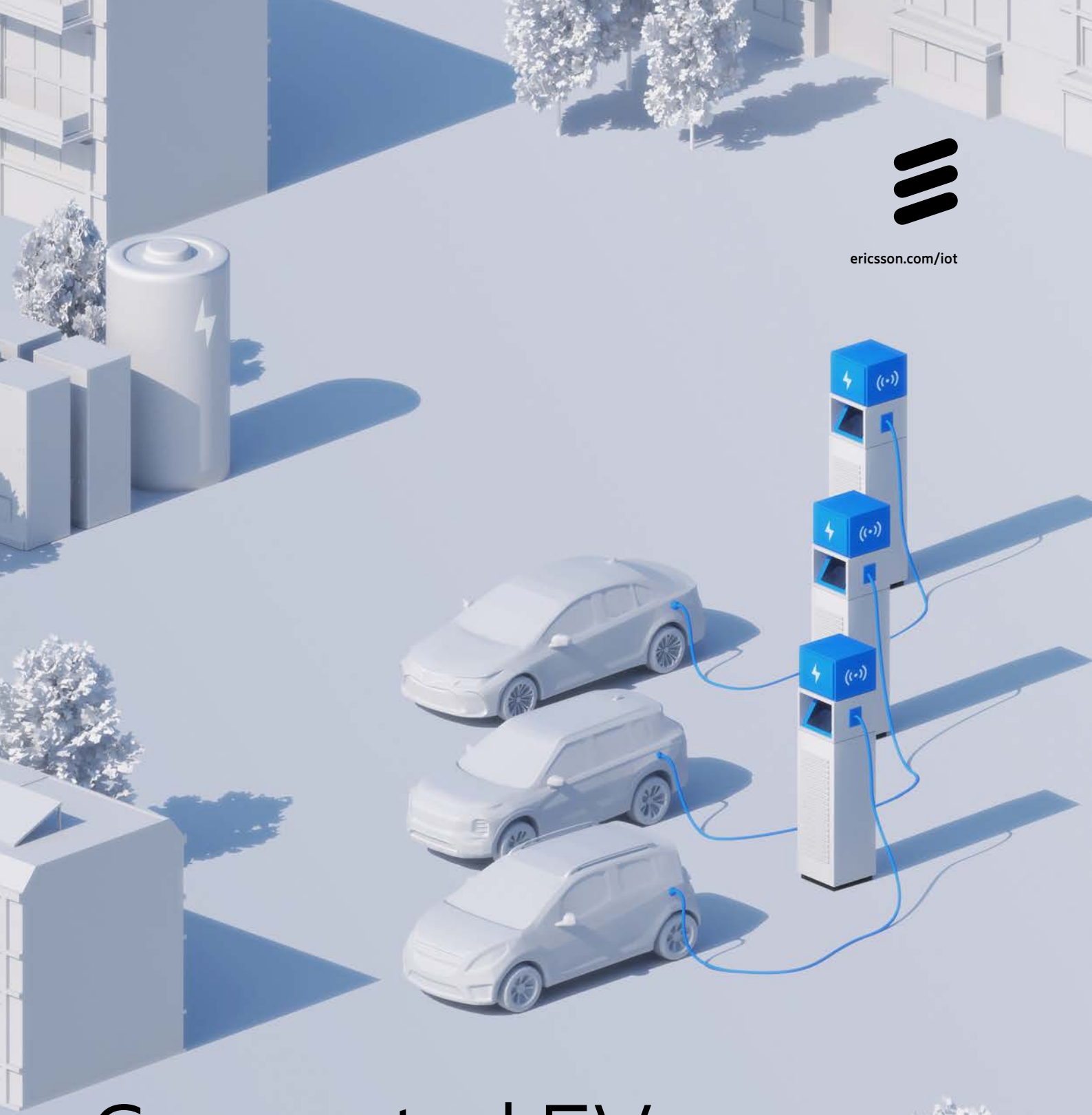


ericsson.com/iot

Connected EV charging

A case study demonstrating cellular IoT business value in orchestrating electric vehicle charging stations

Understanding how cellular IoT connectivity ensures efficient management of electric vehicles charging stations

Electric vehicles (EV) are becoming common in our cities and highways as the automotive industry, governments, and consumers seek alternatives to fossil-fueled cars and look toward sustainable climate-friendly transportation. In order for drivers to efficiently plan their journey, they rely on charging stations along their route. As a result, EV charging companies have a major business opportunity.

