

OPTICITIES: paving the way for smart urban transport

In Europe, 45 percent of journeys are made by car, with an average occupancy rate close to one. To encourage use of multimodal public transport, OPTICITIES - a consortium of six European municipalities led by Lyon and supported by industry, research and major European networks - plans to fast track 'plug and play' intelligent transport system (ITS) applications and tools. By **Jean Coldefy**, Greater Lyon ITS Programme Coordinator*



By giving priority to trams or buses at intersections in Gothenburg, travel times are reduced and more people choose public transport over private vehicles

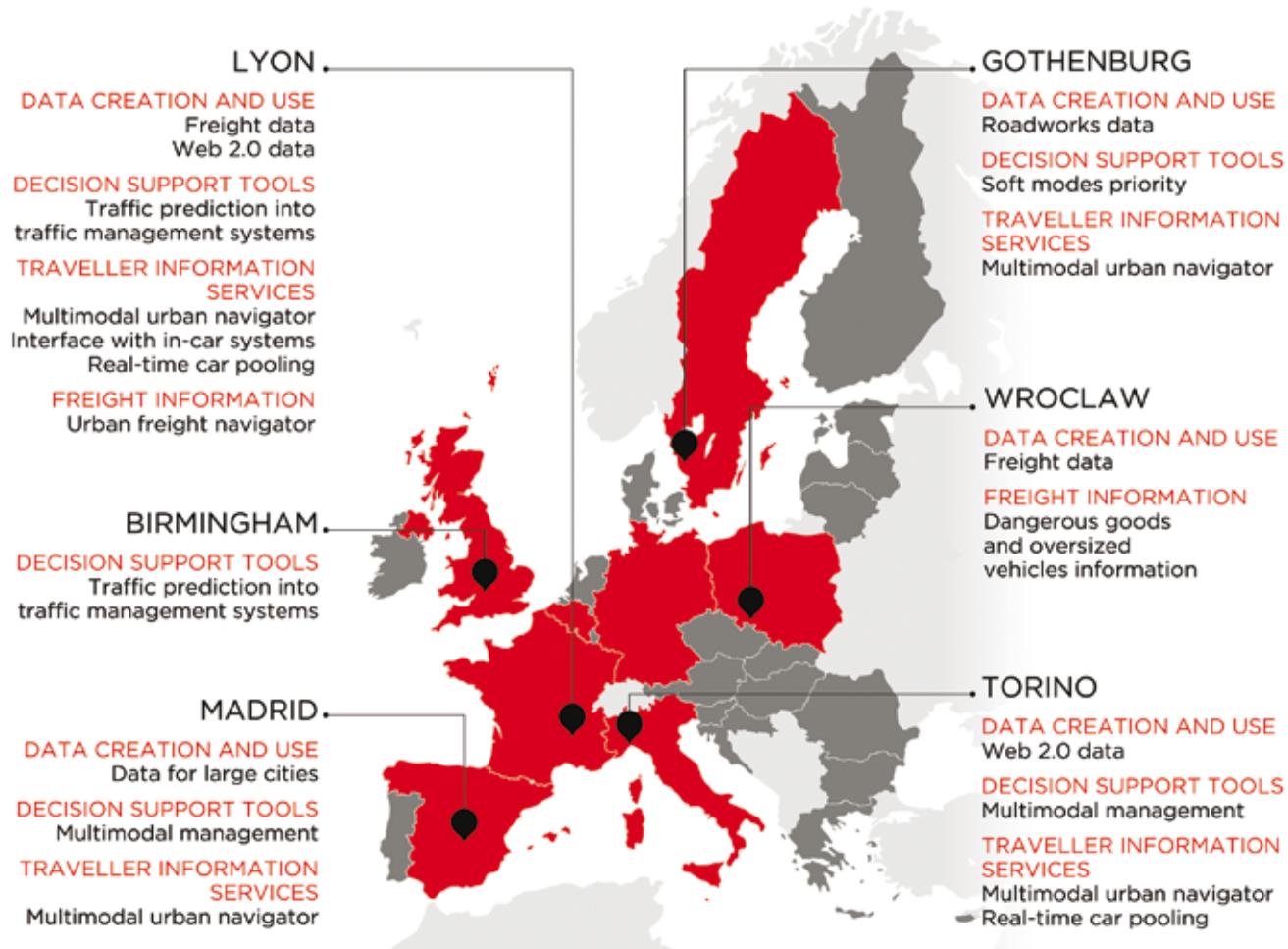


Photo: OPTICITIES

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Intelligent transport systems have yet to make their mark on cities in the European Union, which is mostly down to limited information and uncertainties surrounding their payback periods.

To showcase the versatility of these systems, the EU-funded OPTICITIES consortium has decided to experiment with various applications of ITS aimed at users, public policy makers and service providers. The 20 experiments being carried out under the project offer insight into mobility data format and access, multimodal traffic management, and urban navigation for people and freight.

The experiments will highlight the organisational, environmental and energy savings of the proposed solutions, allowing cities across the continent to calculate their potential cost benefits.

The end goal is to convince other European municipalities to adapt the

ready made OPTICITIES solutions to their unique local context, improving the liveability of their cities and saving money.

Open data for better commutes

For the coming decade, municipal financial constraints will steer policy towards transport system optimisation. As public and private, fixed and mobile sensors become increasingly commonplace, local governments need to harness the power of data to reduce congestion and make life easier for their millions of daily commuters.

Partners in the OPTICITIES project, EUROCITIES members Lyon, Madrid, Birmingham, Turin, Gothenburg and Wroclaw, have pooled their multimodal, real time and historical data from their largely existing infrastructure and services. In collaboration with researchers and software engineers, they are now

developing a European standard for this multimodal urban dataset and its interfaces between public authorities and service providers. The goal is to expand the scope of urban mobility data to not only include public transport, but also real time traffic information, availability of shared cars or bikes, number of free parking spaces, and much more. The cities would then open up this data through standard portals, clearing the way for interoperability. What this translates into is cheaper services and better business models for app developers, who can propose more advanced products that are easily transferable from one city to another. The consortium's work on the standardisation of multimodal data has been so successful that ISO – the largest developer of voluntary international standards – has launched ▶

