UITP PROJECTS THE FUTURE

Mobility catches up with Umberto Guida, the busy director of UITP's European Project Department, to talk bus systems, standardisation, energy, cars, congestion, and plenty more besides…

By Lesley Brown

Over the years, Umberto Guida's training as a systems engineer has enabled him to navigate a relatively smooth career path from aviation to aerospace (Galileosatellite programme) to public transport at UITP (International Association of Public Transport), which he joined in 2008 as manager of the European Bus System of the Future (EBSF) R&D project.

Throughout the course of the EBSF, UITP realised that such European-wide initiatives are essential for really boosting public transport, he explains. *Consequently, in January 2015 it created the European Projects Department, which I oversee as director. Our team of 10 are currently managing a total of 14 initiatives. I coordinate some of them, such as ZeEUS* [Zero Emission Urban Bus System], *which aims to extend the fully-electric solution to the core part of the urban bus network.*

And he has other strings to his bow, representing UITP both as a member of the ERRAC (European Rail Research Advisory Council) steering board and in theERTRAC (European Road Transport Research Advisory Council) plenary.

BUS SYSTEM TO GO

As well as being the first European Commission (EC) project dedicated to urban buses, the EBSF also helped trigger **a change in mentality among bus actors**, i.e. industry, authorities, and operators, *because UITP succeeded in bringing them all to the table to discuss innovation, rather than tenders. This had never been done before on such a large scale!* adds Mr Guida.

One of the outcomes of the EBSF was a **roadmap document** – *a sort of wish list of the next steps in research on urban bus systems that we considered needed to be taken.* Another was the EC's realisation that institutional research and financial support are vital if the performance of city buses is really to improve.

Mr Guida picks up the thread: C*ity bus systems are ten times more complex than those of coaches, yet the number of products on the market are far fewer. Consequently they deliver a poor ROI. At the same time, the market is pushing hard for aspects such as comfort, accessibility, and on-board IT, which are having an impact on the costs of vehicles. So in order to make real and rapid progress, the industry needs funding from Brussels.*

He also highlights the importance of taking the **bus system as a whole** into consideration. *We must keep our eyes on the complete picture and not invest only in, say, propulsion, while neglecting the rest,* he warns.

STRENGTHENING COMPETITIVENESS

At its World Congress & Exhibition in Milan, this June 2015, UITP launched EBSF 2. The goal of this follow-up action is to continue the bus system innovation drive that began under EBSF.

More specifically, the objectives are to **improve the efficiency of urban bus systems** mainly in terms of costs and energy consumption through 'smarter' technology solutions, maintenance procedures and infrastructure.

In terms of funding, the EBSF received a total of €16 million, its successor is benefitting from €10 million, and then there was 3iBS (intelligent, innovative, integrated Bus Systems), an intermediary action that ran between October 2012–March 2015 with a total spend of €3.3 million.

The 3iBS consortium focused on seven innovation topics identified as having *'high potential for strengthening the competitiveness of the bus in the urban environment',* namely: **accessibility**; **optimised operation for special events; level of service; intermodality; modularity; IT standardisation for public transport;** and **energy efficiency.**

The EBSF roadmap had to be updated and expanded, so we fixed the topics for 3iBS in consequence, explains Mr Guida. *This project also produced analysis of changing trends in cities and buses, e.g. high or low capacity, gauging the real interest in electrification and other clean propulsion solutions, and so forth.*

RENEWING FLEETS

A key outcome of 3iBS was a strong call for **accelerating fleet renewal**. Indeed Mr Guida drove home this point in his keynote speech at this year's Busworld Academy Congress in Kortrijk, which organised high-level debates, roundtables and seminars on the safety, sustainability and comfort of buses and coaches.

Even if pollution of urban buses is much lower than cars, ***around 45,000 diesel buses operating in European cities today have engines that are not even Euro 4*** *[emissions standard, they run from 1 to 6]* ***compliant***, he told Mobility.

But the burning question is ***'just how much of a political priority is improving air quality in European***

***cities?**' If Brussels is really taking this issue seriously, more financial support mechanisms should be created to renew the oldest parts of the bus fleets, which would lead to an immediate improvement in polluting emissions.* On the matter, it comes as no surprise that money talks.

