



ENLIGHTEN
 "SHARED
 MOBILITY
 IS OUR
 FUTURE"

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 PUMP UP
 THE VOLUME!

EXPLORE
 CYBERSECURITY
 IN TRANSPORT
 NETWORKS

ACCOMPLISH
 MIND THE
 GENDER GAP

**PULSE IS INTENDED FOR ALL
STAKEHOLDERS, DECISION
MAKERS AND OPINION LEADERS
OF EVERYDAY MOBILITY. A KEOLIS-
LED INITIATIVE, THIS BIENNIAL
MAGAZINE AIMS TO FUEL DEBATE
AND GENERATE DISCUSSION ABOUT
THE TRENDS AND CHALLENGES THAT
ARE SHAPING OUR INDUSTRY.**

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To have a pioneering spirit is akin to cultivating your capacity for wonder. And thus, by questioning preconceived ideas, being open to their ecosystem and being part of the daily life of their regions, the men and women of Keolis have an insightful perspective on the world and today's major mobility issues.

This pioneering spirit is the philosophy behind our Keoscopie Observatory of Mobility Trends, for which we have just conducted a new large-scale survey on the mobility use of citizens in 37 metropolitan areas across the world. It is also the *raison d'être* behind *Pulse*, our twice-yearly magazine, now in its third issue.

In this edition you'll get to read exciting and in-depth articles on time offices, women's safety in public transport, and cybersecurity; as well as the views of renowned mobility experts such as Seleta Reynolds, General Manager of the Los Angeles Department of Transportation and Robin Chase, an influential mobility entrepreneur.

Enjoy.

BERNARD TABARY
Keolis International CEO

CONTRIBUTORS



Pascale Lapalud

Urban planner and President of the Genre et Ville think tank

An expert in political science, geo-architecture and urban design, Pascale Lapalud co-founded Genre et Ville in 2012. This French urban innovation platform revisits cities through a multidisciplinary approach, aiming to make them more inclusive. Pascale Lapalud also works as a consultant for 9A+ Explore, a socio-ethnographic research agency. Her main areas of interest include mobility, urbanism and “living together”. She shares her perspective on inequalities in public transport and her vision for a more adapted and inclusive city with *Pulse*.



Robin Chase

Influential mobility entrepreneur

An American entrepreneur in the mobility field, Robin Chase co-founded Zipcar, the world’s largest car-sharing service, in 2000. She also created Buzzcar, a peer-to-peer car-sharing service and Veniam, a vehicle-to-vehicle communication network. Robin is also a consultant to the OECD and US Department of Commerce and Transportation. She is recognised as one of the world’s most influential opinion leaders on mobility. For *Pulse*, she looks back on the introduction of the “Shared Mobility Principles for Livable Cities”, which boasts more than 170 participating organisations.



Seleta Reynolds

General Manager of the Los Angeles Department of Transportation

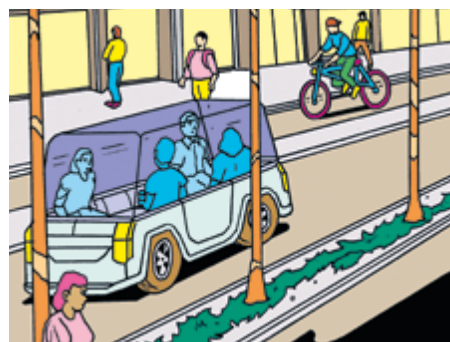
Seleta Reynolds heads the Los Angeles Department of Transportation and is president of the National Association for City Transportation Officials. In Los Angeles, she has implemented the “Great Streets” plan, aimed at reducing accidents, facilitating bicycle traffic and promoting access to public transport, and this was only a start. She discusses her goal of making Los Angeles a pioneering city in terms of mobility and redefining the role of transport coordinating authorities in her *Pulse* opinion column.

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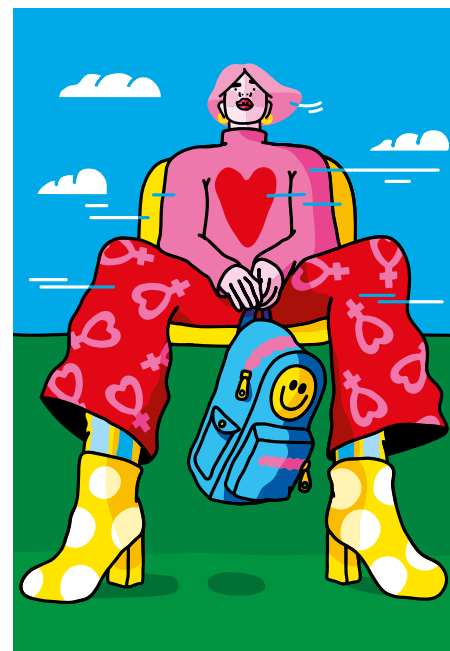
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OPINION COLUMN



FROM CAR DEPENDENCY TO SHARED MOBILITY

REDEFINING LOS ANGELES

by **Seleta Reynolds,**

General Manager of the Los Angeles Department of Transportation (LADOT)



Los Angeles was designed around unfettered use of the car. Streets are congested. Air quality is poor for one quarter of the year. Traffic deaths are the number one cause of death for kids in Los Angeles. And for every new resident that moves to Los Angeles, they bring one car with them, which now means we have a city with four times the rate of vehicles than in the 1990s. **If these trends continue, how can we expect our city to thrive?** As the General Manager of the Los Angeles Department of Transportation, these challenges fall squarely on my shoulders.



*Illustrations:
Pauline Bonis & Paul Pätzel*

I have spent the last four years developing a plan to overcome my city's car dependency. New transportation innovations have opened up the possibilities for Los Angeles. And a better mobility future is within our reach, certainly sooner than most might expect.

My aim is that, by the time we host the 2028 Olympics, Los Angeles will be a model for the autonomous and shared mobility movement that is equitable and sustainable.

By 2028, driverless cars and air taxis will form part of a coordinated transportation network. The City will take a much more proactive role in managing the movement of goods and people. Community-led initiatives will redesign streets to eliminate traffic deaths and reallocate space to public parks and plazas. We will have aggressively converted our buses and city fleets to electric vehicles. We will have centered our work around social and racial equity so that everyone has access to dignified transportation choices. If we get all these things right, air quality will improve, our streets will be safer, and we will retire the tired cliché that traffic sucks.

To achieve such a transformation, we need to redefine the role that a city transportation agency has played in the past.

In the past, we had a static and incomplete picture of how people were traveling, we had no digital data base of where you could or could not park in the city, and we begged for data from private transportation providers. Today, we are offering companies substantial input into the data specification we will use as part of our permit system for electric scooters and ride sharing. Businesses like Uber and Lyft are now taking a very different posture to when they first arrived on the scene. And we're creating a dynamic digital database of all of our infrastructure in the city.

In the past, transportation agencies have taken an adversarial approach to private product companies and required partners to go through time-consuming and cumbersome contracting processes to share basic data.

In the past, we've allowed enticing new technology (like freeways) to completely reshape our urban form with little thinking about long term social impacts of unfettered expansion. Tomorrow, we expect autonomous systems to be a feature of our

streets and air space, integrated with mass transit, and aligned with the city's sustainability and equity goals. Autonomous vehicles have the greatest potential to solve many of our mobility challenges. However, if left to purely commercial forces, autonomy will add to congestion, increase safety challenges, and exacerbate inequality. This is why today, we are working in close coordination with autonomous vehicle providers to ensure the technology is supported by our infrastructure and aligned with our goals.

To achieve our transition from car dependency to shared mobility, we need to redefine the role that a city transportation agency has played in the past.

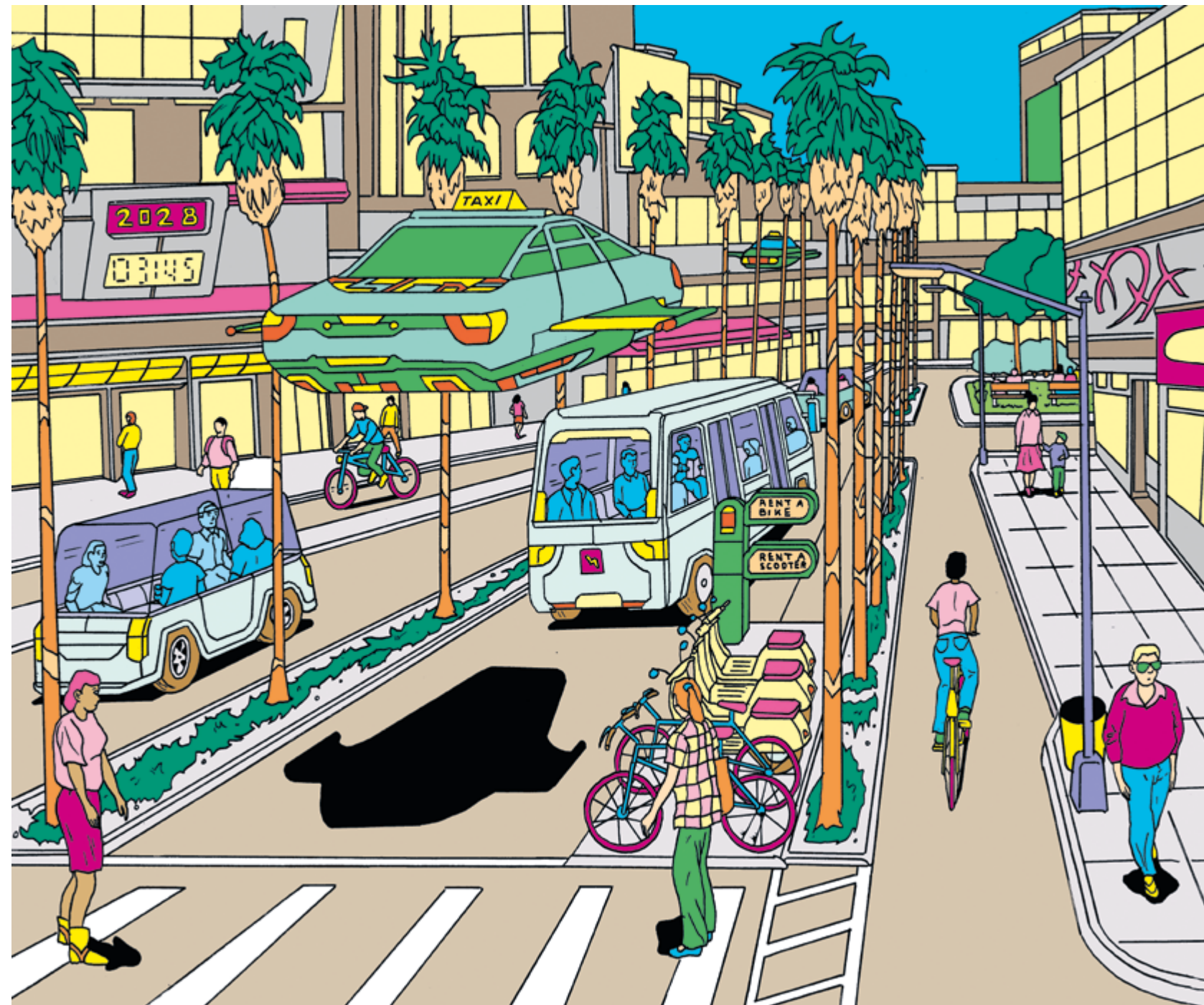
And finally, in the past, we've approached community engagement as a chore. We created portals to request services that eliminated human interaction. Today, we're asking better questions of our community partners. Do women feel safe on public transit? How can we improve walking and biking access that helps make people feel more comfortable? Are our buses going where people want them to go? How could micro transit, protected cycle lanes and electric scooters work alongside the bus to provide flexible options that encourage people to drive less?

In just the last 12 months, we have been able to deliver groundbreaking work to build a Transportation Department that functions more like a platform for services to be built on top of. This digital platform will allow us to guide all users around Los Angeles in the most sustainable way.

I cannot be sure how mobility will develop in our city. I can be sure that our goal is to express our policies through technology, so that the city remains the guardian of the public realm to ensure that the future serves our goals. ●

Bio

SELETA REYNOLDS is General Manager of the Los Angeles Department of Transportation (LADOT). As such, its mission is to make Los Angeles a model city by the time of the 2028 Olympics. In particular, she has implemented "Great Streets" for Los Angeles, a plan to reduce traffic fatalities, double the number of people riding bikes, and expand access to integrated transportation choices.



AI MAKING SHARED MOBILITY STARTER

♦ ARTIFICIAL INTELLIGENCE

Booming computing power, big data and deep-learning technologies facilitate so much the development of Artificial Intelligence that we can expect to see a vastly different transportation landscape.

