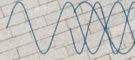


NOKIA



 LuxTurrim 5G

Espoo City gets smart with a 5G powered urban digital platform



More than half the world's population already live in towns and cities. Urbanization continues to expand, changing social and environmental norms and creating new challenges for safety, city operations, quality of life, economic growth and sustainability. Urban digitization is a key tool to help cities become more attractive places to live.

In Finland, a publicly funded research project **LuxTurrim5G** is aiming to make Espoo the smartest city in the world, supported by a 5G network deployed on street lighting poles.

Driven by Nokia, this smart city ecosystem project aims to use new digital backbone to promote innovation, create novel digital services and open up business opportunities.

According to the United Nations (UN), global urbanization exceeded 55 percent in 2018 and is growing; by 2050, 70 percent of the world's population will live in cities.

Cities are also major contributors to climate change. UN Habitat says that cities consume 78 percent of the world's energy and produce more than 60 percent of greenhouse gas emissions. One of the greatest challenges of our time is how to improve energy and transport efficiency, air quality, safety and our overall quality of life, especially in cities.

Smart cities founded on a digital service infrastructure are becoming an increasingly important way to tackle the challenges of urbanization. An advanced digital ecosystem delivers greater data capacity for citizens, as well as new service and business opportunities for companies.

5G platform enhances data collection

In Finland, Nokia is a driving force behind the LuxTurrin5G project to deploy a smart 5G sensor network using street lighting poles to create a digital backbone for a smart city. The high-speed communications platform supports an extensive sensor network to collect a wide range of data. A variety of sensors, including video cameras, displays and other devices, are integrated into smart poles. This enables the building of a comprehensive real-time situational awareness picture of the city.

The project aims to reliably and efficiently capture, process and analyze large data sets and expose them in a data marketplace (Data Bazaar) to the local ecosystem. This encourages the creation of new digital services that support sustainable growth for the city and help enrich the lives of citizens.

Setting a smart city benchmark

Over the last two years, Nokia and its ecosystem partners have been piloting the solution on its campus in Espoo. The campus hosts and tests multiple smart city solutions like real-time environmental data collection, transportation, public safety, energy optimization and remote healthcare services.

LuxTurrin5G has already set a benchmark for smart cities, receiving the 5G Innovations Award from the Finnish Traffic and Communication Agency. The project's results are closely followed by organizations interested in solutions for sustainable growth – such as the UN and the European Union.

The 26 members of the LuxTurrin5G ecosystem are now targeting global smart city markets worth tens of billions of Euros.



Challenges

Countries around the world face the challenge of how to meet sustainability targets in the face of growing urbanization.

Digitization is a key enabler, with technologies such as Artificial Intelligence (AI), Machine Learning (ML), 5G and Internet of Things (IoT) offering new ways to support urban infrastructure. It is vital to find the best ways to use such digital technologies to improve sustainability, make transport intelligent, enhance public safety, improve quality of life and enable new local business opportunities.

Major issues are how to avoid siloed city development to enable city-wide innovation and collaboration; how to scale smart city projects; and how to create services that address all the different needs of smart cities and development areas.

The Solution

The LuxTurrin5G project implements a neutral host model in which a 'neutral' local operator builds, operates and shares an urban 5G network to support a data platform for digital service providers.

The 5G powered smart street lighting pole network collects a huge amount of data from integrated sensors. This data is then delivered to the local data platform for processing and analysis. The results are made available to the local ecosystem through the Data Bazaar marketplace

Connectivity from the poles to the data platform is provided by Nokia AirScale 5G mmWave Radio Access, while Nokia AnyHaul fiber access provides a high capacity backbone.

Nokia's Integrated Operations Center (IOC) lies at the heart of smart city operations by providing a unified real-time view of all assets and services, as well as running efficient analytics.

Benefits

The LuxTurrin5G digital backbone uses 5G to power new services for the smart city ecosystem. Such services are vitally important to help Espoo meet its sustainable development goals, and act as a model city for UN by making this already by 2025. Piloting in Espoo serves as a real-life benchmark helping Nokia and its partners to scale-up the solutions globally.

The data generated stays local and is exposed to digital service providers to enable them to create applications that enrich the life of the citizens.

The neutral host model enables shared connectivity and a shared data network, which substantially reduces the deployment and operating costs of mobile operators and digital service providers.



Why Nokia

To capture the full benefits of smart city initiatives, Nokia believes cities need to move beyond point deployments of individual services and applications. A more connected, more cohesive approach is vital.

The Nokia city-as-a-platform strategy uses technologies like 5G, Industrial IoT (IIoT), analytics and machine learning to create intelligent and integrated city platforms that can support multiple applications, use cases and business models. This is the route to true city innovation.

The strategy is based on an open, standards-based approach known as the Nokia Future X for Smart Cities architecture. This enables the easy integration of best-in-class partners across a broad range of technologies, services and applications.