By connecting charging stations with cellular IoT, EV charging companies are better positioned to effectively manage their orchestration, administration, and maintenance, offering a smoother driving and customer experience. Cellular IoT also has the required security to protect sensitive user, payment data and reliable connectivity coverage regardless of location.

To quantify how IoT plays a central role in connecting and orchestrating EV charging stations, Ericsson and Arthur D. Little partnered with Blue Corner, a charging solution provider with a network of more than 10,000 charging points in Europe and Orange Belgium, Blue Corner's connectivity provider.

The study reveals that by implementing cellular IoT, a mid-sized European EV charging company can increase revenues by 40% through interoperability revenue share and decrease annual monitoring costs by 15%.

Join us on this road trip on how your business can benefit from cellular IoT connectivity powered by Ericsson IoT Accelerator.

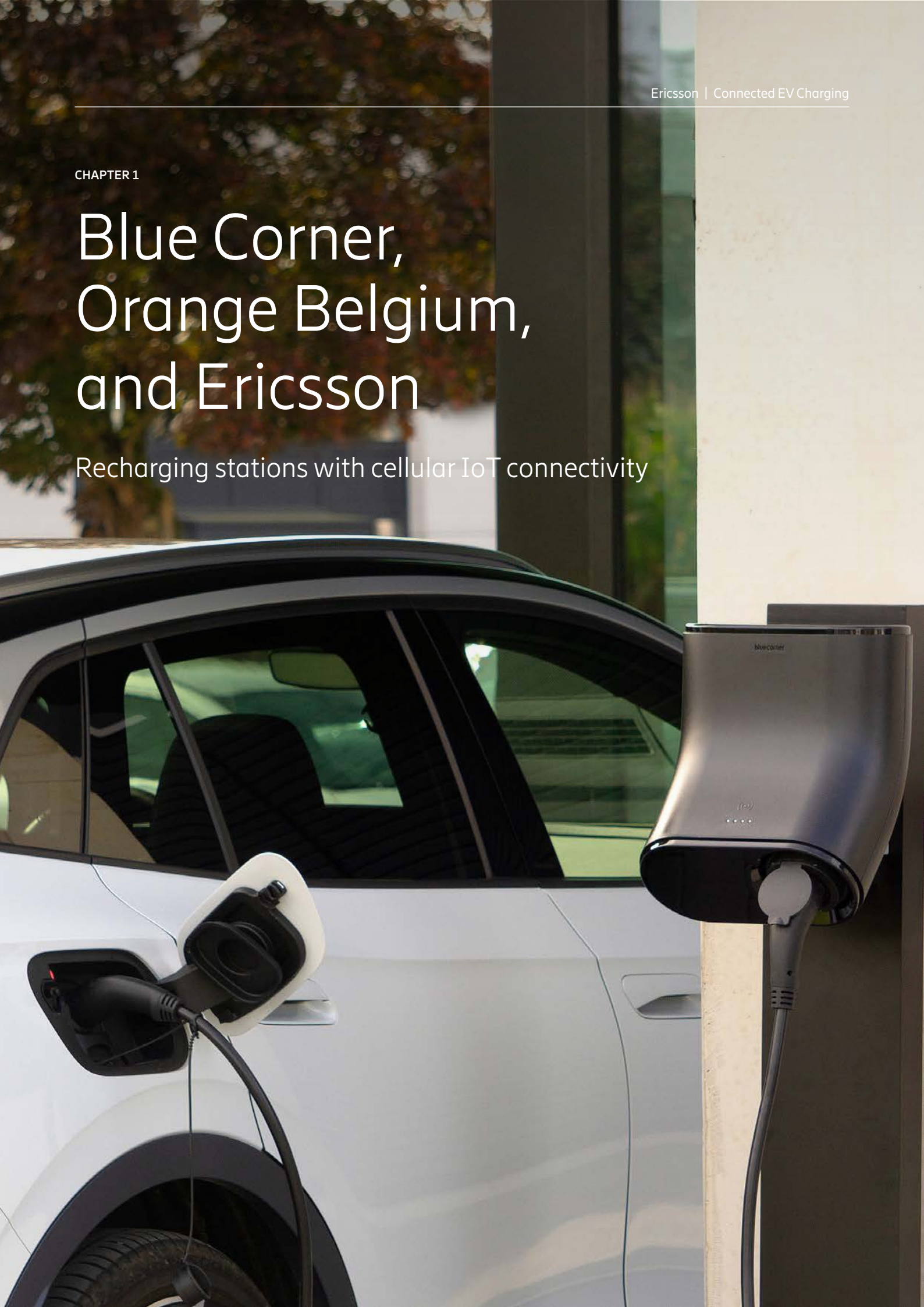
Contents

This material is based on a joint study by Ericsson and Arthur D. Little in collaboration with Blue Corner and Orange Belgium.

CHAPTER 1

Blue Corner, Orange Belgium, and Ericsson

Recharging stations with cellular IoT connectivity



Blue Corner

Smart charging solutions make it easy for electric vehicles, anywhere, anytime

Since 2011, Blue Corner has provided innovative charging solutions in the European market, contributing to the much-needed EV infrastructure. Blue Corner joined forces with the Blink Charging group in 2021 with the ambition to grow into a leading player in the European EV market in the short term.

As a charging station and services provider, they have a network of more than 10,000 charging points throughout Europe. Blue Corner offers charging stations and related services to consumers, businesses, and Public Administration. They act as a charging point operator and a charging service provider.

Blue Corner wants to build a sustainable society and be ready for the driver of tomorrow. They do this by providing charging solutions that allow customers to charge electric vehicles at home, at work, or on the road.

Their customers include drivers, leasing companies, fleet managers, and asset owners such as parking operators, consumer households, and municipalities. With their services, different customers can track, manage and optimize charging sessions and stations.

Orange Belgium

Fueling charging stations by equipping them with cellular IoT connectivity