The transformation will include driverless buses routinely shuttling people safely to their destinations and smart, sustainable vehicles performing tasks such as ploughing snow, collecting garbage or delivering food and mail. Here are a few of the ways in which AI will enrich our daily commuting lives.

♦
by
Madeleine Resener

IMPROVING THE USE OF PUBLIC TRANSPORTATION FOR THE DISABLED

California industrial and public researchers are working on an artificial intelligence project on the Caltrain (the commuter rail line on the San Francisco Peninsula and Santa Clara Valley). The goal? **To give passengers with vision, hearing, or other disabilities real-time information in order to help them find the right track, platform, and train, as well as the optimum spot for boarding.** The technology could also alert passengers when to disembark and confirm that they are on the right train. The Internet of Things system taps into the cloud, smartphones, and data devices called “beacons” at Caltrain’s Diridon Station. The project could be expanded to include BART – Bay Area Rapid Transit System – and high-speed rail, or used for transit terminals nationwide. ●

SMART CHARGING FOR LOWER ENERGY CONSUMPTION

Until now, recharging the batteries of electric buses has been a challenge for the cities that use them. The system requires putting the buses on charge when they return to the depot and leaving them there until their departure the next day. This may provoke peaks in energy consumption that can wear down the batteries and even result in overcapacity fees. Artificial intelligence is about to change that. **Smart charging involves smoothing out the consumption so that the peak is never reached and the battery life is preserved.** Keolis is experimenting with this new method that will ensure the availability of energy for residents when cities fully electrify their bus fleet. ●

RESOLVING URBAN CONGESTION

Leveraging AI to understand and predict passenger movement is one of the latest innovations that aims to resolve global urban congestion problems. The software leverages low-power smartphone sensors to detect and predict passenger movement across various modes of transport. It then processes real-time sensor data from smartphones and wearable devices without the need for any other external hardware. Because the solution leverages fundamental AI techniques to model passenger movements across several modes of transport, it can identify key transition points such as passengers waiting at the platform to getting on the train. So it helps public transport operators to get an end-to-end understanding of journeys. ●

MAKING PUBLIC TRANSPORTATION SAFER

Experts have proposed an AI-based system to help make better decisions relating to safety so that riders can enjoy a more comfortable and secure journey. **The idea is, first, to let an algorithm monitor all the incoming passenger communication via Twitter, Facebook, and online chats. The information will then help to determine whether they relate to a critical emergency situation, such as fire, crime, or faulty equipment.** Once identified as an emergency, the system will decide which department and location are best equipped to handle the situation and automatically push the customer’s message to mobile phones of all the relevant stakeholders. It all makes for a safer, more enjoyable journey for passengers. ●

ANTICIPATING BREAKDOWNS IN ROLLING STOCK

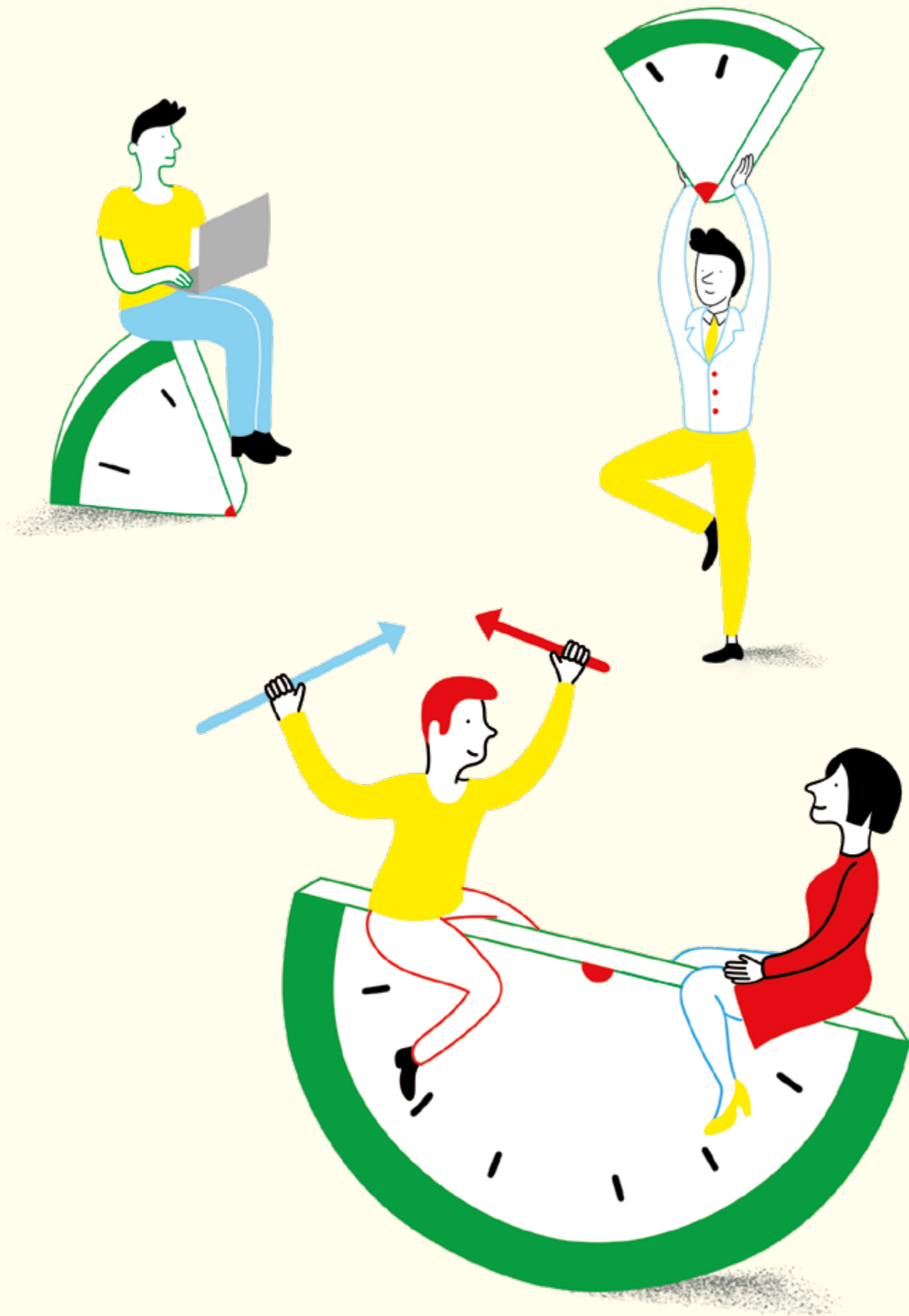
Transit operators stand to gain big by using AI to carry out maintenance. Instead of relying on diagnostic tasks performed under human supervision, “predictive maintenance” anticipates breakdowns by detecting data inconsistencies. **It relies on collecting and analysing information from the millions of sensors located on critical train components to anticipate maintenance requirements before accidents occur, thus significantly decreasing stoppage times and costs.** Predictive maintenance also uses diagnostic, warranty, survey, federal and social data sources with advanced analytics to detect and predict which parts, or combination of parts, are potential issue points. The cost savings for rail operators in terms of avoiding major repairs or recalls is significant – as much as 25% by some estimates. ●

PROVIDING MORE EFFICIENT CAMERA SURVEILLANCE

Camera surveillance has become an integral part of protecting passengers. Analysing videos, however, isn’t easy: it requires time, attention to detail, and discernment by the security personnel. **Keolis is experimenting with a way to make security cameras used in public transportation more effective.** The solution involves connecting the cameras to a software system that can identify an abandoned bag in a precise location in just 10 seconds and retrace it to its owner. ●

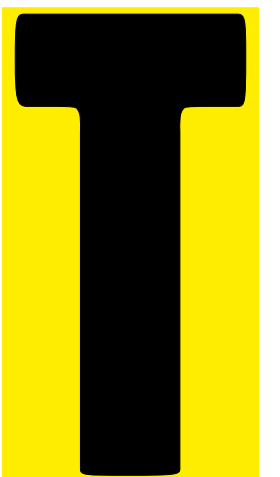
SIMPLIFYING TRAVEL BY INTEGRATING VOCALBOTS IN PUBLIC TRANSPORT

Artificial intelligence-powered voice interfaces, or vocalbots, are useful to give passengers quick answers to questions like “When is the next bus to work?” or “How do I get to the dentist?” Using the transport network information already stored and a journey planner system, the solution is able to provide an answer within a few milliseconds. **Today, the idea is to make it easier for customers to choose public transport by integrating a platform with a hands-free speaker you control with your voice.** This could be particularly useful for elderly and disabled people who may find it difficult or even impossible to use smartphones, but still need to access all kinds of travel information. ●



IN SEARCH OF LOST TIME: “TIME OFFICES”

TO **IMPROVE** THE QUALITY OF **LIFE**



The way we spend our time is very different from how people may have done decades ago. Major economic, social and cultural changes have pushed European policymakers to be more sensitive about time-related issues experienced by citizens. And this, in turn, has led to the creation of “time offices” and temporal policies, i.e. policies that integrate time-related issues. But how did they come about? What are they exactly? And what do they do?

◇ *In many Western societies*, the notion of time has become an important tool for policy-making. *The creation of time offices in Europe* has helped cities *to unlock real social benefits* for their citizens.



by Joa Scetbon – Illustration: Inkie

Different times, changing work

In order to understand the emergence of time offices, we need to grasp the depth of the changes that have occurred over past decades and how they have impacted our relationship to time.

Since the 1950s, habits and lifestyles in the West have changed dramatically. The roles of men and women have evolved, resulting in the development of women's work and childcare services, for example.

We also now work differently, often part-time or on weekends. In the European Union for example, 18.8% of workers have part-time jobs, and about 14.2% work on a regular basis on Sundays⁽¹⁾. **And, we no longer collectively follow a single social or cultural model.**

This means the divisions of time (school time, working time, leisure time, travel time, etc.) are increasingly individualised and diverse.

The emergence of a gig economy, in which independent workers are contracted for short-term commitments, is amplifying this phenomenon. Typical examples include the work provided by platforms like Deliveroo, Uber, Lyft and so on. Changing work schedules are reflected in the way our cities operate. Conventional rhythms that previously dictated city life – night vs day, weekdays vs Sundays – are slowly disappearing.

New world, new problems

With these social, economic and cultural evolutions, new issues have arisen.

Take for example the social change in Italy during the mid-1980s, when women voiced their discontent about the difficulty in reconciling and preserving the professional and personal spheres in their lives. Since more women were working, they requested that opening hours of public services be adjusted⁽²⁾. This demand led first at the end of the 1980s to a proposed bill put forward by Livia Turco, then to the 142/90 law that encouraged cities with over 30,000 inhabitants to reassess public services schedules. This moment can be seen as the birth of temporal policies, which are now well integrated into cities like Turin, Genoa, Milan and Bergamo.

Inspired by the Italian experience, a French parliamentary report in 2001 recommended the creation of “time offices”⁽³⁾. Several cities (including Lille, Lyon, Rennes, Paris, Montpellier and Poitiers) set up formal institutional structures to promote temporal policies. Similar initiatives took place in Germany, Spain, Belgium and the Netherlands. In 2009, Barcelona, the first Spanish city to be

endowed with a time office, launched a European network of temporal policy advocates. In 2013, the association Tempo Territorial took over the management of this network (see interview of Katja Krüger, page 13). This new approach to policy-making implies a cultural shift and a certain amount of financial resources. This explains why temporal policies are not yet the norm everywhere.

Supporting temporal policies

These time organisations investigate time-related issues and support temporal policy-making. They act as independent experts and tackle every time-related topic that could make life easier for citizens. Jean-Yves Boulin, associate researcher at Irisso-Université Paris-Dauphine-PSL, mentions several: **“One example concerns the opening hours of public and private services. They help cities provide services that are compatible with citizens’ busy lives. They also investigate regulations for business hours on Sundays, advocate for libraries to open on Sundays instead of shops, and help organise city nightlife and public transit during the day and night.**

Temporal policies can help make better use of facilities.”

In Groningen, in the Netherlands, a temporal analysis of a public school showed that the facilities were under-utilised outside school hours and could be used to enhance social cohesion. So, the city decided to make the school accessible to neighbourhood residents outside school hours in order for them to engage in various programmes.

Applying temporal analysis to mobility

Time offices tackle multiple issues related to mobility. In 2008, for example, policy-makers in the Netherlands and the local time office explored how to reduce commuting time as well as carbon emissions. This led to the creation of Smart Work Centers, first in Amsterdam and Almere, along the model of what is now called a “third place”, i.e., a location that is neither home nor the traditional workplace. A year later, results showed that “users had saved an average of 66 minutes per day by using the SWC instead of commuting to their companies’ offices⁽⁴⁾.” Third places similar to the SWC provide further benefits creating local community centres, acting as a market place for services or reducing costs for companies. Today, third places exist everywhere across Europe.



