



Actility
Connecting with intelligence

How IoT can make Smart Cities a reality

Delivering value to citizens and municipalities

Mark Maidman, Actility



Activity
Connecting with intelligence

How IoT can make Smarter Cities a reality

Delivering value to citizens and municipalities

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Smart City

- A smart city is an urban area that uses different types of electronic data collection sensors to supply information which is used to manage assets and resources efficiently.
- This includes data collected from citizens, devices, and assets that is processed and analyzed to monitor and manage traffic and transportation systems, power plants, water supply networks, waste management, law enforcement, information systems, schools, libraries, hospitals, and other community services.
- The smart city concept integrates information and communication technology (ICT), and various physical devices connected to the network (the Internet of things or IoT) to optimize the efficiency of city operations and services and connect to citizens.
- Smart city technology allows city officials to interact directly with both community and city infrastructure and to monitor what is happening in the city and how the city is evolving.

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Key challenges



Up to **30%** of cars driving in downtown traffic are looking for parking space



Street light accounts for upto **40%** of a municipality's utility bill

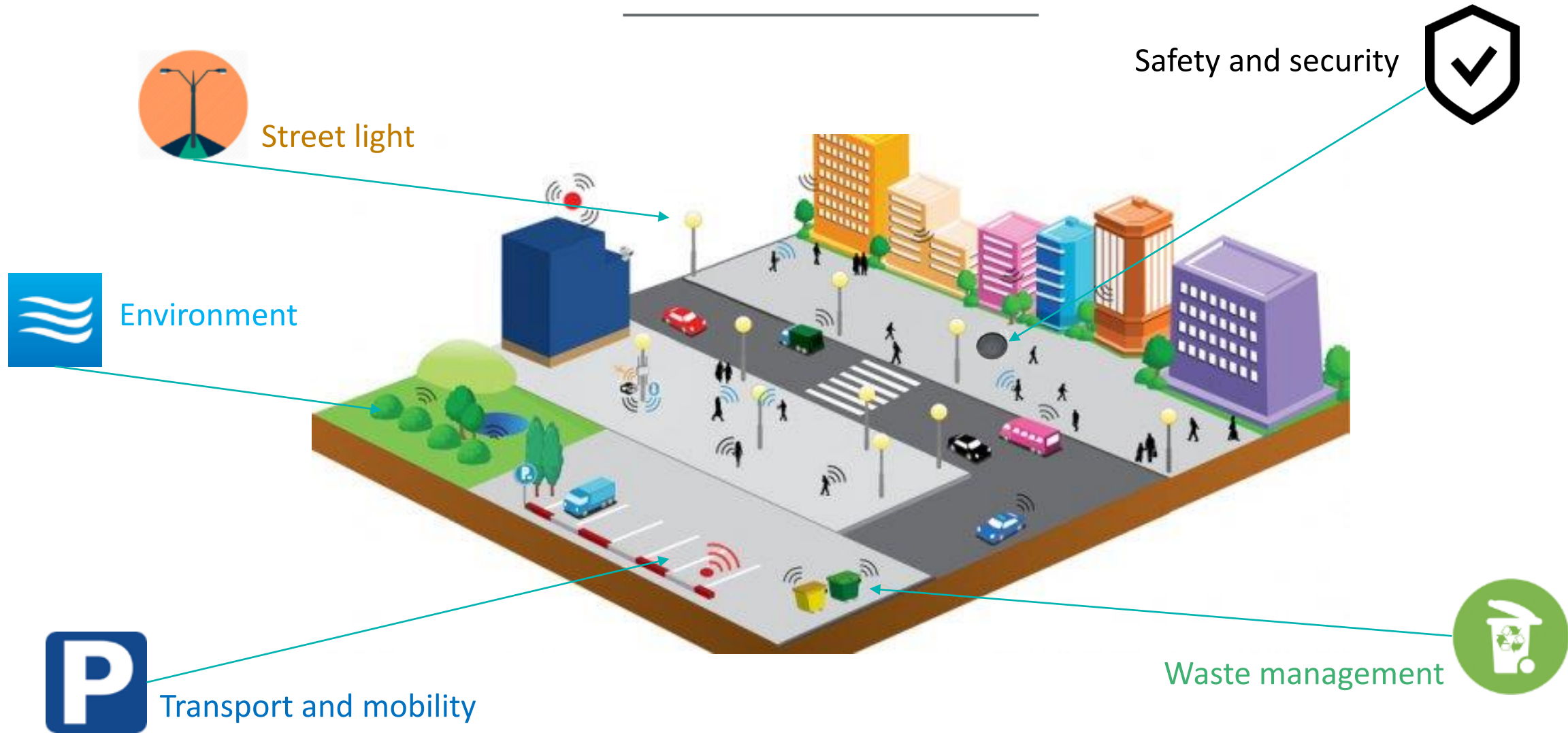


Urban waste generation will increase by **100%** by 2025 vs 2010



Cities occupy **2%** of the territories and produce **80%** of carbon emissions

Smart city key applications for LoRaWAN



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Smart city key trends

Mass urbanization

The world is rapidly urbanizing and by 2050, **2/3 of the population will live in cities**. The urban population has grown to **4 billion** and is expected to grow by **another 2.5 billion** by 2050.

Environment

Today, cities are responsible for **60 to 80%** of the world energy & **greenhouse emissions**. With more & more inhabitants and infrastructure installations, cities must **reduce energy footprint** of the infrastructure, traffic

Maintenance & Operations

City infrastructures like traffic, waste, lights, sustain **increasing stress in terms of usage**. Cities target to optimize mobility & traffic flow and to better **manage maintenance & repairs**.

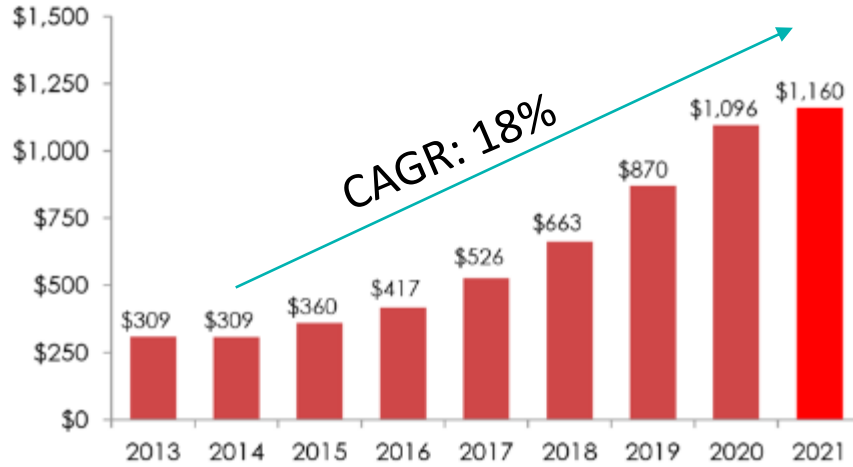
Comfort, safety & security

With exponential increase of inhabitants, cities have to take in account the **comfort and security** of the citizens. Reducing air pollution or time spent to search for a parking space can increase people happiness and **satisfaction**.