Indeed one could say that the rich/poor disparity between the European Union (EU)'s 28 Member States (MS) can been gauged, to a certain degree, by the emissions levels of their city bus fleets. More prosperous countries like Germany, Sweden, Finland and the Netherlands, whose existing diesel vehicles are already less polluting, are switching to fuel cell and electric.

Meanwhile cities in the south of Italy, Portugal, parts of Spain, Greece and Bulgaria, for example, simply don't have the euros to shift out of old Euro 3 (or worse), even if their minds are willing.

*This is where **the EC has to provide the means to take high emission buses out of the picture**,* reckons Mr Guida, *and by so doing prove its commitment to the air quality cause. Such is already the case in cities like Ljubljana and Budapest, which are really starting to clean up their fleets.*

Let's not forget too that older buses are costly to run and maintain. So replacing them makes extra sense, since it will also save money in the long term for city authorities, their operators, and, perhaps even the EU over the long term.

Another action to encourage replacement could take the form of a **scrap incentive for buses**, similar to the schemes in place in MS like Germany and France whereby motorists are encourage to trade in old cars for new in exchange for a euro bonus.

Discussions on the above are ongoing with the EC, reassures Mr Guida.

DIESEL MATTERS

The Euro 6 emissions standard, in effect since January 2014, is the result of massive investment by the European bus industry (the standard was issued by the EC, then manufacturers invested to produce vehicles compliant with the regulation). *And thanks to its specific engine technology filter, **the level of NoX emissions by compliant buses is minuscule**,* points out Mr Guida, who is clearly delighted with this performance.

He does not share the 'diesel is the devil' vision.

It is proved that you can have a clean diesel bus today. In particular when bearing the production cycle of electricity in mind when making comparisons: while qualifying as an 'emissions free' fuel in a local context, e.g. in cities, on the global level, if the electricity is produced from coal, it's not quite so innocent.

BUS ELECTRIC – STANDARDISATION WHERE ARE YOU?

The public transport sector is certainly seeing a shift towards electric propulsion for its bus fleets. But all is not simple. Long-term decisions are urgently needed vis-a-vis the technology. And this is where standards must come into play.

Different solutions already exist for charging systems, yet standardisation is lagging behind. Nevertheless it is indispensable to ensure that **tenders are not complicated by compatibility issues**, and that cities are not subsequently hampered by vendor lock-in, thus retaining their 'technology freedom' to purchase the right type of vehicle for the right route.

One bus system doesn't fit all, points out Mr Guida. *But in the absence of standardisation for the charging infrastructure, cities will have less choice. And the risk is that the flexibility of the bus system will be compromised in the years to come.*

On this score, another point to bear in mind is the **reselling value of vehicles** – if they are locked into one specific charging solution, this value will decrease.

MOVING FORWARD

'In order to ensure rapid market penetration and avoid any future incompatibility, it is vital to work out a cross-industry agreement on how to charge the vehicles and arrange for payment of the electricity,' says the European Electricity Industry. *'Standardising electric vehicle charging infrastructure will provide benefits to all stakeholders. Developing standards is of the utmost importance to drive forward progress in European car and battery technology research, development, and innovation.'*

To help resolve matters, UITP is keen to bring all the public transport actors concerned (despite being competitors) to the table (as was the case for the EBSF project).

While the situation is still 'up-in-the-air', standards will come in the form of EU directives, reckons Mr Guida.

Then there is the EC mandate to CEN-CENELEC to develop standards for electric bus charging by 2019, he adds. *But as for some elements such as the depot plugs, interfaces, and protocol for transmitting energy, manufacturers, public transport operators, and the authorities all realise that this date could be too late for them. **Everyone wants to have standards sooner,** rather than **later**.*

Since we are not starting with a blank sheet, in a possible scenario, given that it will cost less to change the infrastructure interface than redefining the whole power system behind it, we could envisage a first level of standardisation for the communication and software interfaces.

A second level will follow whereby the market will decide which manufacturers prevail for the type of charging technology.

