Session 2

New transport modelling, business models and mobility services in the post COVID-19 era

Tamara Djukic	Dirk Schindler	Christof Schminke	Ioanna Fergadiotou
Project manager at AIMSUN	Product Manager Air Operations at AIRBUS	Managing Director at TRAFI	R&D Director at INLECOM

Managing the unexpected

SUMP and new mobility services during COVID-19

Webinar - 14 December 2020 - 14:00 CET

HARMONY

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 815269

Part of: CIVITAS

Invited project

LEAD

14/12/2020

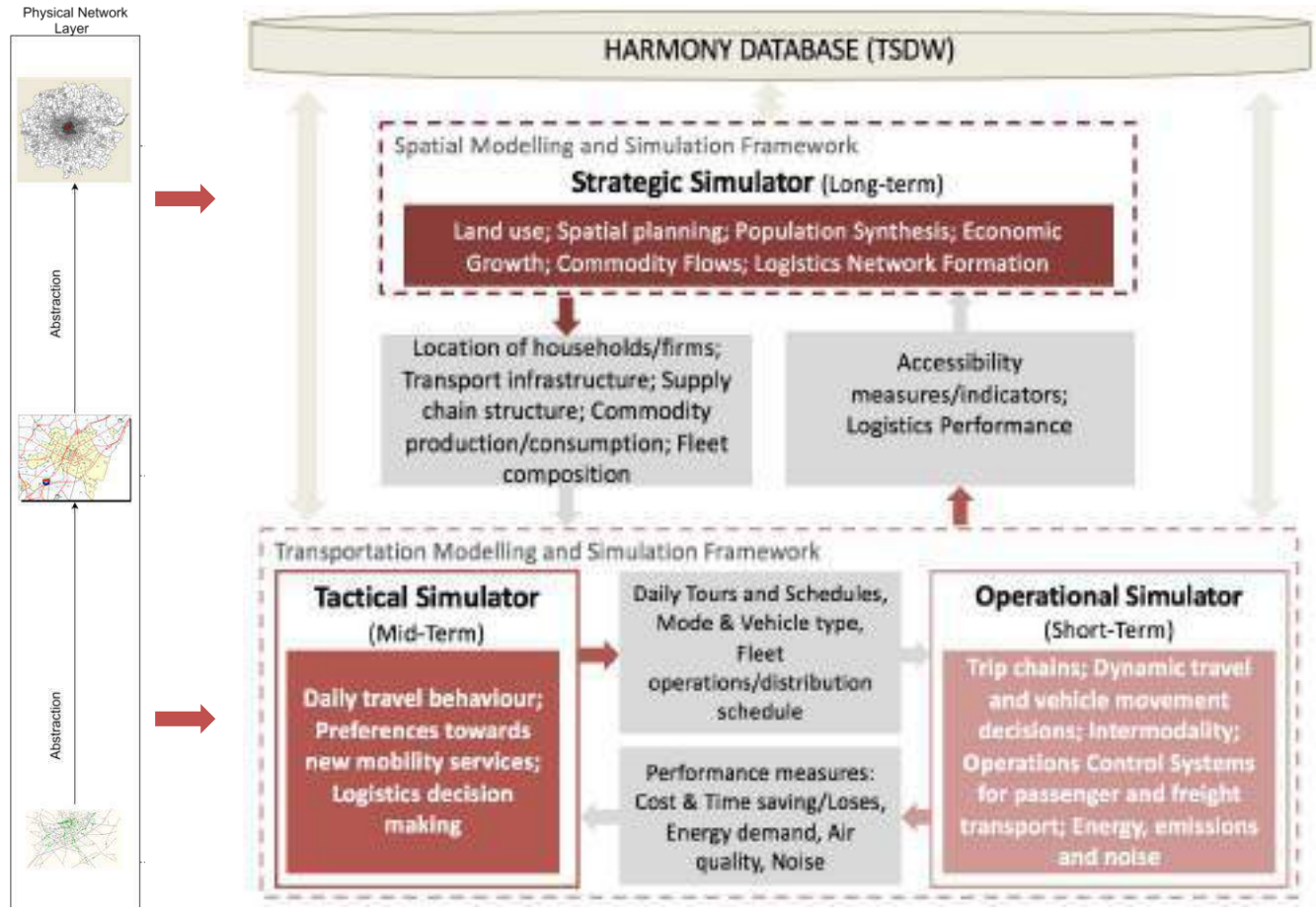
Emerging mobility scenarios in HARMONY Model Suite

Dr Tamara Djukic, Aimsun

aimsun.
A Siemens Business

HARMONY model suite

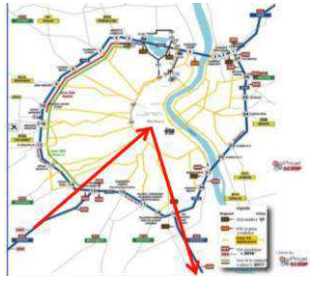
- ***Any major change in mobility landscape, either from supply or demand side, has a potential impact on transport models.***
- *Decision support systems that reproduce emerging mobility concepts*
- *An integration is a straightforward way to model mobility*



HARMONY model suite

Unmanned aircraft systems Traffic Management

Agent-based passenger controller



Agent-based freight distribution controller

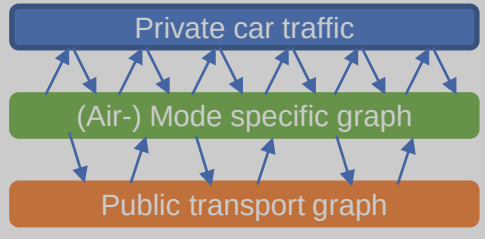
Energy, emissions and noise models

T7.1 Multimodal network models

Aimsun Next

Activity demand (WP5 + WP6)

T7.6 Operational Supply simulator



Tactical demand simulator (activity demand)

Strategic simulator

HARMONY metropolitan areas

Emerging scenarios

Trailblazing

Rotterdam
- Electric AV demonstration - freight
- HARMONY Model Suite - Freight

Oxfordshire
- Electric AV demonstration - Passenger & freight
- Drones demonstration - Freight
- HARMONY Model Suite - Passenger

Aspiring

Athens
- HARMONY Model Suite - Passenger

Turin
- HARMONY Model Suite - Passenger

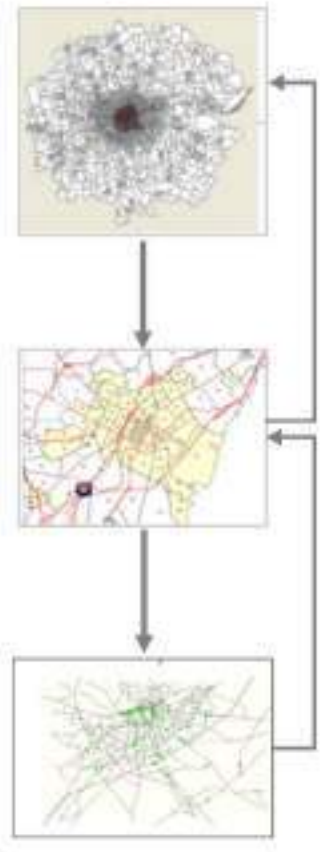
Follower

Trikala
- Drones demonstration for medical purposes

GZM
- Adopter metropolitan area

HARMONY emerging scenarios

COVID-19 scenarios



Strategic level –

Regional economic model to capture the impact of COVID 19 economic crisis on employment and income (subsequently on mobility), new car ownership models, land-use models for new hospital scenarios and logistics

