Fortum/Plugsurfing Digital Mobility Platform

Making Car Charging easy with a SaaS Cloud Solution

2 June 2021

Andrey Khurri

Technical Sales Lead (2020 →)

Product Manager (2017 – 2020)

plugsurfing fortum

Fortum Group is a major European energy company

Fortum is a European energy company with activities in more than

40 countries

20,000 experts worldwide

We provide our customers with electricity, gas, heating and cooling as well as smart solutions to improve resource efficiency

Together with Uniper, we are the 3rd largest producer of CO_2-free electricity in Europe with growing portfolio of wind and solar

With ~ 20,000 professionals and a combined balance sheet of ~ EUR 58 billion, we have the scale, competence and resources to grow and to drive the energy transition forward

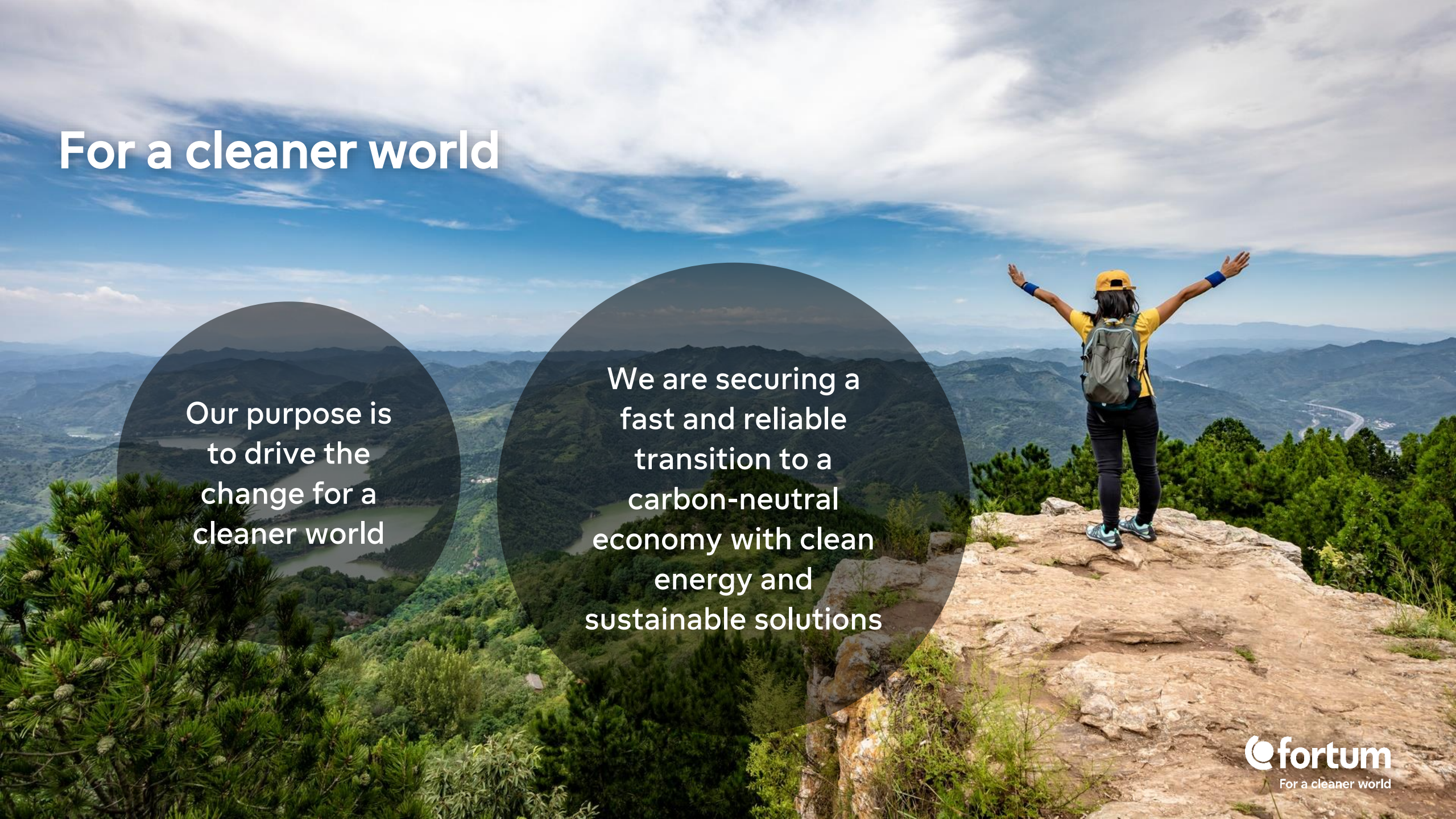
Fortum's share is listed on Nasdaq Helsinki and Uniper's share on the Frankfurt Stock Exchange