a normalisation process based on the OPTICITIES proposals.

As privacy and business models are key to the implementation of such an open system, the OPTICITIES team has also put together a guide on contractual arrangements between municipalities and service providers to facilitate the development of alternatively funded mobility services.

to improve public mobility services by calculating the reachability of local points of interest and identifying the multimodal interchanges most in need of investment.

Other local challenges, such as transforming Turin's modal split from 53 percent car use to a higher proportion of public transport, can also be solved with ITS. By working

or buses at intersections: travel times are reduced and more people choose public transport over private car. This system has already been developed by OPTICITIES partner Gothenburg and will be tested in the city later this year.

ITS and properly harnessed data can also improve information exchange. Coordination between transport services can easily become chaotic.



Madrid aims to bring together mobility datasets to provide accurate and up-to-date information to commuters, operators and traffic managers

Greener city mobility through ITS

When connected to an ITS, the multimodal data that cities own can also help reduce local carbon footprints and better organise transport. With this in mind, OPTICITIES is combining real time information on all modes and operators with an evaluation of the state of the network. Placing all these elements onto a map allows the municipality to identify how

with the regional transport authority, the polytechnic university and a local telematics company, the Italian city will calculate point-to-point travel maps using various modal combinations, adapting schedules and traffic restrictions in order to encourage multimodality, decrease congestion and shorten travel times within the entire region. Another excellent way in which ITS can support soft mobility is by giving priority to trams

Consider for example the decision making complexities of cities such as Madrid: the metro, bus and urban rail system is overseen by the metropolitan transport authority, while car and bicycle traffic is managed directly by the city council. By taking part in OPTICITIES, the two local authorities aim to bring together their local mobility datasets and cooperate on providing accurate and up-to-date information to commuters,

operators and traffic managers. This is especially useful in case of accidents, as the system would help coordinate emergency services, while diverting traffic to avoid congestion and informing public transport users of schedule and route changes.

