PRESS RELEASE
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A unique smart city pilot goes live in Espoo, Finland

A company consortium led by Nokia is targeting the global smart city markets, worth tens of billions of euros. The LuxTurrim5G ecosystem has just completed a one-of-a-kind piloting environment that boosts the development of new data-driven services for cities both in Finland and abroad. It covers the route from Nokia HQ Campus in Espoo, Finland, to the near-by Kera railway station. Comprising of 19 smart poles with the latest 5G technology and altogether 250 interconnected devices it brings super-fast connectivity and extensive sensor network available for practical piloting of digital smart city services.

The LuxTurrim5G project has been progressing systematically from multi-disciplinary research to practice. The 5G smart pole concept does not only boast a 5G base station integrated into a light pole but also weather and air quality sensors, video cameras, displays, an electric vehicle charging point and other devices. The concept has now reached its piloting phase for practical applications. The extensive pilot network of 19 smart poles has just been completed in Kera, Espoo, covering areas in Nokia's Espoo Campus and extending to the nearby Kera railway station. The smart poles, using the so called millimetre wave 5G technology, bring high-speed 5G connectivity and an extensive network of sensors within the reach of the users.

"This is a globally unique smart city pilot where a high-speed and low latency 5G network, an extensive sensor network and a data platform bring novel services to the city, its people and community," says ***Pekka Wainio****, Project Manager, Nokia Bell Labs.*

"Local data collected by the various devices, cameras and sensors within the network can be used to produce a multitude of local services through the open interfaces of the data platform. We have received wide interest on how the surveillance cameras and radar devices can be utilised in overall security surveillance, traffic and road quality monitoring, for remote control of self-driving vehicles and in other transport and logistics services," Wainio continues.

The smart pole network itself, built by Nokia and its partners, comprises approximately 250 interconnected devices, such as three new generation 5G base stations (26 GHz by Nokia), more than 50 WiFi devices (60 GHz), 75 video cameras, 49 different sensors monitoring the air quality, weather, temperature, road surface state as well CO_2 levels etc. (Vaisala and others), nine radar devices (six traffic radars and three lidars), seven information screens, an electric vehicle charging station and a drone charging and landing station at the top of the pole (Rumble Tools).

In addition to the smart poles, the LuxTurrim5G pilot network also has two smart and safe bus stops (Connected Zone by Teleste,) and a separate city information display, showcasing how different sensors can be integrated into the elements found in the urban infrastructure. These are part of the "LuxTurrim5G smart urban furniture" we are developing for cities. Drones and self-driving vehicles, such as the self-driving shuttle bus (Sensible 4), are also an essential part of the piloting entity where the infrastructure, functionality and services for a smart city are developed in a holistic way.

From light poles to smart poles

The LuxTurrim5G smart pole concept has been developed to meet the future needs of cities. It is not about the light pole as such, as this is a completely new element forming an essential part of the key infrastructure of a smart city – its digital backbone. The recently implemented smart pole version already serves as a pre-commercial pilot product which helps to design the actual smart pole product family. The companies mainly responsible for the design and manufacturing of the pilot poles have been Tehomet Oy and Orbis Oy.

"This is the first large-scale smart pole pilot in Finland, and a globally significant project. The shift from traditional light poles to smart poles is a natural, but also a challenging task where every partners' role matters. Currently we are already working with the next generation of smart poles and focusing on designing and productising a complete product family. Smart poles hold huge potential for global markets," says ***Sami Huuskonen****, Design Manager at Tehomet Oy.*

The integration of several devices to form a well-functioning entity has been the key area of development in manufacturing of the smart poles.

"The limited space in the smart poles sets its challenges in the installation environment. The devices integrated into the pole also have different interfaces that must be connected to the same cabling system for data and power supply. The smart poles that are being piloted in the LuxTurrim5G ecosystem enable services that are needed today but they also serve as a platform for future services. We have designed our solution so that it is possible to add and replace equipment over the course of the smart pole's life cycle. As the needs are evolving, it will not be necessary to replace the entire pole or dig new trunk cables under street level," says ***Jani Linna-Aro****, CEO of Orbis Oy.*

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Digital services for sustainability and smoother living

Espoo is going to transform the Kera area to a smart and urban district with at least 14,000 residents and 10,000 jobs in near future. Kera will become a showcase of sustainable urban development and an international reference case, where the city works together with its partners to create novel, clean and smart solutions to enhance the smoother living of its people. The future Kera will be a significant piloting ground for new solutions, paving the way to larger international projects. The role of Espoo as a pioneer of sustainable development appointed by the United Nations also promotes this approach.

*"The newly implemented LuxTurrim5G pilot network and its smart route from Nokia Campus to Kera railway station showcase an excellent example of a new kind of bold and concrete co-innovation between companies and the city," says **Pekka Vikkula**, Project Director at City of Espoo.*

The LuxTurrim5G smart pole network will form the digital backbone of a smart city offering high-speed connectivity and a versatile sensor network. This in turn brings a wide variety of relevant on-line data available e.g. on environment, weather, traffic flows, public safety, usage of energy to be used by the city and companies for specific needs and to create holistic situational awareness. Cities have also big amounts of own data which often is not widely utilized. The project has already been developing a data platform that is capable of processing large masses of data from various sources in a reliable and efficient manner. All this is important for building new data-driven services for the city needs. LuxTurrim5G partners are excited to move now to practical piloting of different service concepts in the actual live environment. This lays the foundations to the development of the Kera area and helps us to validate our solutions for scale-up in international projects. Through this Espoo pilot, the LuxTurrim5G consortium shares an ambitious target to expand to global smart city markets, worth tens of billions of euros.

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See also:
LuxTurrim5G video
White paper, Building the digital backbone for a smart city, May 25, 2020
www.luxturrim5g.com

Partners of the LuxTurrim5G ecosystem:

Nokia Bell Labs, Nokia, Premix, Teleste, Vaisala, Indagon, Rumble Tools, Orbis, Tehomet, Destia, Sitowise, A-Insinöörit, Caruna, Link Design & Development, Vedia, Agora Networks, Sensible 4, City of Espoo, Finnish Transport and Communications Agency (Traficom), VTT Technical Research Centre of Finland Ltd., Aalto University, University of Helsinki, Tampere University and Spinverse (coordinator of the ecosystem).

The project is funded by the participating companies and Business Finland.

Images for the news:

LuxTurrim5G_Drone_pole_Pekka_Wainio: Pekka Wainio, Nokia Bell Labs presenting LuxTurrim5G smart pole equipped with drone landing and charging station

LuxTurrim5G_route: LuxTurrim5G smart pole route leads from Kera railway station to Nokia HQ Campus

LuxTurrim5G_Safe_Smart_bus_stop: Smart and safe bus stops highlight public safety aspects in the LuxTurrim5G pilot

LuxTurrim5G_Smart_pole: LuxTurrim5G Smart Pole configured for traffic monitoring and public safety services: speed radar, 3D laser scanner, Communication PA system and pole integrated information display

LuxTurrim5G_smart_pole_radio: LuxTurrim5G smart pole with Nokia 26 GHz 5G base station