In Rennes, France, together with Keolis, the local time office acted in 2012 as an independent and legitimate expert to help alleviate public transit congestion by encouraging university to modify class schedules in order to reduce the number of students travelling simultaneously to and from the university. On a similar note, an experiment is currently being launched to reduce public transit congestion during rush hours in the business district of La Défense, near Paris. Public authorities are working with companies to spread out employees’ arrival and departure times in the morning and evening. The plan also involves encouraging working from home and using third places. The goal is to decrease employees’ rush hour transit by 5 to 10% within a year.

Italy remains a pioneer in this domain. As Jean-Yves Boulin notices, “Time management has become an integral part of many urban planning policies. Interestingly, it is the only country with a university programme focused on the subject. Students of

the Politecnico di Milano School learn about chronotopic and chronographic mapping, which are tools used to study the accessibility of public transit and services in a city, and thus help to develop strategies to improve mobility”.

Time offices have proved their worth by supporting local authorities when they implement solutions that boost the welfare of city residents. They certainly have the capacity to inspire more decision-makers worldwide. ●

(1) Source Eurostat.

(2) Bonfiglioli Sandra, Rosso François. *Les politiques des temps urbains en Italie*. In: *Les Annales de la recherche urbaine*, N°77, 1997. *Emplois du temps*. pp. 22-29.

(3) Hervé Edmond, *Le temps des villes*, rapport parlementaire, 2001. p.66. Disponible sur <https://urlz.fr/8I2Q>

(4) <https://urlz.fr/8I2T>

“TIME OFFICES PROMOTE EQUALITY AMONG CITIZENS.”

“Despite everything that has been done recently in terms of transit, like introducing more fast trains and building more highways, people haven’t really saved time. Instead, areas have simply become more accessible.

The issue of time raises questions about equality within the population, as a great number of fragile people still suffer from time-related issues.

On the one hand, low-income families still tend to live further away from city centres and their workplaces, or have no choice but to take jobs, the schedules of which are often constraining; as for women, they often suffer from a double inequality as they tend to work full-time while still doing most of the housework (on average, 73% in France, according to the OECD) or caring for dependent family members, such as children or the elderly.

On the other hand, those who have better qualifications can choose jobs with less demanding schedules, and those who enjoy better incomes can purchase time, by acquiring the services of third parties, such as babysitters for example.

Time offices, through temporal urban planning policies, can help address these inequalities. By supporting urban planning and the accessibility of public services such as childcare centres or public transport, they actually promote equality in society.

And they do so from a neutral position, as they are neither urban planners nor delegates. Whether on the scale of a city or a less densely populated area, they simply act as outside experts, proposing innovative solutions.”



Katja Krüger,
President of Tempo Territorial

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MIND THE GENDER GAP:

MOVING TOWARDS EQUALITY IN PUBLIC TRANSPORT

by Libby Wilson
Illustration: Xaviera Altena



*Transport is a unique vector for opportunity. Whether economic or social, the easier it is to get around, the more locals thrive. **But for more than 50% of the world's population, public transport still comes with serious baggage.***

Ensuring women have access to inclusive and secure public transport is a growing priority for economists, policy makers, urban and transport planners alike. Institutions such as the World Bank and UN Women actively research and make recommendations on the relationship between gender and transportation. ***That's because the consequences reach far beyond transport use: this isn't simply about getting around with ease; it's about equality and advancement.***

DIFFERENT TRAVEL PATTERNS

The jury is still out on whether men and women are from different planets, but one thing is certain:

they do have different travel habits. For example, women in Africa, Asia and Latin America are more likely to combine domestic and caregiving duties with travelling to work, moving between multiple destinations throughout the day. This can be quite complicated when you are reliant on public transport, which is the reality for most women, especially those from low-income backgrounds. Two-thirds of public transport passengers in France are women⁽¹⁾, over 50% in Latin America and the Caribbean⁽²⁾ and 55% in the US⁽³⁾. And in India, a whopping 84% of women's journeys are by public, intermediate public and non-motorised modes of transport⁽⁴⁾.

For women, limited access to transport, and the dubious level of safety while onboard, is the greatest obstacle to labour market entry, according

to the International Labour Organization (Trends for Women 2017). In France, according to a FNAUT study on gender harassment in public rail transport, just 19% of women say their use of public transport is not influenced by harassment. *"The lack of personal security, or the inability to use public transport without the fear of being victimised – whether on public transport, walking to or from a transit facility or stop, or waiting at a bus, transit stop, or station platform – can substantially decrease the attractiveness and thus the use of public transit"*, notes a 2017 Global Mobility Report released by SuM4All (Sustainable Mobility for All), a World Bank-led initiative.

DAILY RISKS

From stalking and unwanted comments or gestures, to groping and assault, women are

at higher risk of experiencing violence. And it's a global problem. A 2015 French report from France's National Observatory of Crime and Criminal Justice found that 220,000 women had been sexually harassed on public transport in what was described as *"a conservative estimate"*. **In the Île-de-France region, for example, a study from FNAUT on gender harassment in public road transport and multimodal hubs shows that public transport (including rail stations) is the primary location for sexual assault against women, with 39% of attacks reported occurring there.** And journeys at off-peak times, like early morning or late at night, present a real safety issue. Minorities are often targets of gender and sexual harassment as well. In the UK, the number of LGBT victims on the road and rail networks has tripled over the past five years alone⁽⁵⁾.

SAFER SPACES

In an effort to reduce risk, many initiatives focus on improving the quality of transport

infrastructure and operations: redesigning waiting areas, creating better lighting on access routes or improving schedules and punctuality at stops. For many women, getting around is a bit like a puzzle, and



timing is critical to fit together their various daily trips. On-time transport minimises waiting time and reduces insecurity. In other words, it makes a real difference in people's lives. For example, a report from the Inter-American Development Bank (IDB) in Latin America found that cutting down on tardiness and congestion also reduces the likelihood that a woman will be a victim of crime. Adapting off-peak offers, such as expanding evening and weekend services to avoid extended wait times in deserted or poorly lit stations, is also crucial.

In Quito, Ecuador, as part of UN Women's Safe Cities Programme, officials found that 84% of women cited public transport as unsafe due to sexual violence. The city created a response plan to address the issue on every front: remodelling 43 of 44 trolley stops in line with new safety criteria, training 600 staff members to assist and respond to victims, a mobile app for reporting sexual harassment via text message, expansion of crime and violence monitoring, a communications campaign, school-based prevention initiatives, and more. In 2016, Quito declared the programme an "emblematic, special category project," and committed to continuing it in the future. Women-only compartments on buses and trains have even been introduced in

countries like Japan, India, Brazil, Egypt and Mexico as well. But for some, this is only addressing the symptoms and not the problem, and perpetuates perceptions of female vulnerability. Speaking about women-only buses in Papua New Guinea, Lizette Soria, UN Women's Safe Public Transport Programme, said, *"This is just a short-term strategy, because our long-term goal is to make public transport safer for everyone"*.

TECHNOLOGY SOLUTIONS

There is good news: technology can intervene at various stages.

In India, the Safetipin app allows women to easily consult safety scores for public spaces. And in Cairo, HarassMap creates crowd-sourced maps of harassment incidents. Citizens can report an incident or intervention – whether someone acted to stop the incident or supported the victim – via a dedicated website. The result functions much like Google Maps: each dot represents one report and additional details are available upon clicking. This easy-to-use overview helps users determine the safest routes. Once using public transport, geotracking and alert apps kick in. For example, Singapore's "justshakeit" lets users simply shake

their cell phone to send alerts to the police, family members, and their doctor. Under-reporting of harassment is an epidemic and technology is proving its force in this arena too. The root cause of under-reporting is difficulty identifying perpetrators and a lack of information about when, where and how to file a complaint. In 2012, London conducted a survey and found only one in ten passengers said they would report sexual harassment. So transport authorities launched "Report it to Stop it" to give women more ways to report incidents: in person, by phone and even by text. Since this programme launched in 2014, British Transport Police in London have received 65,000 reports by text.

COMBINING APPROACHES

The most effective strategies look at issues holistically.

That's why policy makers are taking action to tackle harassment and improve women's transport safety as part of a wider gender-equality framework. **"It's a combination of factors that we need to bring: technology can play an important role, as well as infrastructure and service system design, but it is also key to engage women and girls, involve the community at large, and design systems that will also lead to a change in behaviour because that's part of the issue"**, said Pierre Guislain, Vice President of Private Sector, Infrastructure & Industrialization at the African Development Bank Group.

Incorporating women's needs and perspectives is an important first step. In Toronto, Canada, active consultation and joint projects with women's groups have proven effective. Thanks to a fruitful collaboration between transport authorities, police and community groups, comprehensive safety audits of the city's transport systems were conducted and various safety-related improvements delivered, from designated waiting areas to request-stop programmes on transport networks. Other organisations (see *"Gender sensitisation training in Delhi" and "Australia: a more gender balanced workforce"*, page 19) have introduced

gender-sensitive training for drivers and increased the number of women in transport-related roles.

IT TAKES A VILLAGE

Improving public safety works best when the public is aware of the issues

and transport personnel properly trained to combat them. Authorities and campaigning groups are getting the "stop harassment" message across using traditional means like posters, advertising and staff at safety kiosks, as well as via digital tools like Hyderabad police's Hawk Eye app, which allows citizens to report sexual assaults. But social media plays a big role too. After all, one of the best ways to spark a reaction is to go viral. A campaign by UN Women and the Mexico City government to raise awareness of sexual harassment on subways grasped this: seats were shaped to look like a man's body, including the penis. Needless to say it sparked more than a few side stares and digital shares. The goal behind all these campaigns is empowering everyone to be part of changing attitudes and behaviour.

Promoting safe and sustainable transport doesn't just benefit women. It creates more security for everyone. But it remains a collective challenge. Involving users, especially women, goes a long way in shaping services that improve access, reduce inequalities and create a better, safer experience for all.



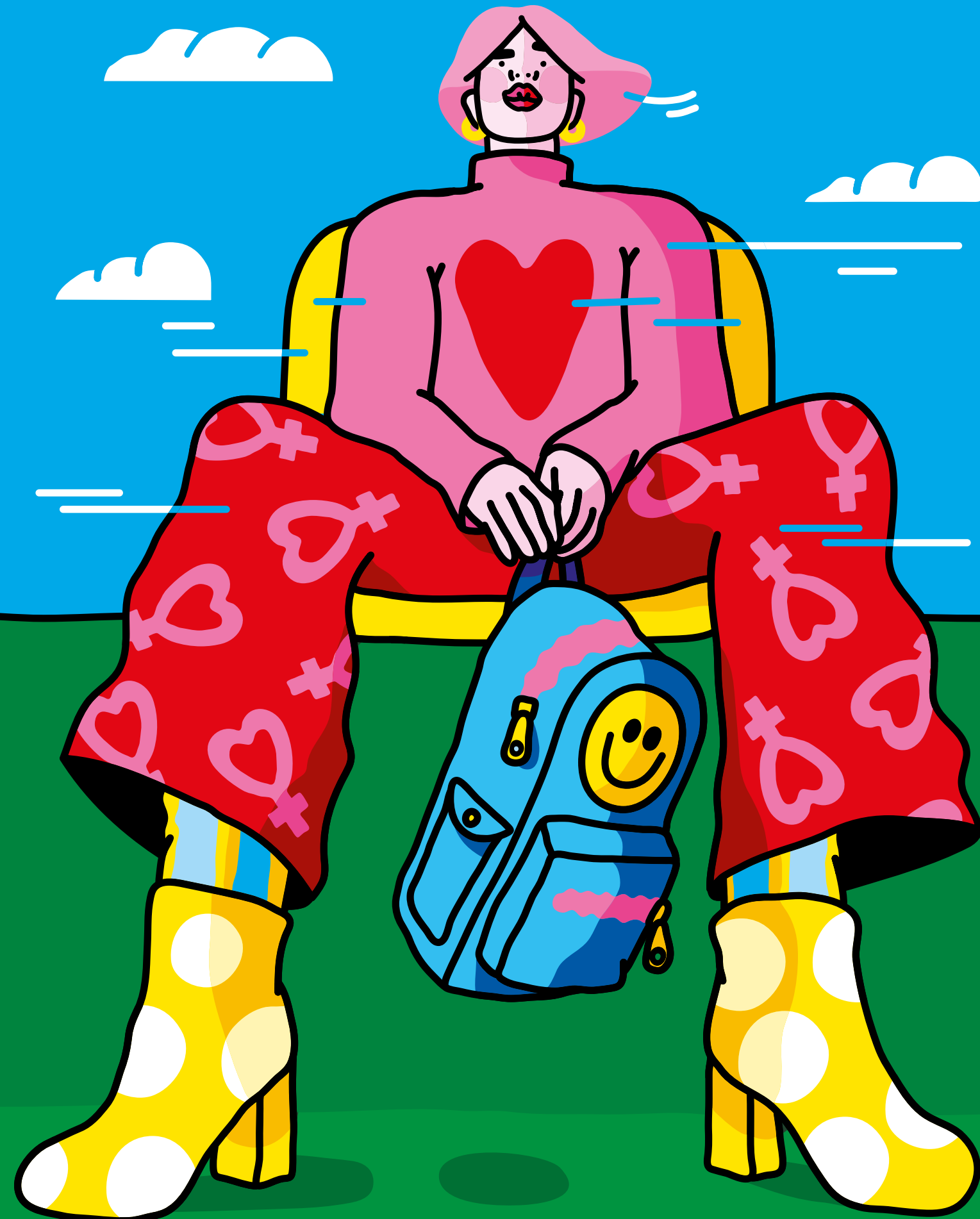
(1) *Gender Equality Initiatives in Transportation Policy*, Yael Hasson and Marianna Plevoy, July 2011.

