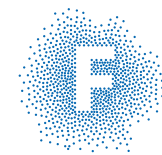# FLOWBIRD
Urban Intelligence

HOW TO DELIVER SMART URBAN MOBILITY

The urban journeys of tomorrow

Imagine a smart mobility future. You drive your EV to a parking spot on the edge of town, where a space and a charger is waiting for you. The weather is nice, so instead of the bus, you have reserved a bike to travel the last mile into town. You dock as you arrive in a clean, congestion-free city centre.

All this happened on an app, but you could just as easily have booked it all at the parking terminal with its new touchscreen or on the web. At the end of the day all your activities are added up, discounts and price caps applied, and the money comes straight out of your bank account.

Meanwhile, the local authority is using this anonymised data to understand mobility patterns and make informed decisions to make their city cleaner and more accessible for residents and visitors.

They are redirecting traffic in real-time to improve traffic flow and reduce congestion, pollution, and noise. They are gathering data to make decisions about public space sharing, such as new out of town parking, repurposing quiet car parks, cycle schemes, clean and efficient last mile delivery, and EV charger positioning.

This all sounds great. But it is not as simple as rolling out new technology. Making it work for everyone, requires bringing together fragmented systems, and making decisions in complex physical, digital and human ecosystems. That needs coordinated strategic thinking, political will, and new technology. This whitepaper will explore these challenges and how we respond to them in a way that works for everyone.

PART 1:

THE CHALLENGES OF SMART MOBILITY

Smart mobility is often seen as a technology challenge but in many ways the technology is the easy bit. The hard bit is bringing everything together to make it seamless for the user and ensuring the data it generates is reliable.

From working on urban mobility projects around the world – including pioneering projects in New York, Rome, Monaco, Detroit, and Brussels – we have identified some of the main challenges. We discuss three challenges here before sharing our learnings and insights on how to address them in Part 2.

1. Moving from a siloed to a 'joined-up' approach to transport or mobility

Historically people took a car, bus or train to their destination. Infrastructure was built around the needs of the vehicle, not the needs of the user. But people increasingly use multimodal transport, and they want services built around their convenience – as they have in shopping to banking – not built around blocks of infrastructure.

As Stéphane Schultz, founder of French innovation consultancy, 15marches, points out, "many public authorities have transport and parking responsibilities divided between siloed departments and sub-regions. They struggle to join things up. Without good data sharing, collaboration, and consistent approaches and technologies, they will struggle to deliver smart services."
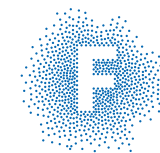
"There are some good examples out there" he says. "London does it well because it has a single authority that can coordinate across transport and parking. And Brussels has shown how to do integration – the city has at least 11 apps and has managed the integration layers for payment, enforcement, and so on. But on the whole, taking a joined up approach has proved difficult for most."

Often the rising number of old and new players proves hard to integrate with central systems. Hans Spincemaille, says, "We see a multitude of parking equipment companies, and added services like bike hire schemes, but they are not all connected or sharing data through central platforms."

2. Balancing innovation with useability

As technologies arrive – digital parking payments, EV chargers, bike and scooter hire – they will become complex to navigate. New apps will proliferate. Lots of choice can be good for consumers, but having to navigate many different options, T&Cs, and user interfaces is frustrating and puts people off.

Local authorities need to be able to add new digital services, without alienating users of existing ones, or overwhelming users. And they need to do so in a way that integrates behind-the-scenes so they can offer combined services.

3. Ensuring no one is left behind

There is much talk of apps offering solutions. They are part of it, but they are not a panacea. 46% of UK drivers still prefer to pay for parking with cash, especially older and lower income drivers[1]. For now, at least, there is a need for an appropriate mix of digital and physical infrastructure that allows everyone to share in the benefits of smart mobility.

Francesco Amendola of Rome's ATAC SpA, says "People are creatures of habit and many still buy a ticket every day, or pay for parking in cash. Even though new systems would make their lives easier and save them money, many are still slow to change. So we need to move gradually – we can't just force a whole new system on people."
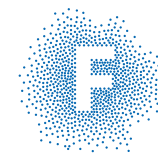
[1] https://www.theaa.com/about-us/newsroom/cash-is-king-for-parking

PART 2:
DELIVERING SMART MOBILITY IN TOWNS AND CITIES

In this section we discuss key elements of a successful smart mobility transition

1. Create a seamless user experience across all modes of transport

"Customers want a single app that can do everything for a clear and transparent fee – either a subscription or pay per use," says Stéphane Schultz. Such an app could plan a journey according to your criteria (eg fastest, cheapest, lowest emissions), see all multimodal options, book, and guarantee the best price.

