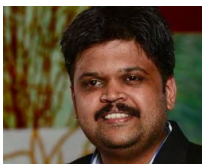# Deloitte.

Smart Cities &
Urban Transformation
Client Stories

Brussels' SmartMove promises to upend traditional mobility in the city

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In 2019, Brussels, the capital of Belgium, received the notorious title of being the traffic jam capital of Belgium.[1] This is not surprising given Brussels is the largest city in Belgium, an economic center, and that nearly a fifth of the country's population resides in or around the city.[2] The COVID-19 pandemic had its usual effect on traffic and congestion—but with the return of economic activity, traffic and congestion have picked up and are creeping toward pre-pandemic levels.

Riders in Brussels lost 78 hours per year in traffic in 2021—a 4% decline since 2019, but a 5% increase since 2020.[3] So, it can be safely concluded that traffic is inching back to "old normal" levels.

This prompted the Brussels government to evolve a mobility solution that could address the growing congestion cost in the region, including health, economic, and environmental. It tapped into the EU Horizon 2020 program funding to develop a smart kilometer-charge solution for the city called SmartMove.[4]

Road-user charging (RUC) is not a new concept—multiple cities and regions worldwide have piloted such solutions already. However, while most of these have been smaller pilots that have either not been scaled up or were restricted to smaller geographies in a city—especially in business districts—SmartMove is aspiring to be the first citywide smart-road user-charging system in the world.

SmartMove is focused on four foundational components that could upend the traditional mobility system in the Brussels region. It primarily focuses on implementing a smart-kilometer charge where users can pay for road usage, a mobility-as-a-service (MaaS) platform for riders, a nudging tool based on behavioral insights to move people to more sustainable transport options through incentives, and ensuring privacy by design.

Making road-user charging smarter

SmartMove charges users for road usage based on multiple factors, including the time of day, destination (geographic auto zones), engine type, and emissions. For instance, a rider will pay less for riding an electric vehicle (EV) than a rider using internal-combustion (IC) vehicles. Also, someone driving to the central business zone during peak hours will pay more than riders driving to other zones.

But how does it work in reality? Currently, the rider will have to start the SmartMove app on the smartphone to start tracking and, on reaching the destination, stop it. The data is transferred securely to a third party that matches the GPS coordinates, travel route, travel

[1] Gabriela Galindo, "Brussels crowned traffic jam capital of Belgium," The Belgium Times, January 29, 2020.
[2] World Population Review, "Brussels population 2022," accessed August 30, 2022.
[3] Tomtom.com, "Brussels traffic," accessed August 30, 2022.
[4] ReVeAl, "SmartMove: A breath of fresh air for Brussels," December 9, 2020.

time, geographic zone, and engine type from a federal database to calculate user charge. There is a base fee for each geographic zone along with user charge. The total charge is calculated at the end of each day, and the total amount is sent to the user app for payment.

Mobility-as-a-service platform

The second component of the SmartMove application is the MaaS solution for riders. It is a straightforward plan-book-pay application for riders that integrates 15 mobility service providers in the city, including metros, trains, buses, trams, ride-sharing, and micromobility options.

Users can choose from these service providers, when planning their trips, to find the fastest or cheapest options, book a mobility option, and pay from the same application. This could open up an on-demand multi-modal future in the city.

However, the region is encouraging the concept of "mobility budgets" where employers can pay employees a certain amount each month for travel, which riders can use either for public transport (cheaper and sustainable) or for driving their cars and paying via the smart-kilometer charging option directly.

Nudging riders toward more sustainable mobility options

SmartMove also encourages and nudges riders to make more economical and sustainable mobility

choices in the long run. The administration is focused on moving people from single-occupancy cars toward more sustainable options like carpooling, public transport, walking, and cycling.

Moreover, SmartMove is expected to replace the existing annual road and car registration taxes, except for large, high-powered vehicles. SmartMove could nudge people who prefer individual cars to move toward EVs or low-powered IC-based vehicles that cause less pollution. The administration is also trying to nudge the mobility behavior of citizens by gamifying the user experience. When a rider uses public transport instead of a car, the rider receives points on the app. During the current testing phase, the rewards are merely virtual. However, when scaled up, users can accumulate these points by showcasing "good" mobility behavior and redeem them for rewards.

Privacy by design

The technology for implementing road-user charging projects has been in place for years. The real challenge most cities face worldwide lies in data governance. Most RUC-based solutions depend on tapping into user-generated data, metrics from onboarded vehicles, and data from surrounding infrastructure to determine vehicle miles driven, travel time, GPS coordinates, congestion levels, and more. The administration should address certain pertinent data-governance issues: who owns this data, who provides consent, where it will be stored, who can use it and in what ways, how to protect citizen privacy, and how to manage data security.

SmartMove is developed to adhere to GDPR guidelines and built with privacy-by-design principles in mind. It uses a federated data system where Brussels Fiscality, the city's tax agency, is made aware of the vehicle miles driven within a geographic zone only—not where or on which route. The third-party data broker gets the raw GPS points and a unique identifier not linked to a person. Only the user can see all this information in one place when it is integrated into the SmartMove app.

The way forward for SmartMove

SmartMove shows a lot of promise in moving the mobility system from a flat-tax system to a more dynamic system focused on charging people for usage based on different factors. Moreover, the region wants to use SmartMove to shape commuter behavior by nudging them to move to more sustainable transportation modes.

The administration tested a beta version in 2021 to test the technology components within the region. Next is the ongoing live testing with 1,500 citizens in the region to test the different components from the smart-kilometer charge on the MaaS platform. The administration is currently addressing the challenge of implementing the system for vehicles entering Brussels daily from neighboring jurisdictions.

Addressing these implementation challenges will be vital in scaling SmartMove over the next few years. This would include providing alternatives to the public outside of the SmartMove application.

Finally, the aim is to evolve Smart-Move into a "plug-and-play" kind of solution that can be configured and customized for different regions and countries globally.

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The initiative offers up-to-the-minute thinking on how cities can use advanced digital technologies to address such key issues as mobility, infrastructure, data, and sustainability. Drawing on our global reach and cross-sector experience, Deloitte translates a holistic vision of smart cities into actionable, concrete solutions that can enable a brighter and more human-centric urban future.

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