(2) InterAmerican Development Bank *The Relationship between Gender and Transport*, Isabel Granada, 2016.

(3) *Demand for Public Transport in Germany and the USA: An Analysis of Rider Characteristics*, Ralph Buehler and John Pucher, 2012.

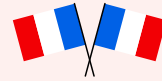
(4) Census, B-28 "Other Workers" By Mode of Travel to Place of Work, *New Delhi: Office of the Registrar General & Census Commissioner*, India, 2011.

(5) British Transport Police data 2013-2018, obtained through Freedom of Information request.



SECURING WOMEN'S JOURNEYS IN MEXICO CITY

The Viajemos Seguras (Travelling Safely) programme began in 2008 aims to prevent and penalise violence against women and girls in public transport. Following the introduction and enforcement of women-only cars on Metro lines and buses, the deployment of personnel on bus networks and policewomen in stations to assist with complaints has led to an increase in female-user participation.



FRANCE: WOMEN-LED EXPLORATORY WALKS

"In France women are the main passengers on public transport and the primary victims of sexual harassment and violence. We began exploratory walks on bus lines in Lyon in 2015 with the aim of actively involving women in identifying safety risks and potential solutions with us. This led to concrete improvements such as newer, more comfortable buses, better lighting and redesigned bus waiting areas, as well as awareness building initiatives such as educating drivers on women's safety issues and highlighting the 7,500 video surveillance cameras across our transport network. Last year we began a campaign to mobilise passengers against sexual harassment, explaining how to report incidents and reminding perpetrators of the sanctions."

Claire Brousse,
Statistic Analysis and Prevention
Policy Manager, Keolis Lyon



LONDON: JOINT ACTION AGAINST SEXUAL OFFENCES ON PUBLIC TRANSPORT

Project Guardian, a partnership between Transport for London (TfL) and the police, created a team of officers dedicated to dealing with unwanted sexual behaviour crimes and support victims. To encourage more passengers to report incidents, TfL created a "Report it to stop it" campaign in 2015, and a film, which has been viewed over 13 million times. In parallel, police officers engaged with the public, giving advice to commuters, reassuring women that reports would be taken seriously and distributing leaflets explaining the reporting process. Over the past three years, the number of incidents reported has doubled, with a 36% increase in arrests for unwanted sexual offences on London's transport network⁽¹⁾.



NO TO MANSREADING IN MADRID

Transport authorities in Madrid launched a campaign in June 2017 against mansreading with signs placed on all city buses. The initiative was driven by EMT, the City Council's equality department and women's group Microrrelatos Feministas. A similar campaign is planned for the city's Metro system. **Clara Serra**, politician and member of the Madrid Assembly: *"We believe that putting a name to and making visible these kinds of daily sexist behaviours is the way ahead to become more aware and leaving inequality and machismo behind."*

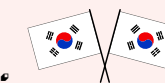


AUSTRALIA: A MORE GENDER-BALANCED WORKFORCE

In 2013, only 12% of employees of Melbourne operator Yarra Trams were women. It launched a Driven Women recruitment campaign to address the barriers that prevented women from applying for tram driver roles, including misconceptions about safety issues, earning potential and working conditions. The campaign quickly yielded results: in the first two years after its launch, the number of job applications from women increased nine-fold. Today, women account for more than 22% of Yarra Trams' workforce and driver recruitment is now 50:50. **Craig Ypinazar**, Director, People and Organisational Effectiveness said, *"It's important that our employees reflect the diversity of the community we serve. A diverse and inclusive workplace make good business sense, and we continue to work on new ways to attract and retain diverse talent across Yarra Trams."*

ACTIONS TO ADDRESS WOMEN'S SAFETY FROM ACROSS THE WORLD

Explore our selection of initiatives linked to different aspects of public transport management that are helping to make transport networks safer for women.



SEOUL: WOMEN-FRIENDLY CITY PROJECT (WFCP)

Authorities in Seoul have set out to implement women-friendly policies that address safety and convenience since 2007. To incorporate women's perspectives, WFCP created a framework that involves women's civic groups, government officials and experts in fields such as transportation, architecture and environment to guide policy-making from planning to implementation.



GENDER SENSITISATION TRAINING IN DELHI

Delhi Transport Corporation worked with Jagori, a women's advocacy group, to run gender sensitisation sessions for drivers and conductors. Drivers were made to sit on the bus and watch role-plays about women's journey experiences in order to understand gender issues and sexual harassment and become stakeholders in making transport safer for women. Women-only cars have been introduced in the New Delhi Metro.

HISTORICALLY, CITIES HAVE BEEN DESIGNED BY AND FOR MEN.

INTERVIEW

PASCALE LAPALUD is co-founder of Genre et Ville, a French urban innovation lab created in 2012 that takes a multi-disciplinary approach to rethinking how to make cities more inclusive and equal. Involving architects, artists, urban planners, philosophers and sociologists, Genre et Ville has provided gender urban planning expertise to a range of cities and public transportation companies, both nationally and internationally.

Photo: Jérôme Goupil

AT GENRE ET VILLE, HOW DO YOU EXPLORE EQUALITY?

Pascal Lapalud: We look at the various places where people come together from roads, city squares or gardens, cultural or community buildings to shops and public transport facilities, like stations or bus shelters. We explore the different facets – historical or sociological factors, urban planning, legal framework – that

influence attitudes and usage. We research in a number of ways – through observational studies, we take pictures and films, carry out interviews and other qualitative research. We use our findings to analyse cities through the prism of gender and propose different ways to redesign urban environments so they offer a more equal and inclusive experience.

WHAT EXPLAINS TODAY'S INEQUALITIES?

P.L.: We are assigned roles and identities from birth that are shaped by social traditions, political institutions and assumptions. **By questioning what is at work, we observe that the urban and societal model is built on the basis of a gendered, hierarchical duality that imposes on all individuals the normative power of a hegemonic masculinity.**

Sociologists and geographers Connell and Messerschmidt define this model as the embodiment of the most revered form of what a man should be, it imposes on all other men to position themselves in relation to it and ideologically legitimises the total subordination of women to men.

Historically, cities, mainly those of the 19th century, have been designed by and for men. To men, the legitimacy of public space, coffee and business and to women, private space, withdrawal and care. This heritage still influences how men access and live in public spaces differently than women today. Think of playgrounds dominated by boys playing ball games or man-spreading on public transport. We need to fight these stereotypes by reorganising spaces to embrace diversity and be more inclusive. #WhyLoiter is an example of a growing movement of women (and men) in India challenging accepted norms that women don't have the same right to hang out in public spaces by walking through the city at night.

ARE ATTITUDES CHANGING?

P.L.: Equality for women is not a new subject and has been gaining ground since the feminist movement of the 1960s. Legislation is helping put gender-sensitive thinking more firmly into the design and provision of public services. For example, many cities have adopted the 2006 European charter for equality between women and men. In 2014, France passed a law to promote substantive equality between women and men: “the State and local authorities, as well as their public institutions, must implement a policy for equality in an integrated approach”.

Many public sector projects now integrate gender policies – both thanks to top-down pressure from government as well as through the lobbying efforts of local advocacy groups.

These days there are more women working in professions like architecture and urban planning. Countries like Germany, UK, US and the Nordics have successfully mainstreamed gender perspectives but it is yet to be integrated into the formal teaching of these disciplines in France, for example.

WHAT CAN HELP MOVE THINGS FORWARD?

P.L.: Over the past year, the #Metoo movement has given new impetus for women to be seen and heard. **Women should play a more central role in defining and demanding their right to safe public spaces and transport.** Urban planners need to

explore real needs and experiences in order to study the social impact and not just the technical or engineering aspects of a project. Consultation and field research is a great place to start. Exploratory walks have been used across the world, involving women and men, as well as men dressed as women, to highlight the potential harassment women face and safety issues that can be addressed.

We need to be gender sensitive but also go beyond the stereotypes because women and men are not simple or unified categories. At Genre et Ville, we explore the diversity of our cities – inclusive of men, women, LGBTQ communities – to create a better and more egalitarian way to live together.

IN TWO WORDS, A CITY SHOULD BE...

P.L.: ...agile and sensitive.

Cities are in permanent evolution and have to anticipate changes in needs, aspirations and mobility. A city that's agile is accessible to all, adapted to different usage and travel patterns (and not just from periphery to centre) and facilitates inter-modal ways of getting around, such as taking bicycles on public transport.

Sensitive means thinking beyond functionality to the pleasure in city experiences. In our work, we seek to strengthen social interactions. For example, transforming bus shelters through community art or creating open public spaces where people from all backgrounds are comfortable to come together.

Vienna is a city that has successfully incorporated a gender lens into its urban and transport design, from projects making the city a safer and more convenient place for women as well as moving to more gender neutral signage in public places. ●

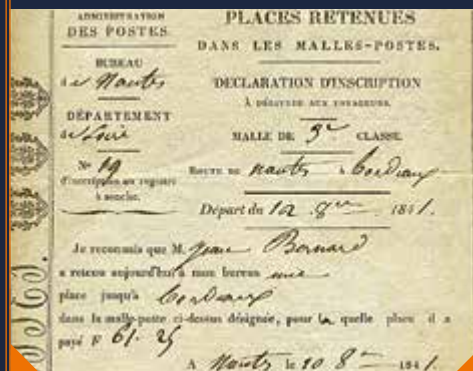
@pas_lap

pascalapalud.wordpress.com

The origins

Paper and ink

In the middle of the 15th century, before the invention of printing, public transport was provided by horse-drawn coaches. Passengers were simply given handwritten vouchers as travel tickets. •



1804

Print it out

In 1804, trains carried passengers for the first time in England. With the Industrial Revolution and the emergence of the first train companies, transport tickets functioned like modern contracts. In the form of a printed piece of paper, their terms involved a user and a service provider, a point of departure and a destination, and a date of validity. •



A SHORT HISTORY OF THE TRAVEL TICKET

CURIOSITY CABINET

Travel tickets have taken all forms and shapes over the years.

From simple pieces of paper to high-tech devices, it has been quite a journey. Come on board for a quick tour!