fortum

For a cleaner world

Our purpose is to drive the change for a cleaner world

We are securing a fast and reliable transition to a carbon-neutral economy with clean energy and sustainable solutions



fortum
For a cleaner world

Strong position to drive the energy transition in Europe

3rd largest
power generator
in Europe and Russia

3rd largest
CO_2-free power generator
in Europe

3rd largest
nuclear generator
in Europe

4th largest
gas storage operator
in Europe

fortum

Today’s story

1
Complexity of EV charing

2
Role of software

3
Challenges for a global software provider

Terminology

Abbreviation	Description
eMobility	Electric Mobility = the industry enabling electric vehicle charging
CPO	Charge Point Operator = party managing network of charging stations
EMP or EMSP or MSP	eMobility [Service] Provider = party owning relationship with and offering service to end users (consumers/drivers)
AO	Asset Owner = party [co]-owning charging stations
LO	Location Owner = party [co]-owning a charging site/location
eRoaming hub	A platform connecting EMPs and CPOs and enabling access of drivers to different charging networks
Charger	or Charging Station (CS) = a piece of equipment with 1-many connectors for EV charging
Charge Point (CP)	A charging connector on a charger
EVSE	Electric Vehicle Supply Equipment inside a charger supply electricity to one car at a time
SaaS	Software as a Service

