



A SMART LYNX LTD.

SMART CITY SOLUTIONS

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ABOUT US

WE BELIEVE THAT WITH THE LATEST TECHNOLOGIES WE CAN MAKE URBAN LIFE BETTER

At Smart Lynx, we are committed to innovate urban mobility thereby create a healthier and more liveable urban environment with the help of the latest IT and communication technologies, supporting the creation of more liveable and healthier Smart Cities.

Customer satisfaction is extremely important for us, so we constantly strive to provide the highest level of service.

Technology is constantly changing, so we're continuously evolving our smart city solutions and services with it.

Our team has decades of experience in IT, telecommunications, engineering and operations. Within our narrow field of expertise, sensor-based on-street parking management, we clearly have the most experience and references in the Hungarian market.

In our daily work, we maintain our existing Smart Parking and Traffic Monitoring systems, install new Smart Parking and Traffic Monitoring sensors, analyse the data from the sensors, provide valuable information to our customers and help drivers looking for parking spaces to find them more easily.

Our cloud-based operations platform allows us to remotely monitor the entire network of devices (Smart Parking Sensors, Traffic Monitoring Sensors and Street Parking Guidance Displays), so that in the event of a malfunction or other service outage, we can start troubleshooting as soon as possible.

Our Smart Parking and Traffic Monitoring Sensors are highly sensitive, so their proper installation is critical to the system's operation. With more than 5,000 deployed sensors behind us, we can confidently say that our professional and precise installation processes contribute to the outstanding reliability of our Smart Parking and Traffic Monitoring solutions.



SUMMARY

CHALLENGES OF URBAN PARKING

Did you know that some estimates suggest that in an downtown environment

30% OF CAR TRAFFIC IS MADE UP OF CARS LOOKING FOR A PARKING SPACE, WHILE THE AVERAGE TIME NEEDED TO FIND A FREE SPACE OFTEN EXCEEDS 15 MINUTES AT PEAK TIMES?

This leads to traffic congestion, increased noise and air pollution, which contributes to a deterioration in the quality of life for people living in urban areas.

SMART PARKING SOLUTION

Smart Lynx's Smart Parking solution not only makes it easy to set off on the road of becoming a smart city, but

IT COULD INCREASE PARKING REVENUE PER PARKING SPACE BY MORE THAN 15% PER MONTH

in a typically congested public parking lot. This not only improves the efficiency of parking operations, but also makes life easier for drivers, who do not have to waste time searching for free parking spaces. In addition, the living conditions of people in the neighbourhood will be also improved, thanks to reduced traffic, noise and air pollution. With the implementation of the Smart Parking solution, for every 500 parking spaces

OVER HALF A TONNE OF CARBON DIOXIDE EMISSIONS CAN BE REDUCED EVERY WEEK¹.

TRAFFIC MONITORING SOLUTION

The Traffic Monitoring solution of Smart Lynx will further improve the city's traffic and environmental conditions by providing real-time access to critical data that will allow professionals to intervene immediately in the event of a traffic anomaly, preventing a major traffic disruption. In addition, the availability of historical traffic data allows to make better-informed decisions on future changes regarding traffic management.

¹ Based on our experience in Budapest, we calculated with 100 parking events per day to be shortened by the use of our Smart Parking Solution.

CHALLENGES OF URBAN PARKING



CARS CHASING PARKING SPACE

They contribute to the congestion of our cities and public spaces, hold up traffic, have a negative impact on our environment, while impatient and inattentive drivers can easily cause accidents in already crowded streets.

FLUCTUATING PARKING SPACE OCCUPANCY

As a result of the uneven utilization of infrastructure congested and unused areas and periods alternate even in the case of areas and periods close to each other.



LACK OF INFORMATION

Even though urban parking spaces are valuable nowadays, the organisations responsible for parking typically have outdated and incomplete information on their utilisation.

SHORTAGE OF PARKING SPACES

In order to make cities more liveable and more accessible to the public, cyclists and pedestrians, it is essential to reduce the number of cars in the city and also the number of on-street parking spaces, but the number of vehicles that would require these public spaces is still increasing.



SMART PARKING SOLUTION



SMART PARKING SENSOR

Flush-mounted, small, easily replaceable sensors using cutting-edge Narrowband IoT (NB-IoT) technology, capable of measuring the occupancy of the monitored parking spaces for more than 5 years without the need for any additional infrastructure installation.

Thanks to the magnetic detection mechanism, vehicles can be accurately and reliably detected in all weather and road conditions.

The reliability of the system is ensured by an artificial intelligence-based algorithm that can determine the occupancy status of a parking space in real time with an accuracy of over 98%.