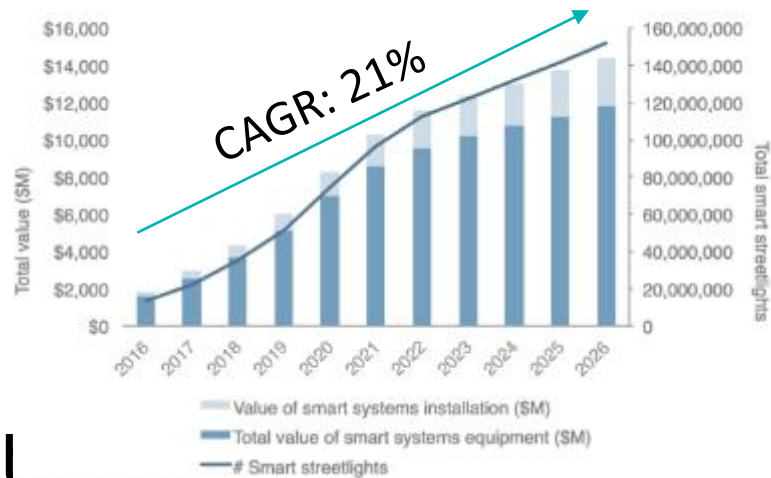
Actility LoRaWAN based smart city solutions aim to enable cities to deploy a horizontal IoT platform solution to enable verticals (parking, light etc.) to reduce energy consumption, optimize operations & increase citizen comfort and satisfaction.

Smart city market

Global Smart City Market Value Forecast
2013 to 2021 (in U.S. billions)
(figure 1, source: Zpryme)

