

# THINKING CITIES

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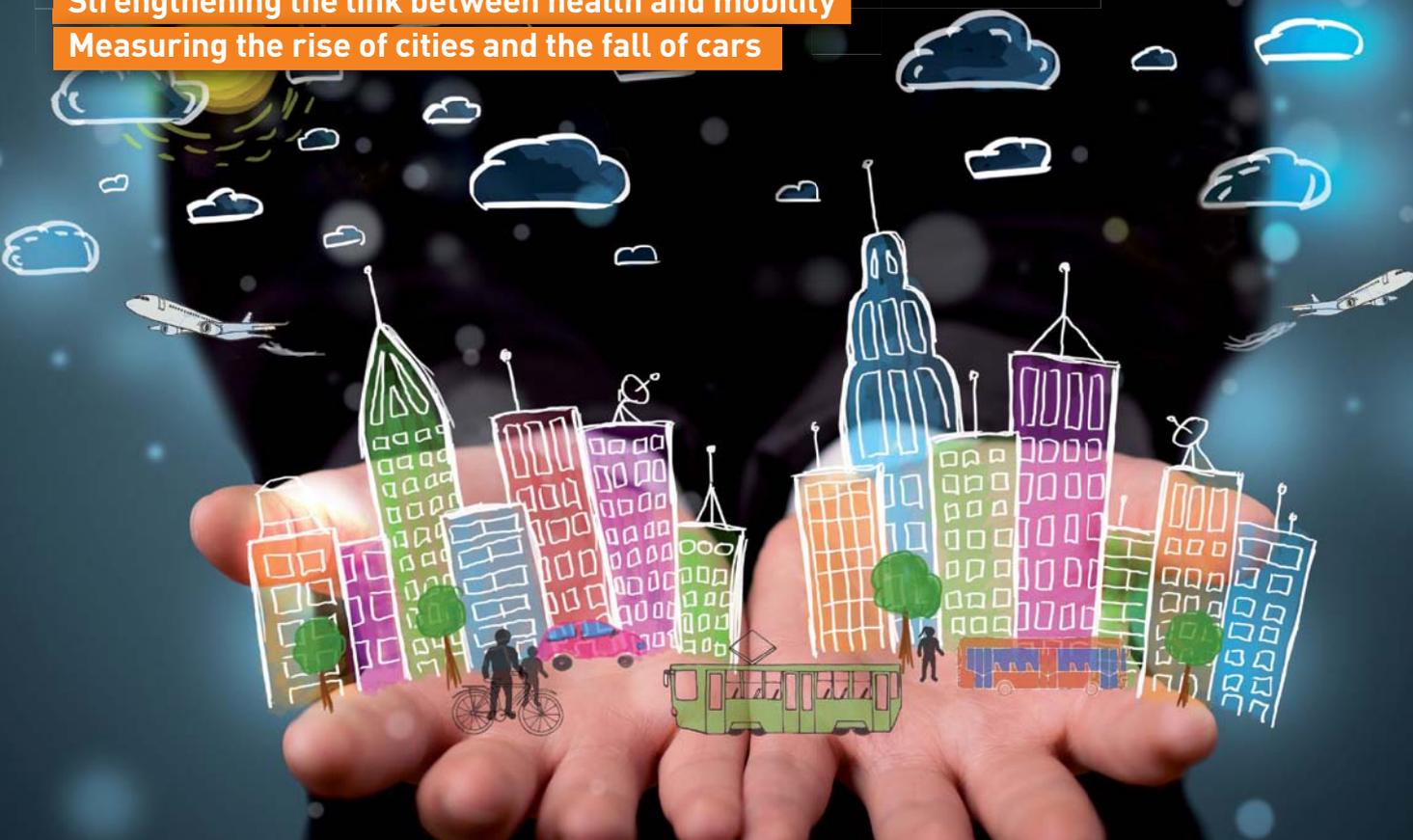
## SMART TRANSPORT FOR CITIES AND REGIONS

# Understanding the intelligent city

How transport can have a positive impact on smart city strategies

Strengthening the link between health and mobility

Measuring the rise of cities and the fall of cars



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# Understanding the intelligent city

**Karen Vancluysen** and **Kevin Borrás** on how and why transport can have such a positive impact on smart city thinking and smart city strategies

**O**n a global scale, cities and industries are developing coherent operational tools to better plan and manage the urban territory and improve the quality of life of citizens.

These tools are the practical translation of a deeper understanding of interdependencies and synergies between sectors such as transport, energy, urban planning, economic development, environment and health. This trend is proof that the 'Smart City' concept has substance and is not just a buzzword.

The EU is addressing the challenge to make cities smarter by means of a package of instruments: research and innovation (Horizon2020), policy development and community building (European Innovation Partnership Smart Cities and Communities) and finance (European Investment Bank, Connecting Europe Facility and EFSI).

Polis is involved in the European Smart Cities Marketplace as manager of the Action Cluster for Sustainable Urban Mobility, and is partner in GrowSmarter, one of the first European Smart Cities Lighthouse projects co-funded by the Horizon2020 Framework Programme for Research & Innovation.

Several Polis members are involved in the Marketplace, in Smart Cities and Communities Lighthouse projects and generally are European pioneers in making their cities smarter. This illustrates that we are closely following European Smart City developments and activities and support the European Commission in making these a success.

Still, as a network representing leading cities and regions working on innovation in local transport, we believe that currently the role and potential of urban mobility in making the city smarter is not sufficiently recognised.

Transport has a lot to offer to the Smart City. We want to ensure that local urban mobility

“  
**We want to ensure that local urban mobility stakeholders can take full responsibility for co-creating the Smart City**  
 ”



**Karen Vancluysen**  
 is secretary general of Polis



**Kevin Borrás**  
 is editor-in-chief of Thinking Cities

stakeholders can take full responsibility for co-creating the Smart City and pursuing Smart City objectives, without transport being made subsidiary to other sectors, such as energy. This can be the basis for appropriate EU institutional arrangements to support local transport actions in Smart Cities.

Polis has just published a position paper presenting its vision on what a Smart City could and should be from a transport perspective. Read the article on page 24.

This issue of *Thinking Cities* magazine, produced exclusively for Polis Annual Conference delegates, looks at how cities are coping with becoming intelligent and growing increasingly smart as their citizens' desires to be ever-more mobile expand exponentially. As Polis opens up to cities and regions outside Europe it's no coincidence that the geographical remit of this publication is also not constrained by international or continental borders.

Nicolas Hauw's intriguing interview with former New York traffic commissioner Samuel Schwartz follows on from previous editions' peeks into how Philadelphia, Chicago, São Paulo and a whole cluster of cities in the Middle East go about providing smart transport and mobility solutions for their inhabitants and visitors.

This issue begins with the focus on how New York City, formerly New Amsterdam, is looking to learn from how we are making our cities in Europe as smart as feasibly possible and ends with a fascinating article focusing on how the original Amsterdam is tackling a very serious failing.

Somehow, that transition from old to new is rather apt. We hope you enjoy reading this issue of *Thinking Cities* and that you make the most of the exceptional line-up of speakers and sessions that have been prepared for you at the 2015 Polis Annual Conference. 🌐

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THINKING  
Highways

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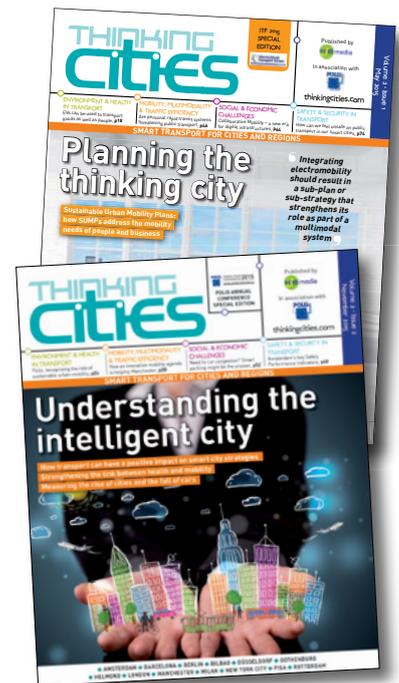
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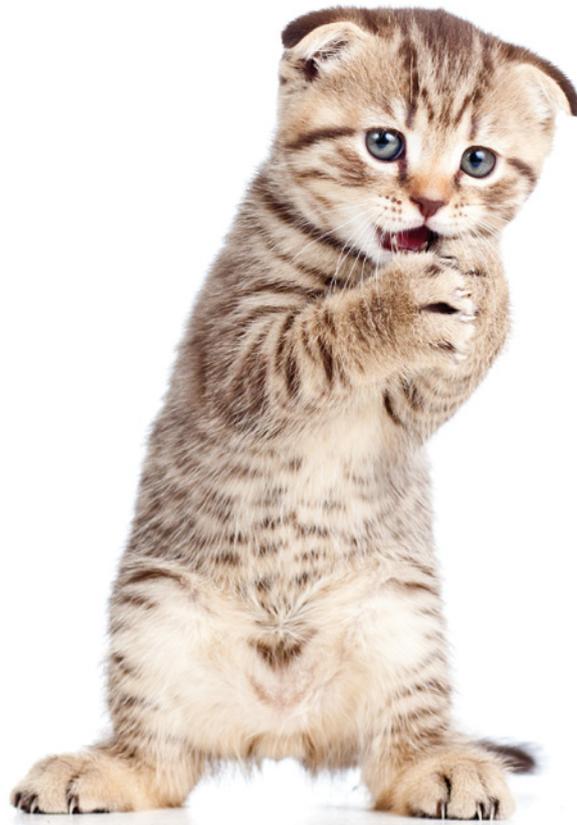


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if it's got something to say



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# Cityview

- o **New York City** – Samuel Schwartz interview by Nicolas Hauw
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What can North American cities like New York learn from their European counterparts?

# An end to gridlock

In September 2015, New York City's former Traffic Commissioner **Samuel Schwartz** published a book entitled *Street Smart: The Rise of Cities and the Fall of Cars* in which he foresees the increase use of public transit and of urban toll systems. POLIS' policy officer **Nicolas Hauw** spoke with the commissioner-turned-author about the future of cities in the USA and what can be learnt for and from European cities



New York City's transportation infrastructure has struggled to keep up with its population growth over the last 20 years

Samuel Schwartz, New York City's former Traffic Commissioner sees a more balanced transportation system as the future of urban mobility



**Nicolas Hauw:** As the former commissioner for New York traffic, what were the biggest transport challenges in you faced in the city when you started? What are the main challenges for urban mobility now?

**Samuel Schwarz:** The biggest problems was failing infrastructure. We had a highway that collapsed, cables on the Brooklyn Bridge failed. We didn't maintain our infrastructure and we had to find the funding to rebuild the infrastructure.

The challenges now are that our population grew fairly rapidly over the last two decades, and our transportation system has not kept up with it. Our subways are the most crowded since WW2, and we don't have the necessary funding in place to keep our transit system in a good state.

**In your view how does this former position differ in terms of governance and decision-making power from a CEO of a European local transport authority?**

Back in the 1980s, I had a good deal of power, but our finances were scarce. I may have had more power than my EU counterparts as I could not only do the engineering work but also the traffic enforcement while at the same time I could institute certain kinds of programmes. I don't think this amount of power does exist in the EU, and that is a mistake, as Public Transport Authorities' CEOs should be able to plan, engineer but also enforce rules.

On the other hand, the EU fully understands the benefit of a more balanced transportation system. In the US, there was too much reliance on the

## EU Public Transport Authorities' CEOs should be able to plan, engineer but also enforce rules

automobile. The US population often thinks about more and wider highways, while my EU counterparts did not seem to encounter this issue that much.

**In an online article you wrote in early September this year, you mentioned the choice that cities have to make between proximity and mobility. How is this reflected in today's city planning in the US?**

We are finding that younger people are extremely mobile and adopt a different lifestyle in terms of transportation patterns. For example in San Francisco, a lot of young people have decided to live downtown, without cars, and use the public transportation system to do their daily activities instead.

In terms of city planning, we are beginning to see cities and mayors implement a new approach toward transportation planning. For example in Salt Lake City, Utah, a Republican mayor invested in transit and a walking environment and encouraged dense development in downtown. In New York City we went from a Republican mayor to a Democrat and very liberal mayor; nonetheless the city kept the same approach and continued the ongoing work. This proves that agreements can be reached at a very local level, which is not the case at the national level.

The federal government played a role after WW2 in developing highways in local areas and had resources to do so with a clear vision on what to achieve at that time. This is no longer the case: funds and vision are clearly lacking at the moment, and the Congress is not passing bills or funding that could cope with the demand.

**Your new book calls for the heavy reduction of cars in cities, but at the same time you seem to accept the idea that a car-free future is a myth. What would be your best advice to local public authorities' managers and urban planners in order to promote a drastic reduction of cars and a shift to public and non-motorised transport modes?**

What I suggest is that cities begin to imagine the



**Transit passengers and pedestrians in New York City – well-catered for but city planners are having to increasingly think about their needs**

year 2030 and look at the transportation services that will be around, including autonomous vehicles. What I fear is that it will be so convenient to use these vehicles that the transportation system will suffer and we will have huge congestion in cities. In that sense, city centers should not allow for too many vehicles. While I do support a market force approach, cities should envisage minimum speed thresholds and pricing for all vehicles that are in the central area. I am personally a huge supporter of pricing. Big cities like London and Stockholm have that already; I hope US cities follow suit.

**Your “Move New York” toll reform proposal suggests the implementation of toll systems in New York. How would such a system work in practice and do you think it would be socially acceptable? Would it be applicable to all TLC-regulated vehicles, including for-hire vehicles?**

We are projecting about 15-20 per cent reduction in vehicles coming in the business district, hence traffic flow will increase by 20 per cent. The for-hire

vehicle should also be assigned congestion charges, with a flexible approach: the slower the speeds, the more you pay. In terms of scope, we should have a regulation that embraces all the services, with clear distinction between private cars and for-hire vehicles.

**Uber backed “Move New York” and has been working closely with the City Council to provide their trip data in order to better understand the current trends and routes taken by for-hire vehicle users. What is your long-term perspective on shared services and their role in restricted access zones as well as open-data sharing?**

For-hire or apps systems are here to stay, we will see more of them and in the future these services will also merge with autonomous vehicles. Google has invested in Uber so I predict what I call “Goobers” traveling our streets by 2030. The market forces along with government should be used to regulate this market. For outlying areas, we should be concerned with social and economic equality,



Photos: Björn Köhler

***An ideal city should make walking easier for citizens and it's healthier - such a city should definitely have a balanced approach between all different modes of transportation***

hence for-hire vehicles should not deprive public transportation because of the forces of Uber and other Transportation Network Companies. Move New York welcomed Uber of course, but it's not surprising since the reform pretty much asks for self-market regulation that Uber advocates for as well.

**The European Union is currently promoting smart cities as a new concept that promotes a better integration between the energy, ICT and transport sector: how does this concept apply to the US, for example in the development of driverless public and private transportation?**

There's no equivalent I can think of in US cities that includes the melding of these different service markets. In terms of driverless transportation, very few governments are looking ahead to the development of autonomous vehicles. But cities like Seattle are trying to envision the year 2030 and how a city should prepare itself. In that sense, we still have a lot of issues to address by then: storage issues for autonomous vehicles, how they perform and their impact on the transit system, plus general legislative rules over autonomous vehicles. We should be forward thinking but unfortunately there is no national approach to that.

**Are there any particular European developments in the urban transport field that the US is looking at with interest and could learn from?**

Cities are looking to some of the EU transportation practices we see in terms of pricing. I found also very interesting what Barcelona did by renaming the transportation department as a mobility department. This clearly defines the way we move: Barcelona found out that most of the trips are taking less than 10 minutes and are often accomplished by walking or cycling. They also introduced

a reduced automobile target, which has no equivalent in the US. This is also true in terms of automation: the US is a bit behind on this issue while the EU is already well advanced in terms of automated parking. I've seen this as effective with underground parking in the EU; it is also something we could use in the US.

Again, to transfer these technologies, we should have a national approach, but at the moment, the country as a whole is not really forward thinking.

**What would be your ideal transportation system in the future in metropolitan areas?**

To me? Walking! An ideal city should make walks easier for citizens and it's healthier. But more generally, such a city should definitely have a balanced approach between all different modes of transportation and let passengers choose their best mode to move around. In that sense, a smart city is the one that takes advantage of all modes and maximizes accessibility, followed by mobility. 🚶

#### FYI

**Samuel "Gridlock" Schwartz** is the former Traffic Commissioner of New York City. Between 1982 and 1986 he led the reorganization of New York's public transportation system. In 1990, Schwartz joined Hayden-Wegman Consulting Engineers, Inc. as Senior Vice President in charge of transportation engineering, infrastructure, quality control and planning, and five years later opened The Sam Schwartz Engineering consultancy.

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# Balance and flow: Cultivating Milan's transport 'chi'

**Maria Berrini** is CEO of AMAT srl, the Milano Municipal Agency for Mobility, Environment and Territory. She has contributed to the AMAT role development in realisation and innovation of planning and strategic services in support of the Milano Administration. **Giacomo Lozzi** spoke with her about the new Sustainable Urban Mobility Plan of Milan, its road charging scheme, the Smart City strategy and the leading role of the city in mobility sharing services

**Giacomo Lozzi, *Thinking Cities* (TC):** Milan is world-renowned as a beautiful city but what are the most pressing transport challenges? Its residents and regular visitors will also know that it is quite famous for its congestion!