This can work well where all transport is provided by a single authority (see Monaco Boxout). But it is harder where transport is fragmented between different departments and private companies.

One solution is that a single party – say a council department or transport operator – takes responsibility for a main app, and provides routes for others to operate within it.

Another is to write open data standards into tenders so any approved partner can integrate services. So a bike hire app could also let you plan your onward bus journey, or a parking app could let you book in competitors car parks for a small finder's fee. This reduces user complexity, and encourages innovation.

A third option is multi-merchant, where multiple apps are available to do the same thing. So, a parking space could be booked via one of four popular apps. This removes local monopolies and allows users to use one app wherever they go.

In all cases, there will need to be interoperability between the data, and a single platform to manage that data and link all options together.

Monaco is a world leader in smart mobility. At the heart of its transformation is an app – Monapass[2] – which offers journey planning and integrated payments.

Based on the Flowbird digital platform, it draws in real time transport data and allows users to plan and book parking, buses, and bikes via single payments or subscriptions. The app then generates QR codes that are presented when boarding the bus or unlocking bikes.

2. Offer endpoints for everyone

Apps are a highly efficient way to bring together different services in one place. But they are not for everyone. Many still want physical terminals and some want to pay by cash, especially older and lower income users. Equally, a visitor to an area will often prefer a terminal over downloading an app for one payment. It is important to offer inclusive options for different users.

Smart connected terminals allow those who reject apps to still benefit from seamless journeys and cost savings. Touch screens let them easily book multimodal journeys, which could then be validated by a text with a QR code or a printed ticket.

Open platform architecture would allow third parties to deploy mobility services into these terminals – ensuring non-smartphones users can still benefit from the full range of digital services and pricing options.

Francesco Amendola says "As we move to an electronic ticketing system, parking terminals provide a convenient place for people to access a range of connected services. The older terminals can be tricky to use for this, but newer versions with touchscreens make this easy." Both upgrading and retrofitting will be key elements of a smart mobility strategy.

In 2021, **Como, Italy** worked with Flowbird to upgrade it's 20 year old parking payment terminals with digital kiosks. The replacement now allows users to buy not just parking but bus tickets, boat tickets, bike and scooter hire. Success involved integrating multiple transport operators behind the scenes. Not only does this offer a better service, but gives the municipality much richer data on user behaviour.

3. Offer payment options for everyone

All these services need to be backed by integrated payment options, whether the payment happens on a phone or terminal, with app, cash, card, subscription, or digital wallet.

Digital integration allows sophisticated payment options such as multimodal discounts, daily caps, combined parking and charging, and dynamic pricing for busy times.

Francesco Amendola says "We want to move people away from buying one-off tickets and instead travel based on an identifier: ideally an app, but if not, we can use a credit card or electronic travel card. Once there is a user ID, then you can track their journeys through car parks, buses etc, and charge the best price at the end of the day. This allows us to provide more, better and fairer services."

Luc Van den Berghe, Parking Consultant, LVdB-Parkeeradvies, and former Director of Parking for the City of Ghent says: "For parking, many cities now use number plates as an identifier.

This means you can charge based on the vehicle, not the location of the terminal. Say a city offers 30 minutes free parking, the vehicle can benefit from that over a few locations if they are running errands. On the other hand, they can't just keep moving their car every 30 minutes to exploit the system. It's fairer for everyone."

Combined options can also be used to incentivise better behaviour. Hans Spincemaille of Belgium's Optimal Parking Control has run projects to offer cheap train station parking, combined with train tickets, to encourage people to park of town. "With digital payments and ANPR, these combined options – which require two or more separate entities to integrate around a single transaction – are much easier to manage behind the scenes than they used to be" he says.

In 2019 **Edinburgh's** main transport operator worked with Flowbird to launch an open payment solution for public transport.

Passengers now tap their payment device (card, phone) and the system instantly create a token for that device, tracks their journey across different modes of transport, and calculates and charges the correct fare at the end of the day. This allows multimodal discounts and price caps that encourage the use of public transport.

A similar but more complicated process is needed for fleets who need to coordinate lots of instances of parking (including curbside 'pick up-drop-off' parking), and charging their EVs, whilst just paying for what they use, with zero hassle.

In all these cases, each payment needs to be aggregated behind the scenes and charged at the end of the journey period, with the fee then split and paid to the different operators according to agreed terms. This requires back-end infrastructure to manage the different parties and a payments provider capable of handling these multi-party merchant transactions.