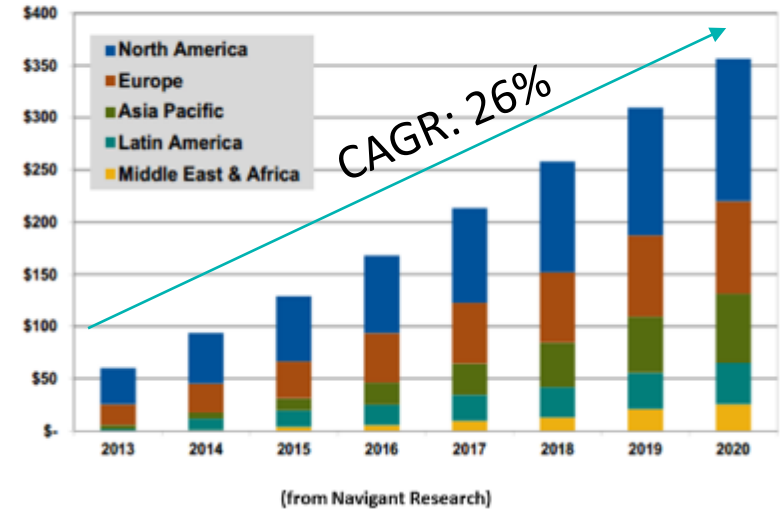


Cumulative smart streetlight forecast



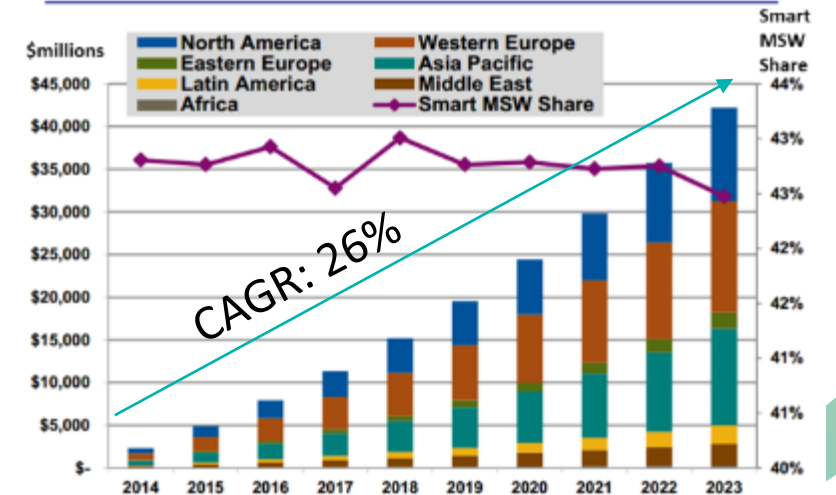
Source: Northeast Group

Smart Parking Systems Annual Revenue by Region, World Markets: 2013-2020



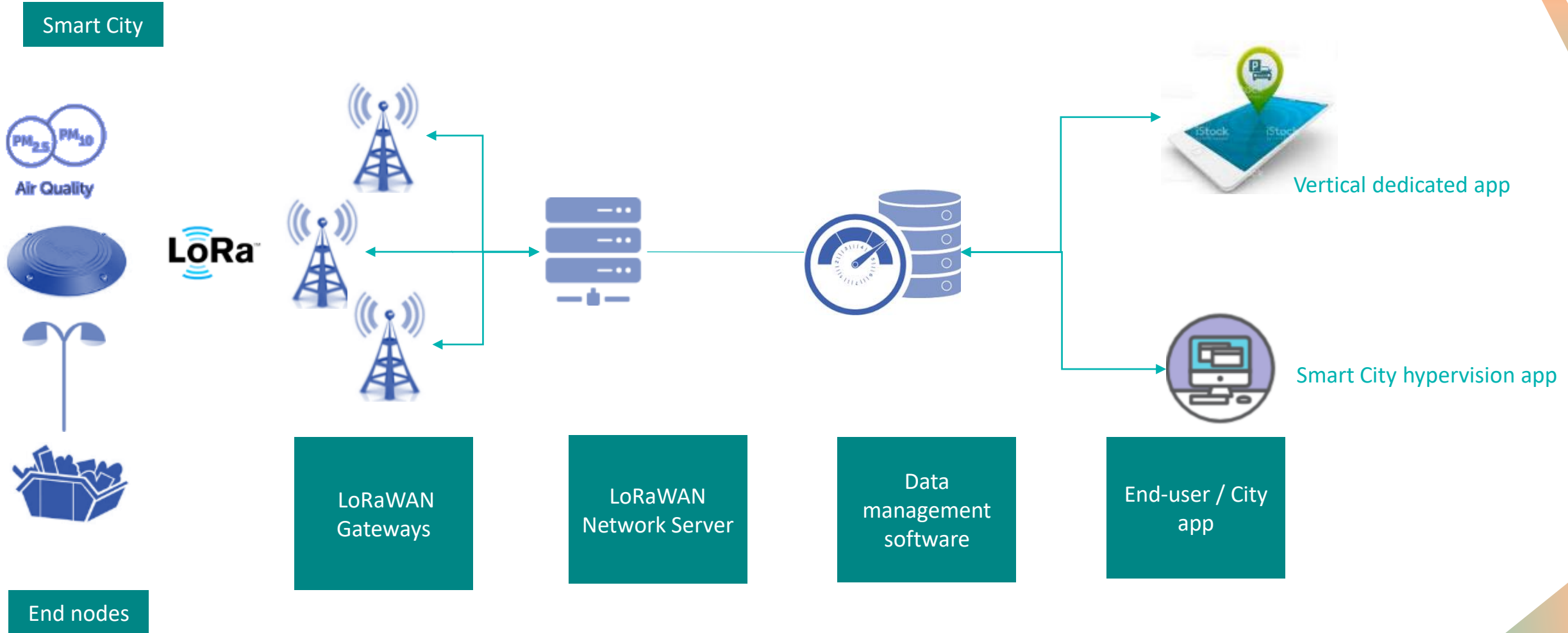
(from Navigant Research)

Cumulative Smart MSW Technology Revenue by Region, World Markets: 2014-2023



(Source: Navigant Research)