**Maria Berrini (MB):** The modal imbalance of the flows between the city and the hinterland is one of the most important challenges. Congestion affects in particular the major axes of communication, despite the recent significant progress. In fact, while in the Municipality of Milan the use of public transport prevails (57%), commuters from the city's surroundings clearly prefer to use cars and motorbikes (62%).

Another big challenge is the high car ownership in the Municipality of Milan. The share is decreasing and is lower (about 51 cars per 100 inhabitants) compared to the Metropolitan area and the Region, though further efforts are necessary so that this number significantly decreases. Congested public space in a city so densely populated and frequented as Milan, deriving from both the residential traffic and the commuting from the hinterland, is no longer sustainable.

Finally, air pollution: the situation in Milan has steadily improved over the last 10 years, but the situation is still quite critical.

**TC: Smart cities represent a hot topic at European level. The European Commission envisages to create a more holistic "Smart Cities and Communities agenda". The City of Milan and the Milan Chamber of Commerce signed a protocol to build a Milano Smart City strategy. Can you tell us more?**

**MB:** Our vision is consistent with the European Commission's initiative: the idea of Smart City is linked to the idea of Smart Community. Inclusion is a key topic too. This means high attention to the sharing of decision-making processes, the involvement of citizens and public-private partnerships to engage the private system and the network of associations as resources to trigger innovation. Business and civil society can provide a boost that the local administration would not be able to produce alone.

**TC: Which initiatives are related to the transport sector?**

**MB:** The specific initiatives in the transport sector (smart mobility) are mainly related to the the road pricing scheme (Area C), and its supporting technologies (cameras, web payments, etc). Moreover, Milan is for example developing e-ticketing services (SMS, QR code) for public transport. The infomobility

*The infomobility portal is growing and is very dynamic, providing the highest level of integration of transport modes for trip planning*



**New pedestrian area in front of Sforza Castle**



**BikeMi: Milan's bike sharing system**

portal is growing and is very dynamic, providing the highest level of integration of transport modes for trip planning. Significant smart solutions in the field of sharing mobility have been implemented as well. Finally, Milan has submitted its candidature for a call in the framework of the EU programme Horizon 2020 Lighthouse. The project foresees the creation



One of the access gates to AREA C

of Smart districts for innovative solutions not only regarding mobility (e.g. car and bike sharing), but also energy and ICT. The interested area would be the district of Porta Romana-Vettabia, in the South of the city.

**TC:** At the time of writing EXPO Milano 2015: Feeding the Planet, Energy for Life is coming to an end. How did hosting the six-month long global exhibition affect the urban sustainable mobility policies in Milan, also with respect to the Smart City strategy?

**MB:** EXPO has accelerated an innovation process already in place in Milan, forcing the actors to engage more quickly and to invest in smart solutions. Many companies belonging to the telecommunications and energy sector have become sponsors of the event and have provided a fast and innovative infrastructure to the EXPO site. Moreover, the electric bike sharing was conceived to let visitors reach the site from the city center, but it is intended to permanently remain as a new service in the city of Milan.

**TC:** The Sustainable Urban Mobility Plan (SUMP) of Milan for 2015-2025 is currently under approval. Which are the most innovative solutions envisaged?

**MB:** The most innovative measure for Milan, which demonstrates the most interesting cost-benefit ratio, shall make surface public transport faster, especially tramways: the intervention foresees an investment on the traffic signals, in order to shorten the duration to cross the city by tram, on the vehicles, to make them more accessible, and on the protection of tram and bus lanes. While priority is given to improve public transport, the plan also envisages the creation of a cordon of cameras around the entire city, to establish a large low

emission zone (LEZ) with control purposes for the most polluting vehicles, which are already banned but difficult to prosecute. In the future, other policies could be implemented thanks to this cordon of cameras, including the creation of a new charging zone.

The SUMP envisages guidance on public transport, sharing mobility, cycling and walking networks, the realization of a low emission zone (LEZ), 30 km/h zones and urban logistics.

In addition, the plan provides a methodological innovation: it has given the city a long-term vision on mobility and shaped a clear instrument with well-defined objectives and actions. For the first time the plan was accompanied by a cost-benefit analysis, integrated by the strategic environmental assessment (VAS in Italy), in order to select the most cost-effective areas of intervention for the city.

**TC:** In January 2012 the city of Milan implemented AREA C, the first congestion charging scheme in Italy. It replaced the previous road charging scheme, ECOPASS (2008-2011). What are the main differences between the two schemes?

**MB:** The area subject to regulation is called Cerchia dei Bastioni, and it corresponds to 4.5 per cent (8.2 km<sup>2</sup>) of the whole territory of the Municipality of Milan. The area is very attractive because of the many activities and services located there: every day about 500,000 people travel into the area from elsewhere.

Ecopass was an anti-pollution scheme, designed to encourage the shift to cleaner vehicles, effect obtained thanks also to the national scrapping subsidy. Area C is a road pricing scheme, which, even taking into high consideration the environmental aspect, principally focuses on reducing congestion: every non electric or hybrid vehicle entering into Area C must pay a €5 fee per day.

**TC:** What are the main results of the two schemes, both in terms of mobility and air quality?

**MB:** One year after Ecopass was implemented, on average the number of cars entering the city centre decreased by 14.4 per cent, although, car traffic outside of the central area also decreased by 3.4 per cent. A corresponding reduction of PM10 (-23 per cent) and CO<sub>2</sub> (-15 per cent) inside the Cerchia area was also observed. After few years, Ecopass had lost its effectiveness because of the shift to cleaner vehicles, and did not substantially affect the reduction of the entries into the city center. Area C is conceived to address congestion, and has reduced

the number of vehicles by 29 per cent and accidents by 26 per cent, has allowed to recover 10 per cent of public spaces previously occupied by cars and to reduce PM10 emissions by 18 per cent. Obviously, PM10 concentrations cannot significantly decrease in such a small area. On the contrary, concentrations of close-proximity pollutants (black carbon) have dropped by 28 per cent during the winter and 56 per cent during the summer.

**TC: Some 6,700 vehicles, 350,000 subscribers, 31m km covered: On the occasion of the last European Mobility Week, Milan was defined the capital of sharing mobility. Sharing schemes for cars, bikes (both traditional and electric) and even scooters are in place. Do you think these collaborative practices could provide a significant contribution in addressing the urban mobility challenges?**

**MB:** Definitely yes. The main challenge is to convince residents that it is possible to easily move within the city without owning a car, not only thanks to an efficient public transport, but also to these new mobility sharing services. We still don't have data demonstrating a substantial behavior change. However, car registrations in Milan are still progressively diminishing, despite in the rest of the Lombardy Region and in Italy they started to increase again, so probably a correlation exists between the sharing schemes and this reduction. However, we are collecting data and interviewing car and bike sharing users in order to produce more realistic and affordable information and to better shape the services.

**TC: Milan takes part in the European funded project FREVUE, realising a demonstrative system of clean city logistics applications, involving Electric Vehicles, to deliver e-commerce goods in the AREA C. How is it going?**

**MB:** Milan decided to implement a demo on the delivery of pharmaceutical products: even if it represents a small supply chain in terms of weight and size of parcels, it requires several deliveries during the day, has special requirements in terms of treatment of the products and several pharmacies exist in the city center of Milan. The Municipality has involved a specialised operator, Eurodifarm, working together with DHL. Moreover, thanks to the project's resources, a Nissan electric van has been provided and equipped on *ad hoc* basis. We hope this demonstration will trigger virtuous practices on a wider scale in the future. Some logistics operators, in particular GLS and TNT, have already

**The main challenge is to convince residents that it is possible to easily move within the city without owning a car**



started offering distribution services through electric vehicles and cargo bikes.

**TC: Milan is well connected across Europe. What is your motivation for being part of European networks? What type of support would you like to see from the European Union for local mobility issues?**

**MB:** Milan is among others a member of Polis, which represents a very important networking support for the city of Milan: it provides a place for debate with other local authorities on the best practices at European level, it involves us in European projects and invite us in conferences and workshops providing inspiration for new ideas and solutions. Regarding the support from the European Union, we would be glad to see a higher attention by the Member States and the Committee of Regions on sustainable urban mobility issues, as often the European Commission is the sole body providing support. We would like to see more structural funds allocated for the mobility sector, and SUMP's should serve as a minimum requirement to obtain funding and a mean to decide how to use them, instead of depending on the decisions made at national and regional levels regarding the urban transport priorities. Finally, the EC should strengthen its control on the actors working in the sector, in order to avoid that a scandal such as the Volkswagen tampering will happen again. 🗣️

**Above left: a motorbike and a car belonging to the city sharing schemes**

**Above right: one of the new electric bikes added to the bike sharing scheme**

#### FYI

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# Countdown to zero

Towards zero emissions from city logistics in 2020 in the inner city: **Pex Langenberg**, Rotterdam's Vice Mayor for Sustainability, Mobility and Culture, talks to Polis' **Merle Schroer** about that ambitious goal and facilitating the energy transition

In Rotterdam, the port and logistics play important roles for the economy. In this context, the approach to erase emissions created by city logistics is even more remarkable. With an exceptional concept of establishing electrical charging infrastructure, a new kind of business model is being applied in the city. What does a political strategy behind such a decision look like? According to Pex Langenberg, Vice Mayor of Rotterdam, priority to a healthy environment for the citizens with a good quality of life is key.

**Thinking Cities (TC):** The transport system of Rotterdam differs from the “romantic Dutch city”; roads are wider and vehicles larger. What is your vision how transport in Rotterdam should develop?

**Pex Langenberg (PL):** Mobility is not a goal on itself, but it is a condition for a city. Sustainable and efficient mobility is beneficial for a resilient and strong economy. The focus in Rotterdam lies on an improvement of (international) accessibility

and sustainability. We mainly focus on more walking, increasing the use of bikes, and improving public transport. In our urban development plans for the city centre we therefore give priority to these three areas. Therefore, we give for example priority to traffic lights, easy and attractive sidewalks for pedestrians, sufficient bicycle parking places, and fast high quality public transport in the city centre.

**TC: Is Rotterdam a “smart city”? What is a smart city in terms of Rotterdam?**

**PL:** In 2014 The New Economy rewarded Rotterdam with a Best Smart Cities Award of the World. The city is proud to work together in the triple helix to facilitate the energy transition. The actions vary from using wind energy, better resilience by means of green roofs and water squares, up to encouraging electric mobility.

**TC: Rotterdam has one of the largest ports in the world and is implementing measurements to**

Rotterdam's electric vehicle fleet includes service and delivery vehicles, such as this Heineken truck



## ***Sustainable and efficient mobility is beneficial for a resilient and strong economy***

**make the related sustainable freight traffic more sustainable. Does the electrification of freight transport play a role in that context?**

**PL:** In our city we give priority to a healthy environment for the citizens with a good quality of life. For the city logistics this means regulating and facilitating actively on this issue. This does not only mean we have to install and scale up environmental zones. But together with private organizations we stimulate companies which are investing to do this in a more sustainable manner in the field of logistics. Together we have an ambition to reach zero emission on city logistics in 2020 in the inner city. To reach this ambition the use of small and large electric vehicles is therefore necessary. One of the actions is to gather interest in larger electric freight vehicles as much as possible by the transport companies, so that manufactures can start to produce these vehicles on a larger scale.

**TC: In 2011, the first charging station had been deployed in the Rotterdam area; your goal is to install 1000 extra charging poles by the end of 2018. Will all these be set up by public financing exclusively?**

**PL:** We place a charging infrastructure where we expect electric cars the most. We extend our already well equipped network of more than 1.400 charging points with a European tender. We are financing the system in a public private partnership. Rotterdam is charging for the electricity, in this way the users pay for the infrastructure as well.

**TC: What are important aspects when setting up charging infrastructure for alternative fuels in a city?**

**PL:** People tend to charge at home or at work, so place the charging infrastructure there where it will be used. The charging points we place at strategic places as shopping centers, near facilities etc. are rarely used. The better the use of the infrastructure the sooner there will be a business case. By



discussing with the (potential) users, it will be made more clear which kind of charging infrastructures would be most beneficial on which locations.

**TC: Rotterdam is presidential candidate for Polis: Can you tell us about your motivation to maintain networking connections in Europe as well as your goals during the upcoming time?**

**PL:** Rotterdam as a port city is traditionally internationally orientated. For traffic and transport we proactively find the link with other cities beyond the borders of Rotterdam to discuss city specific problems and innovative solutions. Rotterdam is the front-runner on port transport mobility, cycling innovations, electric mobility concepts, and cooperation in the field of urban goods distribution. As president of Polis we would like to show these cases, and to organize discussions on how the cities can be positioned to make a leap forward for a more sustainable and attractive city. What can we learn from each other and where do we need others to actively engage in these subjects. 🌐

**The city is home to over 1400 EV charging points with plans to extend the network**

### **FYI**

**Pex Langenberg** is vice mayor of Rotterdam, particularly responsible for sustainability, mobility and culture

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# Environment and Health in Transport

This section looks at the impact that urban and regional mobility has on the environment and on health, and how the adverse impact can be reduced

- o **London:** How the 2012 Olympic and Paralympic games helped strengthen the ties between health and transport
- o **Smart City Strategy:** Emphasising the positive effect transport can have on intelligent mobility



London's 2012 Olympic legacy is highlighted by a healthy urban landscape and the promotion of physical activity

# A sense of well-being

**Julian Sanchez** and **Esther Anaya** report from London where the 2012 Olympic and Paralympic Games were the catalyst to creating greater links between the health of its citizens and its transport network

**E**ast London is changing, the London 2012 Olympic and Paralympic Games were a catalyst but change doesn't stop there. With London's population expected to rise to 10 million by 2030, the 'East End', which includes the Borough of Newham, is planned to accommodate around 40 per cent of London's growth, so planning ahead to create attractive, healthy neighbourhoods which are well connected – a place for people to live, work and enjoy – is essential.

In order to help meet this challenge the London Borough of Newham, which was home to the 2012 Olympics, has teamed up with Imperial College London and other European partners as part of a project called PASTA – Physical Activity Through Sustainable Transport Approaches to better understand the link between transport and health. The idea is to find out what encourages people to get on their bikes or walk and how this helps them to get their 15 minutes of recommended physical activity every day by integrating it as part of their daily travel routine.

## INTRODUCING – LONDON AND THE BOROUGH OF NEWHAM

London is a growing city, with a thriving economy attracting both huge amounts of investment, jobs and people. After a population lull in the 1980s the city has grown to around 8.5 million today and by 2030 is anticipated to grow to around 10 million. East London will accommodate



Map of the London Councils (above), highlighting Borough of Newham (shown larger, left)

Maps: CC

around 40 per cent of London's growth, so planning ahead to create attractive, healthy neighbourhoods that are well-connected is essential.

East London is historically the poorest part of the city. Health inequalities have resulted in average life expectancy in East London significantly lower than the more prosperous 'West End' by around 15 years. As well as being poorer, East London is ethnically and culturally diverse and is home to many of London's new communities. The London 2012 Olympic and Paralympic Games have been a catalyst for change and urban

renewal, refocusing regeneration beyond the fashionable docklands to the wider East End with a focus on transport hubs, and helping to celebrate the diversity and dynamism of this great part of London.

The way that London is governed has undergone big changes in recent times. The Greater London Council which was responsible for city-wide planning, transport and a range of other services was abolished in 1986 in a move towards a more centralised bureaucracy in the United Kingdom. However, this approach was not considered an



The award of the 2012 Olympic and Paralympic Games to London signalled the start of an unprecedented urban redevelopment scheme in the east of the city, not least in the host borough of Newham, seen here from the river Thames

effective way of coordinating and managing cross-boundary issues for the 32 London councils or boroughs. Therefore, in 1999 Parliament legislated for the creation of a new London-wide authority, the Greater London Authority (GLA) that provides the main strategic orientation for the boroughs (through the London Plan) and has a directly elected Mayor.

### SHAPING CHANGE – TOWARDS A HEALTHY URBAN LANDSCAPE AND PROMOTING PHYSICAL ACTIVITY AS PART OF THE OLYMPIC LEGACY

Transport infrastructure and congestion pumping out pollution have long been an issue for London costing the local economy millions and creating an unhealthy environment for its citizens. Under the first Mayor of London, Ken Livingstone,

who was elected in 2000, these issues were made key priorities. As former leader of the Greater London Council, Livingstone had an excellent understanding of the challenges the city faced and the need for huge investment. In response to these challenges, the Mayor introduced a number of measures including: the Congestion Charging scheme, modernising the bus fleet and payment system – resulting in the biggest rise in bus passengers since the 1950s – and instigating a modernisation programme of London's subway system, colloquially referred to as the tube.

The Olympic Games 2012, which was secured under Livingstone in 2005, gave a unique opportunity for urban renewal and became the focus of his replacement, Boris Johnson who took his seat as Mayor in 2008. The new Mayor set out to develop

a plan which looked at how the city could accommodate at least another million residents. The plan determined that around 40 per cent of London's growth could be accommodated in East London, including the Borough of Newham, through a process of densification and urban regeneration of previously derelict or degraded Brownfield land that had been left undeveloped for years – a testament to the difficulty of the task.

