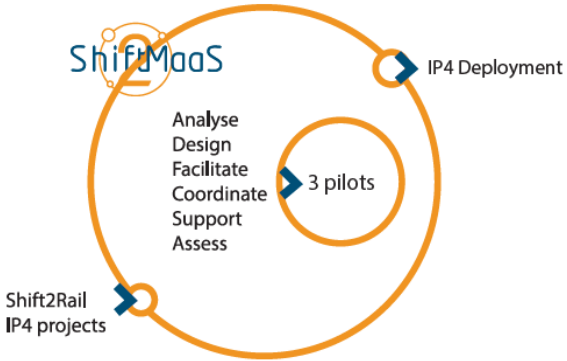
Integrated modes

- Amadeus > pan-European
- SNCB, VAO
- DB, Spanish Rail*
- VBB, MAD, BCN, CXX*
- Park, Toll (@MAD, @BCN)
- Sharing (@VBB)

*simulated data

Shift2MaaS

- Design the demonstrations for S2R IP4 deployment
- Deliver necessary support to the COHESIVE project to implement successful demonstrations in 3 European sites
- Guarantee a technical coordination interface with the S2R IP4 projects (in particular COHESIVE, CONNECTIVE and MaaSive)
- Assess the impact of S2R IP4 ecosystem on the selected demo sites



Questions ?

Scenario Barcelona-Madrid

Marco Ferreira – Thales

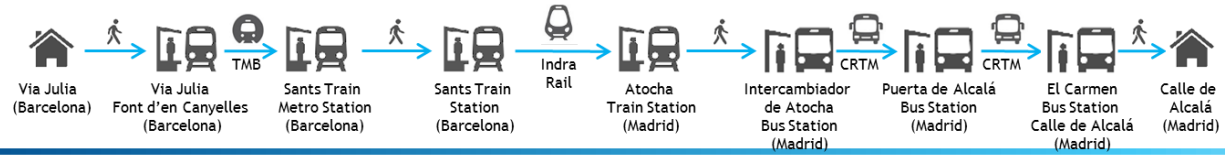
Alpha release Corridor Barcelona-Madrid

- **Data used**

- **Persona**
  - Teresa, age 31, lives in Via Julia, Barcelona
  - She wants to visit an old friend from school times living now in Calle de Alcalá, Madrid

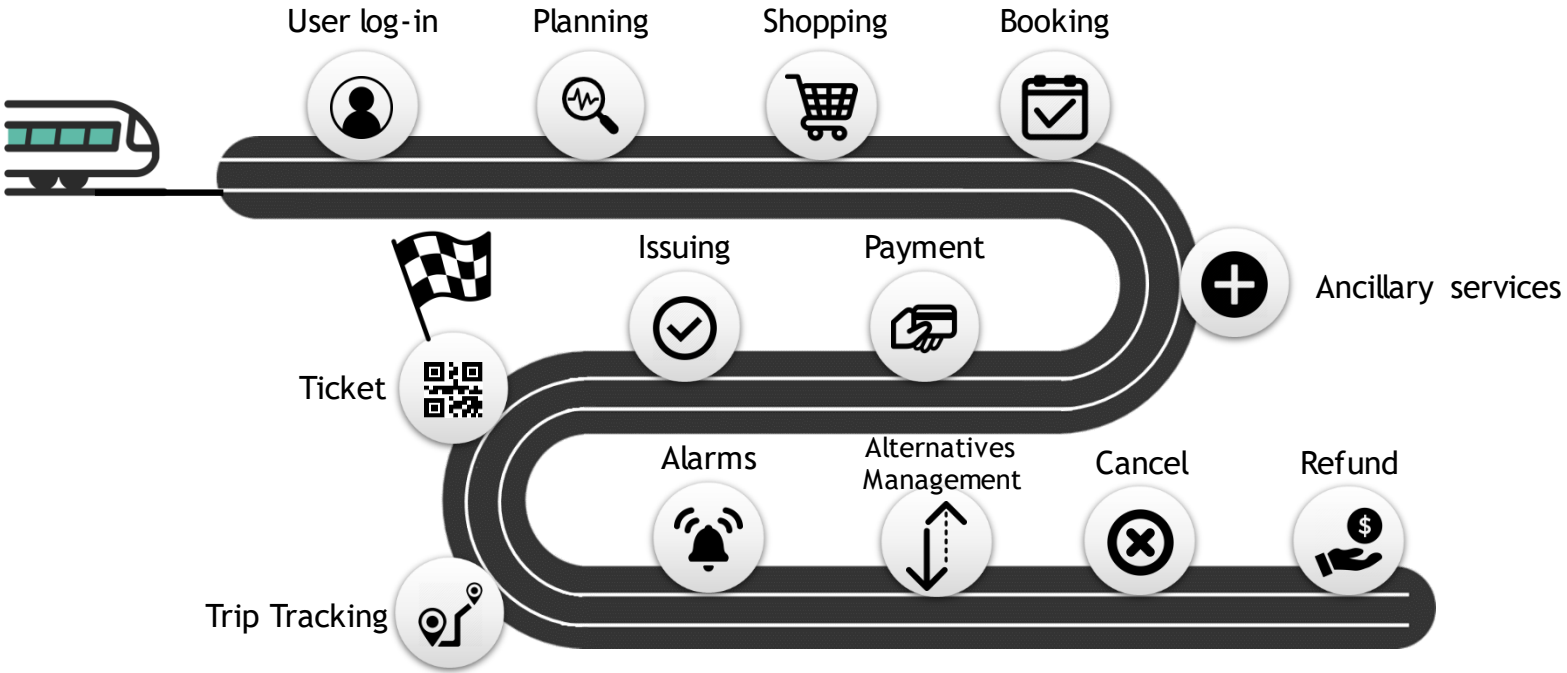
- **Scenario**
  - From Via Julia (Barcelona) to Madrid (06/11/2019 - 11:00)

