Delivering Smart Building Transformation

CAPGEMINI BENEFITS FROM USING SEMTECH'S LONG RANGE, WIRELESS RF DEVICES TO MANAGE BUILDINGS ACROSS THE GLOBE

THE EXPANDING SMART BUILDINGS AND COMMERCIAL REAL ESTATE MARKET

Increasingly sophisticated smart cities are being developed by nations around the world to improve efficiencies, reduce costs and generally make life easier for residents and business owners. A key element in the development of any smart city is the ability to infuse a high degree of intelligence into its buildings, particularly in commercial real estate. The global market for Internet of Things (IoT) technology in smart buildings is forecast to grow from a value of $8.5B in 2020 to more than $22B in just six years.

EASY TO INSTALL

LONG RANGE

PERFORMANCE

CREATING A SMART BUILDING

Capgemini is a world-leading software developer with around 400 buildings worldwide. With expenses in the hundreds of millions of euros annually to operate and maintain these buildings, an improvement in efficiency and 'right-sizing' would result in substantial budgetary savings for the company.

There was also a strong business case for maximizing office occupancy. Capgemini had measured that it was only achieving an average 65 percent occupancy in its offices, meaning that out of every 100 seats or desks available, only 65 were in use. The goal was to increase this to at least 75 percent, which would bring annual savings of more than 10 percent of its real estate costs. Driving cost down is not necessarily the primary benefit of creating a smart building. Additionally, the company wanted to solve the problem of 30 percent 'no shows' in meeting rooms, which occur when people schedule a meeting and book a room, but fail to use the space though the room reservation remains.

Capgemini identified that the only way to achieve its goals was to have access to up-to-date, accurate data through a flexible smart building system based on IoT technology.

LoRa®
DNA of IoT Use Case

IoT Challenge

- Maximize occupancy levels in Capgemini's offices
- Provide accurate data in real time for building and facilities managers across the globe
- Reduce real estate costs

LoRa Devices Used

- Capgemini based its solutions on the SX1276 LoRa wireless RF transceiver from Semtech
- The only wireless solution that could handle long distances, and perform better than Cellular or Wi-Fi/Bluetooth-based alternatives

Business Value

- More efficient management of real estate could generate annual savings over $60M
- LoRaWAN is truly scalable as Capgemini offices around the world join the IoT network
- An initial successful deployment that will expand to approximately 85,000 sensors by the end of 2020
- Capgemini has created a new revenue stream by offering end-users an off-the-shelf IoT solution

A LoRaWAN®-BASED SOLUTION

Capgemini did not just want to connect sensors, it wanted to keep track of changes in the office environment, interpret trend analysis and create a user-friendly and powerful building management system. The company turned to Semtech's LoRa® devices and the LoRaWAN open protocol, an open source, low-power solution that has become the de facto platform for enabling IoT networks, delivering on key requirements of range, sensitivity, reliability, and ease of installation.

For Capgemini, it was important that its smart building transformation was based on a solution that is truly scalable across offices. Without the flexibility offered by Semtech's LoRa devices, Capgemini would struggle to roll out the solutions across its various offices quickly and effectively.

With its goals in mind, Capgemini developed its SmartOffice solution based on LoRa devices consisting of:

- **Presence sensors** – used in meeting rooms to get real-time usage, which is shown on a floor plan in a mobile app

- **Desk sensors** – used for desks and meeting room tables to measure actual usage. This information is used for right-sizing, but also to show in real time where seats are available

- **Comfort sensors** – used to measure CO2, noise, temperature, humidity, and light to bring this information to the users of the office (and also to signal extremes)

LoRaWAN was chosen as the networking protocol for the SmartOffice solutions. The ease of infrastructure installation was an essential factor, because a local non-skilled person would be able to install the gateways and sensors. Another reason for choosing LoRaWAN was the extensive long-range coverage. Capgemini was able to minimize the number of gateways in its offices, saving significantly on installation costs.

DEPLOYING SMARTOFFICE

With Capgemini able to offer a commercially available product, the company's customers would be able to improve their decision-making competencies through better access to data. At the same time, the development would enable Capgemini to sell its other core services, such as solving IT problems at the customer's location and creating applications that deliver businesses the insight they require.