The Olympic project tackled the challenges by offering an opportunity to redress the industrial decline of the area and a means for central government to invest a large amount of public money in a focussed and relatively short timescale, which would otherwise have not been achievable under existing regeneration policy. It is often said the Olympics delivered 30 years of regeneration in 10 years,

## ***Bringing together local transport and health practitioners with academic experts has been key to the evaluation of the top measures, but also an opportunity to share***

with the net result that Newham no longer features in the top 20 most deprived local authority areas in the country as was the case before the Games as recently as 2010. The challenge now is to link the surrounding neighbourhoods with the site and fulfil the Olympics' sustainable legacy, which includes promoting a more active and healthier environment for local citizens.

### **IN FOCUS – QUEEN ELIZABETH OLYMPIC PARK**

The Queen Elizabeth Olympic Park was re-opened for public use in April 2014 and was hailed as a as one of London 2012's most visible achievements. The park is situated near to a major transport hub at Stratford and was chosen as the main location for the 2012 Olympic and Paralympic games. In the wake of the Games this once-contaminated industrial land became the largest new urban parkland in Europe for 150 years.

Sustainability and the environment were at the heart of London's successful bid for the 2012 Games and is a key policy objective for its legacy. The Environmental Sustainability Policy for the Queen Elizabeth Olympic Park sets out a vision to: 'create an environment that encourages more sustainable behaviour, which includes building neighbourhoods that are easy to walk around, encouraging cycling, promoting the use of public transport and reducing polluting emissions to air.'

London 2012 won gold in the Environmental and Sustainability category of the 6th International Sports Event Management awards.



**The award-winning Queen Elizabeth Olympic Park has led to an increase in healthy activity in the London Borough of Newham**



Photos: LLDC

### **IN FOCUS – MAYOR'S CYCLING VISION**

Boris Johnson, who is a keen cyclist, took on the mantle of promoting cycling in London with great enthusiasm and in 2013 published his 'Vision for Cycling'. The promotion of cycling is seen as a way of both encouraging more sustainable transport and enabling improvements in London's streets to make them less car dominated. The Vision set out an approach, inspired by measures

implemented in the Netherlands and Denmark, which incorporates a mixture of 'Quietways' which are non-segregated routes on residential or streets that have low traffic levels and Cycle Superhighways, which are mainly segregated routes for cars and bikes.

Outer London is a mixture of town centres and suburbs which have relatively high levels of car ownership with half of car journeys less than 3km and two thirds of journey are less

than 5km. The Mayor and city's strategic transport authority – Transport for London saw a way of both reviving local economies through public realm improvements and an opportunity to manage demand on the limited road space by encouraging more people to walk and cycle. To maximise this potential they are investing in a three innovative 'Mini Holland' schemes which aim to make three outer London town centres more cycle friendly and thereby to increase uptake in active mobility.

The Mayor pledges that over the 10-year programme, a total of £913m (€1.2bn) will be spent on cycling, with the aim to increase the cycling mode share from around 2 per cent to 5 per cent over the period. London is one of the few global cities to see a drop in car journeys, a trend anticipated to continue, with car mode share expected to fall to around 35 per cent.

### IN FOCUS – HEALTHY URBAN PLANNING AND OLYMPIC LEGACY

In 2013, the same year as the publication of the Mayor's 'Vision for Cycling', there was also a change in health policy which resulted in public health responsibilities returning to local authorities, for the first time since the creation of the National Health Service (NHS) in 1948. Policy makers have been given the opportunity to bolster their efforts of healthy urban planning, as London's boroughs can now consider achieving better public health outcomes such as reducing obesity and the risk of heart disease and stroke by considering these issues more holistically, within the context of developing healthy urban environments.

As part of achieving the behavioural and physical legacy of the Olympic Games, a group of local authorities in East London have been collaborating through a Strategic Regeneration Framework, part of which includes policies to promote



active travel as a way of reducing health and social inequalities. Prior to public health being integrated into London's boroughs, the Olympic provided a catalyst for considering the challenges of promoting active travel within a much broader context of urban renewal and improving the health of Londoners.

### LINKING IN WITH PASTA – EVALUATING OUR MEASURES

Key to the Mayor's 'Vision for Cycling' and broader plans to improve connectivity in East London, three specific or 'Top' measures have been selected for evaluation through the PASTA project which will be managed with expertise from the London

Measures to increase the take-up and awareness of cycling in the Borough will include a cycle quietway and extension to London's Cycle Superhighway 2



Borough of Newham and London university Imperial College London (ICL). All three 'Top Measures', either pass through or near to the Queen Elizabeth Olympic Park, as well as other small schemes and interventions within the area.

### 1. The Leaway – walking and cycling route

The Leaway walking and cycling route follows the river Lea connecting the river Thames at Leamouth to the Queen Elizabeth Olympic Park, which had previously been difficult to access by bike or on foot. Moreover, the new route will link to existing and other improved walking and cycling routes in North-East London known as the upper Lea Valley and will provide a continuous North-South route avoiding roads.

### 2. Quietway 6 – non segregated routes on residential or streets with low traffic

An East-West route, which runs from Aldgate on the edge of central London through the borough of Newham and beyond to the outer London suburbs, this route will be generally non dedicated and provides as the names suggests a quieter (less traffic) route avoiding main roads across East London neighbourhoods the route will pass through the Park and will link to the edge of central London.

### 3. Extension of Cycle Superhighway 2 – high traffic routes with segregated bike and car lanes

Superhighways are cycle routes

## “Building the liveable and healthy city” conference

18 November 2015, Brussels

If you're interested in finding out more about the PASTA project, hearing case studies from other cities and networking with a community of professionals committed to developing a healthier city through walking and cycling, we will be hosting a workshop Building the liveable and healthy city at the upcoming Polis Annual Conference on 18 November in Brussels.

To find out more, please visit:

[www.pastaproject.eu](http://www.pastaproject.eu)

running between outer and central London. Cycle Superhighway 2 (CS2) runs between Bow and Aldgate seeks to provide new cycle lanes and other dedicated infrastructure so that cyclists can enjoy swift, direct, safer journeys around the city.

### HOW WE ARE EVALUATING OUR MEASURES

The core study in the PASTA evaluation process is as a longitudinal web-based survey with a target sample size of 2,000 participants in the London Borough of Newham and in six European cities: Antwerp, Barcelona, Orebro, Rome, Vienna, and Zurich respectively.

Recruitment of volunteers to complete the travel survey has been a big challenge, as the commitment requested of volunteers is high with the first 'baseline' survey taking around 25 minutes to complete and a number of much shorter follow-up surveys. The London Borough of Newham and ICL have been working closely with local stakeholders to recruit volunteers as well as placing

## ***Bringing together local transport and health practitioners with academic experts has been key to the evaluation of the top measures, but also an opportunity to share***

advertisements in local publications, using the Council's billboards and extensive use of social media. All participants will be invited to a final event in the Queen Elizabeth Park to celebrate the completion of the study and share with them the results.

Furthermore, in three of the cities (London, Antwerp and Barcelona) a health 'add-on' module is being undertaken in which the research team collects data of air pollution exposure.

### **LINKING IN WITH PASTA – CREATING A COMMUNITY DEDICATED TO TRANSPORT & HEALTH**

Bringing together local transport and health practitioners based in London and academic experts for feedback and discussion, has been key to the evaluation of the top measures, but also an opportunity to share. An interesting aspect that came out during the interviews was not only to look at the measures themselves but to find out about how different city departments in charge of health, urban planning and transport have cooperated in pushing forward the health agenda as part of the transport agenda and vice versa.

Given the London context of changing governance, a fast-changing policy context and opportunities for new ways of working and better synergies between local partners, the results of the study will be instructive and will contribute towards the evidence base and supporting business cases for new schemes.

### **Sharing your good examples**

If you are a European towns and cities which has a good example of initiatives which have promoted walking and cycling for a healthier lifestyle, feel free to contact the PASTA project at:

[www.pastaproject.eu/friends](http://www.pastaproject.eu/friends)

### **LINKING IN WITH PASTA – CITIES AND TOWNS SHARING EXPERIENCES IN PROMOTING HEALTH**

European cities face many challenges, including managing demand for limited road space, and improving the health and wellbeing of their populations. Local, national and EU levels of governance need to work together inter-departmentally and through projects like PASTA to identify the policies which generate the highest and most positive impact in changing behaviour in moving away from cars towards choosing active and sustainable modes of transport such as walking and cycling.

An important political step in promoting cycling at the EU level was achieved at the beginning of October 2015 at the Meeting of the EU Transport Ministers which adopted a declaration on cycling as a "climate friendly" transport mode and called for an improvement in European policy on cycling and to raise awareness among the European population.

By bridging the gap between policy

and science, PASTA aims through evaluation of measures and case study research to produce a series of policy recommendations to help guide policy makers in designing active mobility policies to achieve behavioural change. In addition, the project will be developing an updated version of the World Health Organization's (WHO) Health and Economic Assessment tool (HEAT)\* which is currently in use by many local authorities. Since the launch in 2009 HEAT is estimated to have prevented up 100,000 premature deaths and remains a key tool for urban planners, transport and health practitioners to make the case for new investment in active mobility. 

#### **FYI**

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\*HEAT: <http://www.heatwalkingcycling.org/>



# Sustainable urban mobility and the smart city

Polis has recently issued a position paper emphasizing the role of transport in smart city strategies. **Karen Vancluysen** explains

**P**olis, representing leading cities and regions working on innovation in local transport, believes that the role and potential of urban mobility in making the city smarter is currently not sufficiently recognised.

The transport sector in general leaves ample room for improvement in terms of (energy) efficiency, environmental performance (air quality and noise) and leverage for economic development. The transport sector is currently shaping and experiencing a paradigm shift, with coinciding transitions in the field of energy use (electrification), technologies and behaviour (sharing economy, focus on active travel). At the same time, urban transport is one of the sectors with a high and continued share of public investment.

## TRANSPORT: CENTRAL BUILDING BLOCK OF THE SMART CITY

There are good reasons to put urban transport at the heart of Smart Cities policies. To name a few,

- With Sustainable Urban Mobility Plans (SUMPs), urban mobility has the framework for integrated planning. New approaches to urban mobility planning are emerging as local authorities seek to break out of past silo approaches and develop strategies that can stimulate a shift towards cleaner and more sustainable transport modes.
- Electrification is happening. In all modes of transport, and for both transport of goods and passengers, electrification is happening. This brings – with the advantages such as clean air,

energy independency etc. – also a set of challenges (deployment of charging infrastructures, links with shared mobility).

- Urban transport embraces the sharing economy. Urban transport is a key area for the transition towards the sharing economy. Both public initiative (public bicycles, shared cargo-bikes, etc.) as private initiative (ridesharing applications, car sharing, peer to peer parking apps) see the benefit of making better use of urban transport assets.
- Transport is an endless source of interesting data. The traveler is becoming more and more connected. Vehicles are connected, public transport users check in and check out with smart cards,

***ICT is an enabler of many smart mobility measures, but still, not all transport solutions need ICT to make them smart***

cyclists and pedestrians use apps to monitor their movement. These data are becoming increasingly available through open data portals of cities.

## DEFINING THE SMART CITY WITH FOCUS ON TRANSPORT

The current European framework for Smart Cities, with focus on ICT, Energy and Transport is rather narrow, considering the daily practice of urban transport professionals in European cities. Smart transport solutions can address other objectives than energy and decarbonisation: health, environment, road safety, economic development urban development, equality etc. In other words: within transport, measures can be smart (eg, they are saving lives) without that they directly save energy. ICT is an enabler of many smart mobility measures, but still, not all transport solutions need ICT to make them smart. The use of ICT should not be an end in itself but is a means to an end. Also simple solutions can enable

## Polis and Smart Cities

Polis is involved in the European Smart Cities Marketplace as manager of the Action Cluster for Sustainable Urban Mobility, and is partner in the European GrowSmarter Lighthouse project – co-funded by the Horizon2020 Framework Programme for Research & Innovation. Several Polis members are involved in the Marketplace, are partner in Smart Cities and Communities Lighthouse projects, and generally are European pioneers in making their cities smarter.

Access Polis' full Smart Cities position paper here:

<http://polisnetwork.eu/smartcities>

**Transport is an endless source of interesting data. Even cyclists and pedestrians use apps to monitor their movement**



place-making and can help to enjoy the city and urban life.

Polis members emphasise the importance of putting the citizen at the heart of the Smart Cities process and suggest using the UK government definition as a basis for EU Smart Cities initiatives: "A Smart City should enable every citizen to engage with all services on offer, public as well as private, in a way best suited to his or her needs. It brings together hard infrastructure, social capital including local skills and community institutions, and (digital) technologies to fuel sustainable economic development and provide an attractive environment for all."

## SMART CITIES AND TRANSPORT: HOW CAN EUROPE HELP?

With European Commissioner Violetta Bulc urban transport has a strong advocate in the European Union's Smart City community. But there is more: currently, several highly relevant European Commission's Directorates General

are not involved in the discussions (DG Environment, DG Regio) although they are linked to Smart Cities objectives. Polis suggests to including them in the Smart Cities governance. Polis also recommends parity in city/business representation in Smart Cities related discussions.

The EU provides substantial budgets in Smart Cities research and deployment. In this regard, Polis recommends to earmark sufficient budget for research focusing on Smart City fundamentals, in addition to funds such as EFSI and CEF that fund infrastructure investments.

Finally, Polis sees the benefit of a strong Smart Cities community, where cities can learn and exchange experiences. Here, global cooperation should be an essential element. 

## FYI

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# Mobility, Multimodality and Traffic Efficiency

The section on Mobility, Multimodality and Traffic Efficiency addresses issues related to network management, network efficiency and innovative services, with a particular focus on Intelligent Transport Systems

- o **Manchester** – The launch of the city’s 2040 transport strategy saw its citizens given an unparalleled level of importance
- o **Helmond, Bilbao, Pisa** – Three European cities are feeling the benefits of an ITS-based urban logistics strategy
- o **UTMC** – Never underestimate the importance of open standards in understanding how an intelligent city works



Urban logistics: smart,  
intelligent and sustainable



# Getting there

The summer of 2015 saw the launch of the “Greater Manchester Transport Strategy 2040: Our Vision,” taking the unusual step of putting the needs of its citizens at the very heart of its strategy. **Rafael Cuesta** heads the Greater Manchester innovation team, working jointly on developing an agenda for intelligent mobility to challenge the ‘old’ way of doing things; and through innovation help address the challenges Greater Manchester faces. He describes Manchester’s approach on the Smart City Concept to *Thinking Cities*

**Can you tell us about your view on the Smart City Concept and how it will be applied in Greater Manchester?**

We believe that, in the UK context, the impact that technology and innovation has on society, behaviours and culture is significant. Therefore, through developing our approach to ‘Intelligent Mobility’ we believe that a Smart City is one which helps deliver our emerging Greater Manchester Transport Strategy 2040 (Greater Manchester’s new SUMP) through

encouraging social, behavioural and cultural changes in our citizens that are aligned with our social, economic and environmental objectives. But it is more than this; it is also about empowering the citizen to make a positive contribution to city life.

**Which role does the transport sector play in this concept?**

Through our work on the 2040 Vision, we have identified a number of areas in which innovation and technology can help support delivery of our

wider transport outcomes. Hence, it is not about simply following new technological developments for the sake of it, but harnessing new tools and techniques to deliver our vision of “World class connections that support long-term sustainable economic growth and access to opportunity for all”. The five key areas where we believe that technology can best support improvements to our transport system are highlighted below:

We will therefore embrace the use of innovation and technology



MediaCityUK, Salford

**A smart city is one which helps through encouraging social, behavioural and cultural changes in our citizens**



The five key areas where technology can best support improvements to Greater Manchester's transport system

to improve the capacity, efficiency, resilience, sustainability and safety of our transport network and to provide a highly customer-focused transport system that meets with varying needs of our residents, businesses and visitors.

**Innovative technology plays an important role in your smart city concept: what kinds of actions have been taken so far to make Manchester smarter?**

We have introduced the "Get me There" smart card in Greater Manchester opening the door for further innovation on payment systems and smart mobility. There has been major investment to get the back office up and running, as well as the infrastructure it requires, and to date, we have rolled out to more than 500,000 concessionary pass holders across Greater Manchester and more than 60,000 smart journeys are



Manchester Metrolink

now taking place every week. Later on this year the scheme is set to roll out onto buses across the region. We have also invested in a new multi-modal, real-time and open data journey planning API, that will enable mobility app developers provide our citizens with an improved customer experience of public transport. For

example, in addition to our own journey planning app, citizens will enjoy the use of global mobility apps, such as Moovit and CityMapper, which have a strong motivation to sustain a high level of User Experience and Satisfaction with their apps.

Furthermore, we have embarked on a feasibility study to develop an

***By incubating innovation in Greater Manchester we hope to face our challenges in new creative ways and create scalable solutions that can be exported to other cities across Europe and the World***

integrated and enduring design approach and framework to city-centre way-finding. This will combine the best of digital with well thought-out information design practice and physical interventions to make our city more legible, and therefore, conducive to walking and cycling.