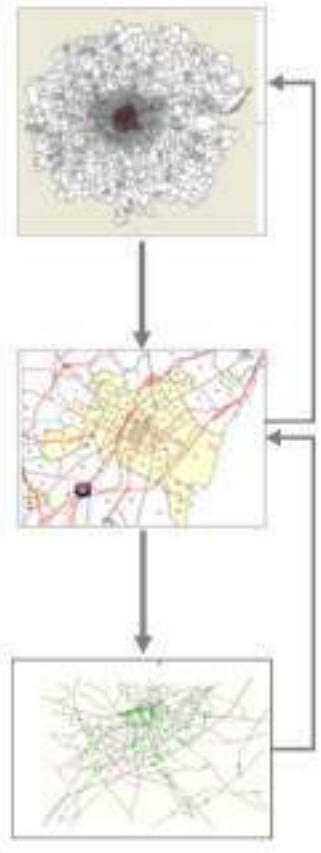
Tactical level –

Passenger mode choice and activity models for new mobility services supported by app-based questionnaires to capture the effect of COVID-19 on habitual activities and travel choices, *Freight* simulator to capture impact of increased demand for e-commerce

Operational level –

MaaS capacity and services modelling, freight control to capture new city logistics schemes and policies, impact of the infrastructure pop up measures and redesign of urban space, drones delivery and surveillance scenarios

HARMONY
Emerging scenarios



Foreseen scenarios

Spatial redesign	Low tax industrial areas	Green belt zoning policies	Regional growth boundaries
Large scale transport infrastructure	New residential areas (towns/ villages)	Regional industrial areas	
Mobility technologies & services	Electric AVs for passenger and freight	Mobility-as-a-Service	
Crowdshipping	(Heavy-lift) cargo drones	On-demand microtransit	
Soft policies (Incl. scenarios)	Low emission zones	Uninterrupted walking routes	Transit hubs
Parking locations (park&ride)	Loading/unloading locations	Provision of real-time information	
Hard policies (Incl. scenarios)	Network (lanes and speed)	Fuel charging infrastructure	Stations / Stops
Drone landing pads	Consolidation centres	Redesign of transport infrastructure	Cycling highways

Thank you!

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HARMONY

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Invited project

14/12/2020

New business ideas and mobility services scenarios in Airbus Defence and Space

Dirk Schindler

AIRBUS

Airbus Capabilities in A/UTM

(**A**ir / **U**nmanned aircraft systems **T**raffic **M**anagement)

Overall Air Traffic Management is severely impacted by COVID-19. „Normal“ ops expected during 2025.

Functions & Services

- Aeronautical Data Management
- Registration & Fleet Management
- Dynamic Airspace Management
- Route Planning, Scheduling & Optimization
- Flight Plan / 4D-Trajectory Management
- Multi-Sensor Fusion feed into Real-Time Air Picture
- Automated Track Generation, Tracking & Monitoring

AIRBUS

Airbus Capabilities in A/UTM

(**A**ir / **U**nmanned aircraft systems **T**raffic **M**anagement)

Overall Air Traffic Management is severely impacted by COVID-19. „Normal“ ops expected during 2025.

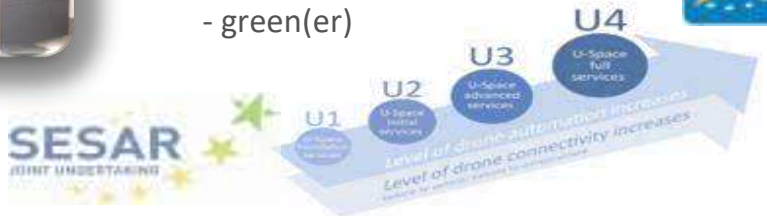
Current reduction in Air Traffic as an opportunity(?)

Actual reduced Air Traffic leads to low load on ATM systems.

(Not withstanding the sad and severe impact of the COVID-19 pandemic!)

This could be seen as an opportunity to work intensively to evolve today’s ATM systems in order to make them

- futureproof.
- sustainable and
- green(er)



EASA
European Aviation Safety Agency

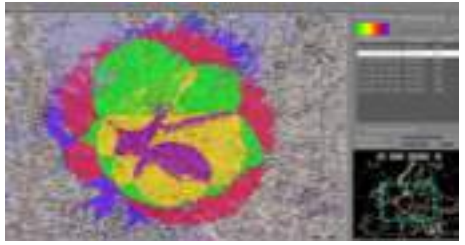
AIRBUS

Examples of related systems and projects

Military:

German Improved Air Defence System (GIADS)

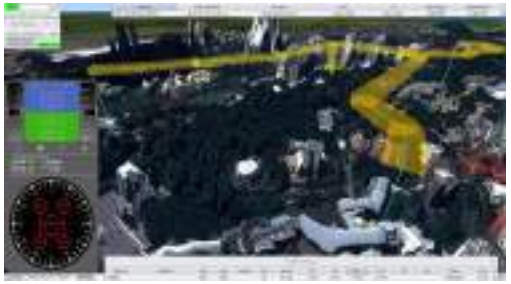




Civil:

Skyways (Singapore), SESAR (Single European Sky ATM Research), HARMONY (European Commission)






GRIFF

AIRBUS

Air Transport Demonstration with Drones

Planned at Oxfordshire in 2021

Automatisation in Flight Plan Management

Automatisation in low level Airspace Management

Coordinated ground and air Traffic & Transport services

AIRBUS

On the path to future contactless aerial delivery

- Managed by the City Council
- Supported by Milton Park Administration

- Integrated into the Smart City Traffic and Transport system
- Combining ground transport with aerial transport
- Autonomous vehicle coordination (on the ground and in the air)
- In widely automated processes
- Working towards sustainable, green and contactless services

AIRBUS

On the path to future contactless aerial delivery

Effects of pandemic situation

- Interest for autonomous, contact-free delivery in the future rises

- Increased home office, enhanced social distancing
- Increased web-communication services requested
- A push for web-security solutions
  - Secure exchange gateways foreseen
- Public acceptance (seems) increased

AIRBUS

Airbus in the Corona pandemic (1/3)

Airbus produced protective face masks by 3D-printing

The completed 3D-printed visor frames produced at Airbus' Spanish sites were subsequently distributed to local hospitals.

Airbus provided the Mobile Hospital Module

In order to separate Corona-positive from non-infected persons before entering the hospital a Mobile Hospital Module was provided by Airbus.

AIRBUS

Airbus in the Corona pandemic (2/3)

Pléiades captures the extraordinary rapid construction of the Wuhan new Hospital which started on 25th January and is expected to be completed on 1st February. Using OneDay Tasking.