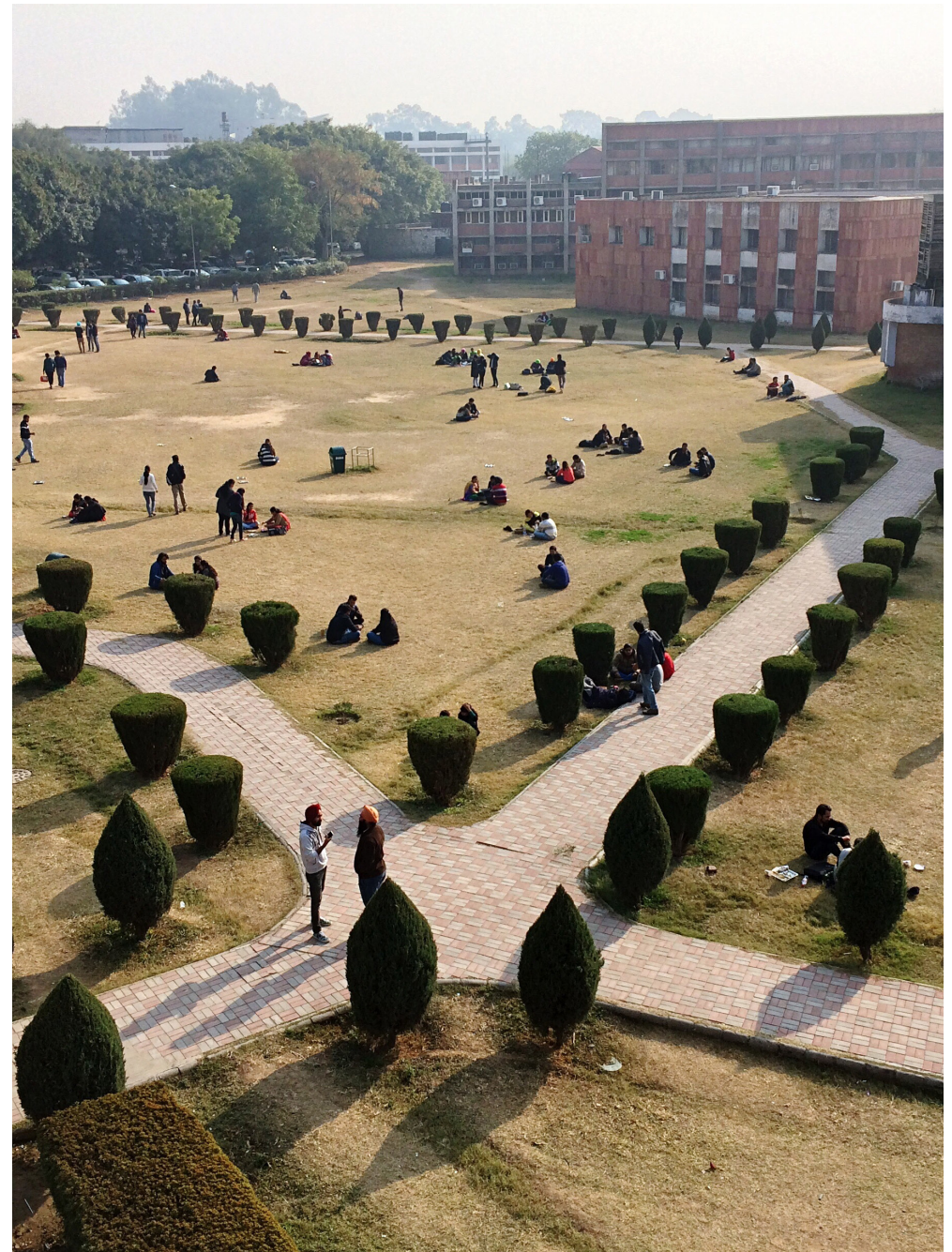
This helps ensure the city can establish an ecosystem of global collaborators and local partners best qualified to address its unique requirements. It also offers a modular, smart city approach that enables Espoo to develop and test an initial set of high-priority use cases, then introduce new services or capabilities gradually as circumstances demand and resources allow.

Learn more about [LuxTurrin5G](#).

The Digital city platform deployed in Espoo by LuxTurrin5G solution involves the processing of personal data and certain controls are in place to assist stakeholders in meeting their obligations under data protection laws, including the General Data Protection Regulation. However, members of the LuxTurrin5G consortium make no representation in relation to the digital city platform or the extent to which it enables stakeholders to comply with their legal obligations. Stakeholders remain responsible for their own compliance with applicable law.

The LuxTurrin5G pilot is a marvelous example of the ways Nokia and Espoo are building a smart city of the future and its requisite infrastructure in collaboration. Smart light pole networks will provide lucrative business opportunities for companies both large and small.”

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At Nokia, we create technology that helps the world act together.

As a B2B technology innovation leader, we are pioneering networks that sense, think and act by leveraging our work across mobile, fixed and cloud networks. In addition, we create value with intellectual property and long-term research, led by the award-winning Nokia Bell Labs.

Service providers, enterprises and partners worldwide trust Nokia to deliver secure, reliable and sustainable networks today – and work with us to create the digital services and applications of the future.

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