**Manchester has a comparatively young population. Has this aspect been taken into consideration in the city concept?**

Crucially, we are also investing in our young people and business start-ups.

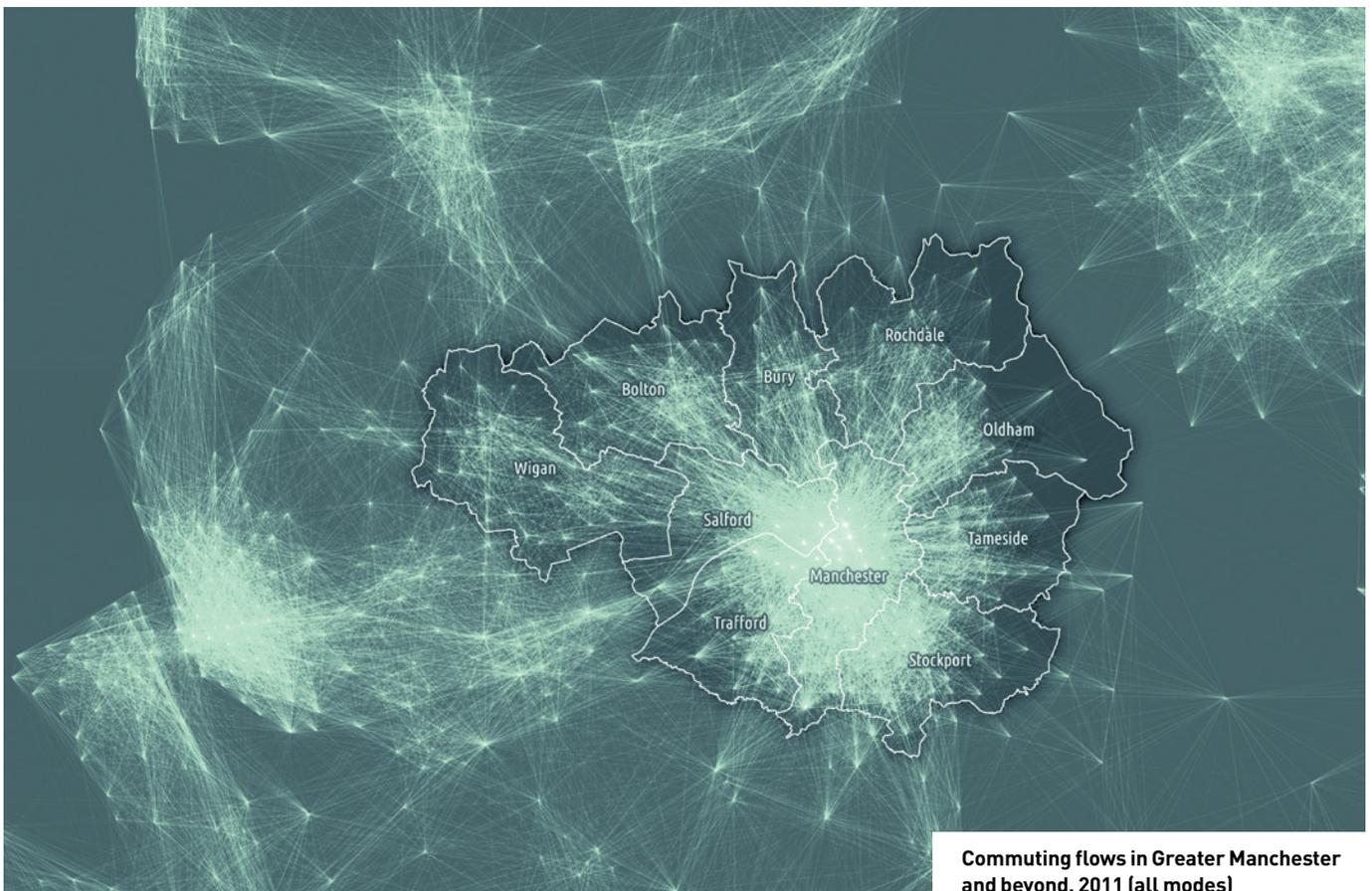
Through partnership we have established a number of incubator and accelerators, including SpacePortX, Barclays Manchester Accelerator, and The Landing in MediaCity. We are directly engaged with all three organisations – providing thought leadership on what ‘smart city’ solutions and ‘use cases’ would really help Manchester’s transport sector and be aligned with many city SUMP’s across Europe.

By incubating innovation in Greater Manchester, through setting challenges that are focused on the

specific transport problems we face in Greater Manchester, we hope to tackle them in new, creative ways and create scalable solutions that can be exported to other cities across Europe and the World. CityMapper, a London-based SME, is a good example of this. We want to create more “CityMapper” Intelligent Mobility businesses in Manchester.

**Which role do cities play regarding the implementation of the Smart Cities Concept?**

European Cities are a very important



Manchester's Albert Square and Town Hall: it's all about citizen engagement, from the top



market for our entrepreneurs to expand their scalable solutions into. Therefore, an on-going commitment to the Open Data agenda is critical. But the Smart City concept is not only about technology – the human scale is an essential part of the smart city. Good quality spaces, attention to the public realm, and an emphasis in creating streets at the human scale, with improved air quality, safety and improved quality of experience for their people is fundamental in the cities of the future. European cities need to embrace this to increase their liveability rating and become exemplar worldwide.

**Should citizens be involved in the decision-making process of implementing measurements?**

People have a crucial role in developing the smart city by taking advantage of the talent and activities of self-decisive, independent and aware citizens. Ultimately the Smart City concept is about people and enabling

them to achieve a high quality of life. To make this happen it is indispensable to involve stakeholders in a process of co-creation to ensure they can actively participate in decision making. In addition to our more traditional methods, we are seeking to achieve this by making use of intelligent platforms that enable citizen input through a range of digital and visualisation tools and gamification that allows us to engage citizens in a dialogue about city projects, services and policies.

**Can you tell us about the lessons learned during the process of developing and implementing the Smart City Concept? What's your advice for other cities striving to become smart cities?**

It's all about being customer centric. In order to address the needs and aspirations of our citizens we need to work in partnerships with all sectors. It's about working together and creating an environment of trust

and collaboration that allows us to formalise a common vision and a dynamic programme of interventions. In Greater Manchester, we have a wealth of talent in transport service delivery, advanced manufacturing, and digital and creative industries and are therefore well-placed to become a leader in transport innovation. We are up for the challenge! 🚗

**FYI**

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# A tale of three cities: freight expectations

ITS for urban logistics: the right way to improve efficiency, by **Giacomo Lozzi**, supported by contributions from three European cities using ITS to address logistical issues

Urban freight represents the 10-15 per cent of urban traffic volume, it is responsible for about 25 per cent of transport-related CO<sub>2</sub> emissions, 30-50 per cent of other transport-related pollutants, eg particulate matters (PM), Nitrogen Oxide (NOx), and accounts for a significant proportion of ambient noise in cities. Urban freight service companies are generally very small (85 per cent have fewer than five employees) and normally represent very low load factors for city delivery vehicles<sup>1</sup>. This because of the restock policies adopted by the retailers: they pursue *just in time* (frequent deliveries to constantly have new products) and *zero inventory* (small ordered quantities to minimize inventory costs in the city center) strategies, leading to a rather inefficient load factor.

Urban logistics aims to identify those measures favoring a balance between two conflicting elements: a freight distribution system effectively and efficiently responding to the market needs, and a satisfactory level of environmental sustainability. In recent decades, public authorities



**ITS solutions are key to improving urban logistics efficiency**

have developed a growing awareness of the crucial role of urban freight transport (UFT) in city traffic, and policy makers are designing new urban logistics schemes. Although more coordinated measures are beginning to spread, there is still the need to identify standardised actions and for a higher integration of UFT solutions into city mobility management.

The European Commission (EC) aims to achieve CO<sub>2</sub>-free city logistics

by 2030<sup>2</sup>, and in 2013 it released the Urban Mobility Package<sup>3</sup>, providing an overview of solutions for urban mobility challenges, including a specific working document on urban logistics<sup>4</sup>, which identifies four areas of intervention: manage urban logistic demand; shift modes; improve vehicles and fuels; improve efficiency. As regards the last point, Intelligent Transport Systems (ITS) solutions are mentioned: *new ITS*

## NOTES

- 1 ALICE / ERTRAC Urban mobility WG, Urban Freight research roadmap, November 2014
- 2 European Commission, White paper: Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system, COM(2011)0144 final
- 3 European Commission, Together towards competitive and resource-efficient urban mobility, COM(2013) 913 final
- 4 European Commission, A call to action on urban logistics, SWD(2013) 524 final

*solutions can help to optimise routes, improve service and reduce costs and impacts. In the framework of the e-Freight initiative, attention will be given to the optimisation of information exchange for UFT as part of longer (international) logistics chains.*

The advent of smartphones and other nomadic or in-vehicle devices are making it easier for travelers and operators to be informed in real-time about the travel conditions on the roads (congestion, road works, travel times) and in public transport (bus arrival time). From the local authority perspective, real-time information is a useful tool to influence users' behaviour. Moreover, integrated ticketing and charging is perceived as an important step towards achieving integrated and seamless mobility.

However, ITS interventions by local authorities, in particular in the urban logistics sector, are very recent and still confined in few virtuous contexts. They generally aim to optimise infrastructure use, generating space and time savings in order to improve services, and reduce costs and impacts from freight. ITS-freight related activities for a city could be implemented for access restrictions and automatic enforcement, route optimisation (guidance and prioritisation), dynamic delivery space booking, data collection and real time information for operators on traffic and parking conditions, and systems for urban deliveries' consolidation. As regards traffic management, there is still a need for better integration of urban traffic management system and urban freight management system in order to exchange information in both directions.

In the following sections, three European cities, Helmond, Bilbao and Pisa, members of Polis Network, explain what initiatives they are undertaking as regards ITS solutions for urban logistics management.

## From technology to mobility solutions: Helmond's view on deployment of C-ITS services

**Gert Blom**, Strategic advisor mobility, City of Helmond

**W**ith about 90,000 inhabitants, the city of Helmond, located in the South-East of the Netherlands, is considered a medium-sized city on a Dutch scale, but a very small city at a European level. Nevertheless, Helmond thinks that the deployment of Cooperative ITS (C-ITS) services is not only something for large cities. C-ITS fits very well in Helmond's mobility policy, and it has the potential to offer smart solutions for urban freight challenges.

### HELMOND MOBIEL 2015

The involvement of Helmond with C-ITS goes back more than a decade. Around the year 2003 the City had to decide how to solve the problem of large volumes of vehicles, especially heavy freight trucks on the main urban corridor, passing through the city centre. Plans were made for large investments in new road infrastructure, including tunnels. Finally, the City Council decided to change the mobility policy towards better use of existing infrastructure

instead of building new infrastructure. Moreover, the City Council made a very clear statement, establishing that Helmond would not just wait for the market to come up with smart solutions, but was willing to actively support smart mobility pilots and showcases. This policy shift, laid down in the mobility policy paper "Helmond Mobiel 2015", marked the beginning of Helmond's involvement in C-ITS pilots and deployment.

### FREILOT

Together with Lyon, Bilbao and Krakow, Helmond was one of the pilot cities for the European FREILOT-project. The main goal of this project was improving fuel efficiency for trucks in urban areas and reducing the environmental impact of urban freight. For the sake of the pilot, 14 intersections in Helmond were equipped with C-ITS road side units, communicating with the on-board units of the trucks of a local logistic service provider. By means of this communications, trucks were getting an intermediate level of priority at intersections and the driver got a speed and time-to-green advice. Result of the pilot: 13 per cent fuel savings and 13 per cent less CO<sub>2</sub> emissions. For the City of Helmond and the transport company it was a clear win-win situation: less environmental impact and a potential business case for the user at the same time.

**In 2013 Helmond joined Compass4D, a three-year EU project that will deploy Road Hazard Warning, Red Light Violation Warning Energy Efficient Intersection Services in seven European cities**



The deployment of Red Light Violation Warning is part of the Compass4D project



### AFTER THE PILOT

In Helmond's view, you should already at the beginning of the pilot ask yourself: "what if the pilot is successful?". In Helmond's view, participating in a pilot is not about writing deliverables, but about continuing the services if successful. For this reason, Helmond decided to keep the FREILOT-system alive after the project phase, to upgrade the road side units from pre-production to production version, to include more users (Fire Brigade) and to extend the installed road network. However, for a sustainable deployment, upscaling and standardization of course is very much needed. For this reason, the City decided to join the Compass4D-project in 2013.

### COMPASS4D

Compass4D ([www.compass4d.eu](http://www.compass4d.eu)) is a three-year EU co-funded project which will deploy three services, i.e. Road Hazard Warning, Red Light Violation Warning and Energy Efficient Intersection Services in seven European cities, in order to prove the concrete benefits of cooperative systems for citizens, city administrations and companies. The seven European cities are Copenhagen, Newcastle, Vigo, Verona, Bordeaux, Thessaloniki and Helmond. From the very beginning of the project, much attention has been paid to the continuation of the services after the project life. Although the operational phase is still running until end of November 2015, nearly all

partners in the project already committed themselves to continue the services for at least one year after the project phase, thus without further EU-funding. There is a sincere belief in the benefits of C-ITS services towards safer and cleaner road transport in urban areas. In order to achieve large scale deployment, some issues still need to be solved in the context of proper working of the technologies, further standardisation and delivering user benefits. However, the clear and ultimate objective remains the shift from pilot to large scale deployment for a self-sustained market.

### 2015 ANNUAL POLIS CONFERENCE

The results of the Compass4D operational phase will be shared with the audience at the annual POLIS Conference in November 2015 in Brussels. However, regarding the deployment phase, the consortium believes it has already achieved the most important goal of the project: continuing the services after the project phase. At the ITS World Congress in Bordeaux (October 2015), both cities as well as the private stakeholders signed the Memorandum of Understanding for this continuation. And in the belief of Helmond, this is essential for a successful deployment: real cooperation between the public and the private sector. And for this, also smaller cities can provide huge contributions.

## Bilbao and the Intelligent Delivery Areas

**Pablo Isusi**, Traffic and ITS Subdepartment Manager, Traffic, Transportation & Environment Department, City of Bilbao and **Fernando González-Vara**, Circulation Director, City of Bilbao

**B**ilbao is the capital of the Bizkaia province in the Basque Country (Spain) and could be considered as the industrial and financial capital of the Basque Country. It is located right in the heart of Greater Bilbao, which is a metropolitan area that extends along the estuary of river of Bilbao (Nervion), giving shelter to many companies, iron mines, factories and shipyards.

In relation to urban logistics, the City of Bilbao has participated in the CIVITAS-CATALIST Urban Goods group together with Polis. Last mile freight is a key issue for sustainable Urban Mobility Management. Bilbao Council has been innovating in urban freight since 2010 under the umbrella of several EC projects within the support of MLC-ITS Euskadi.

### FREILOT

At the end of FREILOT Project (2010-2012), four new tools were achieved and set into Bilbao's day-to-day "Mobility Management Toolbox":

- The Transport Forum, where the Council and the main freight operators discuss and reach some agreements.
- Multi-use lane: the same space is used as parking at night, as a delivery slot in the morning and as a traffic lane during the rest of the day.
- Dedicated Delivery Space: it fixes

operational conditions in order to permit a shopkeeper to privately use a delivery slot some hours a week, allowing them to manage their own incoming goods from different providers.

- Night Time Delivery: big trucks can park at night, closing the street for the rest of traffic, to provide goods for a supermarket, only after a physical verification that a minimum noise level is guaranteed in every flat of the building.

The City Council also tested an ITS service for freight operators, to book a time-slot in some loading zones of the city. The test did not work efficiently, but its results will be useful for the conception of future projects.

### COCITIES

COCITIES project (2012-2014) allowed the City to develop an Urban Mobility Open Data Platform, consisting of some standardised web services providing static and dynamic information about traffic and parking. The Cooperative scheme under deployment concerns Vehicle-to-Vehicle/Vehicle-to-Infrastructure interaction systems, and allows to innovate in the last mile delivery in urban environment.

### CO-GISTICS

Nowadays, Bilbao participates in the CO-GISTICS project, to develop an ITS system for freight with a new approach, in order to:

- provide real-time information

about the status of loading zones

- address specific operational conditions for different delivery practices
- dissuade irregular parking in the loading zones

The new system will run in a real day-to-day operational scenario, in order to test different on-street hardware configurations. At a later stage, the project will evaluate them and obtain the related cost-benefits ratios for investment for large scale deployment. The City defined this system starting from the lessons learned in Freilot:

- Operational aspects: in FREILOT, only affiliated users were allowed to use established loading zones, which could be pre-booked. However, the Pilot Test run in an unreal situation, due to the close universe of users involved, and the pre-booking system did not work. CO-GISTICS, instead, will provide real-time information about the occupancy of the loading zones, and the loading zones will be available for every driver whether he is



Four new tools were included in Bilbao's day-to-day mobility management plans as a result of its participation in FREILOT including multi-use lanes, night-time delivery and dedicated delivery space

participating or not in the project.