  - Alternative route: 06/11/2019 11:22>>>15:00



Barcelona-Madrid

Main functionalities used on the scenario



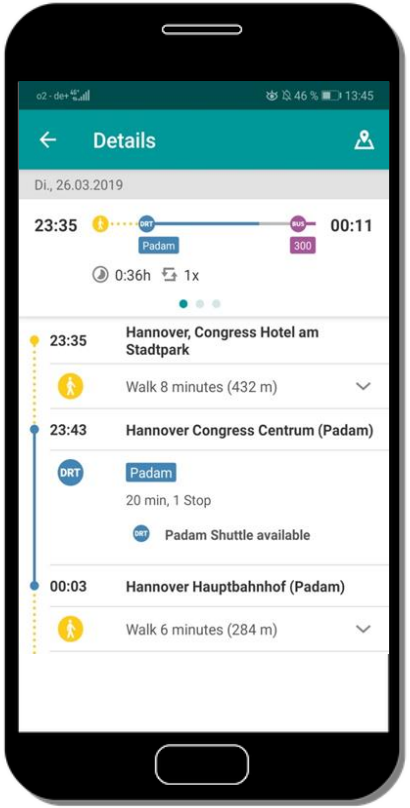
Demand Responsive Transportation Scenario

Achim von der Embse – HaCon

Demand Responsive Transportation

- **Data used**
  - DRT TSP, DRT Stop Points
- **Persona**
  - Teresa, age 31,

  she is for a management meeting at the Hanover Congress Center HCC in Hannover. She plans to attend an evening event in the center of Hanover.
- **Scenario**
  - Teresa plans to go to the Opera Building together with 2 Colleagues
  - Teresa will open the shift2Rail trip planner
  - She enters Origin and Destination and finds a DRT Service available
  - Teresa chooses the DRT Service and confirms it
  - She will be picked up at the HCC



DRT Scenario

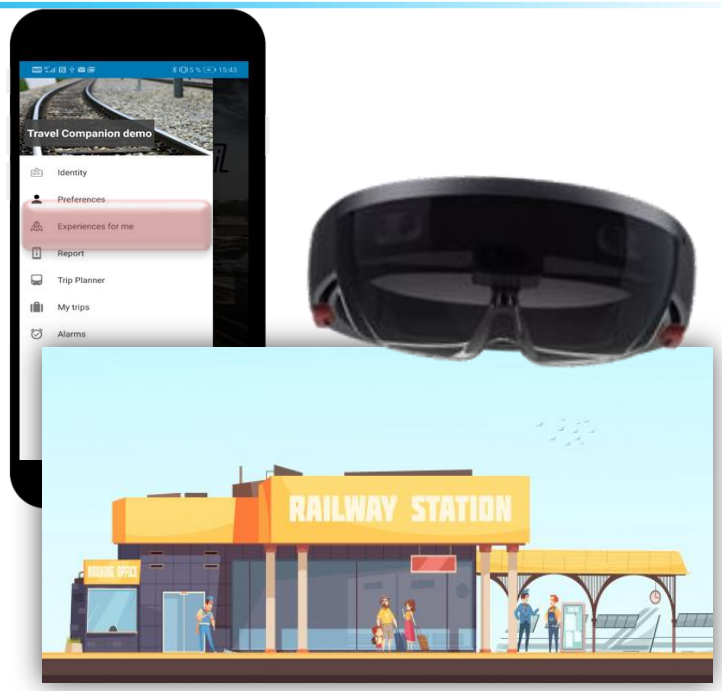
Main functionalities used on the scenario

- Travel Shopper
- Demand Responsive Transport as TSP integrated
- Interoperability Framework - Location Resolver
- Meta Network Explorer
- xMode Server to handle the new mode