Pléiades provided images of the site showing how fast the construction of the hospital has evolved.

AIRBUS

Airbus in the Corona pandemic (3/3)

Airbus airship AltAir provides capability to fly over cities, people, crowd at day and at night. Therefore, gathering of highly accurate data is possible.

The data model (see video) provides options for watching, measuring and several measures of analysis, like

-Thermal analysis

-Surface changes

-…

AIRBUS

Thank you!

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AIRBUS

Trafi

MaaS during COVID19, and beyond

100M+

people served

Technology used by

Google lyft gojek

20M+

routing algorithm requests handled per day

4.6

avg. rating in App Store & Google Play

14 **Years** working with cities

80+ **Specialists** with backgrounds from

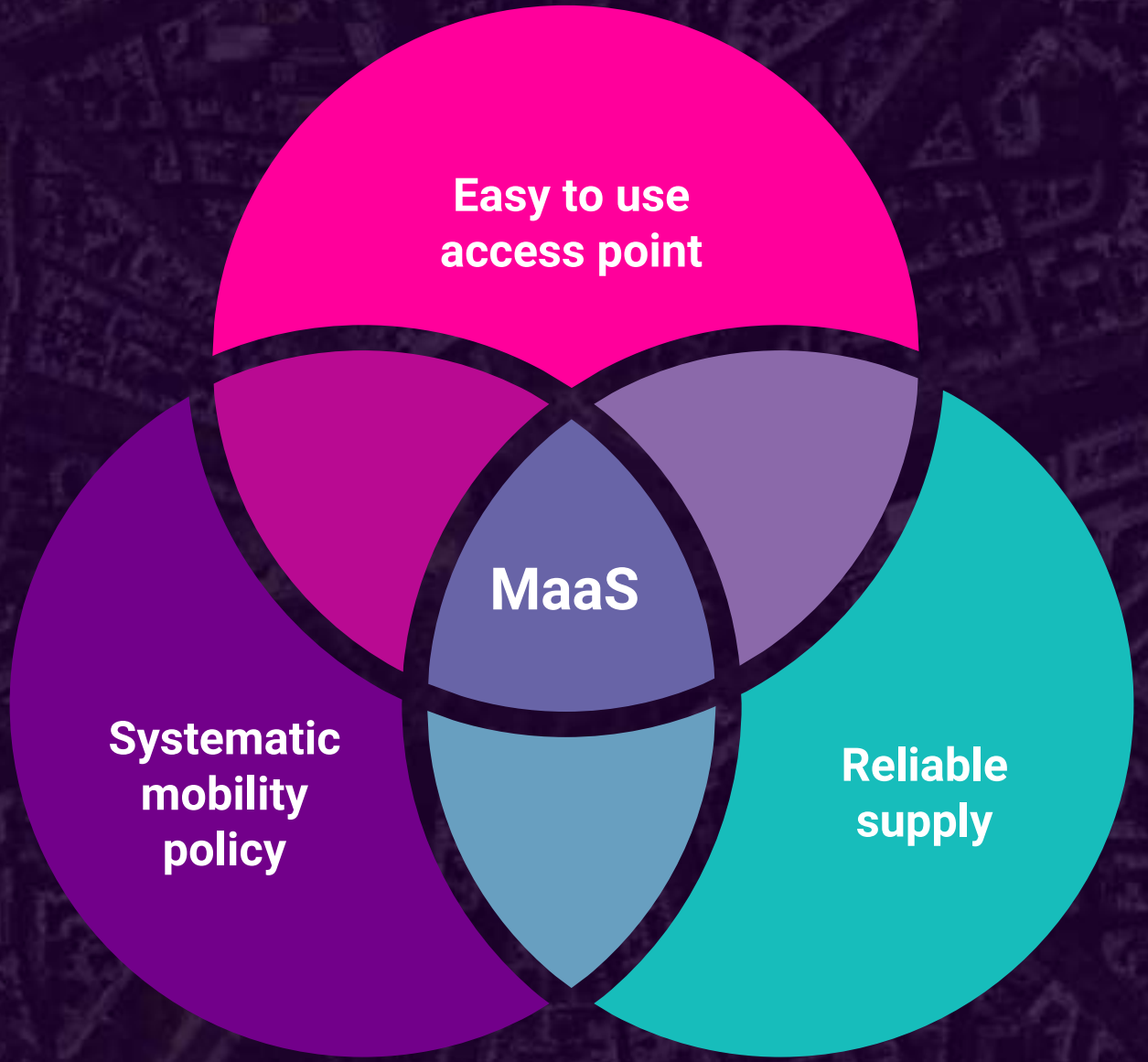
MIT UNIVERSITY OF CAMBRIDGE & others

Used by

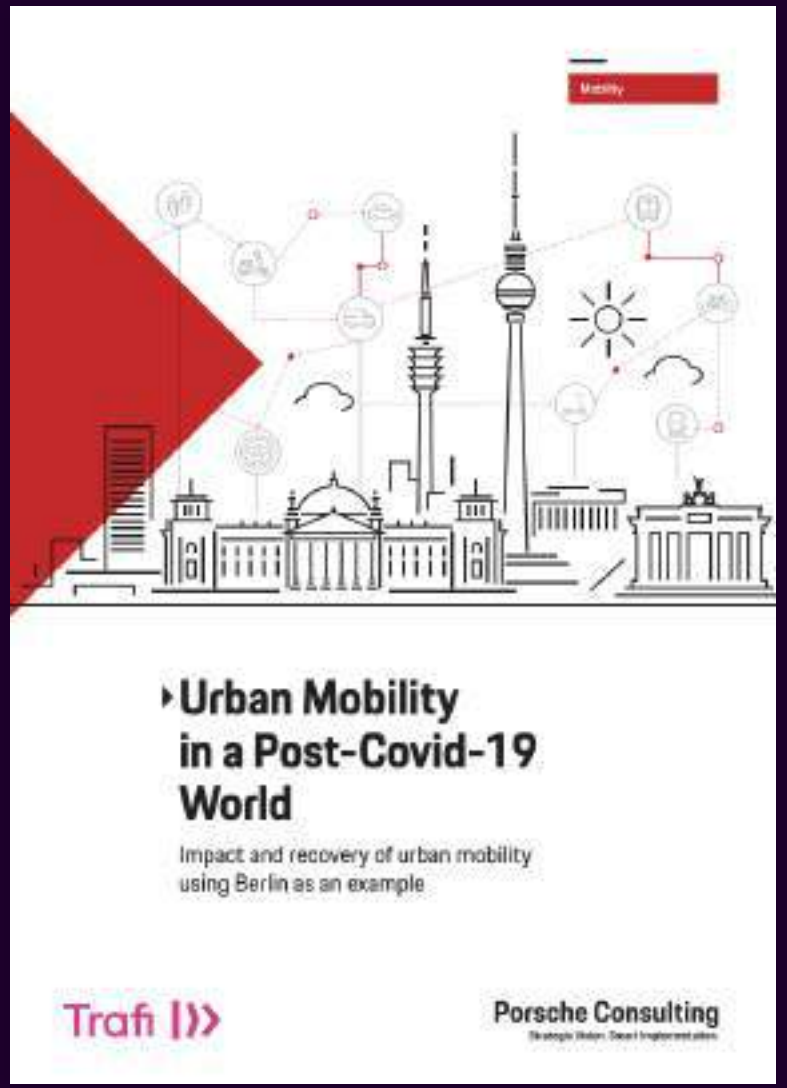
