Housekeeping rules for this session

- All participants except the speakers and the chairs will be muted by default during this session;

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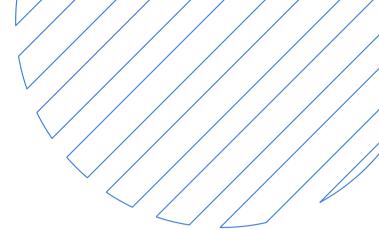 - Ask your questions through the Whova Q&A chat of this session only

- Contact the session facilitator, Víctor Corral, if you have any technical issue

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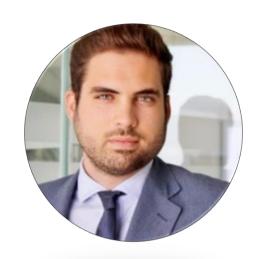**EBDVF 2020 is powered by** BIG DATA VALUE eCOSYSTEM PROJECT

Chairs and panelists

Chairs

Hannes Münzner
Volkswagen

Víctor Corral
Atos

Keynotes and panelists

Christian Wolff
ATB

Daniel Zelenka
Siemens

Jörg Kachelmann
Meteologix AG

EUROPEAN BIG DATA VALUE FORUM 2020

SPEAKERS

Agenda:

1. **What is Cross-CPP about?**

2. **Live-demo: Cross-CPP data marketplace**

3. **VW Success story using Cross-CPP data-marketplace**

4. **Meteologix Services using cross-sectorial data streams**

5. **The future of e-mobility empowered by Cross-CPP**

EUROPEAN
BIGDATA
VALUE FORUM

BERLIN + VIRTUAL
3-5 NOVEMBER 2020

1 What is Cross-CPP* about?

Key Facts:
Call: H2020-ICT-2017-1
Type of Action: IA
Duration: 01 Dec 2017 – 28 Feb 2021

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https://cross-cpp.eu   twitter.com/crosscpp   linkedin.com/groups/8827695
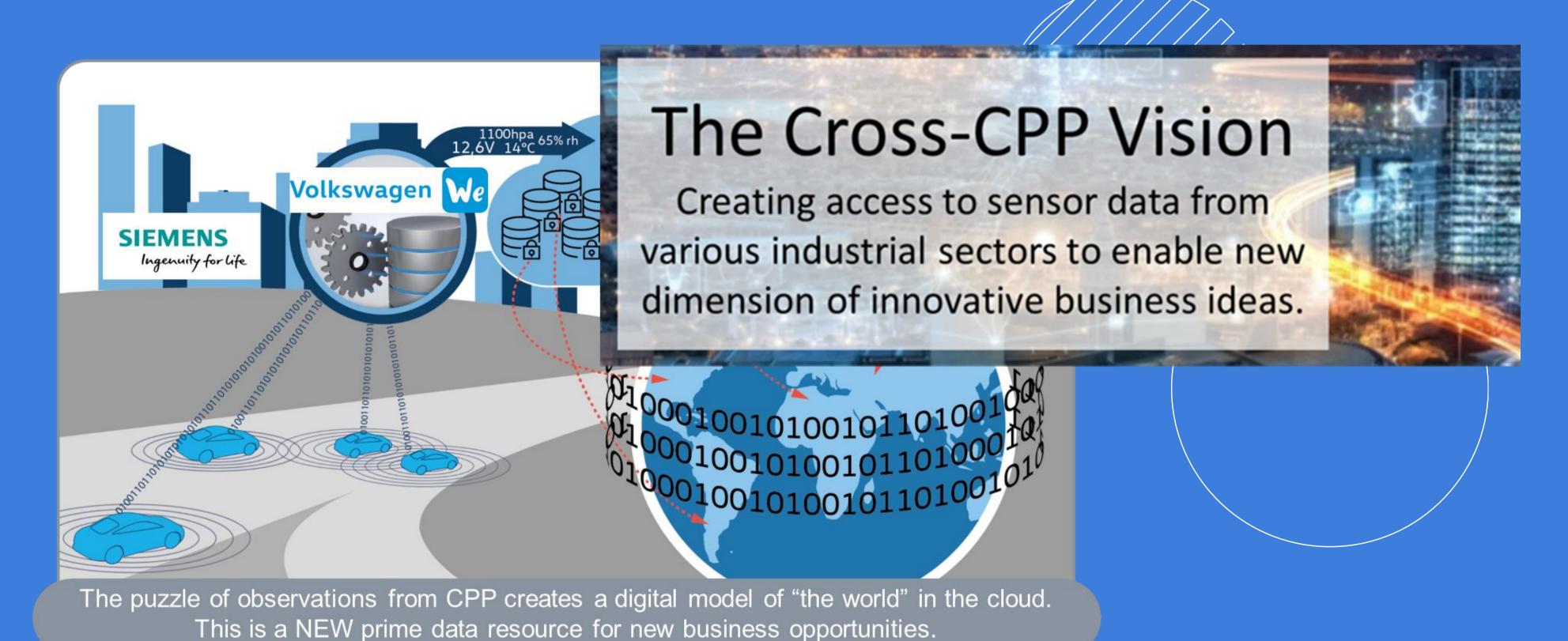
Giving Access to CPP Data