Orange Belgium provides Blue Corner with cellular IoT connectivity and a connectivity management service powered by Ericsson IoT Accelerator. Each charging station is supplied with a SIM card connecting the stations to the public cellular network. Furthermore, with a private Access Point Name (APN) for Blue Corner, they can manage their assets.

Once connected, Blue Corner can communicate with their charging stations. Real-time data is collected and sent to a data center in the Netherlands. With the support of a central platform, Blue Corner can manage their stations with remote monitoring and optimize performance based on data insights. This ensures that the charging stations are always online and maintained.

Ericsson

Ericsson IoT Accelerator: Enabling enterprises to deploy, manage and scale their connected IoT assets globally

Ericsson IoT Accelerator enables enterprises to connect their products and assets wherever in the world they are located - deploying, managing and scaling their global IoT business from a single connectivity management platform. This is delivered as a service through Ericsson's global network of Communication Service Providers like Orange Belgium.

Orange Belgium's Connectivity Management Platform, built on Ericsson IoT Accelerator, helps Blue Corner to manage, develop and maintain their connected IoT assets with key features such as:

Subscription Lifecycle Management:
This service enables the complete management of SIM cards during their lifecycle, including ordering, activation, and deactivation.

Service Management:
This offers a unified way of handling device connectivity, making it possible to manage an individual SIM card or batches, to scale from one to thousands or even millions simultaneously.

Business Insights:
Analytics are the driving engine to understand how connectivity data is consumed and devices communicate. This enables requirement-based tailoring of services and allows real-time troubleshooting.

CHAPTER 2

Paving the road for EV charging companies

Navigating challenges to reach promising business growth

Struggling to stay up to speed with the growth of electric vehicles

Favorable headwinds but complexity is a drag

The shift and accelerated demand for EVs leave cities and governments challenged to secure the infrastructure for charging stations. EV charging stations are critical to ensure a steady adoption, and there are significant business opportunities for EV charging companies and the related ecosystem.

By 2024, a recent study by Berg Insight forecasts 9.7 million charging points in Europe[1].