1920

A preference for metal



Some travel networks chose coins (with a flat fare, 1 coin = 1 trip) and tokens instead of printed paper tickets. In the New York City subway, coins were introduced in turnstiles in the 1920s, then replaced by tokens in 1953. This system survived until 2013. Tokens were costlier to produce than paper tickets, but they had the advantage of being reusable. •



1969

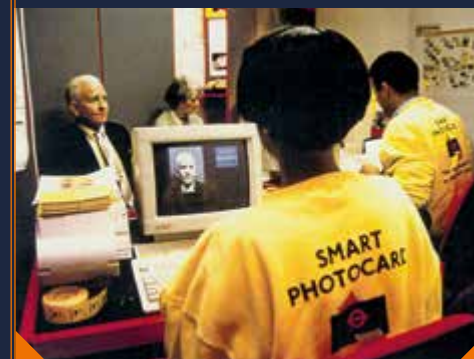
Making it magnetic

The first magnetic tickets were introduced in the Paris metro in 1969. More difficult to forge than simple paper tickets, they made it easier to fight fare evasion. And by automating ticket checks, they facilitated the flow of passengers. The ticket system modernised even further with the introduction of ticket-selling machines in the 1980s. •

1980s

Smart cards, reusable

Building on magnetic ticket technology, Roland Moreno, the inventor of the memory card, had the idea of the smart transport card in 1975. With a chip integrated inside the card, not only was information processing faster, but more detailed data could also be produced to make the transport service smarter. •



1990s

Always quicker

With radio-frequency identification technology (RFID), smart cards became contactless. No more need to dig around in your bag for your transport ticket. This added to an even smoother user experience. The RFID T-Money card was introduced for the very first time in Seoul (South Korea) in 1996. Two years later, Amiens and Nice (France), secured the system with microprocessor technology, which has become the global standard. •



2007

The smartphone, a traveller's best friend

The advent of smartphones combined with NFC technology that enables two electronic devices to exchange information led to dematerialised travel tickets. In 2017, smartphones became a traveller's best friend with the mobile app Plan-Book-Ticket developed by Keolis and its subsidiary Kisio Digital. Since then, not only have travellers been able to access itineraries and real-time traffic information, it has also become possible for them to purchase and validate tickets. •



2013

Multi-service cards, more with less

In a few cities, travel card holders can now enjoy a larger range of services not limited to transit. In Brittany (France) the KorriGo card, launched in 2006, gives access to public transit and public services like local public libraries and swimming pools since 2013. In Rome (Italy) the Roma Pass can be used both to access public transport and to visit cultural sites. •



2016

Tailor-made tickets on your wrist

For special events that temporarily generate heavy traffic, ticketing systems can adjust and innovate. For the 2016 UEFA European Championship, Keolis introduced in Lille the NFC travel wristband, a contactless public transport device. •



2018

Open payment

Travellers can use a contactless payment card to take the bus, tram or subway. In mid-2017, Open Payment accounted for 40% of all "pay as you go" payments on the Transport for London (TfL) bus and metro network. In 2018, Keolis successfully implemented this system in Dijon (France), the second European city after London. •

SHARED MOBILITY

“WE KNOW THIS IS OUR FUTURE”

◆ *Robin Chase, the influential co-founder of Zipcar, believes that cities face catastrophe if they don't rethink their approach to transport. So she has unified NGOs and private sector companies behind a set of Shared Mobility Principles for Livable Cities. She tells us how she did this and what comes next.*

INTERVIEW



by Robert Jack
Photo: Andrew Elliott

You often state at conferences that we need to rethink our approach to transport, why is that?

___ **Robin Chase:** When I co-founded Zipcar in 2000, I didn't really know anything about transportation, other than what every one of us knows. After three or four years of doing it, I realised that it is “the centre of the universe”. It is the gateway to every opportunity.

But it's enormously undervalued. People take it for granted and don't realise its pervasive importance in their lives.

If you care about the quality of people's lives and if you care about the climate, transportation is really important.

Right now, in the United States, the average person spends about 18% of their household budget on transportation, and if you are poor, as much as 40% of your budget goes to transport.

From a climate perspective, worldwide transport produces 23% of emissions (road transport, air, sea, etc.) and

in cities it's 60% of emissions. Given the deep disruptions created by new technologies, the transport sector is currently in flux. From a human perspective and from a climate change perspective, we absolutely positively have to move urban areas to active and shared modes that are zero emission.

We cannot come out in any other place if we want the planet to survive and for cities to be places that are livable. We don't have 50 years, we have to make this happen absolutely as fast, efficiently and pleasantly as possible.

How did this thinking lead you to create a charter of Shared Mobility Principles for Livable Cities?

___ **R. C.:** It was in the spring of 2017. I felt that there was so much noise around cities about transport and where it was going: so many newspapers, so many podcasts, so many non-profit advisors, so many consulting firm advisors. There was a cacophony of advice.

And even among the advisors from non-profit organisations, it felt like there could be disagreement. They weren't aligned. **I realised that we need to have one uniform set of these Shared**

Mobility Principles, something that we could all rally behind, and that we advisors actually did have a strong common set of beliefs.

The 10 principles were produced by a working group of nine international NGOs, including C40 Cities Climate Leadership Group, the Institute for Transportation and Development Policy (ITDP), ICLEI - Local Governments for Sustainability and the World Resources Institute. They were designed to guide urban decision-makers and stakeholders toward the best outcomes for all.

It was challenging, because of the diversity of groups involved, and their different perspectives, but we got to a place where every single word was backed by all of those parties. It's a very solid piece.

We launched the principles at the EcoMobility World Festival in Kaohsiung, Taiwan, in October 2017. Immediately afterwards, I was completely struck by how these Shared Mobility Principles totally resonated. There clearly has been a real desire for this type of simplicity and clarity.

Which stakeholders did you target?

___ **R. C.:** The convening group of large NGOs were the appropriate people to start with, because they exist to address social and political issues in the realm of cities and transport, independent of any government.

Later on we approached private sector companies, but they had to be in the

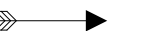
business of transporting passengers and they had to be a multi-national. In February 2018, we announced that 15 service providers and tech companies had initially signed up to the principles, including Citymapper, Keolis, Mobike and Lyft.

Since then, I haven't approached any other organisations. All the newcomers have all come to us. Endorsers now number more than 170 entities from all around the world.

What did you hope the Shared Mobility Principles would achieve?

___ **R. C.:** The end goal is that cities change from planning and building with private cars as the dominant mode to planning and building with active and shared modes being dominant. Over the last 30 years we have been suffering from mono-modal, car cities. There are too many people sitting alone in private cars on their own in nose to tail traffic. Journeys must be shared – and emission free – if we are to make cities better.

I want the Shared Mobility Principles to get policy-makers in cities all around the world thinking about the future of transport, its interrelatedness to how we build cities, build economies, and, importantly, create the right regulatory environment. New mobility services like Zipcar, Uber and Lyft, and the rise of electric bikes and scooters have all shown that our regulations are broken. **Our regulations are based on an outdated framework where**



there were clearly defined transport silos – bus, rail, taxi, private car, etc. – and these new mobility services don’t easily fit into those silos. When self-driving cars come in, it will be the exact same thing – so we need new regulations that help us to achieve the outcomes we want.

I also want the Principles to get people thinking about user fees, what people pay to get around the city in relation to the impact of their behaviour on their fellow citizens. Right now our user fees are very, very broken and around the world. And cities are responding in an even more broken fashion. Without better pricing and allocation of rights of way we are teeing ourselves up for an incredible catastrophe. In my view, we have to do congestion pricing.

Are the Principles already guiding transport policy?

R. C.: Yes, I think there is some evidence of that. Art Guzzetti, Vice President – Policy at the American Public Transportation Association, told me that his organisation views the principles as “our North Star as we navigate the shifting mobility landscape”. That is a really nice quote. And in New York City, a subset of the signatories cited the Shared Mobility Principles when opposing plans in New York City to introduce a system of congestion pricing that targeted taxis, even shared taxis, but not private cars. This plan was nonsense because congestion is caused by all vehicles, not a fraction of vehicles, and the Governor of the State



of New York was urged to look at the Shared Principles and use them as a foundation for a different policy.

What are the next steps?

R. C.: We are building a training workshop that can be used by anybody. **We want to provide resources that help people to understand what the Shared Mobility Principles are about** and then spread the message.

This resource will help cities to evaluate proposals currently on the table and how to use the Shared Mobility principles as a mechanism to determine the correct course of action.

I am also hoping to work on some low-cost congestion pricing pilots. There are only four cities in the world (Singapore, London, Milan and Stockholm) that have done congestion pricing, and I believe the cost of the infrastructure required to operate these schemes – a couple of hundred million

dollars – has stopped others from following in their footsteps.

Perhaps we can do it with cell phones, which didn’t exist when the first congestion charging schemes were introduced. I am really eager to find a city to do a demonstration because if you do a good job on your pilot, and it is well conceived, then people are seeing and appreciating the reality of the benefits and want them to continue.

Have the Shared Mobility Principles encountered any criticism?

R. C.: One criticism I got was that these principles were very vague. They said: none of these principles tell people how to execute. And my answer is “exactly, because in transportation execution is incredibly local”. **We need to say “here are the principles, and here is how you do it in your very, very specific city”, because cities are so different.**

I am hoping to develop small case studies associated with different types of cities. They would show, for example, how you might achieve a transition towards shared mobility in a city that has no transportation backbone and a large informal sector, and how you might do it in a city that has higher GDP and an existing public transport network. Executing will require the work of partners around the world, each with their own local knowledge and expertise.

We are also deliberately vague about which transport modes should be employed to deliver shared mobility.

Cities need metro, light rail, bus rapid transit – things that have their own right of way and are pushing huge volumes of people in peak periods.

In dense metro areas, there is nothing else that can move enough people.

But, ultimately, our customers for the Shared Mobility Principles are cities and the people who live in them. We are not pro any particular company, vehicle or mode. We are sticking with these principles as laid out and I don’t care if it’s self-driving car companies like Waymo or Zoox, or something I’ve never heard of – if it can achieve what we want.

And, shockingly, I also don’t care if public transport retains its glory as it stands today. I am looking to move the most people at the lowest cost in the most livable way. ●

@rmchase

www.robinchase.org

I. We plan our cities and their mobility together.

The way our cities are built determines mobility needs and how they can be met. Development, urban design and public spaces, building and zoning regulations, parking requirements, and other land use policies shall incentivise compact, accessible, livable, and sustainable cities.

IV. We engage with stakeholders.

All transportation services should be integrated and thoughtfully planned across operators, geographies, and complementary modes. Seamless trips should be facilitated via physical connections, interoperable payments, and combined information. Every opportunity should be taken to enhance connectivity of people and vehicles to wireless networks.

VI. We lead the transition towards a zero-emission future and renewable energy.

Transportation and land use planning and policies should minimise the street and parking space used per person and maximise the use of each vehicle. We discourage overbuilding and oversized vehicles and infrastructure, as well as the oversupply of parking.

VIII. We aim for public benefits via open data.

Public transportation and shared-use fleets will accelerate the transition to zero-emission vehicles. Electric vehicles shall ultimately be powered by renewable energy to maximise climate and air quality benefits.

II. We prioritise people over vehicles.

The mobility of people and not vehicles shall be in the center of transportation planning and decision-making. Cities shall prioritise walking, cycling, public transport and other efficient shared mobility, as well as their interconnectivity. Cities shall discourage the use of cars, single-passenger taxis, and other oversized vehicles transporting one person.

III. We support the shared and efficient use of vehicles, lanes, curbs, and land.

Residents, workers, businesses, and other stakeholders may feel direct impacts on their lives, their investments and their economic livelihoods by the unfolding transition to shared, zero-emission, and ultimately autonomous vehicles. We commit to actively engage these groups in the decision-making process and support them as we move through this transition.

V. We promote equity.

Every vehicle and mode should pay their fair share for road use, congestion, pollution, and use of curb space. The fair share shall take the operating, maintenance and social costs into account.

VII. We support fair user fees across all modes.

Physical, digital, and financial access to shared transport services are valuable public goods and need thoughtful design to ensure use is possible and affordable by all ages, genders, incomes, and abilities.

X. We support that autonomous vehicles (AVs) in dense urban areas should be operated only in shared fleets.

Due to the transformational potential of autonomous vehicle technology, it is critical that all AVs are part of shared fleets, well-regulated, and zero emission. Shared fleets can provide more affordable access to all, maximise public safety and emissions benefits, ensure that maintenance and software upgrades are managed by professionals, and actualise the promise of reductions in vehicles, parking, and congestion, in line with broader policy trends to reduce the use of personal cars in dense urban areas.

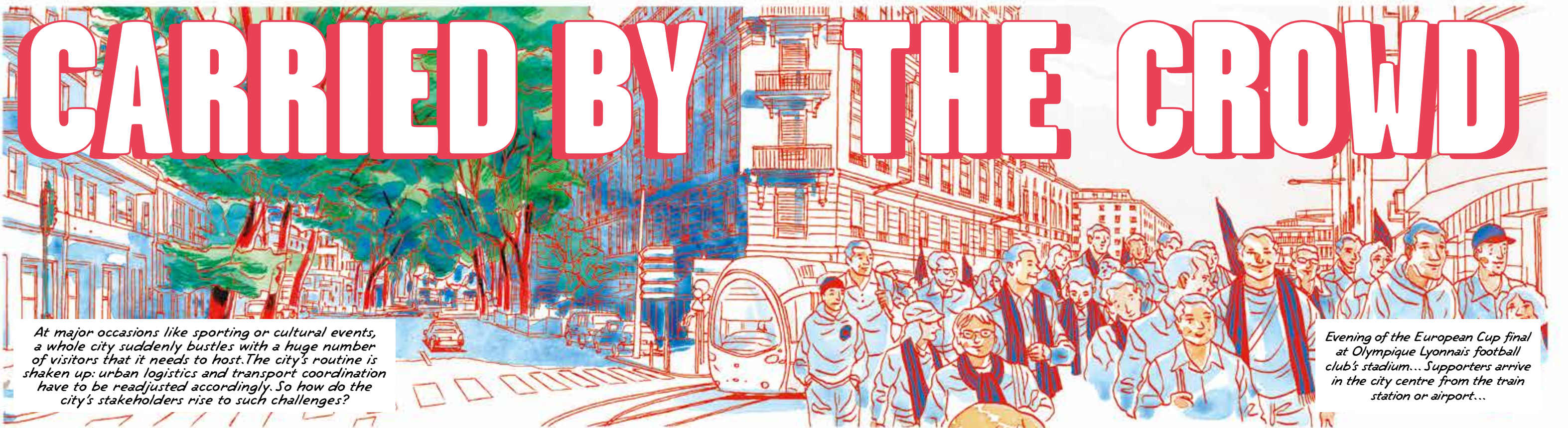
THE SHARED MOBILITY PRINCIPLES FOR LIVABLE CITIES

IX. We work towards integration and seamless connectivity.

The data infrastructure underpinning shared transport services must enable interoperability, competition and innovation, while ensuring privacy, security, and accountability.