fortum

1. Complexity of EV charging

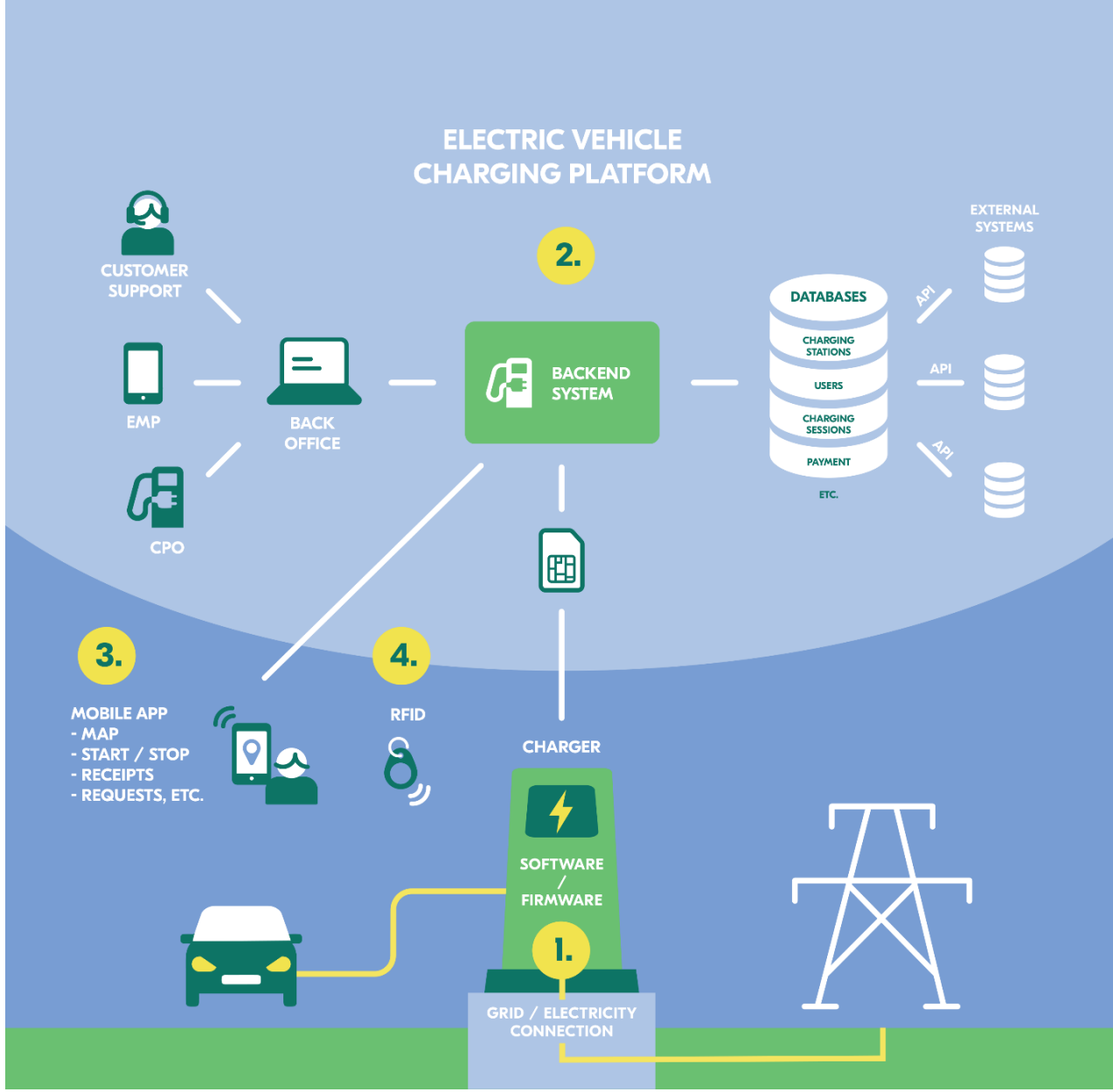
Main infrastructure components

1. Charging station composed of a hardware unit connected to the electricity grid

2. Cloud system connected remotely to the charging station and other interfaces for running the business

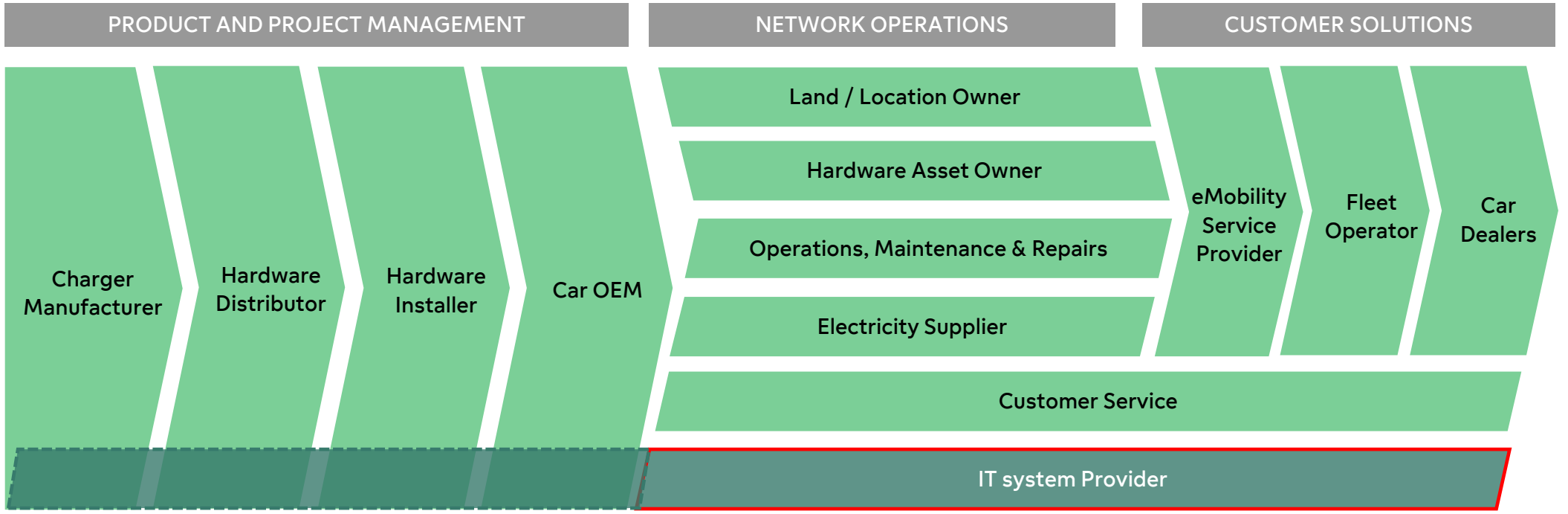
3. Consumer facing digital interfaces

4. Access mechanisms



fortum

Electric Vehicle charging Value Chain



2. Role of software

Functionalities expected from an EV charging IT system

Charge Point Operators

Charge Point Management	✓ Remote management of charge points ✓ Troubleshooting tools ✓ Error Alarms and Notifications ✓ Ticket and work orders management
Network Management	✓ Monitoring entire network in real time ✓ Preventive maintenance ✓ Add, edit and delete multiple charge points ✓ Update firmware / settings on multiple CPs
Smart Charging	✓ Static and Dynamic Load Balancing ✓ Scheduled and reserved charging ✓ Total energy management and optimization ✓ Plug & Charge, V2G
Price tariff administration	✓ Min, hour, kWh, or power level based ✓ Day of week and hour of day ✓ Combination pricing, min/max cap ✓ User group-based pricing
Integrations and APIs	✓ “Inbound roaming” connections to EMPs ✓ Integrations with external data aggregators ✓ Integrations with own asset and work order management systems

eMobility Service Providers

Consumer facing interfaces	✓ Find chargers and their status ✓ Start/stop session and view charging history ✓ Register payment method, redeem voucher ✓ Order and manage charging keys
End User management	✓ Manage user profiles and personal data ✓ Manage RFID orders ✓ Create campaigns and vouchers
Payments and Billing	✓ Various payment methods ✓ Invoicing and subscriptions ✓ B2C abd B2B billing flows
Customer Service	✓ One interface to to user, payment, charger and other relevant information ✓ Tools for troubleshooting
Fleet management	✓ Invite and manage fleet drivers ✓ Aggregated company billing ✓ Fleet hierarchy ✓ Home charging reimbursement

Organizational hierarchy | Roaming | Access Management

Business Intelligence (access to data, reports, dashboards, insights)

fortum

CPO and EMP perspective

IT system provider perspective

Software as a Service (SaaS) is a software that is...