Location Based Experiences Scenario

Souheir Mili – Diginext

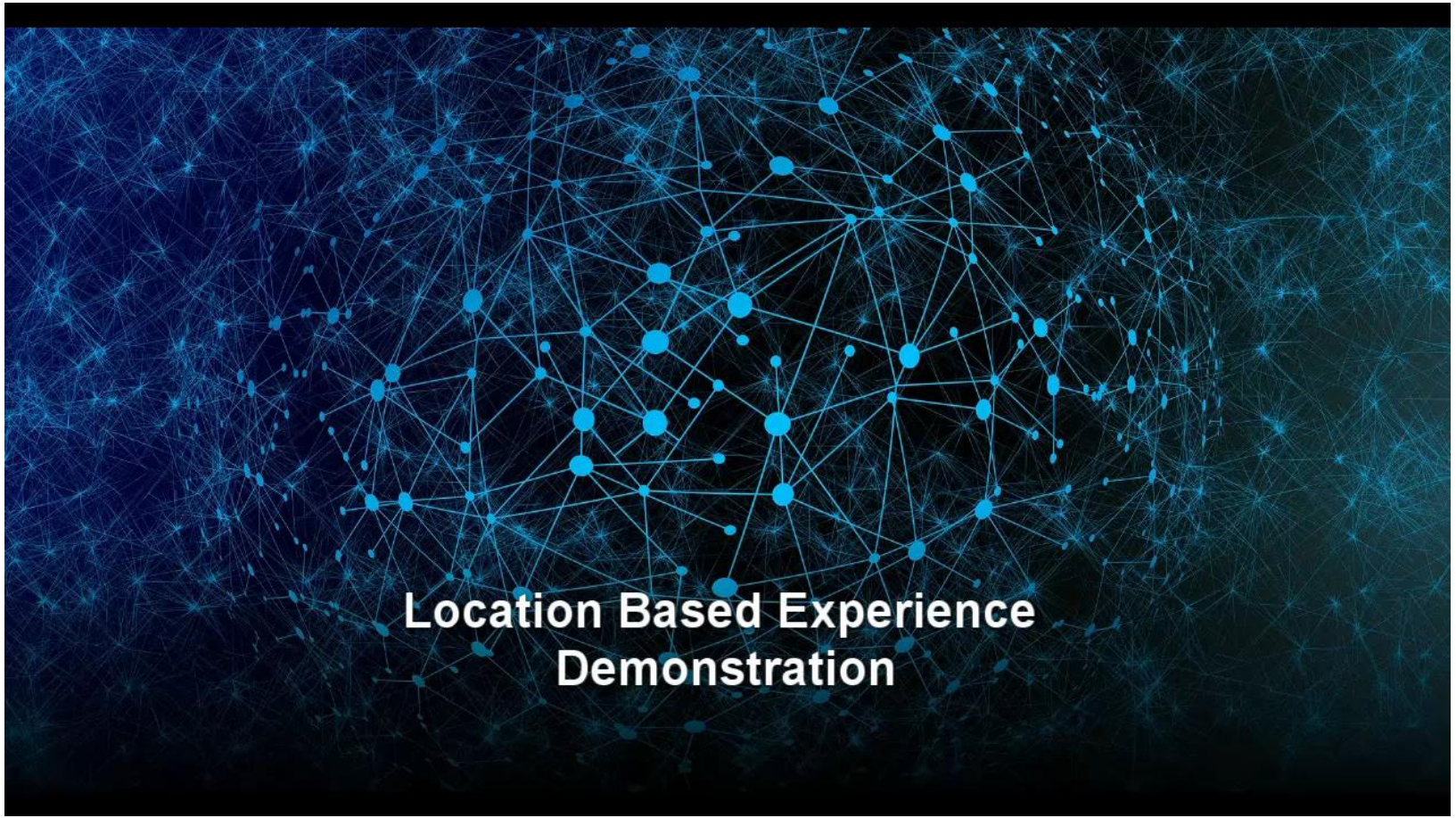
Location Based Experience



- **Data used**
  - Traveller position, Travel information, 3D station models
- **Persona**
  - Teresa, age 31,
  - She is at Main station waiting for her train to Amsterdam.
- **Scenario**
  - Teresa has prepared her trip
  - Teresa arrives at the train station and takes her PA to check her trip.
  - Teresa click on the Experience-for-me when waiting for her train and sees the available experiences
  - Teresa selects the glasses experience, tagged with the small logo and start the experience on the HoloLens
  - Teresa puts on the HoloLens and starts to discover the new augmented experience.

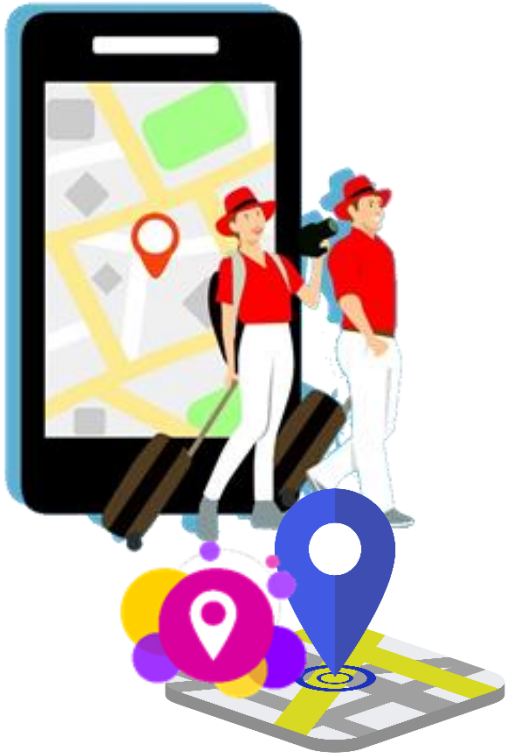
Location Based Experience Scenario

Horizon 2020
European Union Funding
for Research & Innovation



Main functionalities used on the scenario

- LBE & Mixed Reality Composer
- LBE Launcher
- LBE Watcher
- Mixed Reality Engine



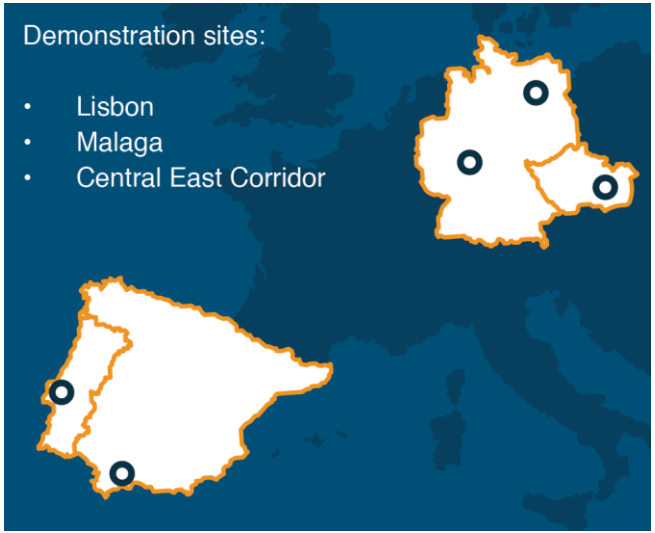
Questions ?

Shift2MaaS

Daria Kuzmina – UITP

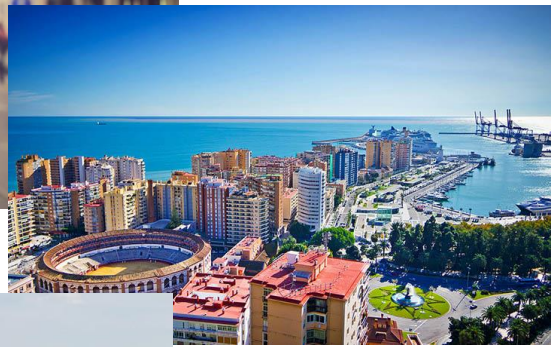
MaaS uptake through testing and demonstrations

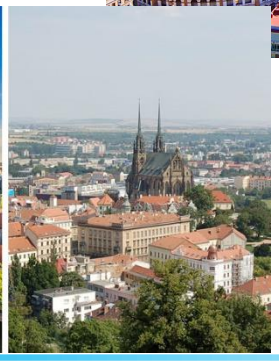
The project will demonstrate the benefits of IP4 through pilots focused on shared mobility services and seamless passenger experience, conducted in three different demonstration sites in Europe.