Note: *'in the domestic environment, the reason why there are no less than 15 different styles of plugs and wall outlets worldwide is because over the years many countries developed a plug of their own, rather than adopting the first two-prong model, which appeared in the US in 1920.'*
Source: World Standards

BETTER LATE THAN NEVER

The good news is that in 2016, together with the Association of German Transport Companies (VDV), UITP and its members will produce a document representing the generic Use Cases of electric bus charging. This document will be presented to CEN-CENELEC during a workshop in February as the basis for developing the standard.

'Decisions about public transport can have repercussions that last for decades, so predicting mobility habits is vital for the success of public transport. In many other businesses, decision-makers can change course every few years – but this is a luxury that public transport cannot afford. The infrastructure, which can take a long time to build, will also probably affect the development of a city for years to come – because cities are shaped by their

transport systems.'
Source: 'Public Transport Trends', UITP, June 2015

END OF THE ROAD?
Once considered the 'king of the road', the car's crown is slipping in today's burgeoning cities. The reasons for its declining popularity among drivers are well documented – **road congestion**, **insufficient parking space**, the **costs of both fuel and vehicle maintenance**. Meanwhile the associated **air** and **noise pollution**generated is a concern shared by all – the public and authorities – to varying degrees.

Major cities across the globe – from Singapore to London to Stockholm – have introduced **congestion charging schemes** in a bid to keep cars under control. And overall, the authorities report that these devices are helping make a difference. Other access restriction policies also being employed include car-free zones, low emission zones, park & ride, and car tolls.

There's no doubt all of the above are effective to varying degrees. *But their success also depends on parallel actions to develop public transport,* Mr Guida reminds Mobility. *These kinds of actions always have to be 'carrot-and-stick' driven.*

In October 2015, Lars Backström, CEO of Swedish transport authority Västtrafik reported that since Gothenburg introduced its congestion tax in January 2013, costing between €1 and €2.3 (SEK9 to 22), **public transport ridership has risen by 8 to 9%.**

Another angle of approach is to consider whether the act of driving is for pleasure, or out of necessity, suggests Mr Guida.

PLEASURE OR PAIN?
People make their transport choices depending on what is most efficient for them. In this respect, one can say that driving to work, being stuck in commuter traffic, is hardly efficient. Whereas driving in the country, on congestion-free roads, without the prospect of work at the end, is another matter!

Of course car use is also determined by the alternatives on offer, their levels (perceived or real) of reliability and safety, expands Mr Guida. *If the latter criteria are not met, people will pick up their car keys. Once again, the carrot-and-stick comes into play.*

The car interior represents an environment over which the driver feels cocooned and has a sense of control. But if you consider the efficient use of time, a 20-minute tram ride to work, for instance, gives passengers the chance to start reading emails, catch up on news and social media. Whereas in the car they can just talk on the phone, listen to music or the radio, and that's about it. Assessing the ***quality*** *of travel time is important.*

In cities, given that cars are parked for over 90% of the time, owning such immobilised capital is hardly an astute move, he points out. *Yet people continue to buy because there are no better travel alternatives, or they are not attractive, or because of emotional ties.*

[**Ed. note**: while he travels to work in Brussels by tram, Mr Guida admits to owning a sports car and to having an emotional attachment to this 'worst possible investment'. *Perhaps because I am Italian?!* he suggests].

SUSTAINABLE URBAN TRANSPORT – MAKING THE CASE

Urban transport accounts for **around 40% of emissions** from the entire transport sector. Hence mobility in the city lies at the heart of the fight against climate change. Given UITP's commitment to the cause, by championing public transport as the means of attaining sustainable mobility, will it be actively participating in the upcoming COP21 climate summit?

UITP has been already heavily involved in its preparation, Mr Guida tells Mobility. *We will be equally present in Paris during COP21, making the case for sustainable urban transport. We are also discussing the possibility of organising some activities centred around ZeEUS.*

UITP presented an action plan for public transport at Climate Summit 2014 in New York, he adds, *plus our secretary general Alain Flausch is one of the 12 members of the High-Level Advisory Group on Sustainable Transport, created by United Nations (UN) secretary general Ban Ki-moon.*

In the run-up to COP21, this October 26 UITP held a seminar baptised 'The Road to Paris: Advancing Climate Change Action with Sustainable Urban Transport.' This meeting sought to demonstrate that the national ambitions agreed in Paris during the summit can be achieved by providing a greater role to collective mobility initiatives.