...deployed and hosted **centrally** in a cloud environment

...accessed **remotely** via web browsers or apps

...receiving **regular updates** available to clients immediately

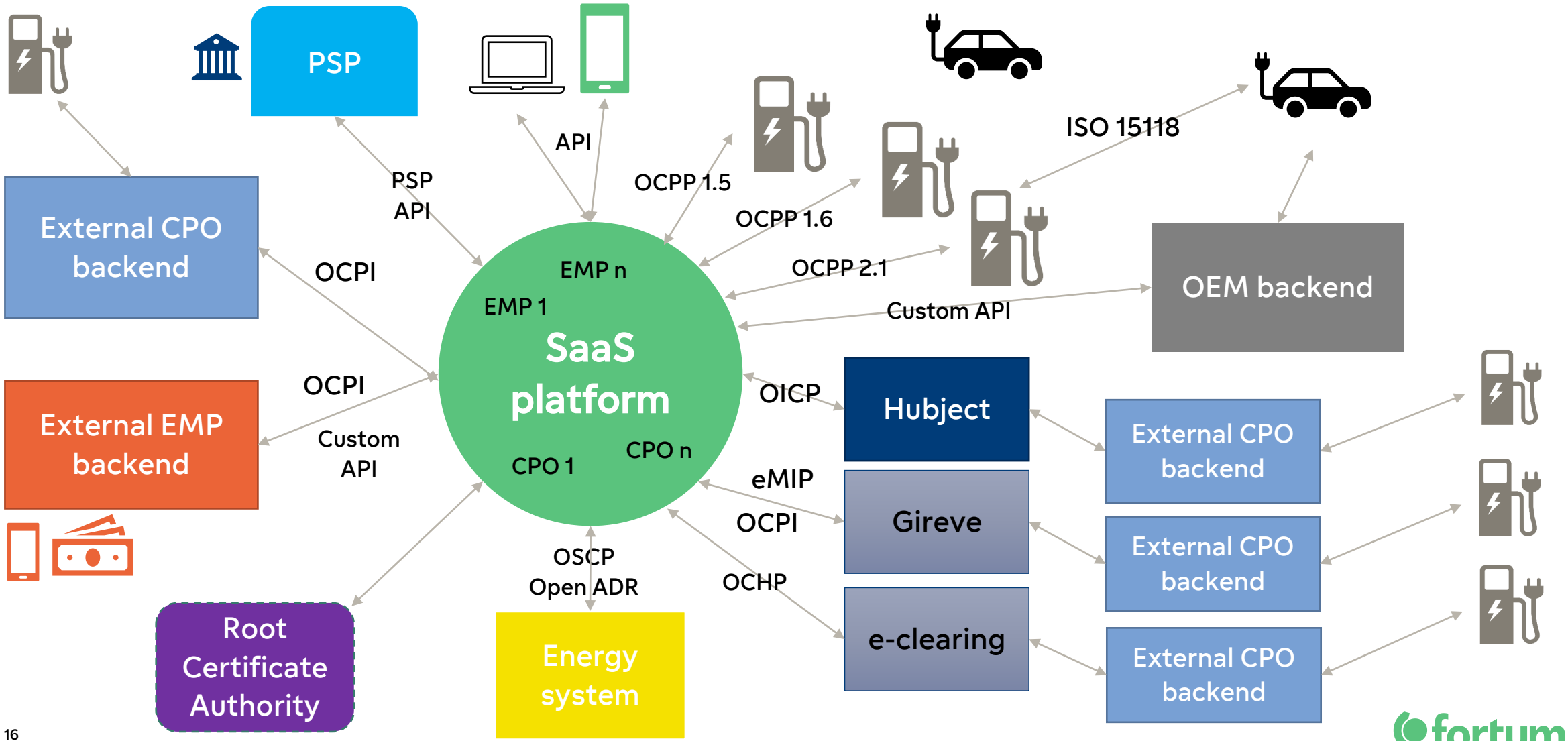
fortum

A SaaS platform for eMobility helps businesses…