Google lyft gojek & others

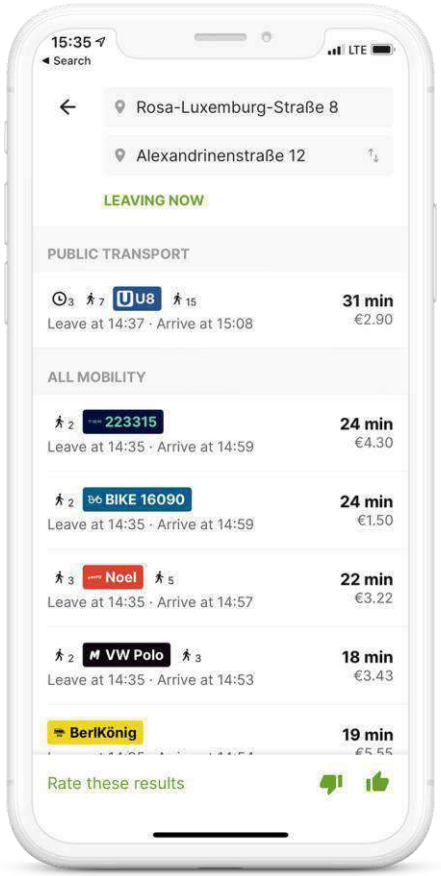
Mobility partners

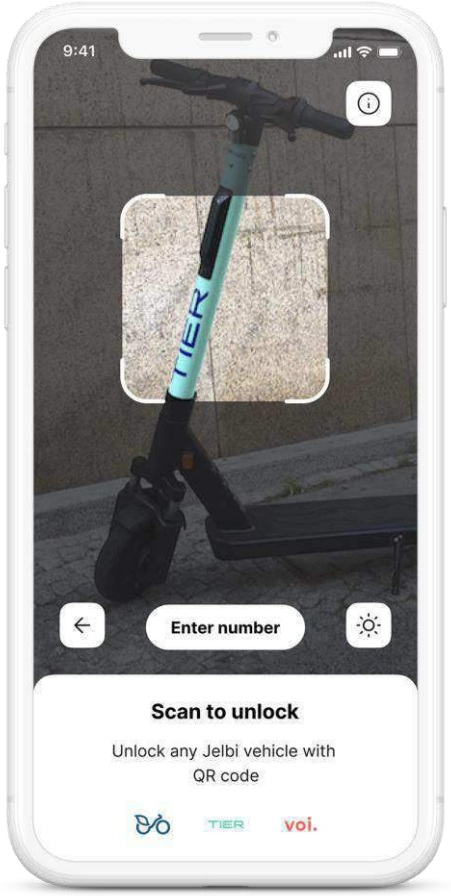
TIER emmy MILES voi. & others

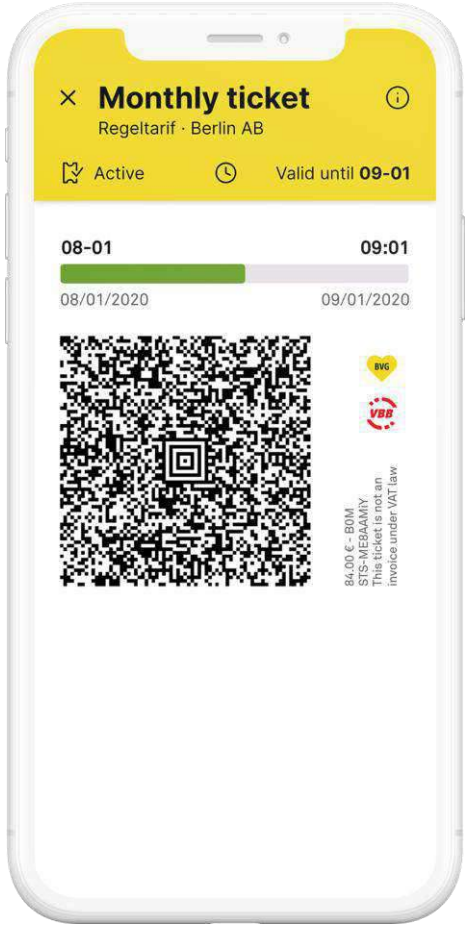

Easy to use
access point
MaaS
Systematic
mobility
policy
Reliable
supply

Understanding mobility in time of crisis





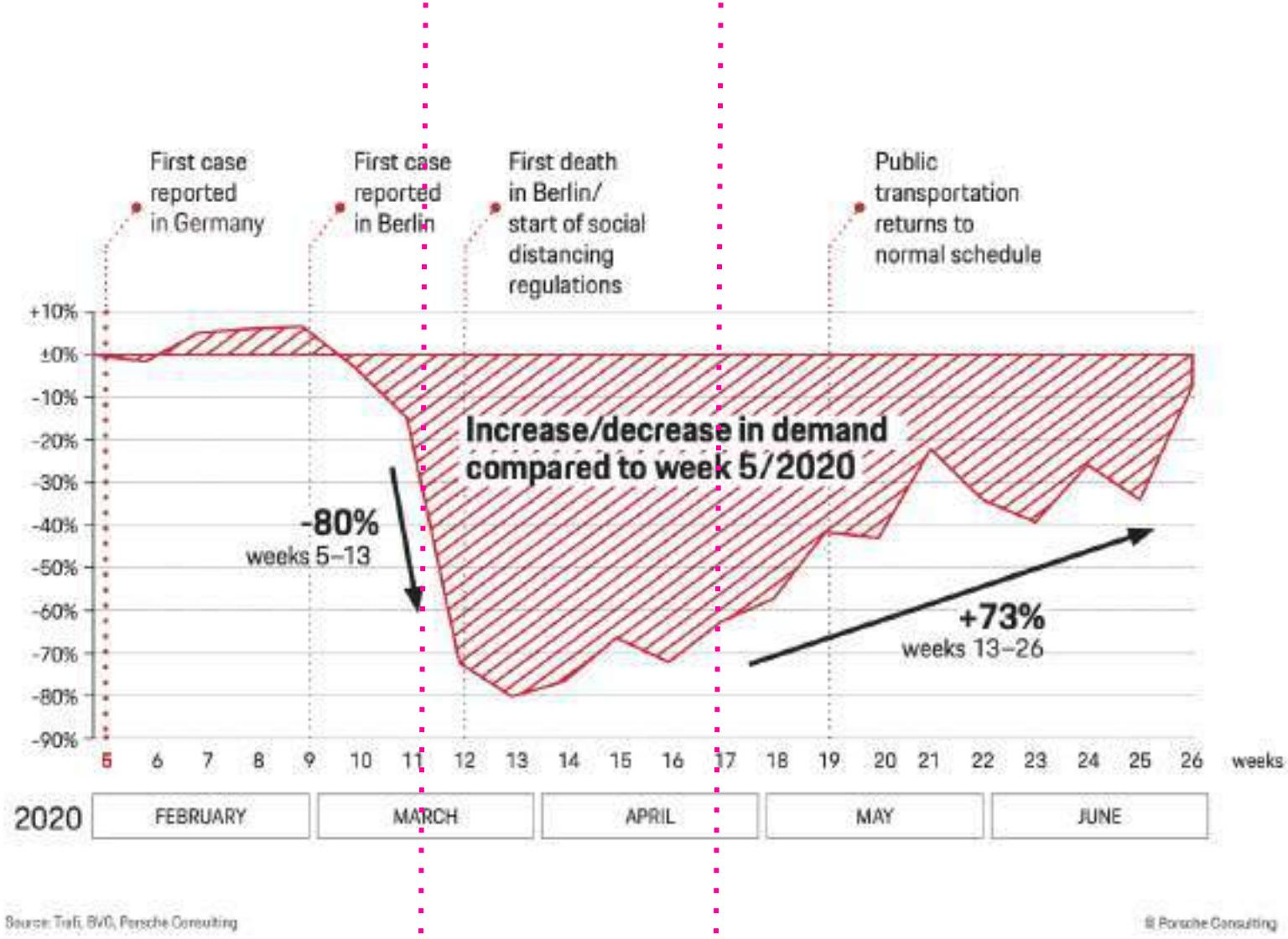




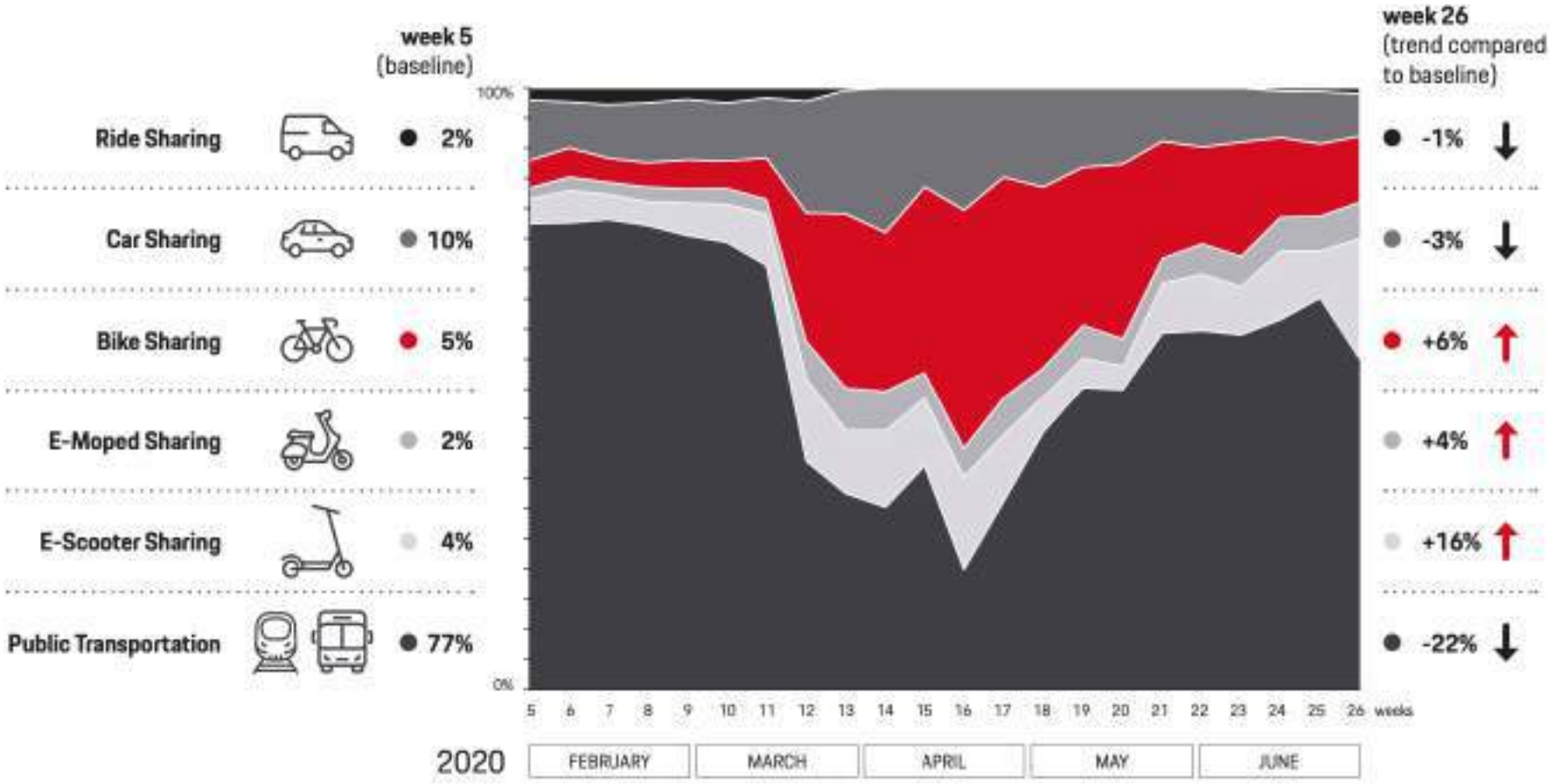
Find, book and pay.

All mobility needs met with one app.