- Layout: "Intelligent" loading zones separated from each other do not give any operational advantages to drivers. CO-GISTICS project will establish an "Intelligent Delivery Area" (55.000 m<sup>2</sup>) including 12 loading zones. This approach will give some back-up to project partners, while non-participant drivers can use the loading zones as they used to do up till now.
- System Architecture: instead of developing a "Full-solution-system", all the ITS infrastructure (CCTV, Coms, Data, Open Data, etc.) will be at the service of the project, improving the service provided to different stakeholders. Any achievement, even only partially successful, should be deployed on a large scale. At the end of the project, the City Council would like to extend the "Intelligent Delivery Area" to other commercial districts of the city.
- User Interface: drivers focus on loading and unloading operations, and they do not have time to buy a parking ticket in every load zone they park. A specific app will be developed, providing drivers on-line information about real-time occupancy of the loading zones. Once they have parked, a "Touch&go" ticket will be provided according to the plate number, the load zone identification and the time they arrived. Some users will have some advantages if they get the "Touch&Go" ticket (e.g. extra loading time for some big truck with beer & food for restaurant and bars).

By the end of 2015, the CO-GISTICS ITS system will be implemented and the ex-ante evaluation will be completed. The system will run for 6 month in 2016, followed by an evaluation of the results and a re-assessment for the future.

## Pisa: enhancing the competitiveness of urban freight distribution through innovation

**Marilena Branchina**, European Program Manager, SpA Navicelli di Pisa

**T**he City of Pisa represents the second agglomeration of Tuscany in terms of population, accounting for about 90,000 inhabitants, 200,000 considering the hinterland. Mobility demand is very high because of the tourism and the presence of an international airport, in addition to the railway station, the technological and industrial districts and the hospital, all located in a small area. Moreover, Pisa functions as a national hub for rail and air transport: the airport, with over 4 million passengers per year, is the largest of Tuscany and one of the most important in Italy, while the rail station accounts for 15 million passengers per year, and is placed at the crossroads of the central and the coastal axis of the Italian rail network.

### AN EFFECTIVE AND EFFICIENT INTEGRATED MOBILITY SYSTEM TO ENHANCE COMPETITIVENESS

Indeed, the area of Pisa is becoming more and more competitive from an economic point of view. This requires an intense promotion of solutions towards an effective and efficient integrated mobility system. In this regard, the creation of synergies between regional and local policy goals becomes crucial: specific local needs are driving the last mobility development policies implemented in the City of Pisa, but the local authority should also take into consideration the priorities and the planning objectives set at regional level.

Moreover, the European Urban Mobility Package, released in 2013,



**A case study will assess the local issues surrounding volume and access and lack of parking availability for urban freight vehicles in the city centre**

requires innovative solutions by local authorities, starting from a planning system consistent with the objectives and actions set at European level. In line with this strategy, the City of Pisa has adopted a planning framework which envisages Open Standard Specification (OSS) and informatics tools for urban logistics, in order to define a new strategy for urban mobility development.

### PISA SUMP: INTEGRATION OF ITS APPLICATIONS INTO THE TRANSPORTATION PLANNING FRAMEWORK

The City of Pisa, in the framework of its Sustainable Urban Mobility Plan (SUMP), will identify and develop measures to support accidents management activities, specifically in the areas of accidents detection and verification, traffic management, inter-agency coordination, in addition to the improvement of traffic efficiency, the availability of freight vehicles parking slots, and the reduction of the negative related effects, as pollution and waste of resources (time and fuel). The Plan incorporates ITS applications into the transportation planning framework, providing a “mainstreaming” effect, in order to obtain the improvement of safety and the reduction of traffic delays and vehicle emissions.

### THE NOVELOG PROJECT: ITS SOLUTION FOR URBAN FREIGHT DISTRIBUTION

The City of Pisa participates in NOVELOG, a three-year EU funded project, started in June 2015. The NOVELOG project aims to enable the knowledge and understanding of freight distribution and service trips, by providing guidance for implementing effective and sustainable policies and measures, and to formulate detailed business plans of Urban Freight Transport measures.

As implementation site, Pisa will develop a case study, responding

Urban freight distribution in Piazza dei Miracoli in Pisa city centre



to two main mobility issues at local level: the lack of knowledge of the number and current accesses in the city centre of urban freight vehicles, and the lack of parking slots availability in the city center.

For the first issue, the case study envisages the setting of new flow sensors for traffic counting and classification, which will be located at the existing radio-frequency identification (RFID) gates. This will allow to count the number of freight vehicles entering the city center, to better forecast traffic flows and to detect access infractions. The data collected could be useful to assess a possible intervention on the urban traffic flows, and the creation in strategic access points of a Urban Distribution Center (UDC), to promote the usage of Electric Vehicles (EV) for urban logistics.

The second intervention concerns the installation of ICT sensors in the parking slots for freight vehicles: the aim is to build a hardware and software framework to collect, analyse and compare different data types, in order to address this issue in an open and structured way. The City will develop a network of

several wireless based sensors, completely integrated with an operation center, which, in turn, will be connected to information panels, mobile applications, and alerting and notification systems.

The monitored area for the case study is the entire boundary of the city and the main access/exit roads. For specific actions, as the monitoring of reserved parking areas for freight vehicles, the area is the Limited Traffic Zone (LTZ).

The development and the implementation of the SUMP, together with the specific case study developed within the NOVELOG project, could provide a multiplier effect for other Tuscan cities with the same characteristics.

To this day, there are no initiatives applying open standards to such a wide range of application fields in the urban mobility planning framework. 🌐

#### FYI

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# How to navigate the technology jungle

**Mark Cartwright**

examines why open standards are so crucial for any smart city activity

**T**here can be few people alive today, at least in the developed economies, who still think we can get by without a deep reliance on information and communication technologies. That doesn't make it easy for those who are responsible for them.

Most of us have grown up in at least one phase of the "computer revolution". It's been happening since at least the 1970s, and indeed is arguably just the latest phase of the "automation revolution" that has been underway for centuries.

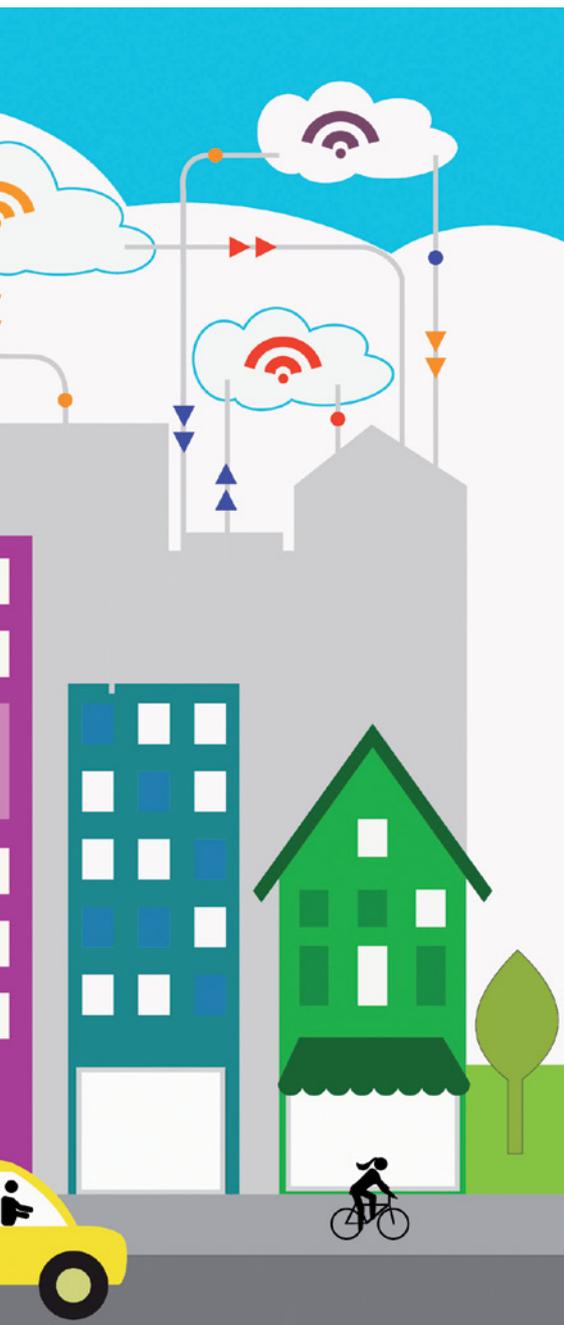
The science fiction author and futurologist Arthur C Clarke said "Every revolutionary idea seems to evoke three stages of reaction. They may be summed up by the phrases: (1) It's completely impossible. (2) It's possible, but it's not worth doing. (3) I said it was a good idea all along".

Where there is a revolution, there are revolutionaries. They cry: "If only people would adopt this new solution, their companies would prosper and their public services would thrive." Those currently in charge may be painted as reactionaries, dinosaurs, short-sighted and incompetent.

There was certainly a lot of old-guard resistance in the early days of computing; but I don't think it's



***It's a great vision, and it's great to have enthusiastic leadership. The trouble is, it's like an impressionist painting: pretty from a distance, but the closer you look, the fuzzier it becomes***



like that any more. Today's leaders are just as likely to be technology visionaries, with any resistance coming from their project managers – or even systems suppliers.

And nowhere is this trend more evident than on the topic of “smart cities”. Every local politician today dreams of delivering a “smart city” for their citizens. They recognise that this involves the creation of a flexible, responsive network of technology systems. It will be crucial to their success in leading their community into a new and better future. Truly, the technology will be the very lifeblood of tomorrow's city.

#### WHAT IS “SMART”?

It's a great vision, and it's great to have enthusiastic leadership. The trouble is, it's like an impressionist painting: pretty from a distance, but the closer you look, the fuzzier it becomes.

First problem: the destination. Where exactly are we aiming for? Is it more cost-effective public services? More responsive? Better democratic engagement? More private sector cooperation? Technology could help improve many things, but an “all of the above” answer will get you a long shopping list (and a big bill).

Second problem: the design. For any given problem there will be a number of solutions, and they will vary on effectiveness, price and risk. For obvious reasons really good solutions tend to be more expensive (sometimes a lot more expensive) and more risky. Will a “cheap and

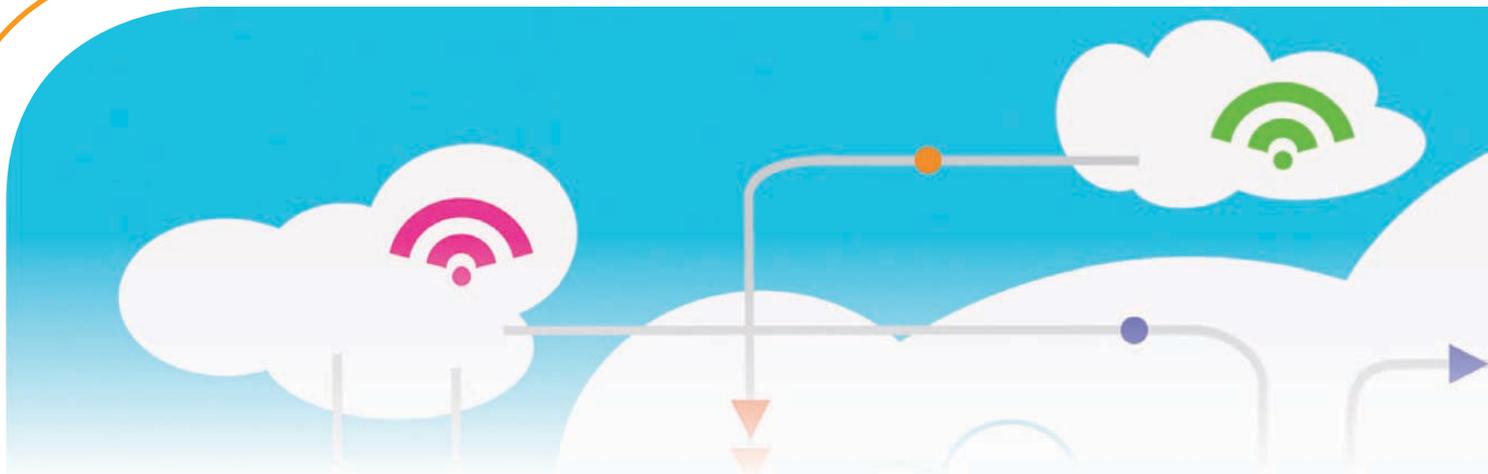
cheerful” solution be good enough, or will it fail to meet expectations? Worse, by drawing attention to something that can be done, will you look silly or incompetent for not doing it very well?

A problem which is all too common is the “get and forget” problem. We want to solve a problem, we've had a long public consultation and detailed technical discussions with suppliers, we've chosen our preferred solution, we've bought it, and it's now installed. Job done: we can move on to the next problem. Well, systems don't work like that.

#### MANAGING EXPECTATION

Let's get specific now. One type of system is the “better managed city” system – for example, an intelligent traffic management system, which responds to congestion, air quality and cyclists; takes account of time of day, weather, planned events and Christmas shopping; and integrates with bus operators, emergency services and neighbouring authorities. All of that functionality needs to be carefully set up and maintained, in a way that a “dumb” network of traffic signals simply doesn't. People have to do that, so you need the right resource level and the right skills.

A second type of system is the “better links to citizens” system – for example, to collect and provide information on network disruptions. You might decide to do that through a social media presence, through sponsoring and distributing apps, or through enhancing questionnaires by



putting them online. You might link to a travel planner. If this kind of system is going to work, it needs to be able to handle many direct queries and complaints from the public – often simultaneously. It is also likely to need a marketing aspect, to raise awareness – again, this isn’t usually something the system can do for itself: it will need people.

So before you even get to the actual technology, you have to do the necessary political work (to determine the goals) and HR work (to provide the necessary humanware).

After that, the technical fun can start.

### **BUILDING BLOCKS**

With smart city systems, rich connectivity is of the essence. Each system needs to be able to link into the complex set of data and services of the systems that supply it, and the systems that it supplies.

In old-style, top-down system design that’s easy enough, because each link will be carefully crafted to deliver the goods. In a smart network, though, the systems will come together much more loosely. Some will be existing “legacy”; some will be procured specifically; and some may be no more than a vague future ambition.

Usually, these systems will have been produced by a number of different suppliers – especially if the

“smartness” involves the cooperation of two very different bits of the city authority, with few historical shared systems. And quite often, some of the systems are not even known – for instance, if you want the public to use their own devices to connect in.

There is only one possible answer to this challenge: open standards.

Now, standards sometimes have a bad name – they are slow to develop, complex to understand, expensive to comply with, etc – but a lot of society (not just the techy bits) relies deeply on their presence and effectiveness. Imagine a world in which each traffic authority (or system supplier) devised its own traffic light system.

As technology has become more and more relevant to transport, the role of Intelligent Transport Systems (ITS) standards has also grown. In the UK, one of the longest-standing and most mature initiatives is UTMC, which began as blue-sky Government research in the early 1990s and is now a mainstream framework for traffic systems across the UK local authority landscape.

UTMC provides an evolving set of practical design specifications, focussing specifically on the data interface between the various ITS involved in traffic management: vehicle detectors, cameras, air quality sensors, signal control, barriers, variable message signs and many others. It’s all based on internet

technologies, so there are plenty of good, flexible design tools for the developer community to use.

The focus on interfaces – rather than functionality – is not accidental. A key goal of UTMC has been the ability to promote commercial success through innovation. By allowing developers complete freedom over

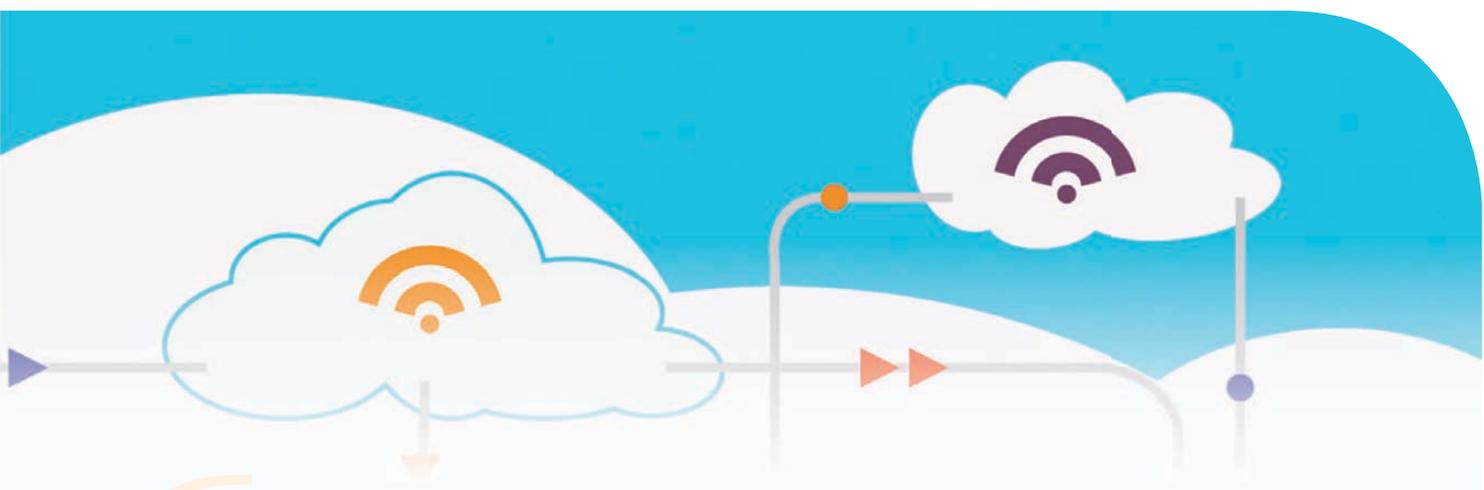
### **About UTMC**

UTMC began as the Urban Traffic Management and Control programme, but the “U” is now often glossed as “Universal”. It provides a free-access technical specification, supported and managed by the UTMC Development Group – a collaborative association of local authorities, systems/service providers, and central Government.