Selected Signatories:

- **BLABLACAR** – long-distance carpooling service available in 21 countries.
- **CITYMAPPER** – public transit app and mapping service.
- **KEOLIS** – a global leader in mobility, operates more than 10 transport modes in 16 countries.
- **LYFT** – on-demand transportation company.
- **MASABI** – delivers mobile ticketing and software-as-a-service (SaaS) based fare collection.
- **TRAPEZE** – provides transportation software solutions for transit agencies.
- **UBER** – peer-to-peer ridesharing, taxi cab, services and more.
- **VIA** – transportation network and real-time ridesharing company.
- **ZIPCAR** – car-sharing company.
- and **MANY** more.



CARRIED BY THE CROWD

At major occasions like sporting or cultural events, a whole city suddenly bustles with a huge number of visitors that it needs to host. The city's routine is shaken up: urban logistics and transport coordination have to be readjusted accordingly. So how do the city's stakeholders rise to such challenges?

Evening of the European Cup final at Olympique Lyonnais football club's stadium... Supporters arrive in the city centre from the train station or airport...

24 DAYS BEFORE THE EVENT

Many preparatory meetings with all stakeholders are held ahead of the event. Seated around the table are councillors, local public administrators, police officers, prefectural officials, sports club directors, UEFA executives, heads of public transport authorities, mobility operators and representatives of resident and retail associations.

The operator draws up a comprehensive offering in mobility (flows, human and material resources to use, communications to be released in advance, real-time passenger information, etc.)

THE BIG DAY

I'M LÉA, A KEOLIS ACCOUNTANT AND A VOLUNTEER DOING ON-THE-GROUND WORK AT BIG EVENTS. THESE VOLUNTEERS ARE VITAL FOR MANAGING FLOWS, FOR GIVING PASSENGER INFORMATION, FOR REPORTING INCIDENTS AND MORE.



THE FLOW OF PASSENGERS NEEDS TO BE FLUID...

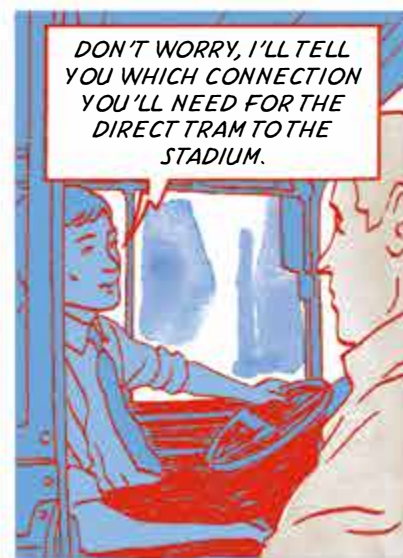
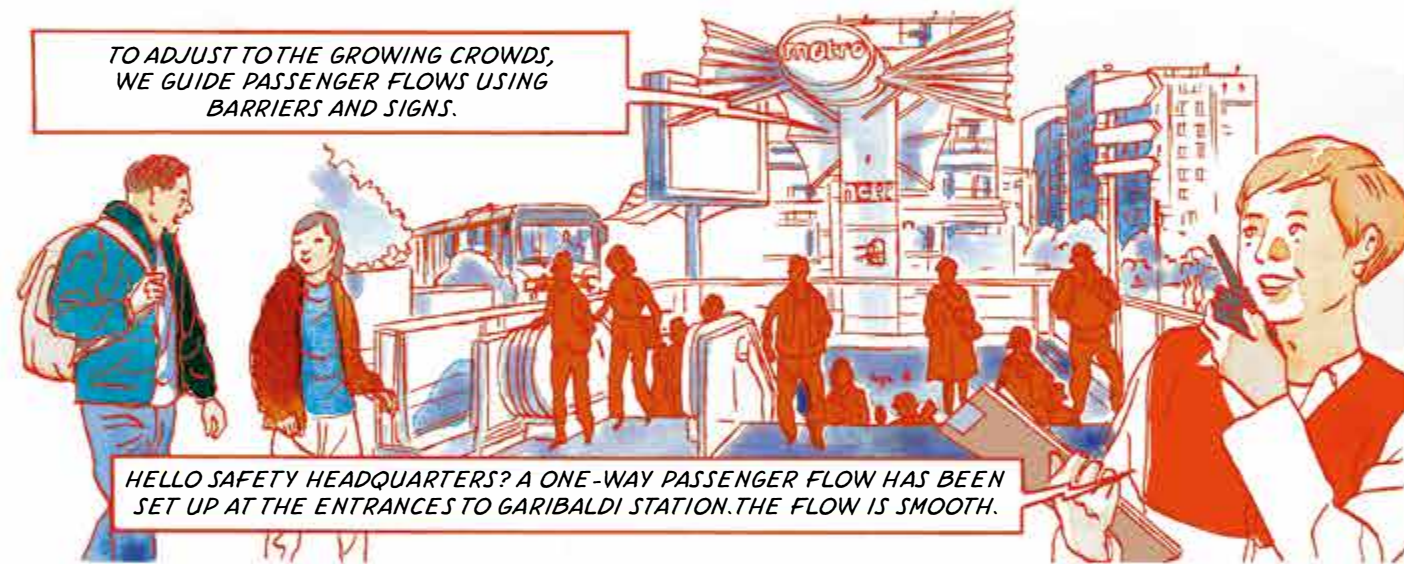
AND SAFETY REMAINS OUR PRIORITY



WE SHOULD CONSIDER ALL WAYS OF GETTING AROUND THE CITY IN OUR MOBILITY PLAN, INCLUDING WALKING.



HERE'S MARC WITH HIS DAUGHTER ÉDITH. THEY'RE BOTH FOOTBALL FANS, THEY'VE COME TO LYON FOR THE FIRST TIME TO FOLLOW THEIR FAVOURITE CLUB AND WANT TO GO TO THE STADIUM BY PUBLIC TRANSPORT.





TO REACH GATE C, TAKE THE STEPS ON THE LEFT. ENJOY THE MATCH!



Like their colleagues on the buses and underground, the drivers quickly get through successive turnarounds. They are vital links in the chain.

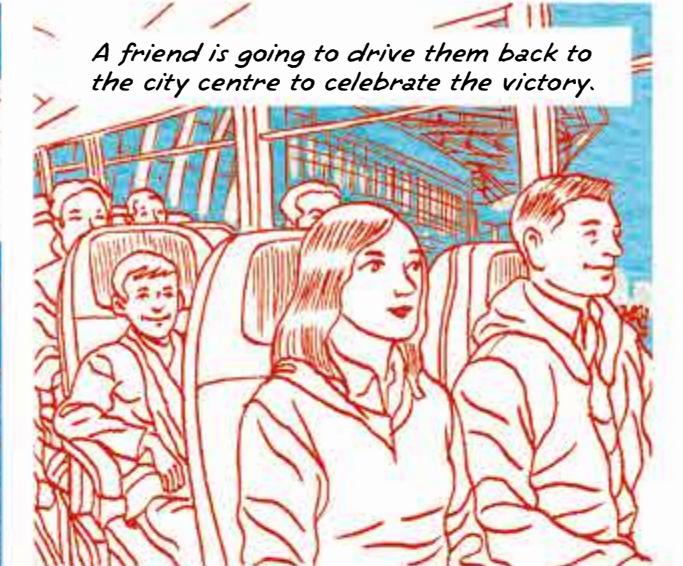


During the match, the teams hold discussions, both on the ground and at the headquarters.

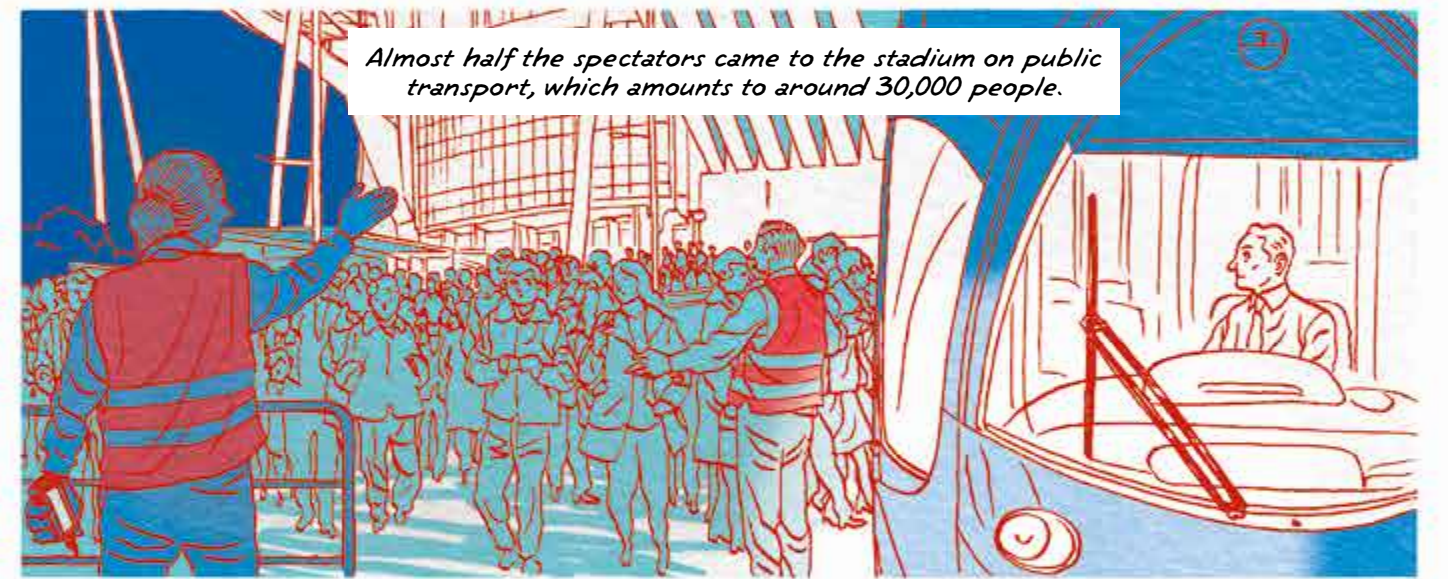
Counterpoint to the arrival period, the stadium has to be vacated in a very short space of time.



The match is over! Marc and Édith take a free shuttle ride from the stadium to the car park.



A friend is going to drive them back to the city centre to celebrate the victory.



Almost half the spectators came to the stadium on public transport, which amounts to around 30,000 people.



TOMORROW THE CITY WILL BE BACK TO NORMAL... AND I'LL BE BACK AT WORK.

by Christian Cailleaux

MAKING SURE CYBERTHREATS DON'T DERAIL PUBLIC TRANSPORT



One weekend in November 2016, *riders of San Francisco's Muni light rail transit system got an early holiday treat.* Following a ransomware attack on the computerised fare system, the Muni, which also runs buses and the city's famed cable cars, decided to turn off the payment machines and open the gates, allowing Metro passengers to ride for free. It lasted two days, while the authorities sought to figure out who had hacked the computer system, reportedly demanding 100 Bitcoin. *Muni decided not to pay up, and by Monday they had managed to get the system back to normal.* While the cybercrime disrupted Muni's computer operations, it could have been worse. And that left experts wondering how transit authorities would respond to a much more severe attack from cyberterrorists intent on causing real damage.



by
Madeleine Resener

ATTRACTIVE TARGETS

Cybersecurity is a concern for all industries, but transportation is a particularly attractive target because of the complexity and age of the IT systems. According to Stan Engelbrecht, Director of Cybersecurity Practice at 3D Security Services, a company specialised in business and personal safety and security, "Supervisory control and data acquisition (SCADA) systems manage the physical automation that coordinates mass transit. Some of these systems have been in operation since the 1970s, and needless to say, they were not designed with modern cybersecurity in mind. Today, they are well-known as vulnerable targets in hacker communities, and the methods for hacking them are widely shared online." What's more, as control and management systems become ever more dependent on automation and information technology, they are vulnerable

to increasingly sophisticated cyberattacks, from sources that range from terrorist groups to individuals bent on quick financial gain. In 2016, there were multiple hacking attempts against the email accounts of employees of railroad workers in South Korea in order to take control of the transport system. And such attacks can do great harm.