Mobility demand dropped drastically

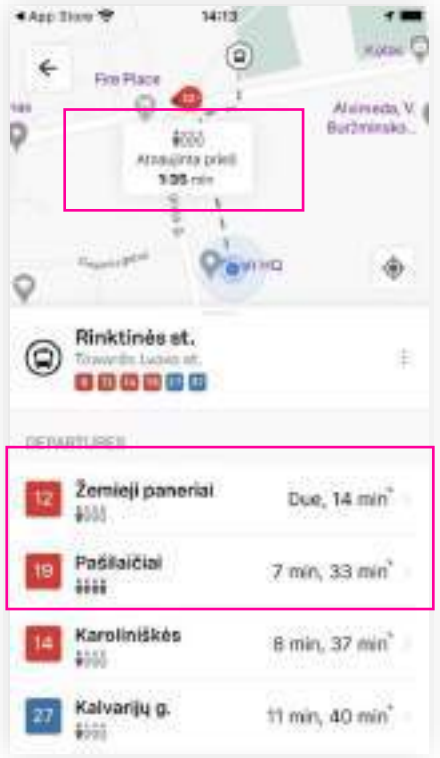


Mobility recovery curve

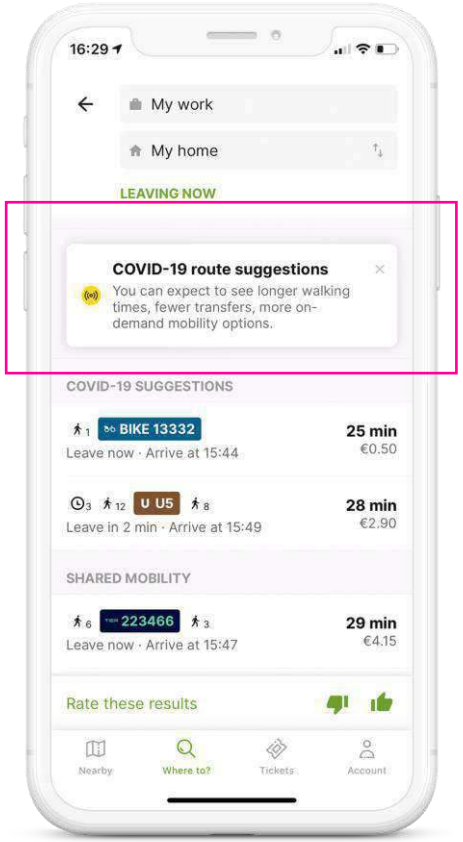


Trafi & Porsche report | Berlin data

Supporting users directly

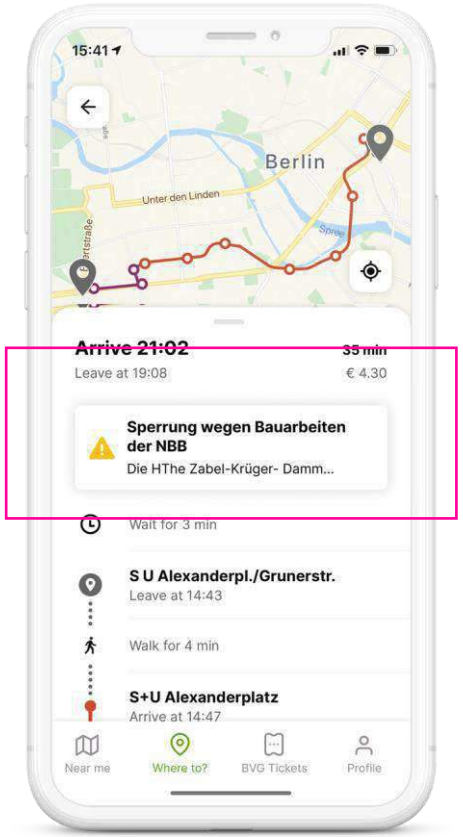


Crowdedness information



Real-time updates

Special **routing** suggestions



Real-time **disruption** alerts

Behavior changes using PT

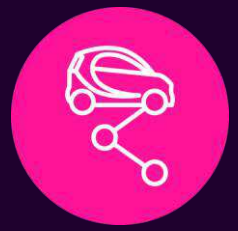
mobility institute berlin

BVG Jelbi

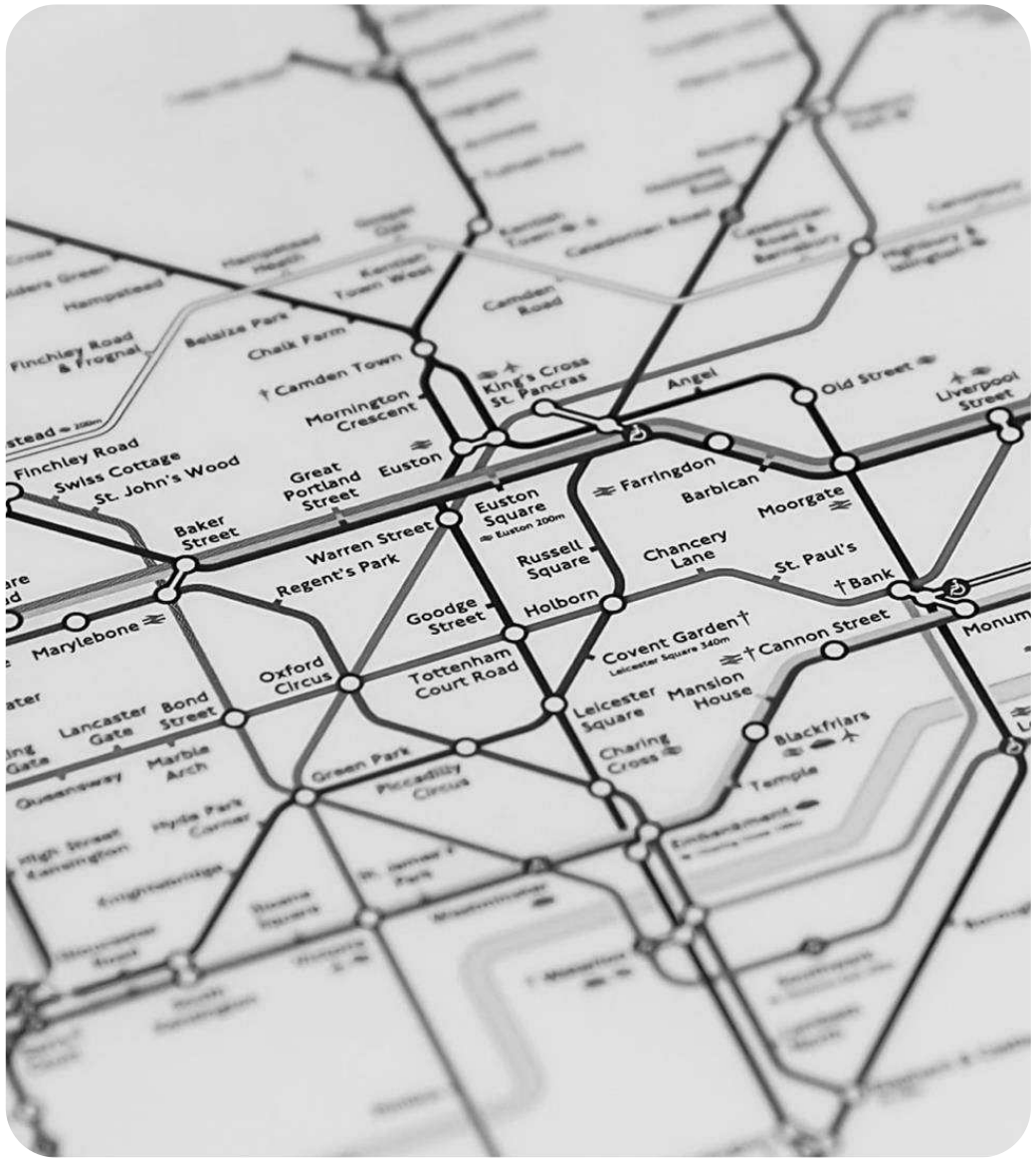
Bookings of PT and shared mobility reversed