Today, Capgemini offers an off-the-shelf version of its SmartOffice solution consisting of asset management applications combined with LoRa-based sensors. The company has deployed sensors in its smart buildings in approximately 25 locations around the world, and the truly global reach of LoRaWAN will enable Capgemini to deploy around 5,000 meeting room sensors in the first phase of its smart building development. At the end of 2020, global rollout will cover approximately 85,000 sensors

Capgemini has been able to demonstrate the main benefits that Semtech's radio frequency-based sensor technology can provide. For a company that spends over 400€ million on real estate expenses, a onetime investment of 8€ million offers potential yearly savings over 60€ million. Additionally, with data shared through LoRaWAN, facility managers have access to the most accurate and timely data on such subjects as the cleaning of washrooms, temperature, humidity, CO2, and noise levels in meeting rooms.

HOW IT WORKS: CAPGEMINI

The step-by-step process of Capgemini's LoRa-enabled solution.

"When engaging with IoT, the emphasis must be about people and not about technology. You have to engage with everyone who is on board. It's very different to working in a pure IT environment because in order to be successful with IoT you have to work extremely closely together. This is one of the key lessons we have learned through working with Semtech."

Hans Scholten, Vice President of Corporate Real Estate at
Capgemini and Product Owner of SmartOffice

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LoRa Devices**
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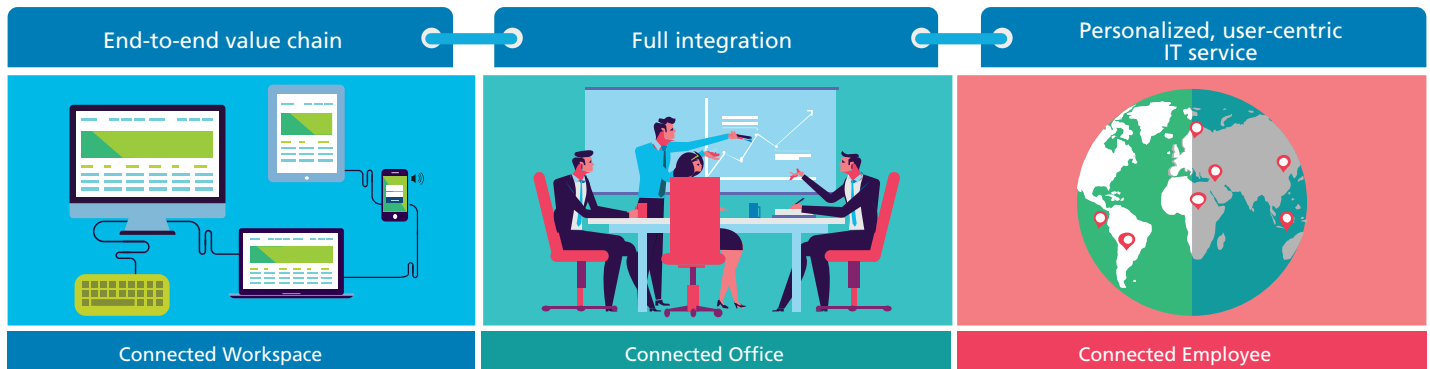www.semtech.com/LoRaCommunity

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End-to-end value chain	Full integration	Personalized, user-centric IT service
Connected Workspace	Connected Office	Connected Employee

Semtech's LoRa devices is a widely adopted long-range, low-power solution for IoT that gives telecom companies, IoT application makers and system integrators the feature set necessary to deploy interoperable IoT networks, gateways, sensors, module products, and IoT services worldwide. IoT networks based on the LoRaWAN® specification have been deployed in over 100 countries and Semtech is a founding member of the LoRa Alliance®, the fastest growing IoT Alliance for LPWAN applications.

Semtech Corporation is a leading supplier of high performance analog, mixed-signal semiconductors and advanced algorithms for high-end consumer, enterprise computing, communications, and industrial equipment. Semtech, publicly traded since 1967, is listed on the Global Select Market under the symbol SMTC and has more than 32 sales and application support offices in 14 countries as well as representatives and distribution support locations in more than 30 countries. Semtech is dedicated to providing proprietary s, differentiated by innovation, size, efficiency, performance, and reach.

The LoRa Alliance is an open, nonprofit association that has become one of the largest and fastest-growing alliances in the technology sector since its inception in 2015. Its members closely collaborate and share experiences to promote the LoRaWAN protocol as the leading open global standard for secure, carrier-grade IoT LPWAN connectivity. With the technical flexibility to address a broad range of IoT applications, both static and mobile, and a certification program to guarantee interoperability, the LoRaWAN protocol has already been deployed by major mobile network operators globally and connectivity is available in over 100 countries, with continuing expansion ongoing.