Support to enable demonstrations

- Build bridges between IP4 technologies and TSPs
- Overcome the technical and non-technical barriers for the adoption of new integrated mobility platforms
- Prepare the demosites for demonstration (e.g., administrative issues, legacy systems, etc.)





Evaluation, assessment and recommendations

Shift2MaaS:

- Assesses the impact of Shift2Rail IP4 technologies on the selected demonstration sites by designing an evaluation framework.
- Analyses the impact of IP4 technologies on business models and on the behaviour of passengers.

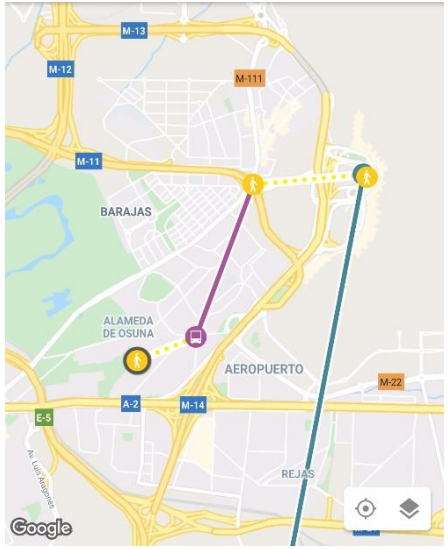
Scenario “From Madrid to Málaga”

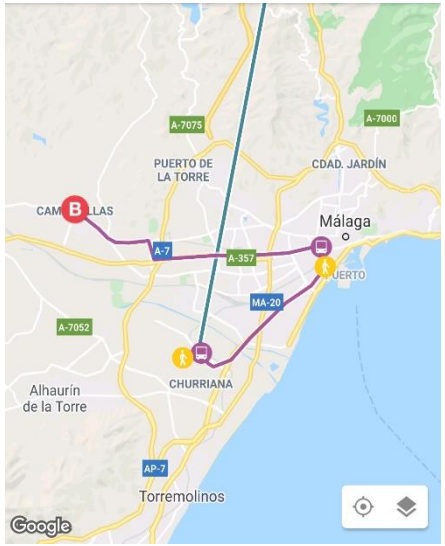
Daria Kuzmina – UITP

“From Madrid to Malaga”

- Data used

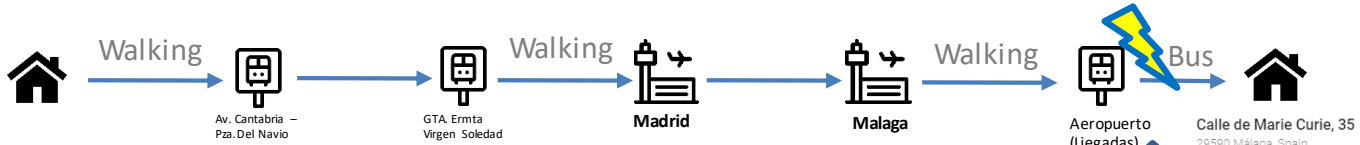
- Persona
  - Diego Perez, young entrepreneur from Madrid
  - Travels from Madrid to Malaga for a business meeting in PTA, Malaga





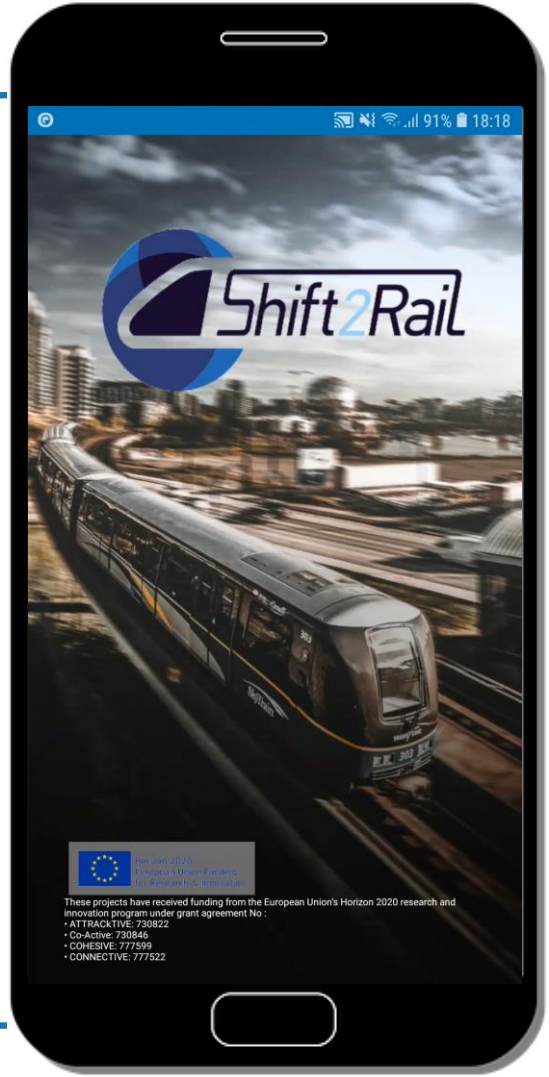
- Scenario:

Option 1:

