SEMTECH

SMART CITIES

Smart Parking

LoRa® APPLICATION BRIEF

DESCRIPTION

Up to 30% of traffic congestion in urban areas is linked to drivers circling to find parking space. By implementing a smart parking solution comprised of sensors and gateways embedded with LoRa® Technology and an intelligent low-power, wide area network based on the LoRaWAN™ protocol, cities can help improve traffic in urban centers, reduce unnecessary pollution and increase city revenue.

HOW A LoRaWAN-BASED SMART PARKING SYSTEM WORKS

Semtech LoRa Technology enables connectivity, real-time analytics, reporting, and additional functions such as geolocation.

1. Sensors embedded with LoRa Technology are placed in parking spots throughout the city
2. Sensors send status of parking spaces available to a gateway
3. Gateway sends information to the network where the data is analyzed by an application server
4. Application server provides open spot parking information to parking garages or drivers via computer or mobile device

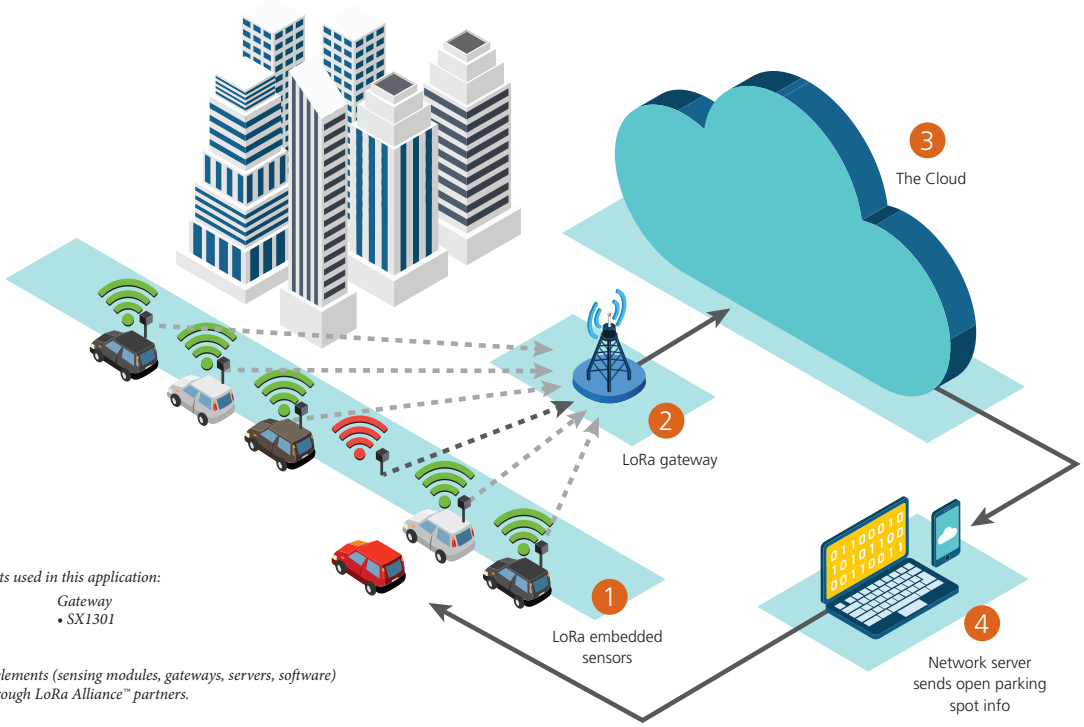
BENEFITS

- Increase revenue for cities using a sensor-based system to identify and ticket parking violations and adapt pricing on city meters based on demand
- Reduce city congestion by using sensors and gateways embedded with LoRa Technology to let drivers know where to find open parking
- Easy to set up since battery-operated sensors do not need to be connected to a power source — an entire structure can be equipped in less than a day
- Keeps maintenance costs low as low power operation ensures sensor batteries can last up to 20 years
- Reliable RF communication link between sensing infrastructure and LoRaWAN-based network provides excellent coverage, including underground parking garages

APPLICATIONS

Cities and parking garage owners increase revenue and improve service through:

- Smart parking meters on city streets
- Smart parking garages that display open parking spots



Semtech Products used in this application:

Sensors
- *SX1272/3*
- *SX1276/7/8/9*

Gateway
- *SX1301*

All application elements (sensing modules, gateways, servers, software) are available through LoRa Alliance™ partners.

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FIND YOUR IoT SOLUTION FROM SEMTECH'S LoRa ECOSYSTEM

MODULES & MODEMS | SENSORS | BASE STATIONS | NETWORK SERVERS | SYSTEM INTEGRATORS

For a full list of LoRa Ecosystem partners and services, visit our LoRa Community https://semtech.force.com/lora

KEY FEATURES OF SEMTECH'S LoRa WIRELESS RF TECHNOLOGY

LONG RANGE	Penetrates in dense urban and deep indoor environments, connecting to sensors 15-30 miles away in rural areas
LOW POWER	Enables multi-year battery lifetime of up to 20 years or more
HIGH CAPACITY	Supports millions of messages per base station
GEOLOCATION	Enables tracking applications without GPS or additional power consumption
STANDARDIZED	LoRaWAN specification ensures interoperability among applications, IoT solution providers and telecom operators
SECURE	Embedded end-to-end AES-128 encryption of data ensuring optimal privacy and protection
LOW COST	Reduces upfront infrastructure investments, as well as operating and end-node costs

JUMP-START YOUR IoT DEVELOPMENT TODAY

Semtech offers several training options to help you get started:

- Learn about Semtech's LoRa Technology platform: visit www.semtech.com/IoT
- Join the LoRa Community: https://semtech.force.com/lora
- Become a member of the LoRa Alliance™: visit www.lora-alliance.org
- Attend a LoRa Boot Camp for a full-day of training featuring LoRa Technology and real world applications: www.semtech.com/IoT
- Follow Semtech on LinkedIn and our LoRa Showcase page
- To contact one of our global offices in North America, Europe and Asia, visit www.semtech.com/contact

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