How cellular IoT intersects with EV charging stations

Orchestrating for optimal management

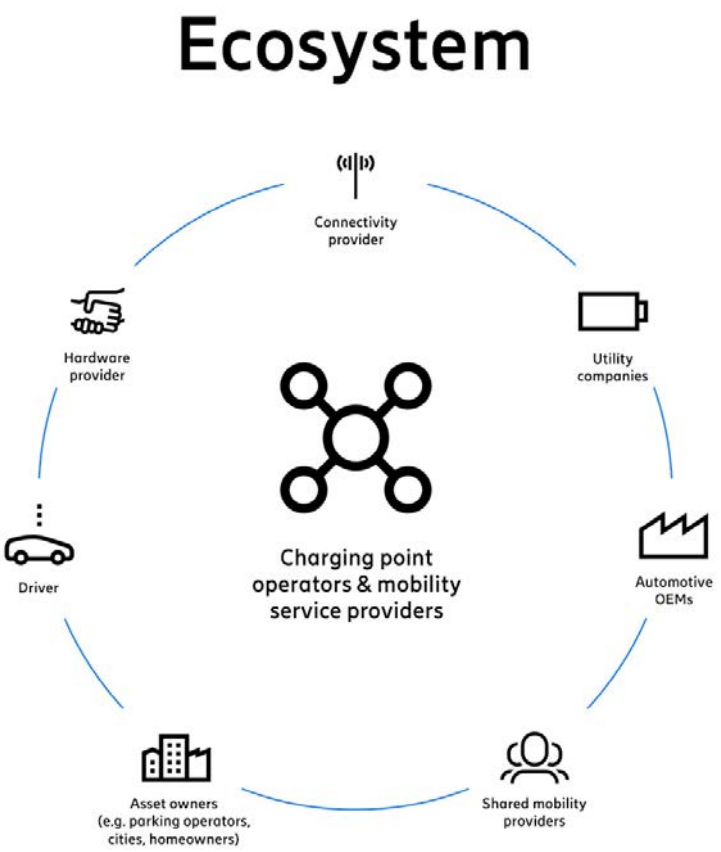
We can see continued exponential growth of cellular IoT connections, with more and more industries leveraging IoT for their businesses. Cellular IoT connections are expected to grow from 1.9 billion in 2022 to 5.5 billion in 2027, a 19% compounded annual growth rate (CAGR)[2].

And IoT can be applied to many industries. For example, several Ericsson reports have looked at connecting devices in manufacturing, automotive, road transport, urban mobility, smart buildings, and even professional coffee machines. Although the industries might differ, they share similar IoT benefits. These include driving revenue, enabling new business models, lowering costs related to asset management and operations, and reducing an environmental impact.

Managing an intricate ecosystem

Cellular IoT can help EV charging companies manage the complex ecosystem of stakeholders. They range from drivers and hardware providers developing charging stations to asset owners (parking operators, cities, homeowners).

Other stakeholders include connectivity providers for charging stations and network functionalities, utility companies supplying electricity to charge electric vehicles, and automotive OEMs that require well-functioning charging infrastructure to grow the electric vehicle market.



Placed in the center are Charging Point Operators (CPO), responsible for the installation and maintenance of charging stations, and Mobility Service Providers (MSP) offer EV charging services to customers. Sometimes, the CPO and MSP can be one and the same.

Clearing roadblocks with cellular IoT

With all these stakeholders and the growing pressure to expand the charging station network, EV charging companies can benefit greatly from cellular IoT connectivity.

Because the charging station is connected, data is easily sent to a central platform where staff can respond to disruptions or problems without physically visiting the charging station. Our use case study showed a 15% reduction in costs in annual monitoring because of remote monitoring.

CHAPTER 3

Under the hood:

Quantifying the benefits of cellular IoT for EV charging stations

Charging up the numbers

Calculating the business value

To quantify the value of cellular IoT connectivity for EV charging stations, the study examined a hypothetical, mid-sized EV charging company in Europe, with 9m EUR in revenue, 60 employees, and 6,000 connected charging stations. The company has both the role of a Charging Point Operator and Mobility Service Provider for the charging stations.