LoRaWAN smart city solution architecture

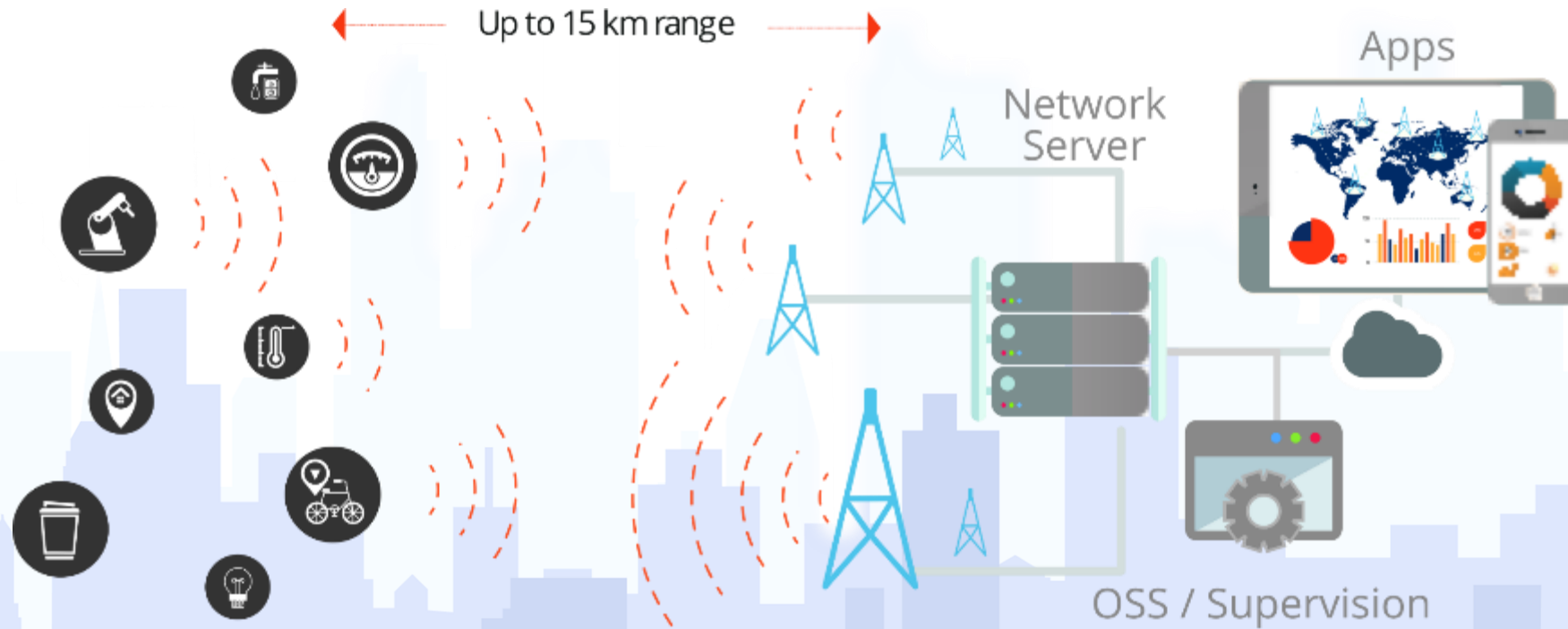




Why LoRaWAN?

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LoRaWAN



Coverage

- ✓ 5-15 km range
- ✓ Deep indoor
- ✓ Star network
- ✓ Bidirectional

Lifetime

- ✓ 10+ years battery life
- ✓ Low power consumption
- ✓ Adaptive data rate
- ✓ Connectivity profiles

Cost

- ✓ Low deployment costs
- ✓ Licence-free spectrum (ISM band)
- ✓ Open standard

Usage

- ✓ Public & Private networks
- ✓ Network scalability
- ✓ Location without GPS
- ✓ Data rate up to 5.5 kbps