Switched to short-term PT tickets

Faster return to PT via MaaS platforms



While PT usage re-increased, other shared options did not drop


Hampstead
Finchley Road & Frognal
Belsize Park
Chalk Farm
Camden Road
† Camden Town
Mornington Crescent
King's Cross St. Pancras
Angel
Old Street
Liverpool Street
Finchley Road
Swiss Cottage
St. John's Wood
Great Portland Street
Euston
Euston Square
Farringdon
Barbican
Moorgate
Baker Street
Warren Street
Regent's Park
Russell Square
Chancery Lane
St. Paul's
† Bank
Marylebone
Goodge Street
Holborn
Covent Garden †
† Cannon Street
Oxford Circus
Tottenham Court Road
Leicester Square
Mansion House
Lancaster Gate
Bond Street
Marble Arch
Green Park
Piccadilly Circus
Charing Cross
Blackfriars
Temple
Queensway
Hyde Park Corner

+

Any Questions?

contact me at: christof@trafi.com

HARMONY

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 816269

Invited project

LEAD

14/12/2020

LEAD: Low-Emission Adaptive last mile logistics supporting on demand economy through Digital Twins

Ioanna Fergadiotou – INLECOM

Context

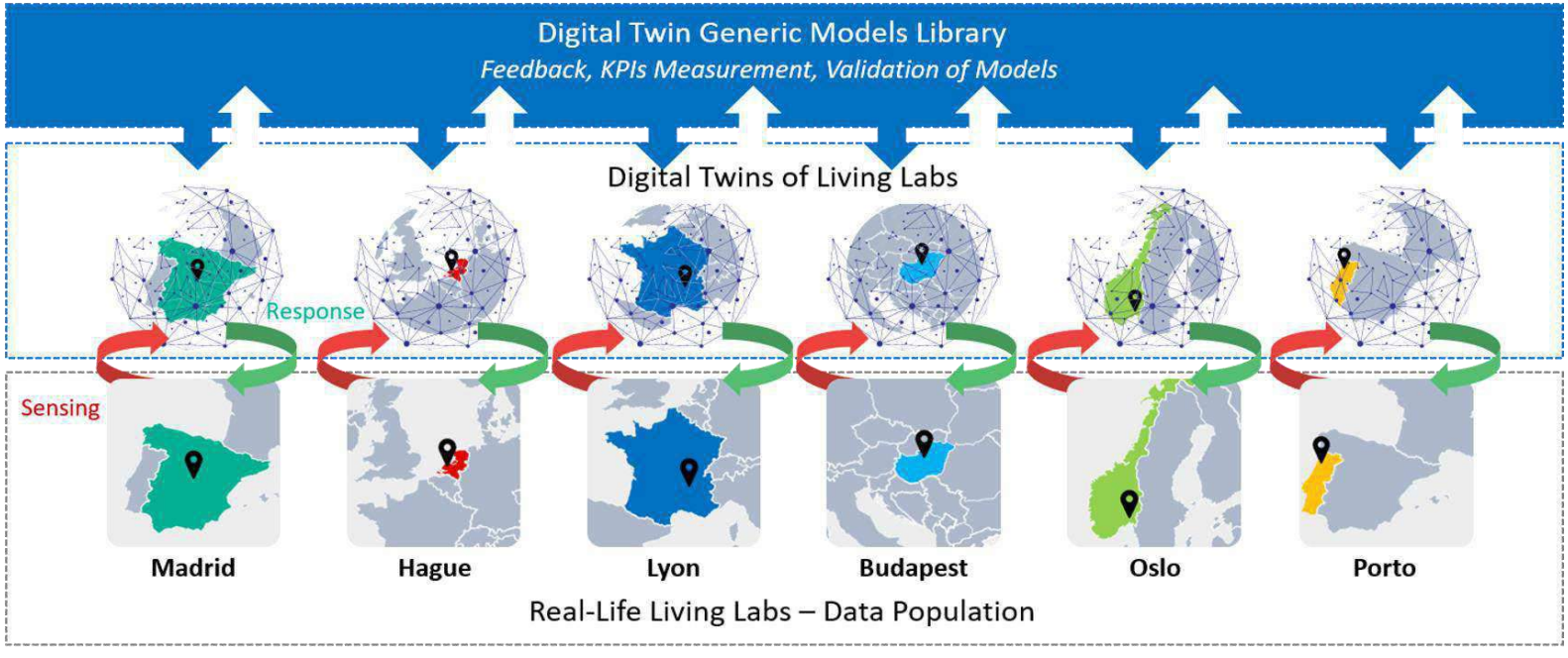
- Rise on-demand logistics stress last mile delivery systems
- **Customer:** responsive system for customised products
- **Industry:** instant delivery
- **Cities:** possible negative consequences.

Impact of COVID-19 on Last Mile

- Online deliveries taking over brick-and-mortar stores
- Increased last-mile logistics demand and complexity
- New services to prioritize safety, touchless delivery
- Fast response, urgent deliveries (food, pharmaceuticals)
- Differentiating with Last-Mile delivery
- New synergies and business models (e.g. Uberisation of supermarket chains)
- Optimisation, optimizing routes for a quicker delivery

LEAD Vision

- Digital Twins of urban logistics networks in six cities (TEN-T urban nodes), to support experimentation and decision making with on-demand logistics operations in a public-private urban setting.
- City logistics solutions that address the requirements of the on-demand economy and the pressures caused by the increase of parcel deliveries while aligning competing interests and creating value for all different stakeholders.



LEAD Strategies

Each solution combine a number of measures coined as LEAD Strategies to cover the complete dynamics and complexity of a city's logistics challenges.

1

Innovative business models

with a view to optimising the performance of last mile logistics (based on volatility of demand, delivery life cycles and costs) in response to the challenges posed by the on demand economy

2

Agile freight storage and distribution

Agile schemes for urban freight storage and last mile distribution, including crowdsourced shipping, capacity sharing, multi-echelon and Physical Internet inspired approaches

3

Low emission delivery vehicles

including Electric Delivery Vehicles (EDVs), hybrid and automated vehicles for freight delivery like cargo-bikes, delivery robots and droids -walkers will also be considered

4

Smart data-driven logistics solutions

for shared, connected and low-emission logistics operations, empowered by an adaptive modelling approach and Digital Twin models, applied in real-life environments