…**manage their EV charging networks** through remote operations, configurations, control and troubleshooting

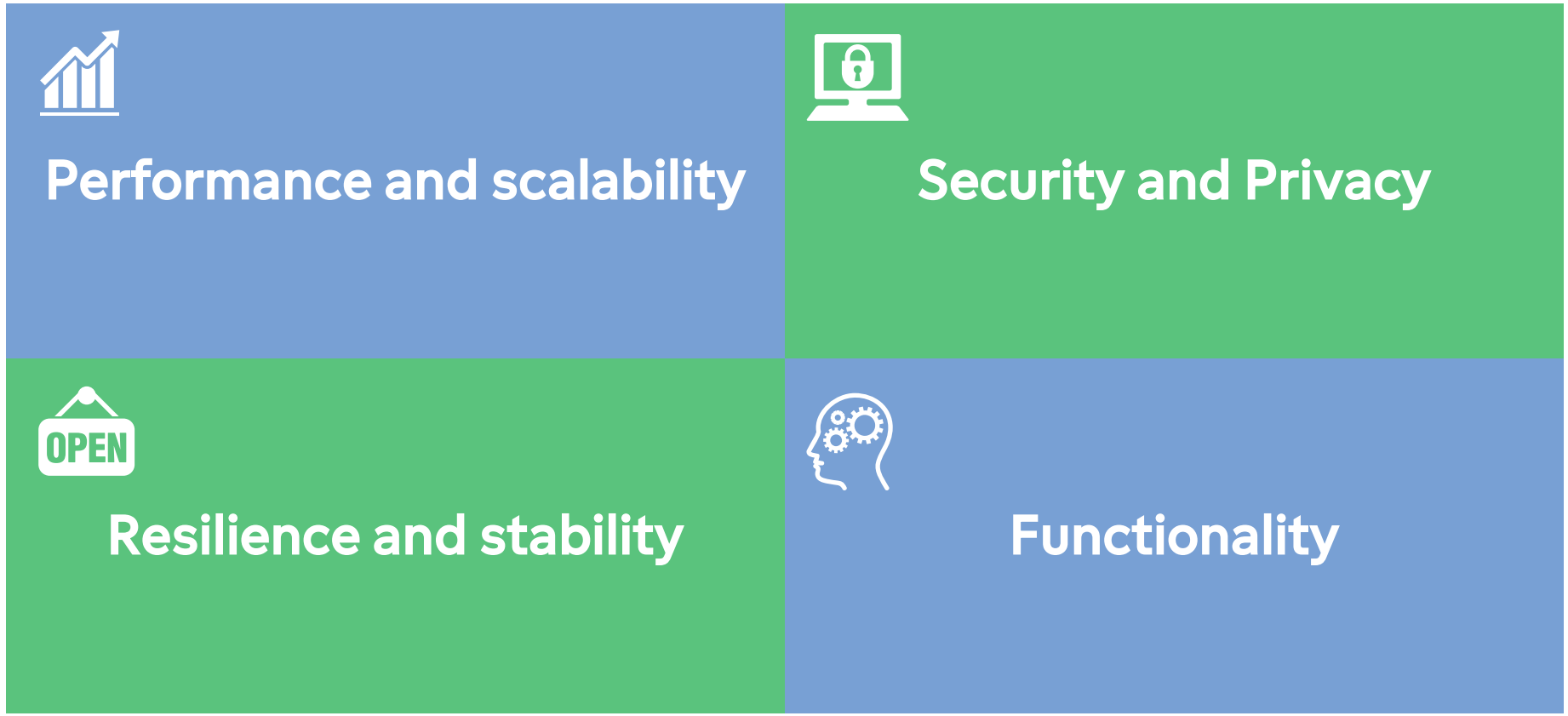
…**offer EV charging services to consumers** with customer management, services and payment functions