"Cyberattacks can destroy a transit agency's physical systems, (ie computers) render them inoperable, hand over control of those systems to an outside entity or jeopardise the privacy of employee or customer data", the American Public Transportation Association has warned in their Cybersecurity Considerations for Public Transit report (2014).

WHEN SMART MEANS VULNERABLE

At the heart of the problem is the inter-connection of systems. Urban transportation infrastructure used to be built on closed, proprietary systems. However, as today's cities become increasingly smart, they are naturally moving toward connected transportation infrastructure to enjoy the many benefits it provides, such as improved safety,

50%
of attacks were motivated by ransomware in the US in 2017

2018 Verizon Data Breach Report



faster response times for emergencies, timelier infrastructure repairs, improved traffic flow and even lower CO₂ emissions.

This leads to a wider potential attack surface of transportation systems, allowing hackers to target not only the information technology, but also the operational technology that runs a city's signalling and control systems.

Among the technical assets transport operators must protect today are traffic signal pre-emption equipment that can be used to change traffic light timings, wireless fare payment technology interfaces such as Near Field Communication, Bluetooth, barcode scanning, and

automatic passenger counting systems.

In addition, "Public transit systems have a great deal of information about passengers," notes Nicolas Vermuseau, Chief Information Security Officer at Keolis. "So there is a risk of passenger data being stolen and either used for blackmail or sold into a more complex system of dark web piracy, where cybercrime

#1

concern: the lack of trained personnel to handle security threats

has become an industry and where even a small bit of information has a price and can be bought and sold."

CRACKS IN THE SYSTEM

The problem is that most public transport systems often aren't up to the task. IT and modern communications networks have been patched onto old industrial infrastructure, leaving lots of cracks in the system. **It's possible, for instance, for a malicious outsider to gain control of the electronic display panels to substitute misleading information via the passenger information systems,** such as the incident in May 2017 when information display screens at the Washington D.C. Union Station were hacked and started playing a pornographic video during rush hour. While that is a nuisance, it's nothing compared to the disruption that could be unleashed if hackers took control to broadcast false messages, or worse if they took control at a distance of the steering of a tram or a train. Cities and transit operators also have to face a wider range of attacker motivations, including ransomware, which, according to annual Verizon Data Breach Report (2018), rose 50% in 2017 in businesses in general.

3 QUESTIONS TO LINDSEY MANCINI

Lindsey Mancini is a UITP (International Association of Public Transport) Senior Manager of IT and security whose responsibilities include managing all the activities related to IT in public transport and cyber security.



There is a lot to be done but unfortunately there's no silver bullet. **I think we've reached a tipping point where cybersecurity has become a hot topic and public transport systems are starting to take a serious look at how to approach it and find real solutions.**

HOW SERIOUSLY ARE CITIES TAKING CYBERTHREATS TO THEIR TRANSPORT SYSTEMS?

It's a big issue for cities like Dubai and Barcelona who promote themselves as smart cities, but all systems are affected. Although digitalisation has led to improved operations, efficiency, and customer service, the dark side is having to face cyberthreats.

There are standout transport authorities, such as Transport for London and Singapore's Land Transport Authority. Both are leaders in the way they have adopted a holistic approach to cybersecurity and have buy-in from the board level to create a cybersecure environment. Both have good policies in training, procedures, and relationships with suppliers.

You have to bear in mind that this is a fairly recent problem. If we go

back 10 years ago, there weren't many examples of attacks. One that stands out happened in 2008 in Lodz, Poland, when a teenage boy hacked into the system and derailed a few trains. The first big well-known attack was probably the ransomware attack two years ago on the Muni system in San Francisco.

IS OUTSOURCING CYBERSECURITY THE BEST APPROACH TO TAKE?

From a purely technical point of view, of course you can outsource the problem. But when it comes to building a real company culture of cybersecurity, only you can do that because you know the environment, the history, and the culture of the organisation. It's pure fantasy to think someone from outside can do that for you. **The big issue is the lack of a cybersecurity culture within the organisation, from the boardroom to the frontline staff.** It's important that every person understands the risk and their role in protecting the system. There are loads of technical solutions, firewalls and such, but they are of no use if you still have employees writing their log-in passwords on a Post-It and leaving them on their computers. That's really the biggest challenge:

getting humans on board, through awareness raising and training and by having cybersecurity policies explained, not just distributed. Another challenge is the fact that public transport systems work with lots of vendors, suppliers, and other outside contractors, and they have no control whatsoever over their IT. So even if you do a great job explaining the risks to your staff, it's not enough, you have to go even further.

WHAT ARE THE FUTURE THREATS YOU SEE COMING UP?

I see a number of trends on the horizon that mean that these threats won't go away. One is artificial intelligence, which is being deployed in many sectors, including public transport, in order to make sense of all the data being collected. That's great but it's also an opportunity for cybercriminals to make even more sophisticated attacks. Another is the Internet of Things, which is growing at an exponential rate. **As more and more things are connected to the system, it becomes more complex to protect.** So I come back to this notion of having a cybersecure culture in place. At UITP we are trying to raise awareness of this, particularly among small and medium sized operators who might feel daunted by the issue, as well as to provide support.



90% of transportation authorities participate in a security standards body or industry organisation
2017 Cisco Report

used via apps to manipulate transit operators into taking dangerous actions.

Security professionals also reported a lack of trained personnel to deal with these issues. This is alarming because as cyber security threats continue to increase, cities will need more experienced security personnel and robust security policies and procedures in place for not only preventing attacks, but also for how to respond after an attack.

Lindsey Mancini (*see interview page 36*) explains that **organisations have to create a genuine cybersecurity to fight cybercrimes. Everyone should be involved in protecting the system and should have risks explained – from boardroom to the frontline staff.**

3/4 of the transportation authorities have a security operations centre
2017 Cisco Report

TACKLING THE PROBLEM

So public transit managers from Dubai to Barcelona are struggling to come up with solutions. In a 2017 mid-year report on cybersecurity, global technology leader Cisco Systems found that security professionals working in transportation were aware of the growing cyber threats. Among their concerns were the stealthy and continuous hacks known as advanced persistent threats (APTs) and increased use of smart devices, which can be

IMPROVING SECURITY POLICIES

More and more cities such as Singapore are putting into place internal awareness campaigns and training programmes for transportation personnel. **Many are also following best practices, including**

carrying out risk analysis and defining cyber and physical security measures to protect assets.

According to the 2017 Cisco report, three quarters of the transportation organisations surveyed reported having security operations centres (SOC), and 14% said they plan to create one. In addition, nearly 90% of the security professionals said their organisations participate in a security standards body or industry organisation. Nearly 80% said their organisations run attack simulations at least once every quarter.

That's a good start, but it's not enough. Further complicating matters is the fact that operators work hand in hand with urban authorities, who often lease the infrastructure assets. Then there is the question of outside vendors and other suppliers. "Transport operators have absolutely no control over the IT environment of contractors", Mancini notes. A lot could be done, such as working better with partners and suppliers to establish a commonly accepted security level – like measures to protect data – and carrying out regular audits of subsidiaries, as Keolis does (18 subsidiaries were audited in depth over the last 3 years, as well as 130 of their websites).

80% run attack simulations at least once every quarter
2017 Cisco Report

"SECURITY BY DESIGN"

Public transit operators in both Europe and the US are coming under increasing pressure from governments to implement minimum-security measures, report cyber incidents, and comply with the regulatory framework, such as Europe's Directive on Security of Network and Information Systems (NIS Directive) that went into effect in August 2016 and aims to create an overall higher level of cybersecurity in the EU, as well as more broadly with the General Data Protection Regulation, adopted in 2016 and applicable since mid-2018. For legacy systems, operators can try to isolate critical functions. **For more recent systems, the solution is to employ "security by design", which means defining the security objectives and controls right from the beginning of the project.**

Under this principle, public transport operators must discuss how security is implemented for the whole lifecycle of the product: at the time the system is designed; when the product is integrated into an existing system; right until the end-of-life. This approach is based on an early risk analysis and allows to anticipate security issues from the start.

Staying ahead of the cybercriminals will remain a challenge for cities – the price to pay for becoming increasingly "smart". ●

Newcastle (Australia): Keolis Downer is responsible for designing and running an integrated transport system across all modes of travel, including ferries.

THE QUIET RISE OF WATER TRANSPORT

Waterfront cities around the world are increasingly embracing ferry transport as a means of combatting crowding, especially during rush hour.

In almost every case, ridership has surpassed official predictions, causing transport authorities to wonder: are ferries ready to go mainstream?

by Danielle Courtenay

As cities swell, public transport must absorb any growth. To help, city planners often propose laying down new miles of train track, ordering roomier trains, or expanding cycle lanes. But for cities lucky enough to have access to a waterway, the simpler solution may be to provide a way to commute not across land, but rather by lake, river or sea.

Once a relatively niche form of transport, waterborne commutes are gaining popularity in major cities worldwide. The reasons are straightforward. One, opening up waterways clears congestion from roads and trains. Two, waterways already exist, so there's no need to construct new, expensive infrastructure such as railway track, cycle paths, or dedicated bus lanes. Three, river transport creates far less pollution than land transport. Four, travel time is more or less guaranteed. And finally, lest we forget – taking a boat to work is, well, fun.

In cities where water transport is already being rolled out, the locals have responded with unanimous enthusiasm. **It's not exactly a surprise: someone who previously had to put up with a long, complex commute on land may suddenly find they are able to cut directly across the bay or river, dramatically cutting their travel time.** And then there's the obvious point: water transport is less hectic and more scenic – a cruise more than a commute. The sheer pleasure

of ferry rides may serve as an invaluable boon to a city's collective mental wellbeing.

The proof is in the ridership rates: when the NYC Ferry began operating in 2017, city officials predicted annual ridership would max out at around 4.5 million passengers. Six months later, the service was carrying 38% more passengers than predicted, spurring them to double their projection to 9 million annual riders. The NYC Ferry owes at least part of its success to its pricing model: at \$2.75 a ride, it's as affordable as the subway. Across the Atlantic in Nantes, France, the Navibus river boat shuttles riders up and down the Loire river for just €1.70, again, the same price as a metro ride. On Hong Kong's historic Star Ferry, a sail across Victoria Harbour is actually cheaper than the local train service, making it a much-appreciated alternative to the city's heaving rush-hour trains.

Clearly, keeping ferry fares low keeps the locals happy. But is it economically viable? Ferries are costly to build and maintain, as are the terminals they'll dock in. Unless they're electric-powered – as is the Bat³ river fleet in Bordeaux, France – they'll need fuel. And then there are the safety-related costs – from staff training to equipment. **To cover costs, cities with existing river-transport systems can opt to diversify the offer with tourist-oriented routes.** Places like Hong Kong, Bermuda and Dubai are introducing special sightseeing routes and timetables (and in the case of Dubai, pricier private charter options). So far, the strategy seems to be working.

Of course, there are other, more qualitative ways to measure return on investment (ROI). Opening up a city's waterways can help relieve crowding on trains, decongest roads, and reduce travel time. When the Lagos state government, Nigeria, made a move to overhaul its ferry system in late 2017, it did so with the intent to take pressure off its jam-packed roads. So far, so good: an August 2018 University of Lagos study shows that complementing the city's taxi, bus and car networks with waterway services has slashed the average journey time by around 46%.

While ferry and riverboat services are enjoying a global rise, if they want to thrive as mainstream modes of transport, public transport operators will need to focus on two areas: optimising vessels, and providing easy connections to land transport. **London's river bus excels in both respects, with services every 20 minutes, docking at 33 points along the Thames, most of which link easily to major Tube stations.**

Onboard, there's plenty of space for bikes and scooters, and passengers have access to bathrooms, free newspapers, and even a bar serving coffee by day and cold pints by night. The cost of the river bus – £6.60 vs. £2.90 for the Tube – may have slowed the service's growth, but has by no means stopped it. In 2018, the service carried its 40 millionth passenger, and operator Thames Clipper will soon be adding an 18th catamaran to the fleet set to accommodate an additional 300,000 riders per year. In London, ridership continues to rise as it has in other ferry-equipped cities worldwide. If the trend continues, in the very near future, commuting by boat may not be so niche after all. ●



Bordeaux (France): the Bat³ river fleet is electric-powered.