DASHBOARD

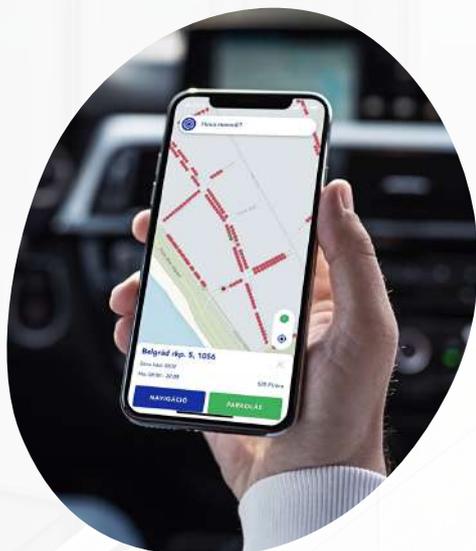
By analysing real-time parking occupancy data, it provides parking managers with essential statistical information to improve operational efficiency and infrastructure utilisation.



MOBILE APPLICATION

By making real-time occupancy data available to drivers, the app helps them find available parking spaces or remotely check occupancy - whether it's disabled parking, loading bays or spaces with electric chargers. Moreover, mobile parking transactions can be easily initiated.

Using the mobile app can reduce the time spent finding available spaces, saving drivers time, fuel and money, while also reducing environmental and noise pollution as well as traffic congestion.



PARKING GUIDANCE DISPLAY

To direct drivers, who are not using the mobile app to free parking spaces, we install parking guidance displays that provide real-time information on the number of free spaces nearby, helping to reduce congestion and disruption around bagged or one-way streets.





IMPACT STUDY

Based on years of experience in operating smart parking systems and our impact analysis, our solution can

INCREASE PARKING REVENUE PER PARKING SPACE BY UP TO 15% PER MONTH IN A TYPICALLY CONGESTED PUBLIC PARKING LOT.

OTHER USE CASES

Our Smart Parking solution has a number of additional use cases, including the ability to check the real length of parking events in a restricted waiting zone and send alerts about unauthorised parking events. The solution could help optimise the route taken by parking enforcement officers, or even provide the basis for a future ticketing and fine-free parking culture.

CHALLENGES OF URBAN MOBILITY

INCREASE IN THE NUMBER OF VEHICLES

While the country's population is steadily declining, the number of cars on the road is increasing by almost 5% every year².



SPREAD OF MEASURES TO REDUCE TRAFFIC

Various forms of traffic restriction measures are being introduced in order to make cities more accessible to the public, cyclists and pedestrians.

IN WHICH CASES SHOULD A TRAFFIC MONITORING SOLUTION BE USED?

If...

- ▶ you want to identify traffic anomalies early enough to intervene before they become a major problem;
- ▶ you would like to make decisions regarding traffic changes based on real-life data;
- ▶ you would like closures due to maintenance or other work to cause the least possible disruption to your citizens;
- ▶ you would like to be aware of the impact of traffic changes due to reasons beyond your control.

² Figures based on Hungarian data.



TRAFFIC MONITORING SOLUTION

TRAFFIC MONITORING SENSOR



We make urban traffic data easily accessible by using small, easily replaceable, magnetic detection-based traffic monitoring sensors flush-mounted in the road surface.

Thanks to advanced NB-IoT network communication, no additional network elements (such as base stations or repeaters) need to be installed.

The use of cutting-edge technologies ensures an average lifetime of 2 years, depending on traffic conditions, without any other external energy source.

The frequency of data aggregation can be calibrated according to customer needs, providing traffic and average speed data in near real time. Unlike inductive loop detectors, installation is simple and cost-effective, requiring no separate power source and no ongoing maintenance.

DASHBOARD

Real-time and historical traffic data and related statistical reports are made available to the city administration, ensuring a continuous and reliable knowledge of traffic conditions essential for proper traffic management.

In the long term the solution supports traffic planning, management and road infrastructure development decisions and helps in measuring and controlling the results of traffic management decisions.





CASE STUDY

SMART LYNX PROVIDES A SOLUTION
TO THE CHALLENGES OF ON-STREET
PARKING AND TRAFFIC MANAGEMENT
IN THE 5TH DISTRICT OF BUDAPEST



CHALLENGES

In the always busy Budapest downtown environment, the everyday life of many residents, commuters and visitors of the 5th District is made more **difficult by the search for a vacant on-street parking space**.

On average, **more than 30,000 cars** pass through an area of 2.6 square kilometers a day, of which an estimated **30% of car traffic** is accounted for cars seeking free parking space.

There are **only approximately 5,200 public parking spaces available** in the district where the scarcity and variable utilization of parking spaces were causing serious problems, like more traffic, congestion and consequent deterioration of air quality in the district.