The Cross-CPP Vision

Creating access to sensor data from various industrial sectors to enable new dimension of innovative business ideas.

The puzzle of observations from CPP creates a digital model of "the world" in the cloud. This is a NEW prime data resource for new business opportunities.

Point of departure

'Dampened data economy'

Data Customer	CPP Manufacturer	Data Owner
• Limited access to CPP data • Need to connect to diverse data platforms • Proprietary data platform interfaces and data formats • Limited Big Data expertise and tools	• Using Data only to offer a few own services • Non-economical brand-specific service platforms • Wasted Innovation Potentials by blocking external expertise	• Restricted possibility to exploit their most valuable asset (CPP data) • Limited amount of value added services
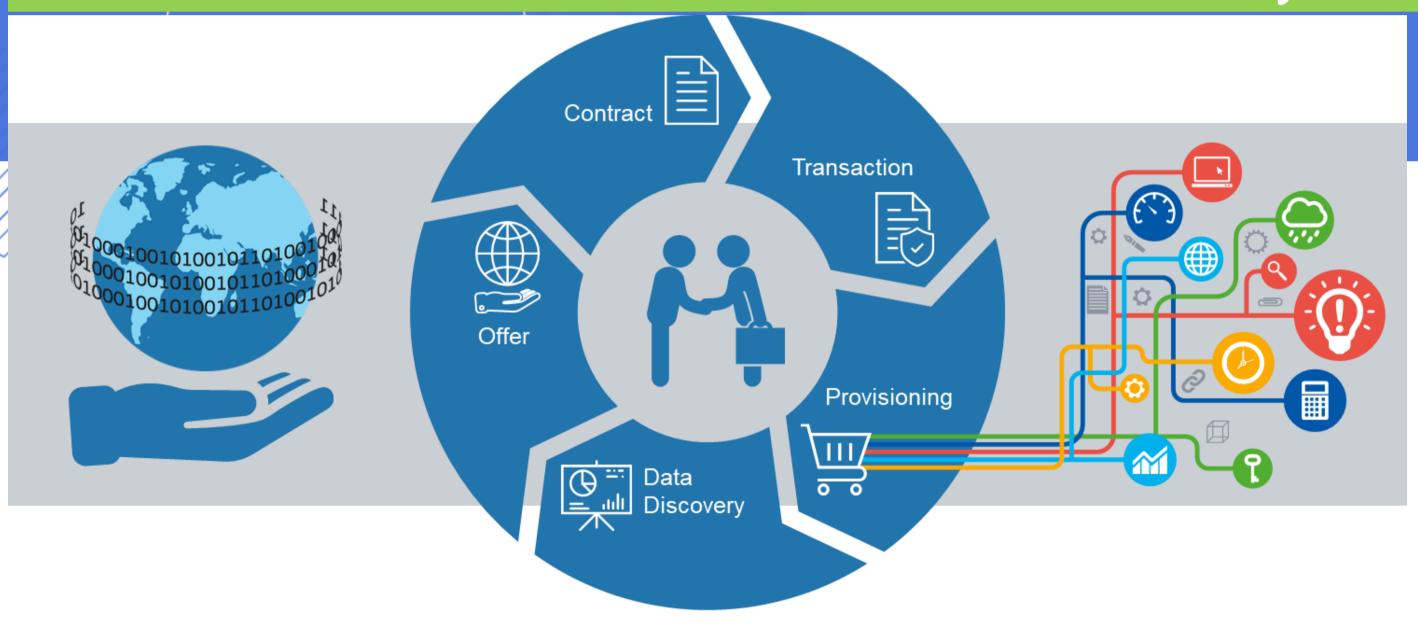
➢ Non-economical data economy environment!!!

CPP Data Ecosystem

Driven by the needs of its key stakeholders

Make Data Markets more attractive for its key stakeholders!