Complex technology landscape in a multi-actor ecosystem



fortum

Platform development needs to address both functional and non-functional requirements



fortum

A global player needs compliance program

Other prerequisites for a global play

Performance

Data in-country storage

Local payment methods

Always ON Support

A global player needs to sustain volumes

Thousands
charging stations

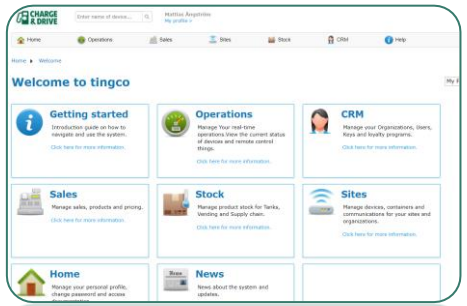
Millions
users

Thousands
organizations

Millions
sessions
per month

Hundreds
countries

Fortum started using an EV charging platform in 2011 and launched a new modern SaaS Cloud Solution in 2018



2011 – Fortum Charge & Drive starts using Tingco platform

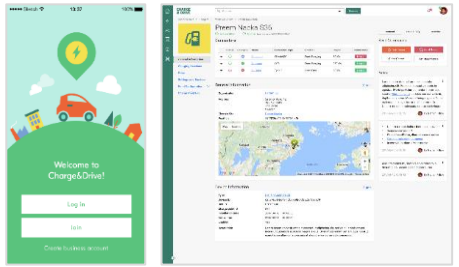
2013 – Tesla Model S launched in Europe

2015 – 50 000 EVs registered in Norway

2018 – Fortum acquires Plugsurfing

2021

NEW SaaS Platform 2.0



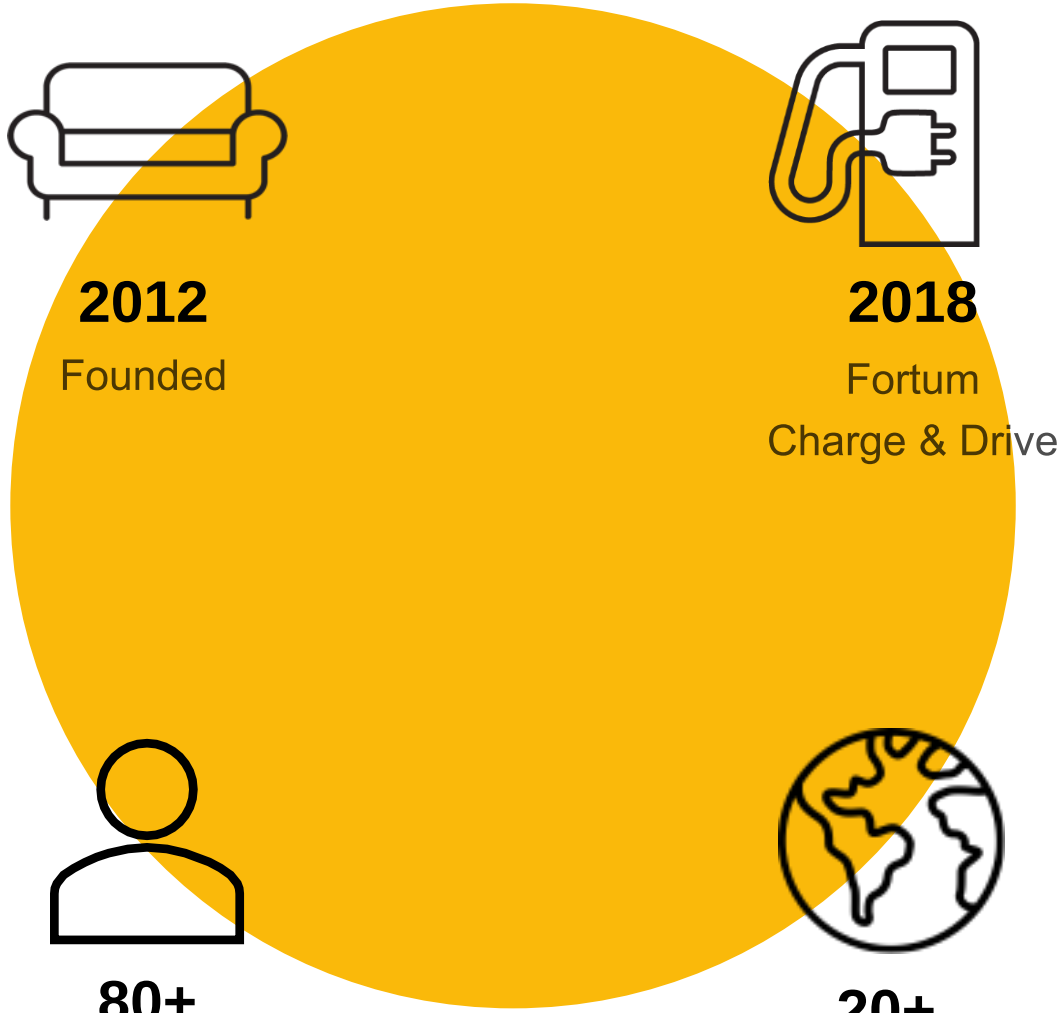
- Solution based on mass-market experience
- GDPR compliant
- Hardware agnostic
- Feature rich
- Reliable and scalable
- Modern technology
- APIs for external integrations

Joint platform with Plugsurfing

- One team
- Unique offering
- Renewed strategy

plugsurfing

- Founded in 2012 as Europe's first true **e-Mobility Service Provider,** acquired by **Fortum** in 2018
- We adhere to a bottom-up philosophy: recognized by our **200,000+ customers**, who give us an **NPS score of 52**
- Largest network for EV charging in Europe, with more than **220,000+ charging points** accessible through our platform
- Leading Fleet solution used by more than 500 companies including **OEMs, Car Rentals, Car Sharing, Leasing companies, Mobility Services** and **Company Fleets**
- In the beginning of 2021, we are the European eMSP partner for **14 major OEMs**, including Jaguar, Land Rover, Nissan Motors Europe, PSA Group, Renault, Volvo, Polestar, Kia Motors NL, etc.



The problem we solve in Europe: many networks

EV drivers in Europe need to use multiple **access** and **payment interfaces** and juggle multiple **contracts** to access Europe's charging station networks

7

Berlin

70+

Germany

700+

Europe

fortum


Sähköpyörällä sujuvasti
THE FUTURE IS ELECTRIC
Fortum charge & drive
THANK YOU!
plugsurfing
andrey.khurri@fortum.com