In addition, the district's management and relevant decision-makers were challenged by the **lack of data to optimize traffic** on the busy but narrow downtown streets. Thus, they were not able to identify traffic anomalies on time, reduce potential traffic disruptions due to maintenance and other works, and it was not possible to measure the effects of any traffic changes.

SOLUTION

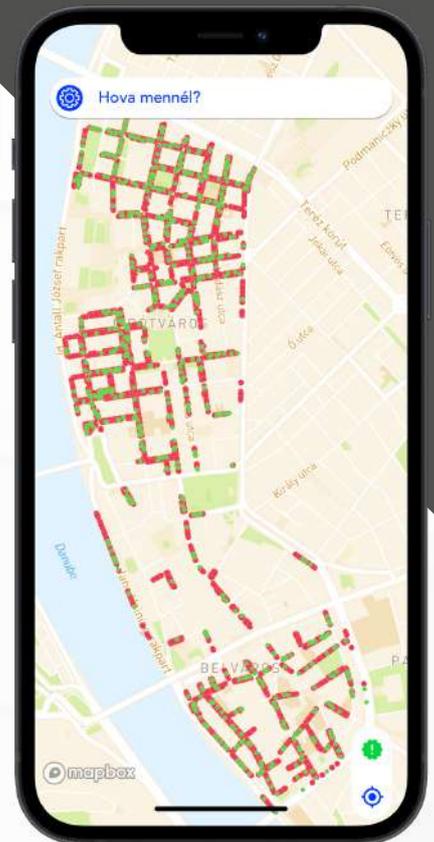
Smart Lynx has helped address this complex problem with its innovative **Smart Parking and Traffic Monitoring solutions**, making life easier for residents, drivers and the management of the district.

After a successful pilot period of the Smart Parking solution, which began in 2018, the live system had been deployed in three phases. By the time the third deployment phase is completed - during the spring of 2021 - the real-time occupancy data will be available for 100% of the district's parking spaces, meaning **more than 5,200 on-street parking spaces' data will be available** in the Parker mobil app.

The drivers can check the occupancy state of parking spaces via the Parker mobile app. The app helps drivers easily find and navigate to an available parking spot and purchase a parking ticket, further simplifying the parking process.

In spring 2020, the first parking guidance display showing the number of free on-street parking spaces was installed at the intersection of Irányi Street and Veres Pálné Street. It helps drivers who are not using the mobile app to find a free parking space nearby, reducing traffic on Veres Pálné utca as well as the traffic congestion and environmental impact in the area.

Along with the introduction of the Smart Parking system, Traffic Monitoring sensors have also been installed at various points in the district, enabling the district's management to keep track of traffic in real time.



PARKER



RESULTS

The number of users who have downloaded the Parker app now exceeds 14,000, and it already saves time, money and frustration for at least 250-300 drivers a day. It is estimated that users of the app spend on average 60% less time searching for free parking spaces, which saves approximately 10 minutes per parking, and can typically park 62% closer to their original destination.

Thanks to the Smart Parking solution, the environmental and living conditions in the district have significantly improved. The use of Parker application alone has reduced carbon emissions by an average of 1,100 kilograms per week, making the air fresher. Lower noise pollution and a reduction in the number of drivers seeking free parking as well provide a livable district for its citizens. In addition, drivers using Parker have not only become more satisfied, but even save fuel, averaging 450 liters per week.

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We are proud that we were the first in Budapest to introduce the smart parking experience to our citizens and visitors. Since the start of the system's public operation in September 2019 the number of those who actively use the Parker application is continuously increasing, resulting in the improvement of parking statistics: the occupancy rate has increased and become territorially more balanced.

Gergely Molnár

Director of Public Space Management Authority, Belváros-Lipótváros, Budapest, Hungary

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With Smart Lynx's Smart Parking solution, the 5th District of Budapest has the ability to track the actual utilization of urban parking spaces, so it became possible to exploit the potential of parking revenue, optimize the infrastructure and ensure even and high utilization of parking spaces and revenue growth. As an example, by monitoring the actual utilization of loading bays, the district is able to optimize loading periods according to real needs, increasing its parking revenues.

With the help of traffic monitoring, the management of the 5th District can make decisions regarding changes affecting traffic based on real-life data. Among other things, it was possible to monitor the impact of Restart Budapest program on urban traffic load, where cars were banned in certain parts of the district.

We need to realize that public space is a treasure and responsible organizations have to manage it as carefully as possible. With the solutions of Smart Lynx, the 5th District of Budapest has been brought closer to making even more informed decisions on public space management issues, thus ensuring a more sustainable and livable environment for the residents, commuters and visitors of the district.



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