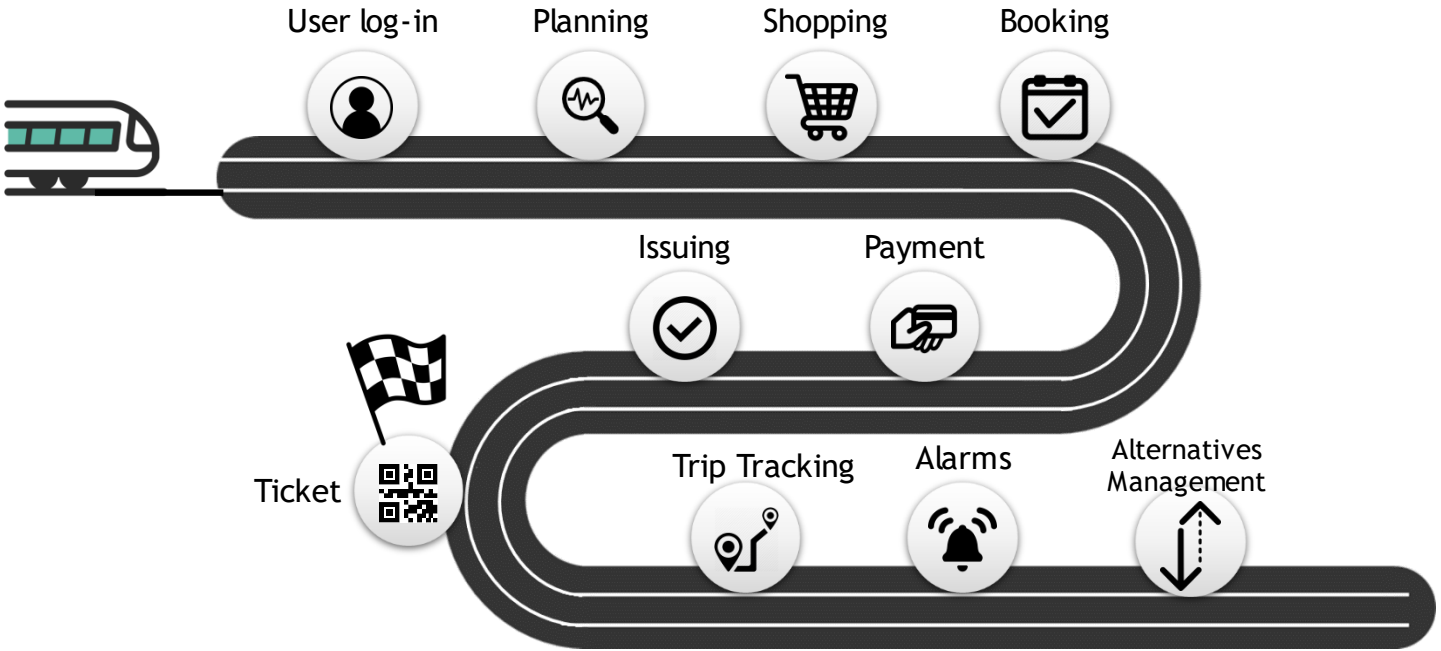


Option 2:

Málaga Scenario



Main functionalities used on the scenario



Lisbon Scenario

Marco Comerio – CEFRIEL

Mark rushing from University to Lisbon airport

Persona

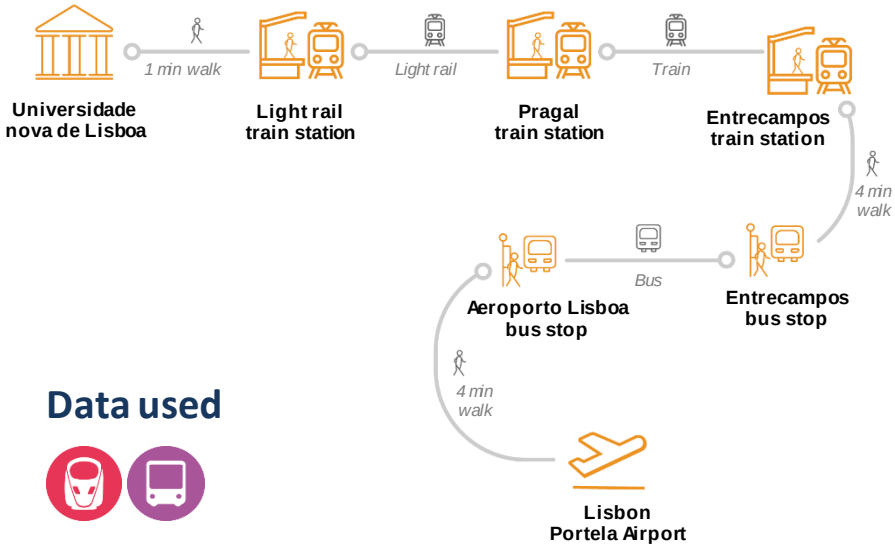
Mark Smith

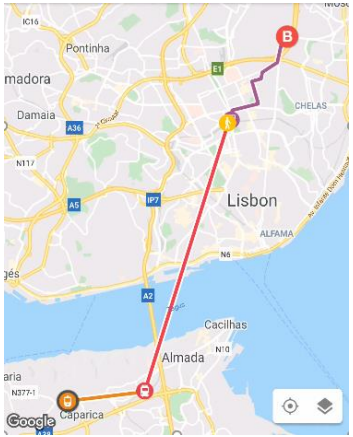
Business traveler

"I have no familiarity with Lisbon city and its transportation system. I have to rush to the airport or I will miss my flight!"