LoRaWAN is a Game changer for Smart City Applications

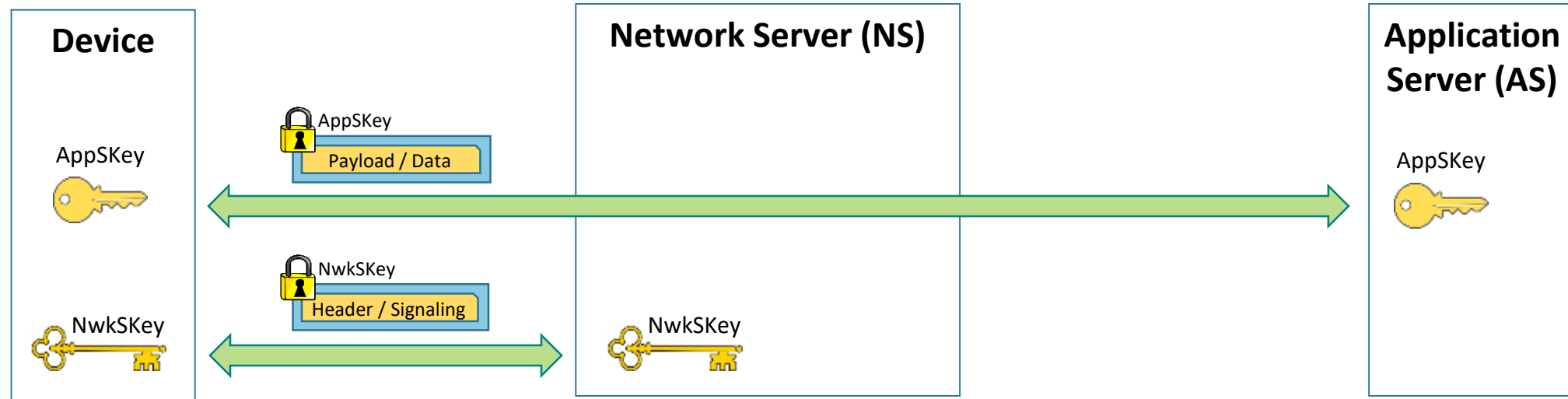
- **Technical Benefits**

- ✓ Low asset deployment cost:
 - The star network architecture with sensors communicating with a gateway from a range of up to 15 km. Multiple building can be covered with one gateway and no need for complex coverage analysis as required for mesh network solutions.
 - The ease of installation: Battery-operated sensors lasting up to 20 years depending on the application being used.
- ✓ Secure : AES-128 encryption is built-in.
- ✓ Open Standard: LoRaWAN specifications are publicly released by the LoRa Alliance.
- ✓ Geolocation with GPS-free technology not requiring additional power.

- **Business Benefits**

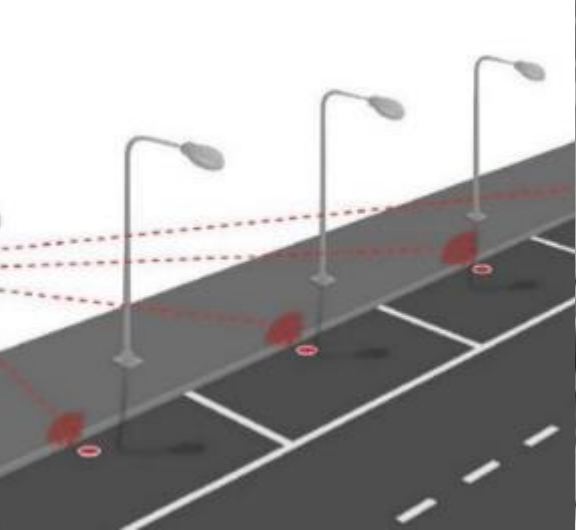
- ✓ Available Today
- ✓ Low deployment and operational cost
- ✓ Open network allowing cities to choose different service providers or to deploy their own network deploying multiple applications and leasing connectivity to third parties (Public or private companies).
- ✓ Growing ecosystem

LoRa End To End Security with 2 Session Keys



The level of security can be further enhanced by a Hardware Security Module (HSM)

- HSM is a Hardware Appliance that will execute cryptographic operations relying on inaccessible master keys.



Transport and Mobility



City Operations



Security and Safety



Environment





enabling the internet of *everything*
to deliver a smart city

la  telecom



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In Partnership
Partnerībā

Thank you 😊

Paldies



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