

## Smart Parking

### LoRa® APPLICATION BRIEF



### Semtech's LoRa Technology Enables Affordable Smart Parking Enforcement Solutions

#### DESCRIPTION

LoRa® devices and wireless RF technology (LoRa Technology) is making it easy and economical for smart cities to improve public services. From better usage of city street lights to smarter parking meters, LoRa Technology enables the most advanced and affordable solutions for urban planning and management.

While traditional urban monitoring systems have been prohibitively expensive for medium and small sized municipalities, LoRa Technology provides an affordable solution that can increase municipal revenues and improve city services. City governments are always in search of better ways to optimize spending and increase revenue. With LoRa Technology, municipalities are able to both lower the overall cost of infrastructure while advancing long-term technological goals.

#### BENEFITS

LoRa-based sensors combined with credit-card enabled parking meters provide municipalities a total solution for expanding the payer base of a parking system. With a mobile app, enforcement officers are able to immediately see from anywhere which parking spaces are currently occupied and unpaid.

These benefits also extend into the workforce since with LoRa Technology, parking attendants do not need to drive or walk specific routes. They can see where they are needed via an application that connects back to the Cloud. This means fewer enforcement officers are required to maintain existing fine revenues, and better utilization of the workforce could lead to an increase in total overall revenues.

#### APPLICATION

Cities implement smart parking meters and in-space sensors to track long-term parking usage in high traffic areas.

## SEMTECH'S LoRa TECHNOLOGY FOR SMART PARKING SYSTEM

### HOW IT WORKS

Semtech's LoRa Technology enables real-time connectivity, monitoring, cost savings, and analytics.

- 1 The city identifies the spaces and meters it would like to upgrade with in-ground sensors and smart parking meters. Data is gathered and turned over to the vendor. Sensors and meters are then pre-configured, enumerated and then sent to the customer for installation.
- 2 With the LoRa-based sensors and meters installed, the gathered data is then sent to a LoRa-based gateway. Data is collected in a central Cloud-based application and made available to all city users through the web.
- 3 Users can now securely and reliably use the smart parking meter for credit-card transactions, and increasing overall parking payment. LoRa Technology ensures security and affordability of the non-cellular network.
- 4 Data collected from in-space sensors is used to track, whether or not a space is occupied. If it is occupied, the meter's payment information is checked. If the meter is not paid, enforcement officers can immediately be dispatched to the location to issue a ticket.
- 5 Over time, data can be analyzed to track most commonly used spaces, off-hour usage and frequency of violations, therefore providing metrics to parking enforcement management and city planning.

### REAL USE CASE SOLUTION

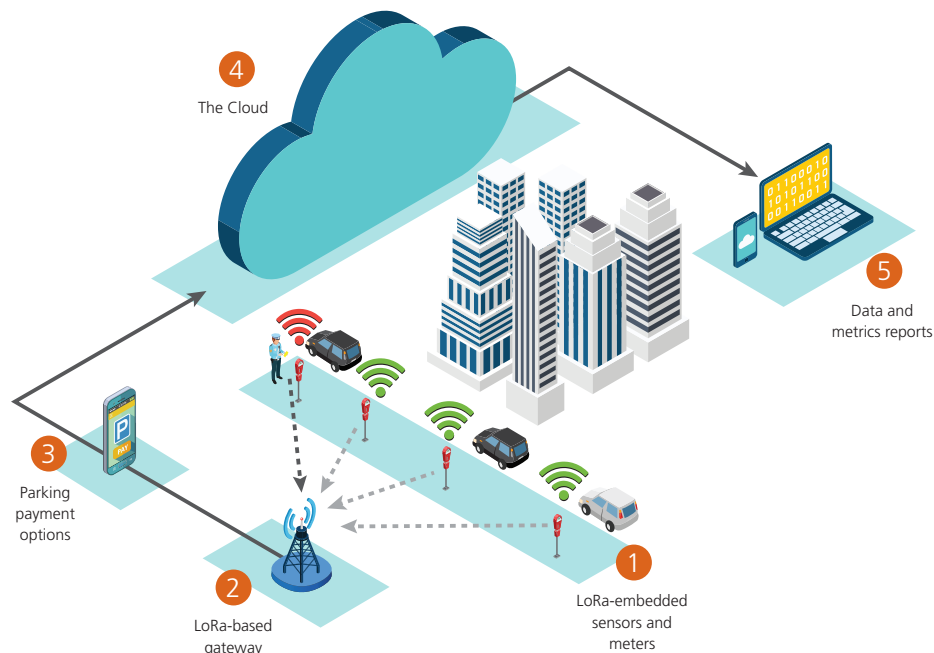
CivicSmart is a smart parking meter designer and manufacturer. The company offers a complete end-to-end smart parking solution, including in-space sensors, smart parking meters and Cloud-based software to manage and track the system. The company's platform also works with other LoRa-based sensors and hardware, and plugs into existing city management software solutions. This customizable solution can fit in any city budget when they utilize LoRa Technology.

### LOW PER-UNIT DATA COST

Traditionally, per meter data costs have been too high due to the usage of commercial cellular networks for the transmission of data, such as credit card validations. LoRa Technology offers as much as a 50% cost savings per meter.

### STANDARDS-BASED

LoRaWAN™, a Low-Power Wide-Area Network (LPWAN) specification, is an open standard and supported by the LoRa Alliance™. CivicSmart can sell products that have assured global interoperability and benefit from the economies of scale that reduce unit costs.



Semtech Products used in this application:

|                |          |
|----------------|----------|
| Sensors        | Gateway  |
| • SX1272/3     | • SX1301 |
| • SX1276/7/8/9 |          |

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

## REAL USE CASE SOLUTION CONTINUED

### SECURE

Multiple layers of security ensure credit card transactions are safely performed. Central management of all devices ensures every piece of hardware on the network is always up to date.

### LOW POWER

LoRa-based in-space sensors from CivicSmart typically have at least a 5-year battery life. This ensures devices are durable and need only limited maintenance.

### HIGH CAPACITY

A single LoRa base station can handle millions of messages per day, ensuring CivicSmart's smart parking solution is able to support large, active customer bases.

### LOW PER-UNIT COST

LoRa Technology was designed to be affordable to hardware manufacturers, and to enable developers to build quickly, reliably and within budget constraints. Additionally, LoRa Technology is easily available to manufacturers, ensuring there will not be shortages of supplies that can drive up costs.

## JUMP-START YOUR IOT DEVELOPMENT TODAY

### TRAINING OPTIONS TO GET STARTED



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Become a member of the LoRa Alliance™  
[www.lora-alliance.org](http://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](http://www.semtech.com/iot)



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