Scenario

Mark's Journey from Universidade nova da Lisboa to Lisbon Portela airport



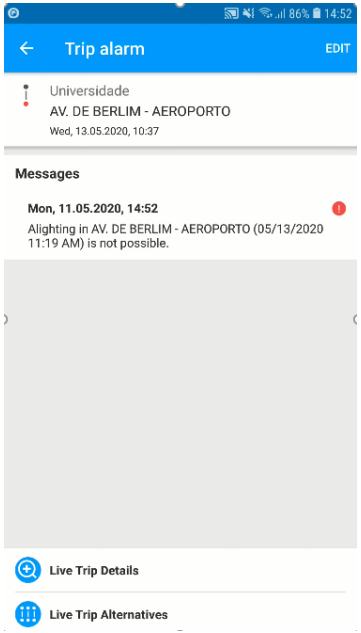


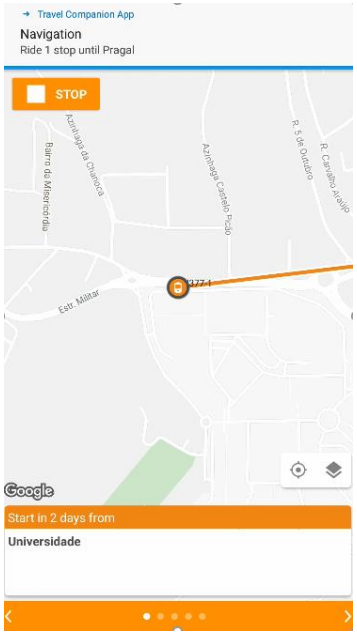
Data used

Lisbon Scenario

Main functionalities used

- Journey Planning
  - Mark specifies departure and destination
  - Mark selects the preferred offer and saves the trip
- Trip Tracking
  - Mark activates the alarm for receiving notification of delays, disruptions affecting the selected trip
  - Mark receives a notification of delay
- Journey Flow Navigation
  - Mark activates the navigation
  - Mark receives notifications when it is time to get off





Questions ?

My-TRAC

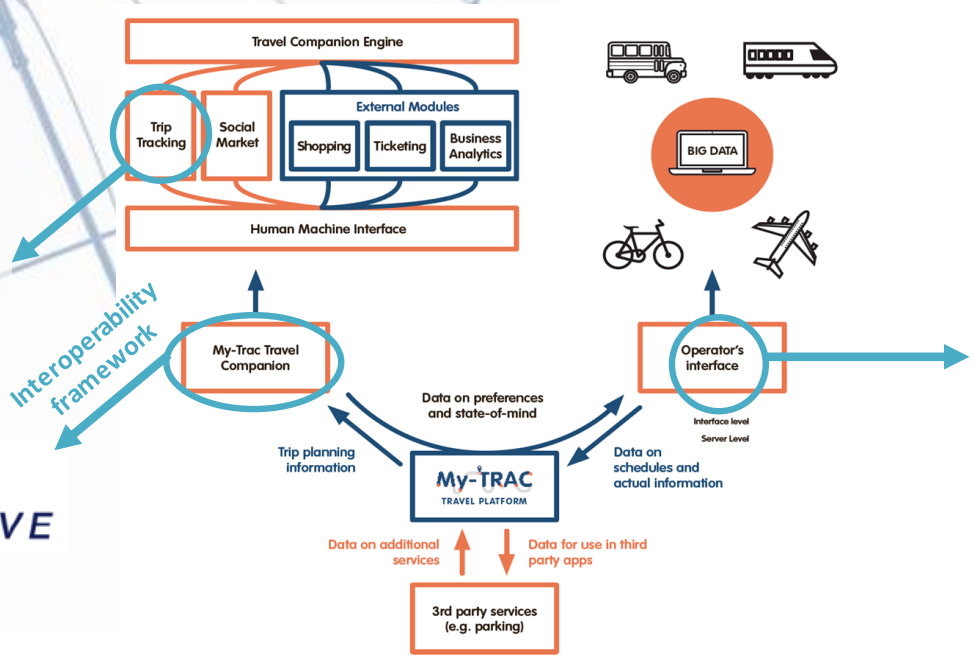
Ismini Stroumpou – Sparsity Technologies

My-TRAC in IP4 ecosystem

COHESIVE

Shift2Rail ATTRACkTIVE

Shift2Rail CONNECTIVE



Sharing of:

-Documents

-Technology

-Information and results

Shift2MaaS

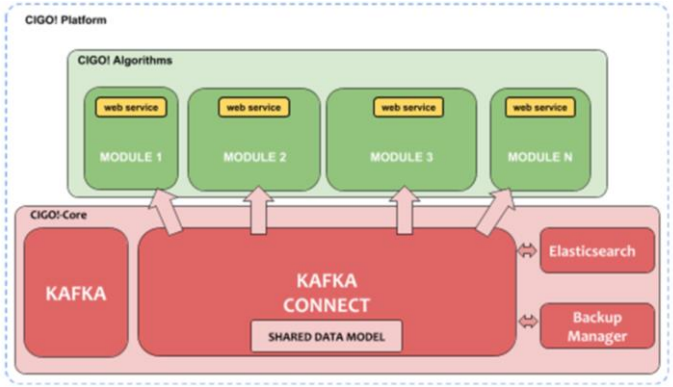
Main objectives/key results

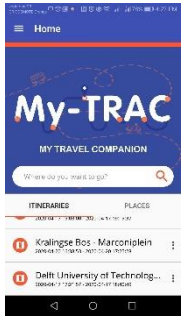
1. An **interoperable platform** supporting operator application and user TC, that will easily connect with external services such as shopping and analytics modules

2. A **Travel Companion** that will behave like a real trip companion understanding user needs and anticipating and suggesting activities or services

3. A **Social Market** service that will enhance user experience by extending the value of a single ticket by providing added value services adapted to their profile

4. An advanced **Human Machine Interface** that will adapt to user profile, preferences and accessibility needs in real time