New York: the NYC Ferry ride is as affordable as the subway (\$2.75), a huge part of its success.



London: the river bus has a service every 20 min. and docks at 33 points along the Thames.

GOING THE COUNTRY MILE



Living in the country can be bliss, but for those inhabiting remote, sparsely populated areas, getting around can prove a real hassle. We look at the complex challenges of rural mobility, as well as the creative, bespoke transport solutions emerging to render residents' journeys less taxing.



by Marie-Noëlle Bauer
Illustration: Aurore Petit



It's many a city-dweller's dream: escaping the urban rat race and moving to the countryside to enjoy a better quality of life. A study published by the French Institute of Public Opinion (IFOP) in October 2018 found that 81% of the French population deems rural living "an ideal lifestyle" (with just 5% of current country residents saying they'd wish to leave)⁽¹⁾.

But of course, fantasy rarely matches up to the reality; just like the city, the country's many advantages are coupled with distinct challenges. According to the same study, one of the main reasons respondents were dissuaded from making the big move to the countryside was the dearth of transportation (54%) – a real disadvantage particularly affecting young people, the elderly, the mobility impaired and the unemployed.

Shared mobility has become a high-stakes issue in the European Union, 57% of which spans rural regions, holding approximately 24% of its population⁽²⁾. It not only bolsters the attractiveness of regions, it also supports carbon-emission objectives and improves the quality of life and public health in general. With the need to be mobile for all sorts of reasons, some of these communities are increasingly open to new and more creative transport solutions.



MANY COUNTRYSIDES, NOT JUST THE ONE

Adopting a monolithic view of the countryside is easy. But in fact, there are several versions of the “countryside”, differing wildly in size and proximity to other areas. Topography, economic conditions and population are important factors in defining the variance of habitability between these rural zones, and a genuine understanding of all three of these is the first step to determining genuine local mobility needs, rather than resorting to a one size-fits-all solution.

Take Spain as an example. Many villages are being hit hard by depopulation, with more than 4,000 villages and towns currently at risk of becoming entirely deserted in the near future. However, *El País* newspaper recently reported that the mountainous areas north of the capital are enjoying a demographic boom⁽³⁾.



Over the last 20 years, 42 towns in rural Sierra Norte have leapt from 17,500 to 26,000 inhabitants, an increase partly due to better connection with Madrid's metropolitan area. Those numbers should be further boosted by a €130 million package aimed at reviving rural Madrid approved in September 2018, which includes high-speed internet as well as “a minibus service ferrying children to and from extra-curricular activities”.

ACKNOWLEDGING THE INDIVIDUALS IN THE CROWD

Understanding the distinct needs of the inhabitants is just as important as knowing the landscape. **While mass transit has for long been the leading philosophy in the transportation industry, this can't still be the case today.** With the irrepressible need for customisation, offerings have to be adapted to address the growing diversity and complexity of passengers.

To achieve this, operators and transport authorities must focus on citizens' behaviour and needs, while moving beyond the parameters of patronage and passenger flows.

BESPOKE IS BEST

When tackling the challenges of rural mobility, it's essential to resist the temptation of finding a quick fix by implementing ideas that better fit urban areas, or over-reliance on digital tools.

Ayen, a rural and isolated commune in Southeast France with a population of 720, is doing just that with Ecosyst'M. Instead of using a digital platform, it relies entirely on human interactions, with 20% percent of its drivers over 80 years old. Riders can show up at a public transport station that has the Ecosyst'M sticker and wait for a participating driver to stop, send an SMS or call to set up a ride. Passengers only contribute to fuel costs, 6 cents (€) per kilometre. However, Ecosyst'M reaches beyond mobility; it also has a meaningful social impact, fostering local solidarity and interdependence.

In rural areas, sharing schemes and community-run initiatives often prove better options than advanced technical solutions. However, as options proliferate, so can passenger confusion. Local transit authorities play an important coordination role, ensuring new initiatives are easy to access and understand.

THE CAR IS STILL KING

Private vehicles are still the preferred mobility solution in the countryside, but they can be exploited in more astute ways. **It's essential that local authorities give their full support**

to car-sharing solutions that result in closer community ties and lower carbon emissions.

To this end, a member of ACRE (Action with Communities in Rural England), the Humber & Wolds Rural Community Council, launched a volunteer car service to support citizens. Drivers use their own vehicles to transport locals to destinations of their choice (hospitals, doctors' offices, local shops, community meetings, and more). Passengers pay just £0.45/mile to cover fuel and other associated costs, a cost-effective option for rural community members with no other suitable private or public transport options.

On the tech front, an app by Keolis partner Cmabulle, a car-sharing network, supports parents whose kids go to the same school or take part in the same extra-curricular activities. It works on the basis that: the school or activity creates a so-called “bulle de confiance” (safety bubble) on the app. It then invites parents (whose kids are subscribed) to sign up and contact each other via Cmabulle in order to organise safe carpools.

ON DEMAND MOBILITY

One of the rural frustrations highlighted by UK-based ACRE, is how not having access “to appropriate forms of transport to the right place at the right time” hampers jobseekers from accessing “services and jobs in neighbouring towns”. A possible solution? More intuitive transport initiatives, like Keolis Filo'r in the French Rouen-Normandie region. **Locals can make last-minute minibus reservations for less common routes**



without regular bus services via phone, web or app. Completing over 750 trips/day, Filo'r provides a turnkey way for residents to move around their region and connect to major network arteries. An initiative spanning 29 community-owned vehicles, 57 communes in the region and serving an estimated 50,000 inhabitants.

KEEPING IT FLEXIBLE

Even regular bus routes are being reviewed to better meet rural locals' needs, which allows for optional stops within a defined area. Flexo, a bus service that operates on a regular timetable but allows for on-demand stops, is proving beneficial in the suburbs of Dijon, Caen and

Bordeaux. This aptly named hybrid service benefits both riders and the community at large by adapting to evolving lifestyles and extending existing coverage during off-peak hours and in remote or commercial areas. The options for creative vehicle use don't stop there: school buses or private medical vehicles could be repurposed for other citizens when

off-duty, for example. So long as there is smooth communication between passengers and operators, the opportunities abound.

AND GET BIKING

Two-wheelers are also getting in on the action. According to ACRE, the 34 Wheels to Work (W2W) programmes rolled out in areas such as Shropshire and Wiltshire have been “providing affordable modes of transport (often mopeds, small motorcycles and bicycles) to enable young people – including those with disabilities – to travel to work, college and training”. Users pay about £20-£35 per week – depending on the type of vehicle – and W2W provides compulsory basic training, insurance and maintenance. The idea is that the vehicle “lease” lasts until the person obtains their own ride, which is generally within six months. Nationally, “the schemes have saved taxpayers more than £19 million per year”.

Thinking outside the box and a healthy dose of pragmatism are crucial when imagining rural mobility solutions.

Sustainable, cost-saving, inclusive initiatives are already making locals' daily routines easier, while further stoking city-dwellers' envy of that ideal countryside lifestyle. ●

(1) IFOP study about rural families as published by French newspaper *Le Monde*, 09.10.2018.

(2) With No Jobs in the City, Better Jobs Are Coming Back to Spain, *Christian Science Monitor*, 01.05.2013.

(3) A rural Renaissance of Madrid's Sierra Norte, *El País*, 28.10.2018.

Metros, trains, stations and all those who frequent these busy transit areas are *a source of endless inspiration for artists*. In the eyes of composers and musicians, trains become allegories, the metro ticket inspector turns into a gentle dreamer, the city's effervescence is transposed into rhythms... *After all, it's only natural that music echoes our lives.*

For *Pulse*, Fred Charbaut, a specialist music journalist and co-founder of Paris's Saint-Germain-des-Prés Jazz Festival, presents a musical selection inspired by the world of public transport. Tracks and stories to (re)discover.

PUMP UP THE VOLUME!

OUR PUBLIC TRANSPORT PLAYLIST

1. *Belly of the Sun* by CASSANDRA WILSON (2002)

Given their distinctive acoustics, metro and train stations provide unique and inspiring atmospheres for musicians. In 2001, jazz singer Cassandra Wilson returned to her native Mississippi to record her album, *Belly of the Sun*. She set up her recording studio in the abandoned Clarksdale train station, home to the Blues Museum. In this "Belly of the Sun", her musicians experience lethargy. The result is a composition pulsing with torrid slowness. Cassandra Wilson's deep and sensual voice shines in covers of Bob Dylan, James Taylor or Carlos Jobim. ●

2. *Take the "A" Train* by DUKE ELLINGTON (1941)

Composed by pianist and arranger Billy Strayhorn in 1939 for Duke Ellington, *Take the "A" Train* is a reference to the New York subway line A, inaugurated in the 1930s. In 1967, Strayhorn recounted the genesis of this song as follows: "When I arrived in New York, a new subway line was being built. I lived on its route but there was another line, the D, which branched off right before my stop, to go to the Bronx. People often took the wrong line, they took the D and, to avoid any confusion when they visited me, I told them: "take the A train". This theme has

become one of the most played by Duke's orchestra. It was revived with lyrics by great jazz voices like Ella Fitzgerald and served as an intro to the Rolling Stones' 1982 album *Still life*. ●

3. *Le poinçonneur des Lilas* by SERGE GAINSBOURG (1958)

In 1958, Gainsbourg, who had spent his entire life in Paris, released the song *Le poinçonneur des Lilas*. It tells the story of "this guy you pass and don't look at". Under the ceramic tiles of the Parisian metro, the ticket inspector is bored with punching travellers' tickets day after day. And so he reads, dreams of great escapes, to the sea and on wild paths. "I'd like to fly away/Leave my cap in the cloakroom" sings Gainsbourg. This song was one of the composer's first hits. The town hall of Les Lilas, in the Parisian suburb, recently proposed naming a new metro station, scheduled for 2019, Les Lilas-Serge-Gainsbourg. Proof that this song has made a lasting impression on people. ●

4. *Little Black Train* by INDRA RIOS MOORE (2015)

Metros and trains have long fuelled composers' poetic fantasies. *Little Black Train* is a traditional 19th century gospel song, made popular in 1935 by the Carter family, then in the mid-1940s by American folk singer and guitarist Woody Guthrie. In this song, the train is an allegory for looming death. The lyrics urge the listener

to be upfront with God before leaving this world. "Soon, maybe tonight, we'll have to get in the train and leave...". New York singer Indra Rios Moore revisits this classic with her favourite musicians, including her saxophonist husband, Benjamin Traerup, and bassist friend Thomas Sejthen. ●

5. *RER B* by DEXTER GOLDBERG (2018)

Living near an RER B station in Paris, young pianist and composer Dexter Goldberg frequently takes this line of the Île-de-France regional network. With the song *RER B*, he translates the commotion and agitation experienced during his travels into music. This composition is emblematic of the cinematographic style shared by many young contemporary musicians. Like the other tracks on the album, *Tell me something new*, this song radiates a merry, fresh and communicative energy. A sound that always seems to be moving forward, from station to station. ●

6. *Northern Express* by TIMO LASSY (2017)

Finnish saxophonist Timo Lassy is one of those outstanding European musicians who have truly internalised 1960s jazz, the mythical quintets of Miles Davis or the Jazz Messengers. With *Northern Express*, the saxophonist invites us onboard his Scandinavian train for a shamanic journey through snow and ice.

His sixth album, *Moves*, combines soul and latin jazz influences from the 1970s, as well as hiphop. A gem of groove, with a soulful rhythm in keeping with the tradition of the mythical Motown label, highlighted with rap. ●

7. *Long Train Running* by THE DOOBIE BROTHERS (1973)

In their famous song *Long Train Running*, the Doobie Brothers share how to move forward and not stay on the platform watching trains pass by, like Lucy, the song's main character who wanders around, homeless, without any family or love. The track's theme was born during a long on-stage jam session. The Doobie Brothers' producer then convinced the singer, Tom Johnston, to write lyrics for the music. This led to the creation



FRED CHARBAUT is a music journalist specialising in jazz. He is the co-founder and codirector of the Saint-Germain-des-Prés Jazz Festival in Paris. He is also a music programmer for FIP⁽¹⁾, Radio France's eclectic radio station, Jazz à FIP and jazz programmer for Air France's long-distance flights.

(1) FIP is a French radio station, part of the Radio France Group, which can be listened to on the web all over the world at <https://www.fip.fr/player>

~ SPECIAL THANKS ~

The editorial team would like to thank all contributors to this third edition of *Pulse*, and in particular:

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