While UTMC is a UK-based initiative, it has developed strong links into Europe through connections with Polis, the EC, and the standards community. Outside Europe too, there is an increasing deployment of UTMC-based system in places as far afield as the Middle East and South America.

UTMC is continuously evolving and its current agenda includes the connection of transport systems into smart cities.

<http://www.utmc.eu>



***Early in the UTMC programme, there was a fair bit of resistance from the established companies, and from their clients and advisers. There are already traffic systems, they argued. Why fix something that worked?***

functionality, there has been ample opportunity for them to create and sell unique products. And by fixing the approach to data exchange, they can sell them as “integration-ready” – as smart city systems, in fact.

#### ROLLOUT

This approach really does work. But – and this is a big but – it takes time and effort to achieve.

Early in the UTMC programme, there was a fair bit of resistance from the established companies, and from their clients and advisers. There are already traffic systems, they argued. Why fix something that worked – especially if it challenges our market position?

Because we can do better, was the answer. Since then, there certainly have been new entrants into the market, adding to competitive pressure and breaking up old comforts. To their credit, the major companies rose to the challenge, refocused their efforts and are now generally very positive about the UTMC framework – partly because it reduces their

problems when they are asked to connect to other systems.

There are cost savings to cities. Some have estimated project costs reduced by a quarter to a third, just because of the competitive pressures, not counting the simpler procurement process and reduced downstream integration costs. (For the comparable German initiative, OCIT, the controller costs are reportedly reduced by 50-80 per cent.)

But the biggest win is in what can now be done, easily, that was previously impossible (or possible only at large additional cost). Little things like connecting car park information to traffic signal strategies can have a significant difference on the ground, and make the difference between gridlock and free flow in the challenging run-up to Christmas. Bigger wins may include the ability to actively manage traffic to meet air quality targets, which means not only local health benefits but the potential to avoid large fines for breaching regulated limits.

We are still at the beginning of the

smart city process. No-one is sure where we will end up. But there is no doubt that it will involve lots of local systems optimisation, creative thinking – and open standards. 

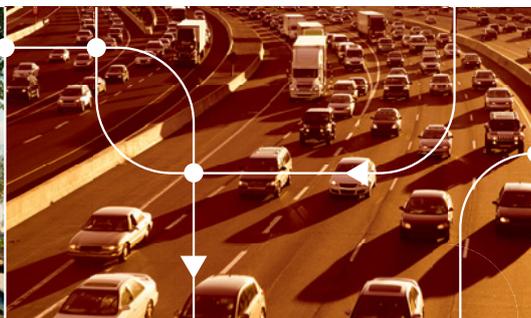
#### FYI

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In 2012, cities in Polis’ ITS working group expressed the need to bring Europe’s open systems and specification frameworks together. This was done within the POSSE project which built on the experience of the UK’s Universal Traffic Management and Control (UTMC), and OCA’s OCIT/OTS which covers systems across the Germanic speaking part of Europe.

[www.posse-openITS.eu](http://www.posse-openITS.eu)



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# Social and Economic Challenges of Transport

This section focuses on mobility for urban economic development and social policy. This includes accessibility of transport for the mobility impaired and accessibility to basic services for everyone; the financing of public transport and transport projects generally; and regulation, planning and governance

- o **Barcelona** – The complexities of managing 3 million mobile people on a daily basis
- o **London** – Credit where it's due: contactless payment comes of age
- o **Berlin, Düsseldorf** – How smart parking solutions can help to ease city centre congestion



Sustainable Metropolitan Mobility: a city like Barcelona can be intelligently efficient in the management of its public transport system

# Tools for modern mobility

**Joan M Bigas** on how the sustainable transport policy of Barcelona's AMB is developing the mobility of the future

**A**mong its many responsibilities, the Barcelona Metropolitan Area (AMB) faces a complex task: managing the daily mobility of more than 3 million people (more than the total population of many European countries), who make more than 10 million journeys every day in an area of just over 600km<sup>2</sup>.

With this challenge in mind, it is not only important to ensure that people reach their destination on time and in comfort, but also that they do so sustainably and efficiently. Reducing congestion, reducing air pollution

and keeping users informed at all times are new challenges for local authorities. Today, thanks to technology, these challenges are easier to meet than a few years ago.

## WE DEVELOP SOLUTIONS FOR THE CHALLENGES

Cycling is no longer just a leisure pursuit and is now recognized as a new means of daily transport. It is becoming increasingly popular as a clean, convenient and affordable mode of transport with health benefits.

However, cycling involves a number of drawbacks that could

In 2011 AMB launched the city's first safe bicycle storage facilities, Bicibox, aimed largely at commuters



discourage people from adopting it as a daily means of transport.

While bicycles account for a healthy 3 per cent share of daily journeys in the city of Barcelona, in the metropolitan area their use has always been very low. The reasons are essentially the difficulty of introducing a private cycle rental service similar to Bicing in the metropolitan area, as the hilly landscape makes some journeys too tiring, and there are also concerns about theft and vandalism.

In view of these circumstances, Bicibox, the first safe parking system for private bicycles, developed 100 per cent by the AMB, was created in 2011. The service is free for registered users. Parking modules are distributed at strategic points in 13 metropolitan municipalities (more will soon be added), offering a total of 1450 places. The service allows users to park their bicycle for 48 hours. They can thus integrate cycling in their daily journeys, combining it with

other means of public transport with no risk of theft or vandalism. Bicibox currently has almost 5,000 users and records an average of 15,000 parking services every month.

Far from stagnating, Bicibox continues to evolve under the management of the AMB. Users will soon be able to book a place in advance, and the new modules will offer the possibility of recharging electric bicycles: new developments to meet the challenges of future mobility.

### THE RIGHT RESOURCES FOR THE RIGHT SERVICE

Though the public bus service is essential, it often has negative impacts on the lives of people, and particularly on the environment. The AMB has addressed this problem in several ways. A total of 141 hybrid buses are now running on the regular lines, leading to a 30 per cent savings in emissions and noise. Three fully electric buses are also running on these lines. One of the most

recent developments, however, was the launch in 2014 of the first Bus on Demand lines. This service covers areas that usually have irregular passenger demand, such as the hangar area of Barcelona-El Prat airport. With this service, users can request the bus when they need it because the bus stops are equipped with a system that alerts drivers on the line so that they can pass through the area. The system also has a screen informing users of the time remaining until arrival. This service can be summed up with one concept: efficiency. Thanks to the Bus on Demand, during the first year of operation more than 50,000 effective kilometres were saved. More importantly, 50 tons of CO<sub>2</sub> were not emitted into the atmosphere.

### INFORMED USERS

There is little point in having a large, reliable and efficient transport network if users cannot obtain information in real time. That is why the



***There is little point in having a large, reliable and efficient transport network if users cannot obtain information in real time***

AMB has placed special emphasis on developing an extensive collection of tools that allow travellers, among other services, to plan their route, know the costs in advance and interact with the various mobility services. The collection of AMB mobile apps was developed 100 per cent by the AMB so that the tools could be perfectly adapted to the service.

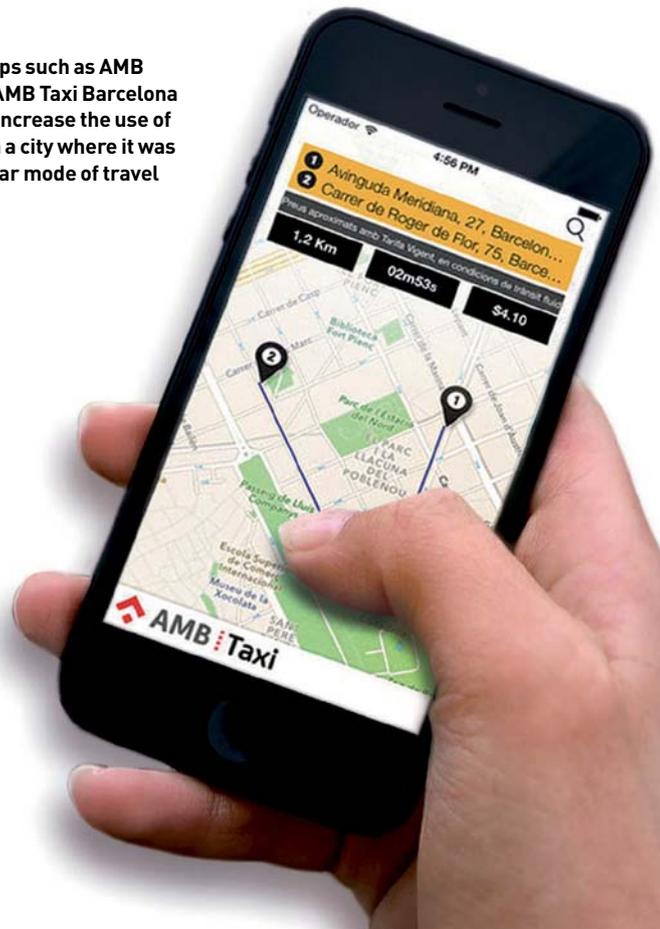
The AMBtempus application, now in its third version, puts the entire

transport network of the Barcelona metropolitan area in the pockets of citizens. AMBtempus allows users to know the arrival time of buses on all lines, to plan the connections with other modes of transport and, thanks to the geolocation system, to find the nearest stop. In addition, the system is constantly developing: with recent improvements, the application allows users to send suggestions and complaints directly to the service,

and provides real-time news of any incidents in the bus network. This development has earned the trust of citizens, as AMBtempus has already had 181,500 downloads and receives 200,000 queries every day.

The AMB Taxi Barcelona app aims to combat the idea that the taxi service is expensive and elitist. It allows users to know the approximate price and duration of any taxi ride within the metropolitan area.

Smartphone apps such as AMB tempus and AMB Taxi Barcelona have helped to increase the use of public transit in a city where it was already a popular mode of travel





AMB's innovative schemes include solar-powered, real time bus information

The third application of the AMB dedicated to mobility is the Bicibox app. Thanks to information on available places at each station, members can plan their routes better. Soon, they will also be able to book a place.

But information has no boundaries, and the tools of the AMB do not end there. Other mobile applications are the guides on metropolitan public spaces such as parks and beaches, and digital technology is also used in the many information systems on the ground, such as information screens at bus stops and onboard buses. All of these services are based on the idea that an informed citizen is an efficient citizen.

### NOW IS THE TIME FOR SUSTAINABLE METROPOLITAN MOBILITY

The Barcelona metropolitan area needs sustainable mobility. A dense, dynamic and vibrant area requires strategies that help to ensure the quality of air, to streamline circulation and, ultimately, to improve the daily lives of its citizens. Thanks to current technological developments, the time has come to make the leap to a new model of mobility. The AMB has launched numerous campaigns to promote electric mobility, providing town councils with electric cars and bicycles and offering subsidies to citizens to buy electric bicycles. Since

the average journey made every day in this metropolis is 20km, electric vehicles are the perfect tool to follow the example of countries such as Norway and Denmark, and to make the metropolitan area world renowned for providing intelligent, sustainable and efficient mobility services to more than 3 million people. ♻️

#### FYI

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# Tap and go

Transport for London and MasterCard are cooperating on an innovative, contactless bank card payment system, as **Will Judge** and **Francisca Delgadillo** report



***TfL customers understand that the new way to pay fares is simpler and easier for them... every day during July TfL observed approximately 20,000 new contactless payment cards transacting***

**J**ust over 12 months ago Transport for London (TfL) introduced an innovative new fare collection model for its customers that that may become recognized as opening an entirely new chapter in the history of Europe's urban transportation industry.

TfL has for many years operated the well-known Oyster card, issuing smartcards to all its customers that enable them to pre-purchase tickets or to pre-load credit onto them so they can enter and exit ("touch in and touch out") London's public transport network. The Oyster system comprises two principal parts – a huge distributed infrastructure of more than 20,000 distinctive yellow card-reading terminals across the city at train stations, on buses, trams, boats and even on the Emirates Air Line cable car, and more than 80 million Oyster cards that are being used by Londoners and the many millions of visitors to the capital.

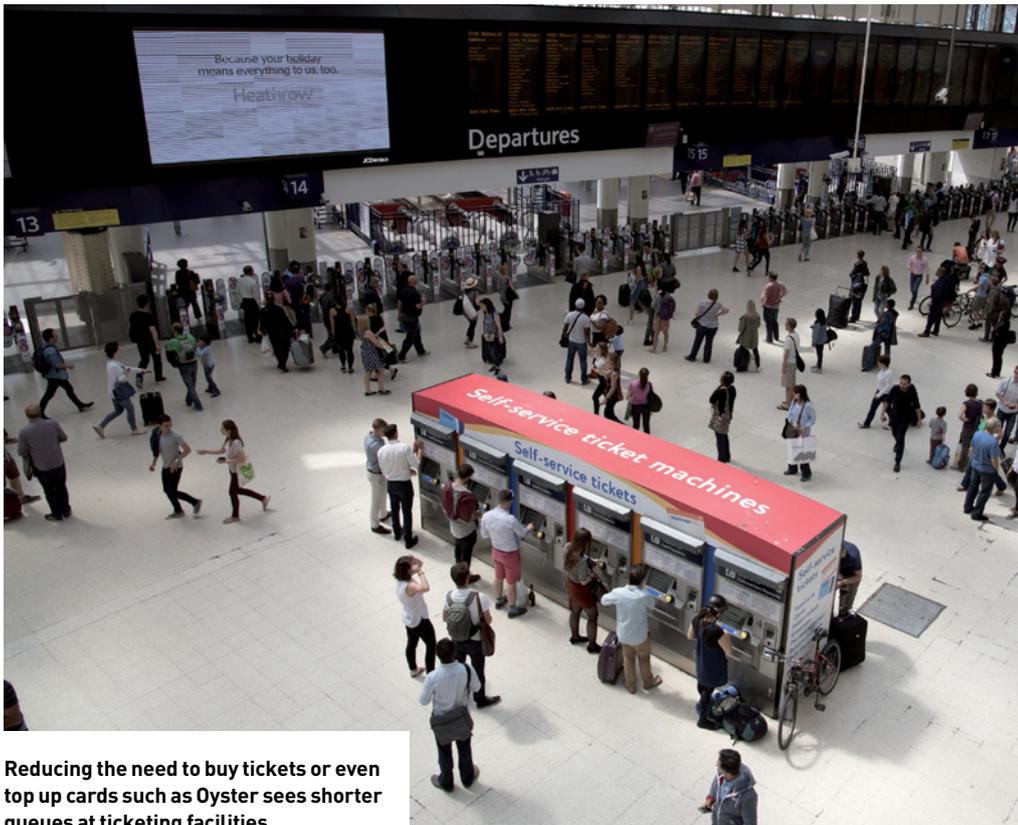
On 16 September 2014 a new functionality in the TfL ticketing system was activated. For the first time customers could choose to use contactless debit and credit cards at the gate-line to pay for journeys on the London transport system. The service was made available to customers travelling on bus, Tube, tram, Docklands Light Rail, London Overground, TfL Rail and most National Rail services in London. Customers paying with contactless

pay the same fare as with Oyster "pay-as-you-go". They also benefit from Monday to Sunday capping. Pay-as-you-go with capping means customers do not need to decide in advance which ticket would be the most suitable, allowing them to be flexible with their travel throughout a day or week. Caps are applied each day on contactless or at the end of the week if a customer has reached a cap equivalent to a weekly Travelcard.

It's worth thinking through the logic of this new proposition and why TfL invested in it. Although Oyster has become a very popular – indeed iconic – London brand over the last 12 years, TfL wanted to take the 'hassle' and inconvenience out of paying fares. Removing the need to remember the expiry date of a pre-purchased ticket; the need to unexpectedly divert from a journey to top-up an Oyster balance at a ticket machine or a Oyster Ticket Stop shop retailer when the balance falls to zero; the need to get a new card prior to travel if you have arrived in London and left your Oyster card at home. TfL also clearly saw that if it could make direct use of standard contactless payment cards provided to its customers by their banks it could reduce the costs of operating the Oyster system substantially, for example by redeploying staff members from ticket offices to gate-lines where they can provide advice to customers; by reducing the need to

**Ticketless travel is even easier when the traveller can use their own bank-issued contactless payment card**

***[The] use of global specifications has meant that consumers can use their devices to pay this way. The launch of Apple Pay in the UK in July introduced contactless payments by watch or by smartphone***



**Reducing the need to buy tickets or even top up cards such as Oyster sees shorter queues at ticketing facilities**

purchase and issue large volumes of new Oyster cards; and by reducing the expense of operating and maintaining a large fleet of ticket machines.