4. Ensure digital services are matched by quality real world experiences

It's not just about digital technology. These tools need to link through to real world things. It's all very well booking a charging space or a place to lock your bike, but those things need to physically be there, and work, when you get there.

Digital tools need to link up with connected infrastructure such as bike docks to ensure the experience is not only seamlessly planned, but actually delivered. Enforcement mechanisms, such as ANPR, warden systems, sensors or scan cars also need to connect in, to ensure systems are fair, available, and not abused.

5. Build a single data platform behind the scenes

Whilst choice can be good for the user, a joined-up user experience requires a single source of truth behind the scenes – a place where data from all those services is combined.

Francesco Amendola says "We need to get the data from buses, trains, parking meters, apps, and any other transport system, into one place, and in consistent formats. This is essential to enable a single ID to move seamlessly between mobility options."

Luc Van den Berghe adds "To move to digital systems we need to offer apps, and upgrade terminals to accept card payments and number plate inputs, but behind all that there needs to be a supervising platform to manage everything. So you can track when a card payment or a number plate crops up in another location and apply the right payments rules."

As noted by Deloitte[3] , a new economic landscape is emerging characterized by two trends: concentration and fragmentation. Concentration is the trend towards relatively few, very large players that provide infrastructure, platforms, and services, which support many fragmented niche players. We think this should be embraced.

Local Authorities should adopt a centralised underpinning infrastructure that brings everything together, but which allows a wide range of existing and new physical and digital transport players to integrate.

³ https://www2.deloitte.com/content/dam/Deloitte/tr/Documents/public-sector/deloitte-nl-ps-smart-cities-report.pdf

PART 3:
CONCLUSION

Evolution not revolution

Cities don't want to be jumping from one digital innovation to the next. They cannot afford to rip everything out and start again every time a new innovation comes along. They need long term strategies that allow them to evolve with the changing needs of their citizens.

This balance requires consistent and reliable platforms behind the scenes, that will stand the test of time, but which integrate the full range of existing and emerging digital technologies – both at the user and the infrastructure end.

This extends to planning for the future. Bike and scooter schemes, already popular in many cities, are coming to others. Parking spaces will install connected EV chargers. Connected cars are on their way. Terminals are undergoing smart upgrades. Any system must be ready to easily incorporate these new endpoints as they arrive and ensure they can be joined up with other systems to become part of the tapestry of smart mobility.

The key is to do it all at a manageable pace for your region and its citizens. As Francesco Amendola says: "We should launch new digital services, make them extremely easy to use, promote them with advertising campaigns. Then we should watch the results and use these to gradually shape our strategy around the pace of uptake. We can't force it in one go. It takes years, not months."

Gradually, this will enable smarter journeys for everyone, and in doing so provide local authorities with data that offers an entire view of the interconnected aspects of smart mobility – parking, public and private transport, EV charging, fleet management, and last mile options. This will support decisions to change transport in response to user needs, and create ever safer, cleaner, fairer, and more accessible towns and cities.

How Flowbird can help

We offer entire smart mobility solutions for cities and towns:

- We provide many of the end points discussed in this report – apps, terminals, curbside management, enforcement. We can upgrade existing terminals with new digital services and open them up to integrate third party mobility services.

- We have a proven platform for managing parking and public transport ticketing – used in many regions around the world – to coordinate, manage, collect data from, and integrate these different digital endpoints. This is also capable of integrating third parties apps and devices, ensuring user choice and easy evolution as new systems arise. We have 20 years' proven experience of mobility and payment data management platforms.

- Our platform manages the complexity of sales, payments, reporting, invoices and fines across multiple endpoints. In doing so, it captures this data in accessible formats which can be analysed to understand trends and inform decisions.

- By embracing our full range of services, cities and towns become the conductor of the urban mobility orchestra.

We would like to thank the following for sharing their insights for this report:

- **Francesco Amendola**, ICT Director & Chief Digital Transformation Officer, ATAC SpA (Tramway and Bus Agency of the City of Rome), which operates most of Rome's public transportation and parking.

- **Stéphane Schultz**, founder, and Consultancy at French innovation consultancy, 15marches

- **Hans Spincemaille**, Chief Digital Officer, Optimal Parking Control , an integrator of driver-friendly parking policy across Belgium

- **Luc Van den Berghe**, Parking Consultant, LVdB-Parkeeradvies, and former Director of Parking, City of Ghent

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