PHILIPS

Smart Cities

Smart parking

Smart cities initiative:

Smart parking for better services

Smart parking combines **intelligent street lighting and integrated parking monitoring services**

Today's street parking infrastructure is still rudimentary and often does not leverage data from connected technology. One of the biggest challenges for city drivers is accessing up-to-date information on the availability of parking spots. Additionally, city officials need insights on parking use in order to better manage occupancy.

In order to explore new applications for connected technology, the city of Helsinki recently piloted a smart parking initiative to build on its connected lighting infrastructure. Funded by the EIT-Digital open-innovation program in collaboration with the consortium involving Philips Lighting, Forum Virium Helsinki and Parquery, the system offers a real time overview of unoccupied public parking spaces. It works by combining traffic monitoring solutions with the existing outdoor lighting network, producing highly granular parking information across the city that can be used to inform and improve parking services to benefit both city officials and city users.

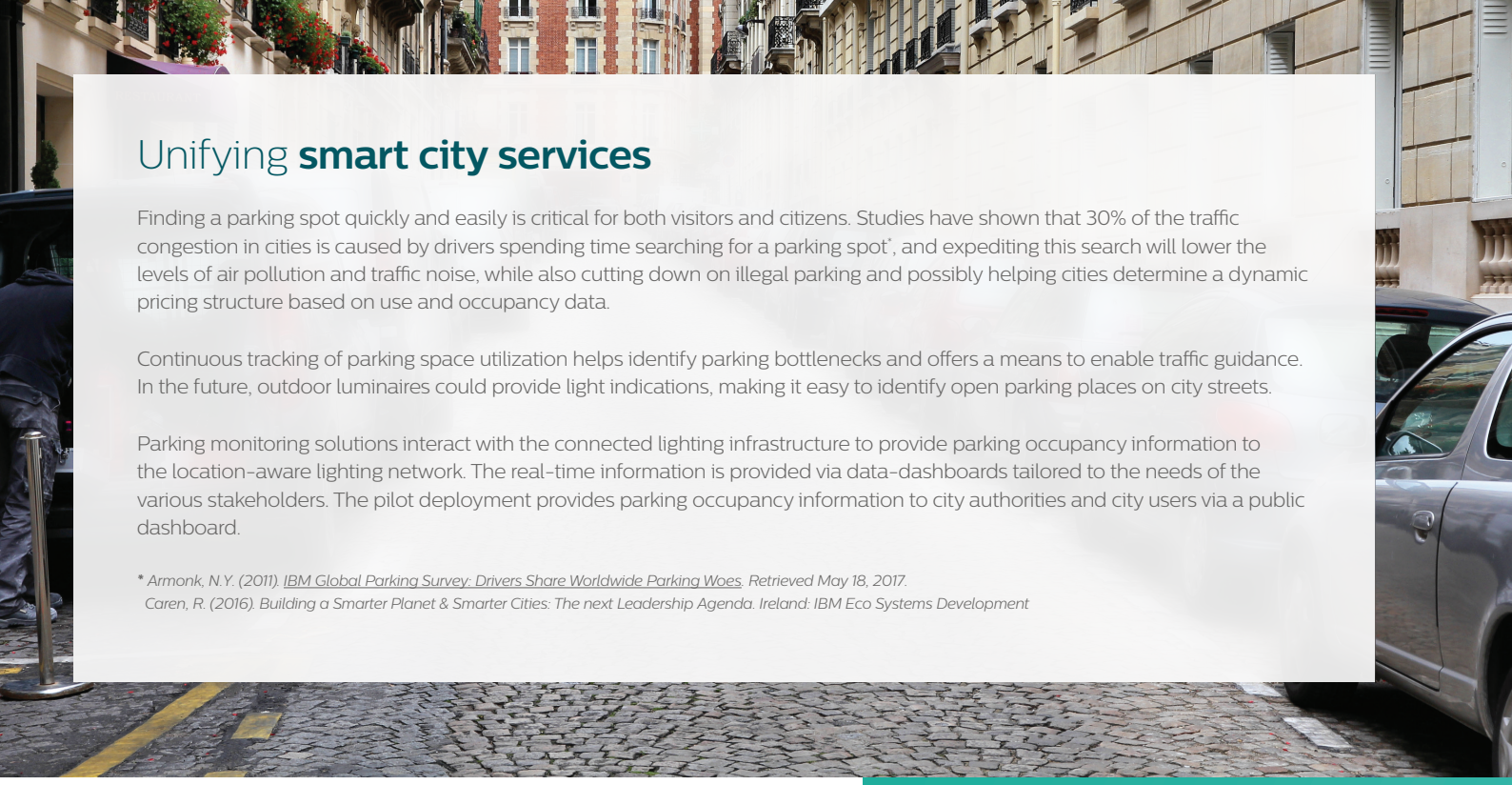
Monitored data is sent to a central server and pushed to platforms that can be used by 3rd party applications and services. Applications using this data help drivers find parking spaces more efficiently while also helping city planners optimize parking space utilization.