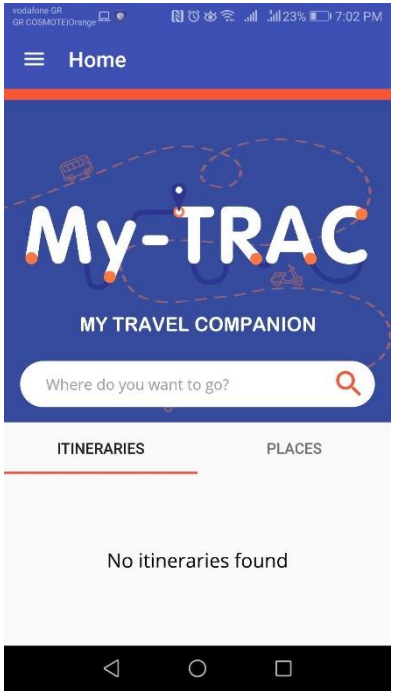


Solo travelling in Lisbon

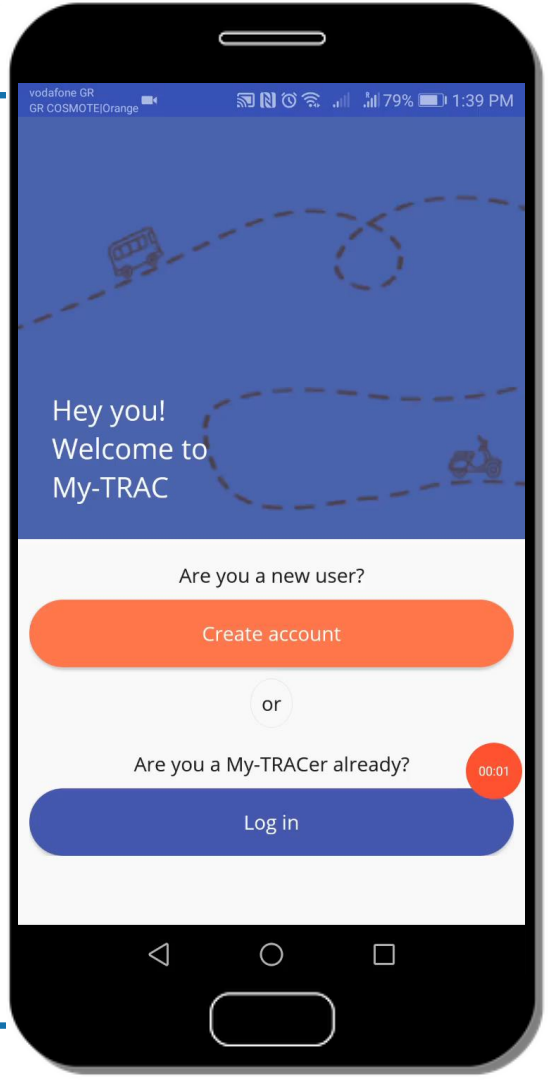
Ismini Stroumpou – Sparsity Technologies

Solo travelling in Lisbon

- Data used
  - GTFS of Lisbon
  - Personal data of the user
- Persona
  - Woman, 22 years old, Erasmus student, PT user with a flexible time schedule
- Scenario
  - Eleni is an erasmus student in Lisbon that wants to go from her house to her work. She is a registered user. She prefers to get personalize information from My-TRAC algothims that are running in the back-end

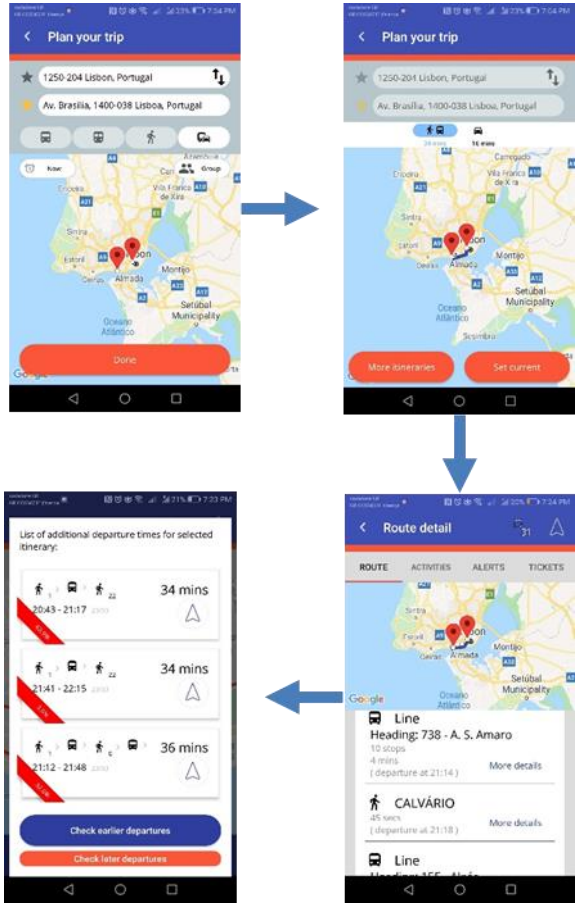


Solo travelling in Lisbon



Main functionalities used

- Log-in
  - Profile has been created which contains personal data
  - History of itineraries and favorite places
- Mode choice model
  - Input: personal and travel behavoral characteristics (e.g. age, car ownership, time flexibility)
  - Output: prefered mode based on the user's characteristics
- Journey Planner
  - Results from the OTP or from the Journey planner of CMFs
- Time of departure model
  - Input: personal and travel behavioral characteristics
  - Output: suggested itineraries with different time of departures based on the user's characteristics