The results showed significant gains and savings. The example charging company could expect to generate a value of 4.9 m EUR per year due to implementing connected EV charging stations.

This value is driven by two factors – an increased revenue from interoperability and decreased costs from remote monitoring.

Gains with interoperable services

The 40% increase in annual revenue share is due to interoperable services. For example, because of connected backend systems, user profiles, payment methods, and authorization make it easier for drivers to charge their car at different stations from different service providers without registering as a new user. This gives the driver the convenience and more options to select charging stations that suit their needs.

With interoperable services, the network of potential charging stations increases, and the example company generates revenue from charging carried out by its customers at other charging stations. And vice versa, customers of other charging companies use services at the example company's charging station.

Without IoT-enabled interoperability, the example company would only have been limited to charging revenues from its own stations, and miss out on the additional revenue potential.

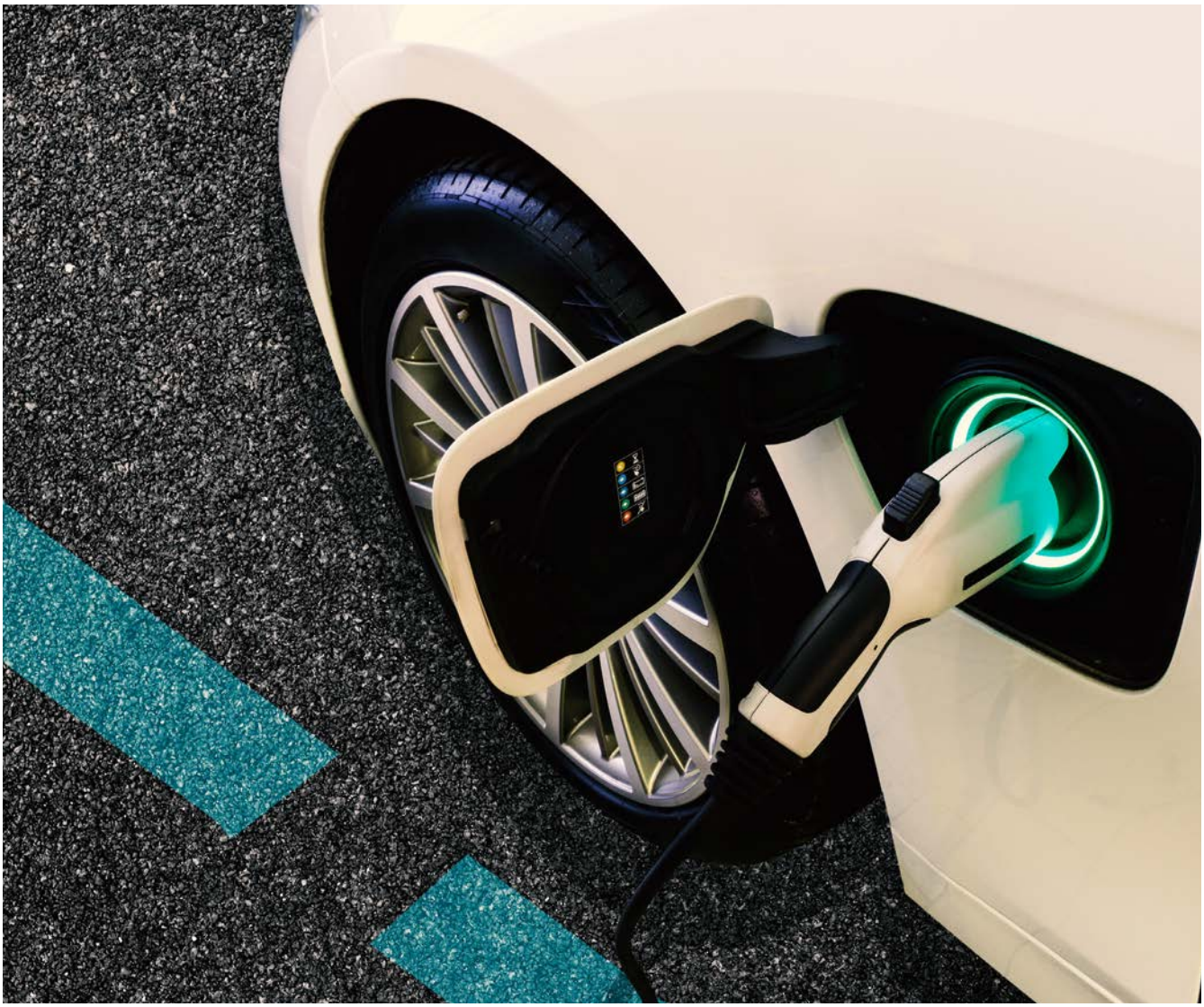
Savings with remote monitoring
Another study result indicated a 15% decrease in operational costs in annual monitoring because of remote monitoring, measured as a share of total revenues. With the example scenario based on various costs for site visits, we estimate that most visits are no longer necessary because of IoT-enabled remote monitoring. With 6,000 connected charging stations to operate, this is expected to yield roughly 1.3 m EUR to total savings.