But what if congestion could be foreseen and measures taken in advance could make accidents and CO₂ emissions avoidable? Within the OPTICITIES consortium, the Greater Birmingham Authority and Greater Lyon have been working on a tool that could do just that. Considering that forecasts predict a rise in the number of cars in the Birmingham area by 80,000 and an increase in daily trips by 200,000 over the next 15 years, the city needs to be proactive in managing congestion and road incidents. As part of its ITS strategy, the OPTICITIES decision support tool uses historical trends and real time mobility data to simulate future road congestion levels and alert operators of possible traffic bottlenecks. The tool also allows for the generation of scenarios, demonstrating the effects of various mitigation measures and informing transport operator decisions. In the longer term, fully automated mitigation strategies could be implemented to reduce journey times and minimise environmental impact.

Smart navigation

ITS and smart public transport can significantly improve city environments, especially with the help of enabled citizens. OPTICITIES partners are involving the local community in their work towards greener and free-flowing cities by opening up their mobility data and creating multimodal urban navigators. This makes a huge difference for residents of cities like Madrid, where public transport is provided by over 40 operators, with no unified mobility app. Or for large urban areas like Greater Lyon, where aside from the public network, there are a wide range of shared mobility options. Following the national success of ride-share services, the French city is experimenting with the integration of a carpooling option in its multimodal navigator, allowing

people to take advantage of all forms of transport in the metropolitan area.

The same navigation needs can be extended to logistics. While satellite navigators can draw up the shortest itinerary, it is often poorly adapted for heavy or dangerous goods delivery vehicles, which are subject to height, weight and traffic restrictions. As city logistics account for 40 percent of CO₂ emissions from transport, it is an area with great climate impact reduction potential. OPTICITIES will explore the potential greenhouse gas abatement from freight by developing an urban navigator for deliveries. It will be tested in Wrocław and its goal is to safely and rapidly guide trucks through city environments while taking into account all applicable restrictions and minimising the risk of congestion or accidents.

benefit from its data backbone, at the same time reducing congestion, travel times, and environmental and health costs.

Going beyond OPTICITIES

The overarching vision of this partnership focuses on effectiveness, scalability and transferability, as OPTICITIES aims to expand the European ITS market beyond standalone living labs. The six partner cities don't just want to extend their successful experiments to their entire metropolitan area, but they also aim to develop the reach of generally national-based developers and technologists through the introduction of interoperable solutions. All efforts will be oriented towards reducing traffic congestion and optimising road network operations in order to lower urban CO₂ production by 1.5 million tonnes per year. In the process,

Freight companies can benefit from the multimodal datasets while reducing risks and costs for their urban delivery operations

Business plan check-up

The innovations developed and tested by OPTICITIES partners are meant to illustrate the potential of ITS and collaboration with local and European partners from industry, research and development. All experiments run by the project also explore a business model that could make the investment sustainable.

The cities' multimodal datasets will be opened to foster interoperability and transparent competition. For example, two app developers will test their products in Lyon using the standard data made available by the local authority. Furthermore, all cities and the car industry want the urban navigators to feature links to in-car guidance systems, thus truly connecting all modes. A link to alternative costing options is also established via the integrated real time carpooling module. Moreover, freight companies can benefit from the multimodal datasets while reducing risks and costs for their urban delivery operations. In the end, ITS enables all urban mobility stakeholders to

the cities also aim to shift 6 percent of urban traffic towards soft and public modes by 2020, gaining 3.6 million square metres of public space through better mobility management.

All urban ITS actors are welcome to take part in and learn from this process via the project's stakeholder forum. This portal is intended to share the OPTICITIES achievements with cities considering smart mobility tools, to collect feedback from cities that have already experimented with advanced ITS, and allow the OPTICITIES consortium to learn from their mistakes and good practices. It also aims to function as an early-warning system against lock-in and as a peer-review system for cutting-edge developments. The forum will start collecting your valuable input later this spring. ■

For more information, visit us at www.opticities.com.

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