### **SWITCH HIT**

The results have been spectacular. By early July, in less than a year, the usage of the new system by customers had grown to more than 800,000 journeys per day. This equates to about 20 per cent of all the

“pay-as-you-go” journeys on the city’s transport system, and is a significant amount especially given the fact that TfL has maintained Oyster acceptance alongside the new proposition – there was no attempt to force customers to switch to this new way to pay. It seems that TfL’s customers understand that the new way to pay fares is simpler and easier for them and have chosen to switch. And they keep doing so: every day during July TfL observed approximately 20,000 new contactless

payment cards transacting that it had not observed before.

Customers paying this way simply walk up to the card readers in stations or on board buses and touch their contactless payment debit or credit card or device on it. Transaction time is very similar to that achieved with the Oyster card, so throughput of passengers remains high enough to maintain efficient transport operations. TfL calculates a daily charge for each cardholder taking account



## A year in review

A year after the launch of contactless payments across Transport for London's (TfL's) network, POLIS and London's European Office together with MasterCard gathered in Brussels in September 2015 to review the success of this initiative and to discuss the future of public transport fares management.

The event centred on the role of contactless payments in public transport and fare management, the benefits of this technology for passengers and transport authorities and how it can contribute to the Transport White Paper objective of facilitating multimodal travel across Europe. The six expert speakers from the European Parliament, TfL, MasterCard, the European Commission, Budapest Centre for Transport and Amadeus reflected on the lessons learnt in London and how this can support policy goals for urban transportation across Europe.

The seminar closed with a consensus that smart ticketing which meets the needs of today's mobile, global citizens and solves the problems cities face can be achieved by exploiting the established global standards that already exist in the payment industry.

**With 20,000 reading terminals across London contact payments can be used for trains, buses, trams and even the Emirates Air Line cable car**

of capping and bills the card used at the end of the day. Customers can visit the TfL website to see details of their journeys and charges and can also get support from a dedicated call centre.

Importantly, it is not just a proposition for TfL's UK customers. With 18.82 million visitors expected by the end of 2015, as identified in MasterCard's Global Destination Cities Index, London is the world's most visited city with tourists arriving from around the globe. Because the new proposition is founded upon the global standards for contactless payments maintained by the payments industry, TfL customers from all over the world arrive in London with a compatible contactless card in their possession and realise that they can use it to touch in and out of TfL's services without having to take any prior action – no need to register; no need to get a special card; no need to load money anywhere; no need to download an app. The proposition really could not be simpler, so it's not a surprise to learn that TfL has observed payment cards from 77 different countries.

Further, this use of global specifications has meant that consumers adopting the latest payments technology innovations can use their devices to pay this way. The launch of Apple Pay in the UK in July introduced contactless payments by watch or by smartphone to UK consumers, and it seems likely that consumers in other European markets will enjoy these products in the near future. Samsung Pay is not far behind. The good news is that because these smartphone services also use the global standards for contactless payments maintained by the payments industry, TfL is in a position to accept them for fare payments without having to fund any

further technical development of the Oyster system.

## OBJECTIVES ACHIEVED

So what conclusions might be drawn from this successful project for urban transportation policy at the European level? It would seem to contribute directly to two stated objectives held by the European Commission in respect of urban transport, namely increasing the attractiveness and efficiency of public transportation. It is also a huge step forward in terms of ticketing interoperability across borders: the Smart Payment Association published figures earlier this year showing that approximately 616 million contactless payment cards were manufactured and distributed to banks in 2014 for onward issuance to their customers. The figure for 2015 is expected to be close to 1 billion. Hence, over the course of two years 1.6 billion people in every region of the world will have been enabled to pay their fares in London. Within Europe, contactless MasterCard cards are issued in 25 countries today and in some markets – notably Poland – contactless features on more than 60 per cent of all cards in use. One might go so far as to say that London has succeeded in implementing Europe-wide contactless smart ticketing in this project – a significant achievement and one which could be usefully replicated in other key business cities across Europe. 🌐

### FYI

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# The race for space: can smart parking solutions cut traffic?

In cities, up to 30 per cent of traffic is caused by drivers searching for a parking space. Two different approaches provide an outlook on how technology can help to decrease this number, writes **Merle Schroer** and **Hermann Blümel**. In Berlin, a detection system for on-street parking spaces is currently being tested in a research project but, thanks to a Düsseldorf-based start-up, off-street parking also comes into the equation



## ***A radar-based system for detecting parked cars has been developed. The detector and the relevant communications technology can be installed in streetlights or attached to them as standalone solutions***

**L**ike in many big cities, Berlin's population continues to grow. Currently, Berlin has 3.56 million inhabitants; by 2030 it is likely to have an additional 400,000, taking it over the 4 million mark. This is not without consequences as over the next few years, Berlin will not only have to build significantly more homes but also more transport infrastructure. In competition between cities, quality of life and quality of location are particularly important and are determined not only by issues like housing and amenities but also by the quality of public streets and squares. In this context, it is important to deal with the scarce and finite commodity of "street space" carefully and in a way that ensures quality.

There are many and various demands of street space that have to be carefully considered. Moreover, when it comes to parking, Berlin has to deal with the competing needs of residents, customers, employees, delivery vehicles and private visitors. In addition to this, there are new needs, for example the demand for public space for the parking and charging of electric vehicles.

For these reasons, the management of on-street and public parking has been an important part of the Berlin Senate's transport policy for years. The management of parking spaces means that available spaces are used more efficiently. This in turn helps to create a greater sense of order in public spaces and

to improve amenity value. In addition, it creates scope for developing infrastructure for other forms of transport, for example bicycle storage and improved road safety.

In future, the management of parking spaces in Berlin could be supported by IT-based solutions.

As part of the research project "City2.e 2.0 - Smart Parking Solutions for On-Street Parking and

### **Polis and EPA**

Parking is important for the redefinition of the role of cities, between the "motorway" culture and re-urbanisation. Centralized parking in cities has been proven to decrease the dependency on car trips and improve the urban public space. However, implementing integrated parking strategies is a challenging task, for both local authorities and parking operators.

To create a better understanding between the different actors in parking activities, the European Parking Association (EPA) and Polis have established a partnership to discuss the interaction of urban transport and parking activities. Both organisations regularly exchange information and expertise about making parking in cities better. As part of their creating an interchange of ideas, Polis and EPA organised a successful series of annual workshops and published a series of Position Paper.

at e-Charging Stations in the City of Tomorrow", which is supported by the German Federal Ministry for the Environment, a lamppost-based system for detecting parking spaces is currently being tested. The aim of this project is, for road safety reasons, to reduce the number of cars that are searching for parking spaces.

In a second technical development stage it will be possible to considerably improve the efficiency of the monitoring of parking spaces, and in a third stage the effectiveness of parking charges. Currently, the legal requirements concerning these latter two stages are being examined with a view to making any changes that might be necessary.

In simplified terms, a radar-based system for detecting parked cars has been developed. The detector and the relevant communications technology can be installed in streetlights or attached to them as standalone solutions. With the help of an auto-adaptive forecasting algorithm it is possible to predict at short notice where parking spaces will become vacant. A link with car navigation systems has already been established. This means that the Traffic Information Centre in Berlin can provide motorists who are looking for parking spaces (and the road transport authorities) with valuable, high-quality information. Important in all of this are questions of data protection. The solution that has been developed ensures that no personal data, for example the car registration

## ***The evopark system mainly cooperates with local retailers. For customers, the parking fee is being refunded to a certain degree by a credit system with those retailers***

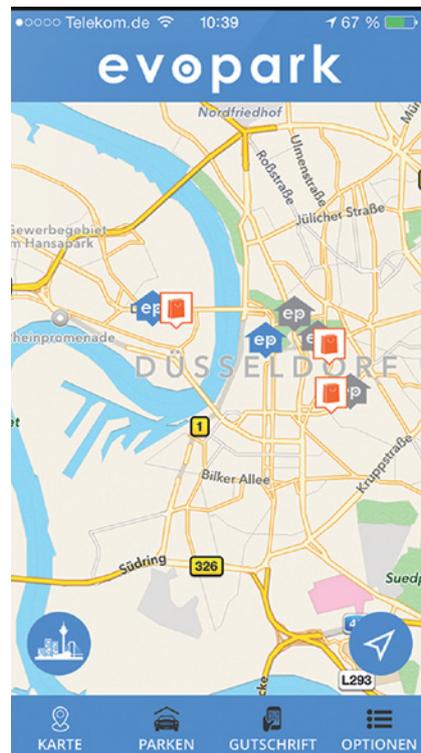
number, is recorded. In a recent test, the first 10 streetlights were fitted with detectors. The area covered by the detectors also included two e-charging posts so that the functions of both parking and e-charging could be observed at the same time. The system could also be expanded to include an RFID reader, which would open up further uses. For example, parking spaces reserved for residents could be stored on an RFID card, which could then be read by the detection system.

### **THE EVOPARK PARKING APP**

Another solution regarding intelligent parking management is a smart phone application, called "evopark". The company, from Düsseldorf, Germany, have developed a solution to detect and consolidate free space in parking garages. By providing information about free parking space to customers, car drivers can choose their parking space and then be navigated to it. When arriving at the parking garage, the barrier opens automatically. This feature is enabled by a parking card in which a radio chip communicates with the parking facilities, opening of barriers and taking care of the payment processes. The evopark system mainly cooperates with local retailers - for customers, the parking fee is refunded to a certain degree by a credit system with those retailers.

From a city's perspective, this smart parking solution offers the chance to guide car drivers away from the street straight into parking garages, thereby reducing the

number of cars searching for somewhere to park in the city. Evidence of the effect of such a solution is being provided by quantitative and qualitative surveys that evopark have conducted. Quantitative wise, the tracking numbers of evopark show a heavy usage of the information screen ("where can I find free parking space?") as well as of the navigation ("how do I get to my desired parking?"), indicating that customers choose a certain parking garage before starting their journey and therefore renounce the search for on-road parking spaces. Moreover, a recent telephone survey of about 100 participants showed that more than 30 per cent of interviewees used



the smart parking service for going directly to a parking garage (while another third was undecided).

So what does that mean for public parking space in cities? According to the founders of evopark, in the future the cars themselves will provide multiple services when it comes to parking (like an integrated radio chip that communicates with parking garage barriers). These integrated parking features would automatically suggest intelligent parking possibilities whenever a customer chooses a destination in the car navigation system.

For evopark's Tobias Weiper, this does not mean that parking spaces on the street are being occupied more steadily, but rather that the "parking space behind barriers" is used more efficiently. Along with reducing parking space in the streets (for example by parking-space management, parking fees, etc), it can lead the way to a more beautiful urban landscape, providing more space for pedestrians or cyclists. 🚲

### **FYI**

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# Safety and Security in Transport

This section addresses road safety and the security of transport systems. It covers road safety policies, addressing all categories of road users and supporting the development of innovative solutions. It also covers technological innovations contributing to the improvement of road safety

- o **Gothenburg, Athens** – Road transport is becoming increasingly dangerous, a trend that needs to be arrested
- o **Amsterdam** – Why is there so little accident data used in traffic policy making?



Safety Performance Indicators are an innovative method for ensuring a city has an alternative source of reliable, relevant traffic accident data

# Stop the accidents – now

Almost 26,000 people lost their lives in road accidents in Europe in 2014. This is almost as many as the year before and some distance from the annual decrease of 6.7 per cent that would lead to the EU target of reducing road deaths by 50 per cent by 2020. Globally, the number of serious injuries is decreasing at an even slower pace than those of fatalities in many countries, so why has road transport become such a danger for people? And what needs to happen to make roads safer? Polis' **Dagmar Köhler** spoke with three experts to understand the local perspective given by **Suzanne Andersson** from the city of Gothenburg, the international view of **Véronique Feypell** from the International Transport Forum at the OECD, and the academic insight of Athens University's **Prof George Yannis**



Suzanne Andersson, Véronique Feypell and Prof George Yannis

## Why are our roads so much more of a danger compared to waterways, railways or air travel?

**George Yannis, Athens:** The main difference between roads and the other modes is that most road vehicle drivers are not professionals, not having received heavy training and not following the very high and strict behaviour standards of the professional drivers and pilots of all the other transport modes. Furthermore, the road environment, especially in urban areas, is much more complex than the railways, waterborne and air routes.

**Suzanne Andersson, Gothenburg:** Roads are an open system, they are not regulated as traffic on rails or in the sky.

**Veronique Feypell, ITF/OECD:** For aviation, rail and maritime transport the notion of a "safe system" has been the norm for many years and aircraft, trains and ships are operated by

professionals with the corresponding preparation and responsibility, individual and corporate. For the road sector, the vast majority of drivers are not professional. It is therefore a radical shift to create a road environment which recognises that humans make mistakes and to move to a vision of no fatalities or serious injuries. Unlike other modes, the road transport system has not been developed with safety for its users as the main focus. The road system was designed to facilitate the transport of goods and people, and the fast movement and delivery is sometimes privileged at the detriment of safety. Also, road transport involves a much larger number of actors and operators, and their actions are often not well co-ordinated.

**Sweden was precursor when in 1997 it concluded that there could**

**be no other ethical target than "Vision Zero". Which is the vision your organization is following to address road safety?**

**SA:** We are following "Vision Zero" - the City of Gothenburg has adopted this vision. Vision Zero means no deaths or injuries in Gothenburg traffic.

**VF:** The International Transport Forum at the OECD strongly supports the concept of "Vision Zero", and importantly - the "Safe System" concept as the best way to move towards that vision. In 2008, ITF published the first international report promoting the Safe System, called "Towards Zero: Ambitious Road Safety Targets and the Safe System Approach", which has become a reference publication. ITF strongly believes that moving towards zero deaths and no serious injuries from road traffic is best supported by

setting intermediate targets and instituting a road safety action plan that is continuously monitored and regularly adjusted. This is the path that should really be followed by all countries; it would save many thousands of lives.

**GY:** Even though everybody agrees with the principle of Vision Zero, most European countries and organisations concentrate on setting targets and putting serious efforts for halving the fatalities in the decade up to 2020, as a first step towards Vision Zero. Especially, in countries with less resources, prioritizing road safety interventions is the only way to optimize the effectiveness of all efforts and investments, particularly during the economic crisis period.

#### **Do we need concrete numerical targets to successfully reduce road transport fatalities and injuries?**

**SA:** Yes, especially on a local level. You need to follow the development and evaluate the effects of measures taken. Vision Zero is all about human lives and the numerical targets represent every lost life or loss of life quality.

**GY:** The use of numerical targets for reducing road fatalities was proved very efficient in all cases, creating

momentum to all road safety stakeholders, including the authorities, the industry, the associations and the road users, especially for countries with less resources and organisation. Furthermore, setting targets leads not only to higher accountability of the authorities, but also to more serious efforts taking into account the effectiveness evaluation of the road safety interventions implemented. Similarly, the use of targets for serious road injuries will certainly bring added momentum and increased results for the reduction of injury accidents.

**VF:** Rethinking the road network as a Safe System implies the adoption of a concrete vision of what you want to achieve. To make that vision a workable concept, it needs to be quantified over a timeline. This way a vision is broken down into smaller, achievable, concrete steps. The setting of quantitative targets for reducing the number of road deaths over “period X” communicates the importance of road safety, motivates stakeholders to act and holds managers of all components of the road transport system accountable for achieving defined results. Ambitious targets raise media interest and public awareness, and hence motivate politicians to support a policy,

to legislate changes and to allocate sufficient resources to major problem areas. Road safety targets are useful and needed at all levels: global, regional, national and local.

There are two kinds of targets: aspirational targets and empirically derived targets. Aspirational targets, aiming for very large reductions, are widely used and can help to break out of a conservative mindset. Achieving them may require introducing practices that are some steps ahead of prevailing practices. However, aspirational targets are not linked to specified interventions.

Empirically derived targets, on the other hand, reflect the estimated impact of the interventions that are part of a road safety strategy. In this approach, targets are based on empirical evidence relating to the selected interventions’ previous effectiveness combined with best estimates of future effectiveness, using a model linking inputs and outcomes. Empirical target-setting is what we recommend. It helps secure community support and linking targets to an agreed strategy of interventions strengthens political support.

**The European Commission follows a target to reduce road deaths but does not set a target to reduce serious road injuries. Transport Commissioner Violeta Bulc explains this with a lack of data to benchmark and monitor progress. What comes first – a vision, or data allowing the monitoring of progress? And what came first in your case?**

**SA:** Our focus on traffic safety in Gothenburg started when we got access to data regarding injuries from the hospitals. We learnt about how many were injured in the city’s traffic, when, where and the degree of injuries. That knowledge led to the need for targets and a vision. That is the story of Gothenburg; however, I think that also a vision could come



**The target of Vision Zero: no deaths or injuries in the city’s traffic**

## **Measures that reduce road fatalities may not necessarily reduce the number of serious injuries. Setting a target for serious injuries as well as for fatalities will help in adjusting policies and interventions**

first. The traffic safety problems, challenges and knowledge are global and well-known in most countries and cities by now. Maybe it is another thing how the world deals with the awareness; it is a matter of acceptance and the possibilities to take measures.