Parking management potential

Smart parking solutions enabling dynamic pricing models are being recognized by cities to bring a range of benefits to citizens and the environment*:

- Reduces average parking search time by 40%
- Reduces average traffic (km driven/day) by 30%
- Improves safety by reducing parking spot searches
- Reduces CO_2 emissions
- Increases payment discipline and parking revenues
- Real-time insights allowing for better enforcement and city planning

* ***Source:*** *San Francisco SFpark pilot project*



Unifying **smart city services**

Finding a parking spot quickly and easily is critical for both visitors and citizens. Studies have shown that 30% of the traffic congestion in cities is caused by drivers spending time searching for a parking spot*, and expediting this search will lower the levels of air pollution and traffic noise, while also cutting down on illegal parking and possibly helping cities determine a dynamic pricing structure based on use and occupancy data.

Continuous tracking of parking space utilization helps identify parking bottlenecks and offers a means to enable traffic guidance. In the future, outdoor luminaires could provide light indications, making it easy to identify open parking places on city streets.

Parking monitoring solutions interact with the connected lighting infrastructure to provide parking occupancy information to the location-aware lighting network. The real-time information is provided via data-dashboards tailored to the needs of the various stakeholders. The pilot deployment provides parking occupancy information to city authorities and city users via a public dashboard.

* *Armonk, N.Y. (2011). IBM Global Parking Survey: Drivers Share Worldwide Parking Woes. Retrieved May 18, 2017.*
Caren, R. (2016). Building a Smarter Planet & Smarter Cities: The next Leadership Agenda. Ireland: IBM Eco Systems Development

Smart city innovation pilot in Helsinki

A smart-parking pilot that uses IP-cameras and cloud-based image analytics is currently helping Helsinki discover the suitability of advanced lighting and video technology to address smart city challenges. Within the EIT-Digital open-innovation program, Philips Lighting Research collaborated with the Public Works Department of the City of Helsinki to co-create a smart parking service. This smart city innovation pilot allows the city to gain valuable insights into the feasibility of deploying these technologies on a larger scale. During February and March 2017, a small-scale smart parking pilot was deployed as part of Helsinki's open street-lab initiative, City as a development platform. Prior to the pilot, the smart parking concept had also been trialed at the High Tech Campus Living Lab in Eindhoven, during June to December 2016.

This smart city initiative has provided Helsinki with first-hand information about the suitability of video technology for this task and helped the city gain valuable insights into how this type of monitoring can be deployed. The concept has helped Helsinki move towards its goal of becoming a 'City as development platform' by providing insight into business models and innovative ways of utilizing its existing lighting network assets as a backbone for IoT applications.

Helsinki's innovation procurement program is now considering public lighting as a potential IoT backbone, enabling future smart city applications. The city is targeting further innovative third-party solutions and services for transport, based on comprehensive real-time understanding of traffic volumes, travel times and related conditions such as parking.

> "Cities recognize the need for open, scalable, connected platforms to harness the potential of the Internet of Things. Activities like this smart parking pilot help us **bring our innovations from the lab into our smart city ecosystems and explore the opportunities of connected lighting beyond illumination with cities.**"

Ruben Rajagopalan
Senior Scientist
Public Spaces & Living Lab, Philips Lighting Research

Visit **www.philips.com/smartcities** to learn more.

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