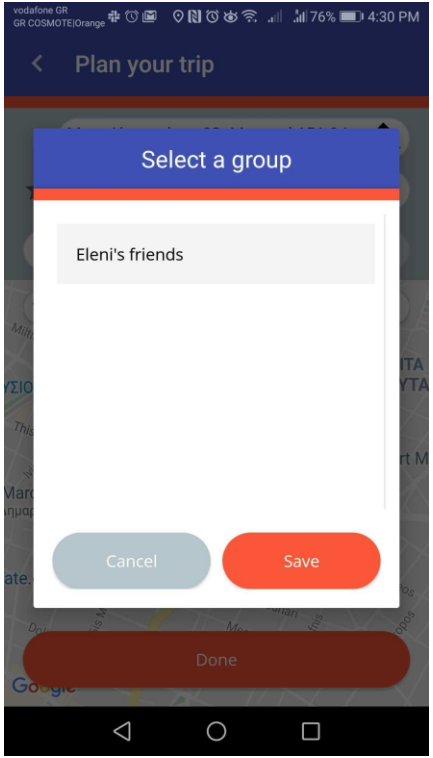


Group travelling Barcelona

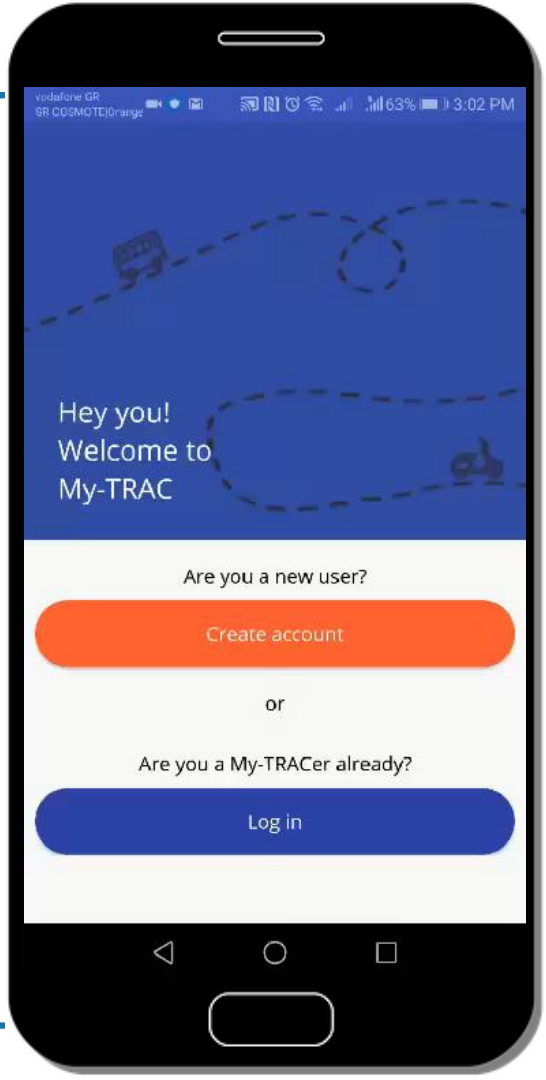
Ismini Stroumpou – Sparsity Technologies

My-TRAC: Group travelling Barcelona

- Data used
  - GTFS of Barcelona
  - Personal data of the user
  - POIs Library of Barcelona
- Persona
  - Woman, 35 years old, leisure travel
- Scenario
  - Ismini is in Barcelona and wants meet with her friends around Sagrada Familia. She is a registered user. She whats to get personalize infomation for activities and share her itinerary with her friends to join her

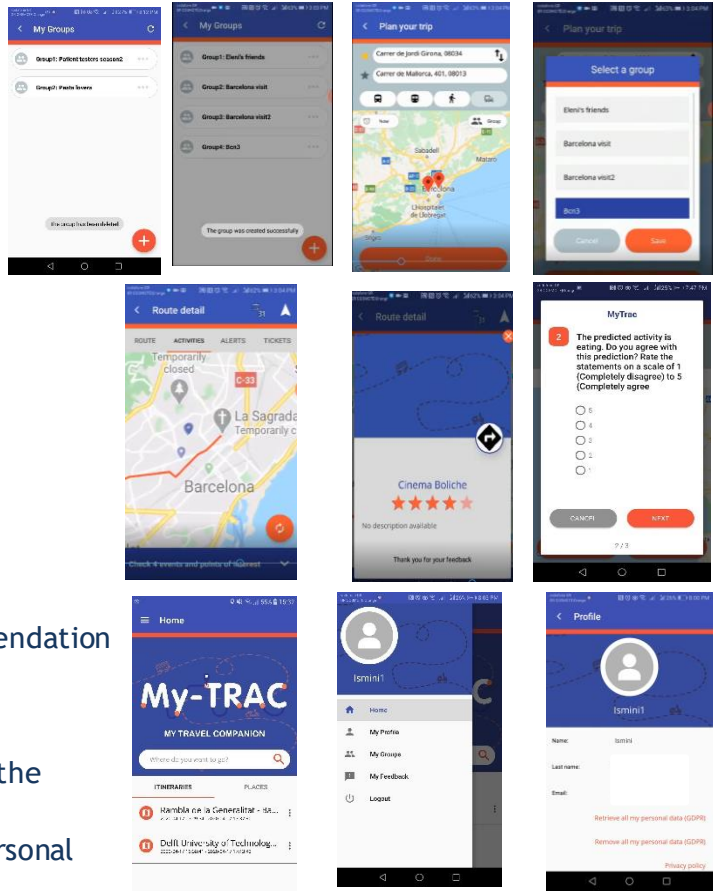


Group in Barcelona



Main functionalities used

- Log-in
- Group creation
  - Identification and invitation of users to join the group
  - Pop up message to the invited user to accept
  - Pop up message if he/she accepted to join the group
- Journey Planner
- Itinerary sharing
  - Choose the group and share the itinerary to the group
- Activities and recommendation model
  - Input: personal and travel behavioral characteristics
  - Output: suggested activities
  - Rating of these activities and purpose to get better recommendation in the next request
- Data retrieve
  - Request of process and retrieve data and email is sent with the notification
  - By 2 weeks the user receives an other email with his/her personal data in pdf



Questions ?

Conclusion

Shift2Rail

WEBINARS

Moving around Europe seamlessly

SERVICE PROVIDERS' PERSPECTIVE

14 MAY AT 10.00 CET

COHESIVE

CONNECTIVE

MaaSive

My-TRAC

ShiftMaaS

sprint

Thank you for your attention

@Shift2Rail_JU
#Horizon2020

My-TRAC ShiftMaaS sprint