Having connectivity to every charging station creates the opportunity to gather data about how customers use the station, the availability and the condition of charging sockets. Some of the main benefits of remote monitoring are improved visibility on how the stations are used, reduced costs of manual tasks and overall, more operational control.

Remote monitoring improves maintenance and uptime by avoiding potential technical issues, even before customers have a chance to notice. This can also help the charging companies plan when and where to scale their charging network. In addition, because there is no need for a physical inspection, the company saves on transportation costs, reducing its carbon footprint.

Data gathered from remote monitoring can be used to provide real-time visibility of all stations to drivers directly, helping them map out their journey and plan their charging stops appropriately.

As a result, customers experience a seamless and smooth charging session that can generate more sales and reduce churn.



The benefits of cellular IoT

When considering different technologies to connect charging stations, cellular IoT provides some major advantages. For instance, cellular IoT has built-in security protocols and encryption to protect data privacy and sensitive information such as user profiles or payment details.

For charging stations in remote areas, cellular IoT provides reliable coverage no matter where the location. By expanding connectivity coverage, drivers can rest assured they can connect to the charging station in rural environments. And the cellular network also supports thousands of users and connections.

In addition, since the charging stations are connected to the cloud, transmitting large amounts of data is not an issue with a cellular network.

Ecosystem stakeholders also gain from cellular IoT

Our study also looked at other stakeholders interacting with charging stations, including asset owners such as parking operators. As an example parking operator, we assumed a European mid-sized company with annual revenue of 300 m EUR and 600 connected charging stations, with a role as a virtual CPO and MSP[3].

With connected charging stations, the parking operator can expect an overall 1.3% revenue increase per year because of interoperable services and increased market share from better customer satisfaction and less churn. Interoperable services are a crucial factor driving new customers to charge at their stations.

These customers may have used services from other electric vehicle charging stations, but the parking operator can now offer seamless charging sessions contributing to a positive customer experience.

Take charge and power up with cellular IoT

And stay up to speed with EV growth

Connecting charging stations with cellular IoT can have a significant business impact for EV charging companies. As shown in the study, cellular IoT can help EV charging providers increase their revenues 40% with interoperability and save 15% in monitoring costs annually. Even other ecosystem stakeholders such as parking operators can expect gains.

Interoperable services make it easy for drivers to use different charging stations with the same user profile. Remote monitoring contributes to more effective operations, maintenance, and customer experience. In addition, cellular IoT as the connectivity technology offers significant benefits in terms of security and reliable coverage.

IoT-enabled orchestration of EV charging stations reduces overall complexity and offers significant financial gains, savings, and upselling opportunities. And gives EV charging companies a solid foundation to scale their business.

Contact us at Ericsson to learn more.

[1] Berg Insight. EV Charging Infrastructure in Europe and North America, August 2021

[2] Ericsson Mobility Report June 2022

[3] Source: Arthur D. Little. It is assumed that the parking operator owns the harging stations and takes the customer-facing role but has outsourced the operations to CPO and MSP.

At Ericsson, we connect businesses

Let's talk about how you can connect yours.

Get in touch at IoT@ericsson.com

Or read more on www.ericsson.com/enterprise

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