6 Living Labs

Transforming a Parking Lot to an Urban Consolidation Centre

Integrated last-mile logistics with demand-supply matching platforms

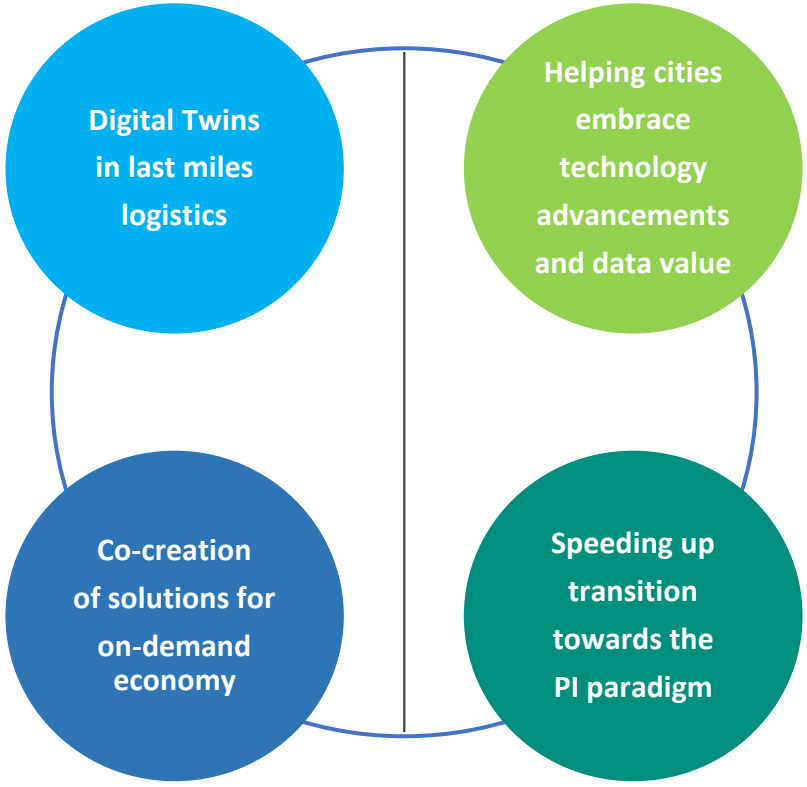
Validation of last mile distribution models with EDVs, AVs

Turning Retail stores to electric vehicles charging stations

Green Crowdshipping through the mass transit network

Spatial Planning of Inner-City Loading Areas

LEAD Innovations



Expected Impacts

Impact 1	Impact 2	Impact 3
• Clear understanding of cost-effective strategies, measures and tools to achieve essentially zero emission city logistics in major European urban centres by 2030.	• New tested, demonstrated practices and solutions for better cooperation between suppliers, shippers and urban/ regions policy makers (planners)	• Clearly provide inputs for the preparation and implementation of SULPs, SUMPs and other planning tools (big data and real-time traffic management)

Green Deal & Strategic Transport R&I Agenda (STRIA) Roadmap

Contribution to Green Deal plan ambitions by promoting
Sustainable Mobility, Clean energy
Zero pollution

- electrification
- alternative fuels
- vehicle design and manufacturing
- connected and automated transport
- network and traffic mgt systems
- smart mobility and services
- infrastructure

Transferability Platform

Six external local authorities will join our Transferability Platform and benefit from a tailored transferability programme building upon LEAD's results, including capacity-building, training, technical visits, interactive workshops and customised feedback.

What is in it for you?

- Interviews and surveys for the identification and analysis of the requirements and necessities of cities, and your expectations towards the LEAD solutions.
- Capacity building activities: webinars, e-training and bilateral meetings/discussions with the partners responsible for the LEAD LL and specific solutions of their interest.
- Direct access to the project's key reports and events, while your will receive tailor-made and hands-on advice on the knowledge and tools developed in LEAD.

Find out more on the call & how to apply on our website:
https://www.leadproject.eu/

DEADLINE: 11th of January

Partners


LEAD
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SEEMEREY
ZLC
SUSTech
HAYLION 海梁科技
Taxi
鹏程电动

Contact us!

Thank you!

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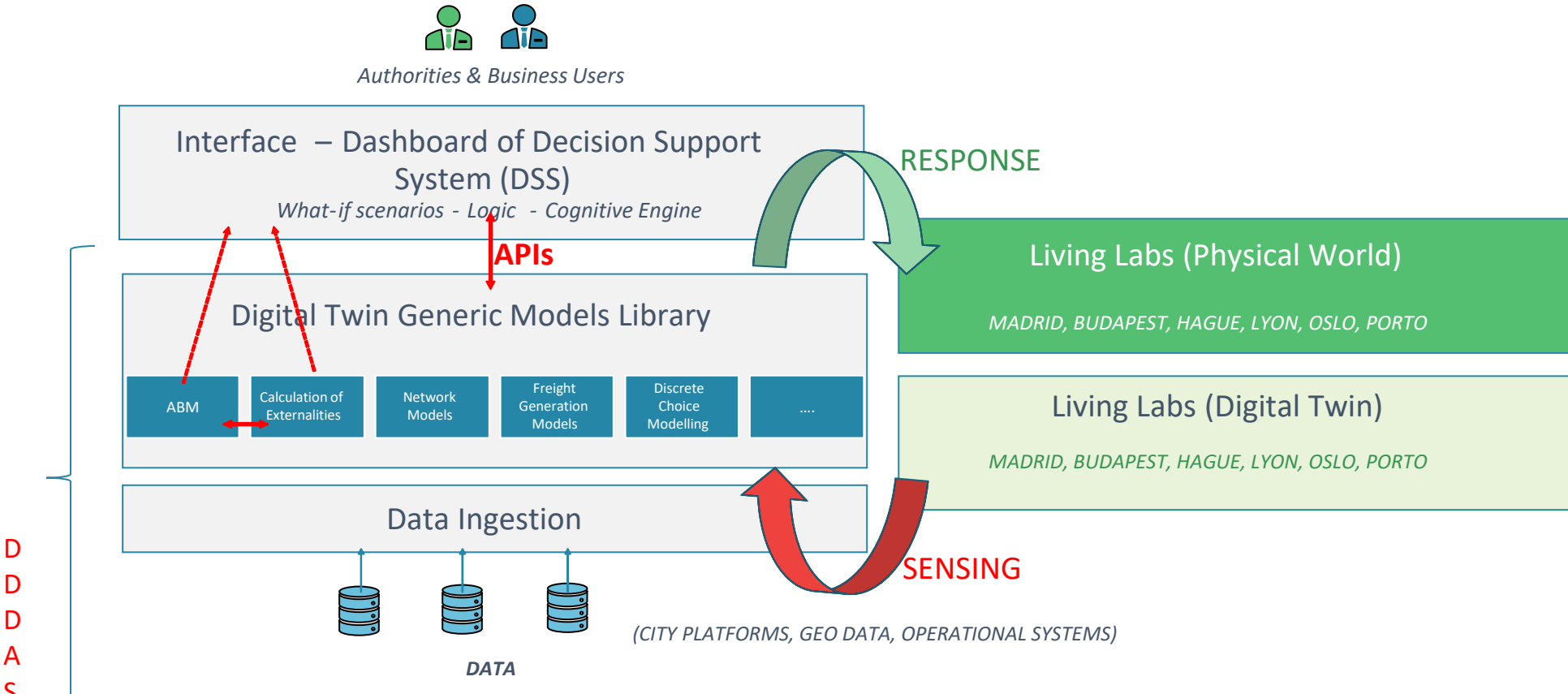
Concept


Authorities & Business Users
Interface – Dashboard of Decision Support System (DSS)
What-if scenarios - Logic - Cognitive Engine
APIs
Digital Twin Generic Models Library
ABM
Calculation of Externalities
Network Models
Freight Generation Models
Discrete Choice Modelling
....
Data Ingestion
DATA
RESPONSE
Living Labs (Physical World)
MADRID, BUDAPEST, HAGUE, LYON, OSLO, PORTO
Living Labs (Digital Twin)
MADRID, BUDAPEST, HAGUE, LYON, OSLO, PORTO
SENSING
(CITY PLATFORMS, GEO DATA, OPERATIONAL SYSTEMS)
DDDAS