**VF:** The Safe System implies to aim for the progressive elimination of road deaths and serious injuries. Therefore setting targets for how much we expect to reduce the numbers of serious injuries is very much needed. In recent years, most interventions and policies have focused on reducing the number of road fatalities, and most European countries have been successful. However, based on available data, policies have been less effective in reducing the number of people seriously injured in road crashes – which suggests that measures that reduce road fatalities may not necessarily reduce the number of serious injuries. Setting a target for serious injuries as well as for fatalities will help in adjusting policies and interventions so that they can effectively contribute to a reduction in the number of people seriously injured. Several countries now have such targets in place. At EU level it is more difficult. It is a considerable challenge to define a EU-wide target as today not all EU member countries are able to precisely measure the number of people seriously injured. But there is a case for saying that a common target will certainly be a catalyst to accelerate the adoption of adequate mechanisms to register serious injuries in all EU member states.



**A long-term goal is a strong road-safety culture across Europe**

### **A letter to Mr Juncker**

The European Transport Safety Council (ETSC) has been calling on the European Commission to come forward with a target to reduce serious road injuries. In June, ETSC initiated an open letter addressed to President Jean-Claude Juncker that was signed by Polis along with 70 other experts and organisations including 12 members of the European Parliament, urging Juncker to reverse the decision to drop the target. Read it online:

[http://etsc.eu/wp-content/uploads/2015-06-10-letter-juncker-final\\_for\\_website.pdf](http://etsc.eu/wp-content/uploads/2015-06-10-letter-juncker-final_for_website.pdf)

**GY:** It is very important to intensify efforts at national and European level, in order to dispose the necessary data on serious injuries, comparable with the agreed common definition of MAIS3+, in order to better support the setting and monitoring of such a target at EU level. However, in the meantime, setting as target the reduction by 50 per cent of serious injuries in every country, with the existing not common national definitions, could certainly be a very useful first step. In fact, setting targets is mainly a necessary management tool to create momentum for more serious work, which worth adopting and exploiting the soonest possible, even without all the appropriate data.

**Collecting accident data is a major challenge for many cities and member states. How can the European or international level help?**

**GY:** Very often we look where the data are and not where the problems are, especially at the complex road and traffic environment of cities. Consequently, European and international organisations should set and promote the appropriate common standard and best practice for the collection, processing and analysis of the appropriate road safety data, with special emphasis to the necessary data for risk exposure data (traffic) and performance indicators (driver behaviour and authorities performance). In addition, they should establish serious funding mechanisms to support the collection and processing of the necessary data, as well as the systematic monitoring of road safety level at local, regional, national and

European level, including the transparent publication of all results.

Special attention should be given to reliable and comparable road safety data at city level (including traffic, travel and behaviour patterns), aiming to identify the real size of the safety problems in the city and allowing for exchange of experience and benchmarking of best practice. The IRTAD initiative on city safety worldwide has a great potential in this direction.

**VF:** The collection of crash data in Europe benefits from the leadership of the European Commission. The European framework known as Common Accident Data Set (CADaS) proposes a common structure including a minimum set of standardised data elements and is a very useful guideline for EU countries. At a more global level, within the International Transport Forum, the IRTAD Group collects safety data for inclusion in the IRTAD database. Although in an aggregated form, the IRTAD database also offers a tool for

countries to provide and share data in a harmonised way. IRTAD will launch a new project to develop a safety database for cities soon, which will offer a unique tool for cities to share in a common format their road safety data and to benchmark their performance against other cities.

**What will need to happen for us to actually witness safe roads where accidents are extremely uncommon?**

**VF:** The implementation of the Safe System approach at all levels of jurisdictions will progressively lead to a world where road fatalities and serious injuries will be an exception, much as we see events that cause humans harm when using a train, a plane or a ship as an aberration. This will represent a true paradigm shift in the way we see and manage road safety. To make it happen will require very strong political support.

**SA:** Automated vehicles will reduce accidents and injuries in conflicts with cars involved to zero. But they

will not solve all the traffic safety challenges. For example, far more cyclists are injured and the safe bicycle/bicyclist is not here yet.

**GY:** The long-term goal to which all road safety stakeholders should strive is the development of a strong road safety culture in the European society. All European decision-makers and citizens should realise that safer roads means no speeding and no aggressive driving as well as drink-free and undistracted driving and continuous use of seat belts and helmets. On that purpose, the safe system approach has a great potential to contribute, under which anyone involved in road safety decisions is considered responsible for the road accidents and should re-engineer its duties in order to avoid them. 🔄

#### FYI

**Suzanne Andersson** is an experienced traffic planner, specializing in road safety. She is responsible for the Road Safety Strategy in the city of Gothenburg.

**Véronique Feypell** is a civil engineer and administrator in the International Transport Forum at the OECD. In this role she is responsible for research projects in the field of road safety and transport infrastructure. Véronique is also the project manager of IRTAD, the International Traffic Safety Data and Analysis Group.

**George D. Yannis** is Professor and Head of the Department of Transportation Planning and Engineering of the School of Civil Engineering of the National Technical University of Athens. His specialisation areas are Road Safety, Transportation Planning and Management, Urban Mobility and Intelligent Transportation Systems.

## Further reading

Short version City of Gothenburg: Road safety programme 2010-2020 in English

[http://www2.trafikkontoret.goteborg.se/resourcelibrary/Trafiksakerhet/TS\\_kortversion\\_eng2010.pdf](http://www2.trafikkontoret.goteborg.se/resourcelibrary/Trafiksakerhet/TS_kortversion_eng2010.pdf)

Evaluation of the effects of speed reducing measures in Gothenburg:

<http://www2.trafikkontoret.goteborg.se/resourcelibrary/Trafiksakerhet/Calm%20in%20G%C3%B6teborg%202007%2003%2029.pdf> and <http://www.vti.se/sv/publikationer/pdf/vardering-av-hastighetsdampande-atgarder-i-goteborg.pdf>

ITF Activities on road safety, incl. IRTAD:

<http://www.internationaltransportforum.org/jtrc/safety/safety.html>

ITF/OECD (2008), Towards Zero: Ambitious Road Safety Targets and the Safe System Approach:

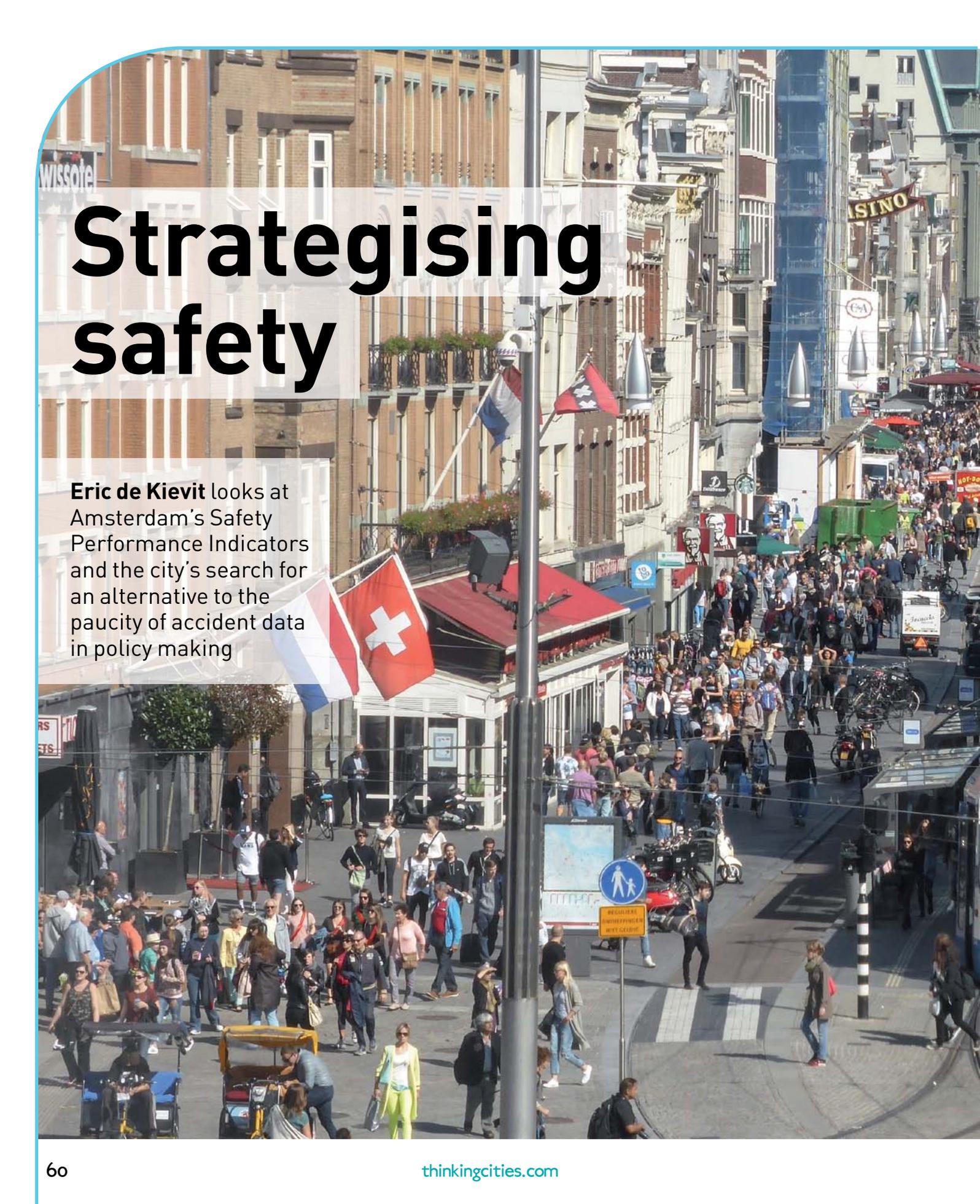
<http://www.internationaltransportforum.org/Pub/pdf/08TowardsZeroE.pdf>

The ITF/IRTAD 2015 Road Safety Annual Report:

<http://www.oecd-ilibrary.org/docserver/download/7515011e.pdf?expires=1445936761&id=id&accname=guest&checksum=408CE78B4021306131B5B485488B586C>

Road Safety Observatory, Technical University of Athens:

[http://www.oecd-ilibrary.org/transport/road-safety-annual-report-2015\\_irtad-2015-en](http://www.oecd-ilibrary.org/transport/road-safety-annual-report-2015_irtad-2015-en)



# Strategising safety

**Eric de Kievit** looks at Amsterdam's Safety Performance Indicators and the city's search for an alternative to the paucity of accident data in policy making

***The combination of large crowds of cyclists and pedestrians in a very limited space makes Amsterdam unique. We see new safety issues arise which mostly have to do with the fight for limited space***

Let's first ask a simple question: why is Amsterdam so interested in road safety? Every day over 600,000 cycle journeys are made; the city attracts more than seven million visitors a year and the street layout was originally designed for horse-drawn carriages. The combination of large crowds of cyclists and pedestrians in a very limited space makes Amsterdam unique. We see new safety issues arise which mostly have to do with the fight for limited space.

Annual growth of inhabitants (+10,000), jobs (+5000), tourists (+450,000 pa) and students (+2500), plus more and more events being organized adds to the problems and, especially within the A10 ring road, the pressure on public space is increasing. This also has implications for road safety. Think of the busy (narrow) paths through the



**One of Amsterdam's busiest streets, Damrak, is a perfect example of multimodality in full effect**

**Preventive measures are taken to prevent common accidents of the largest victim groups, such as creating safer school environments, removing obstacles along paths to prevent single-vehicle accidents and highlighting bicycle lanes in red asphalt**

growth of bicycle use (+40 per cent since the 1990s) and the explosive growth in the number of mopeds (+265 per cent between 2007 and the present). These (light) mopeds have to cope with the large amount of pedestrians, including visitors and tourists. For relatively vulnerable road users like cyclists (including children and the increasing elderly population) and pedestrians, this rising traffic congestion also causes an increase in unsafe situations.

**A NEW STRATEGIC PLAN FOR ROAD SAFETY**

The City of Amsterdam is preparing a new Strategic Plan for Road Safety.

The Strategic Plan for Road Safety is an additional incentive to reduce the number of road accidents in Amsterdam. Within the Road Safety Plan, we focus on improving the security of the most dangerous intersections (black spots) and roads (red routes). Road safety is a precondition in all infrastructure projects of the municipality. The national 'Sustainable Safety' guidelines are processed under the guidance of the Central Transport Commission (CVC) and this forms the basis of road design. The CVC assesses plans and designs on traffic flow and road safety.

In addition, preventive measures are taken to prevent common accidents of the largest victim groups,

such as creating safer school environments, removing obstacles along paths to prevent single-vehicle accidents and highlighting bicycle lanes in red asphalt. A large majority (over 90 per cent) of accidents are caused by unsafe behaviour. An important pillar in this area is traffic education. All primary and secondary schools are offered a coherent road safety program ('Amsterdamse Verkeerslijn').

**How does this relate to SPIs?**

The policy-making process changes from a reactive to a more proactive approach to traffic safety in the years to come. Previously, the accident figures were contributory to the policy. The accident registration has never been quite complete, but since 2010 the records have deteriorated such that the figures of serious road injuries were no longer reliable. Due to the reduction in the registration of these accidents, an important basis for decision-makers disappeared.

In co-operation with the SWOV Institute for Road Safety Research a new method of analysis that is unique in Dutch cities was developed. The approach is based on "Safety Performance Indicators" (SPIs)..

**SAFETY PERFORMANCE INDICATORS – BEHAVIOUR**

We defined over 30 SPIs for behaviours of key road safety groups, which



are scientifically shown to contribute to the occurrence of accidents. On the basis of these SPIs, education campaigns and enforcement are to be used more effectively.

**SAFETY PERFORMANCE INDICATORS – NETWORK SAFETY INDEX (NSI)**

NSI for infrastructure is an assessment instrument (Network Safety Index) for the infrastructure in



In Amsterdam its many bicycle lanes are highlighted in red asphalt

Amsterdam, without looking at where the accidents took place first. Eventually, there shall be an overview of the road network (with priority: the 50km/h roads) where for each road section it is clear how dangerous this is compared to other road sections. This Network Safety Index (NSI) – score is created based on various SPIs for infrastructure. For example: there is a separate bicycle lane alongside a 50 km/h road, there

are obstacles (bollards) on the bike path, there is a curb along the bicycle lane, etc. The instrument NSI is being developed in partnership with the ANWB and SWOV.

The instrument can help in improving road safety considerations (prioritizing) in road infrastructure projects. In addition, when accidents/incidents occur, based on the NSI, we know directly if the infrastructure is in good order.

### Why the municipality of Amsterdam is engaged in SPIs?

There are a number of reasons to use SPIs:

- 1 More transparency with regard to the policy process and the “circle of influence” of the many actors relevant to improving road safety.
- 2 Better control options because the indicators can be measured directly, are less rare and less dependent on ‘probability’ as an accident.

***For each indicator, we can determine what actors can exercise influence on this indicator. This also offers opportunities for a more integrated approach because SPIs may also be relevant for other policy areas (health, assets)***

- 3 The step to taking appropriate measures easier as SPIs better or more direct offer a view on causes of unsafety.
- 4 A natural basis for integrated policy because the indicators can also be relevant for other policy fields. For example, consider health, spatial planning, quality of life and environment and so on. An important opportunity has been recognised in combining the NSI to asset management and we are looking into that...

**What does that mean in practice for Amsterdam? What research is being done, which SPIs being measured? What kind of instruments are being used?**

For 2015 – the first base year – we have chosen 30 SPIs divided into seven indicators and seven types of road users. The SPIs relating to the key behaviors of key road safety groups in Amsterdam are:

- Proportion of road users that give right priority,
- Proportion of road users waiting for green light
- Proportion of road users that respect maximum speed
- Proportion of road users that is sober (including drugs / medicines)
- Proportion of road users that looking back at crossing or overtaking
- Other bike (bicycle lights)
- Distraction (by smartphone) in traffic.

Depending on the type of research question we use existing data sources (traffic lights, counting studs), surveys or observation by camera.



Wait for green – the message is clear...

**Are there any difficulties encountered in this study?**

What is of concern in each study is representativeness and costs. Measuring some many SPIs – surely the first year – requires a considerable investment. That is also the reason that we make use of existing data sources where possible, and additional research where inevitable. Before the end of the year 80 per cent of all SPIs must be provided with a percentage.

**What are the expected results?**

SPIs give the City of Amsterdam the opportunity to monitor the development of road safety in key areas. The state of the indicator is input for new road safety policies. By analyzing the evolution, recorded in an annual progress report (dashboard) we hope to achieve substantial saving of casualties. For each indicator, we can determine what actors can

exercise influence on this indicator. This also offers opportunities for a more integrated approach because SPIs may also be relevant for other policy areas (health, assets). With the actors involved, the City of Amsterdam wants to come to an agreement to get the SPI in a desirable direction for road safety.

**What do you hope the City of Amsterdam to achieve?**

Ultimately we want a decrease in number of traffic accidents. With the use of SPIs, we expect more efficient use of budget for road safety. 🔄

**FYI**

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