Contract

Transaction

Offer

Provisioning

Data Discovery

The Marketplace enables digital trade with CPP data between interested parties and data providers. It covers data discovery and provisioning, accounting and billing, offer and contract negotiation, SDKs and development support.
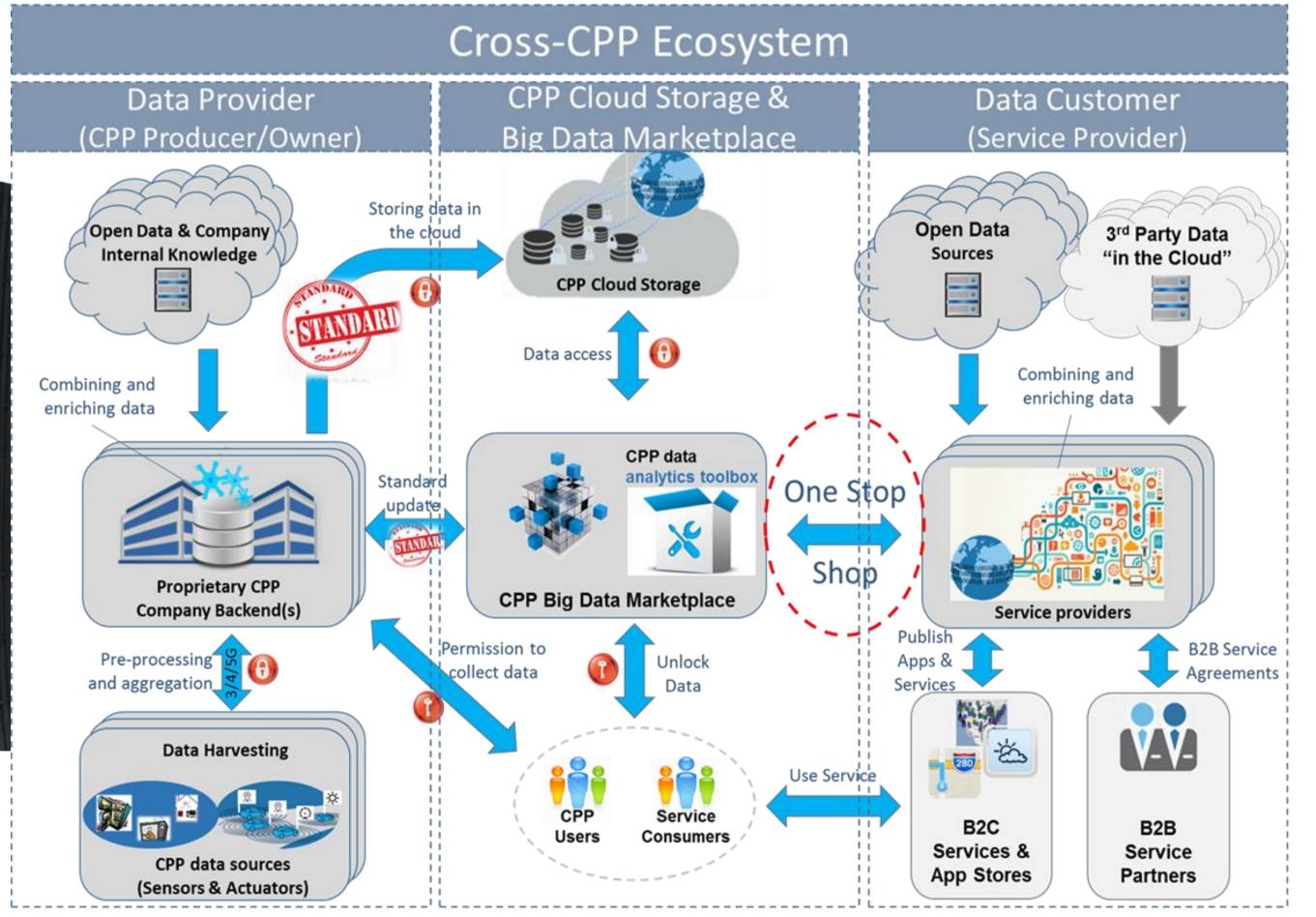
Key Requests:

➢ **Brand independent solution**

➢ **Single point of access to data streams from multiple smart products**

➢ **Common non-proprietary data format**

➢ **Full control over data**

➢ **Win-Win value chain for all ecosystem partners**

EU

CPP Data Ecosystem

Driven by the needs of its key stakeholders
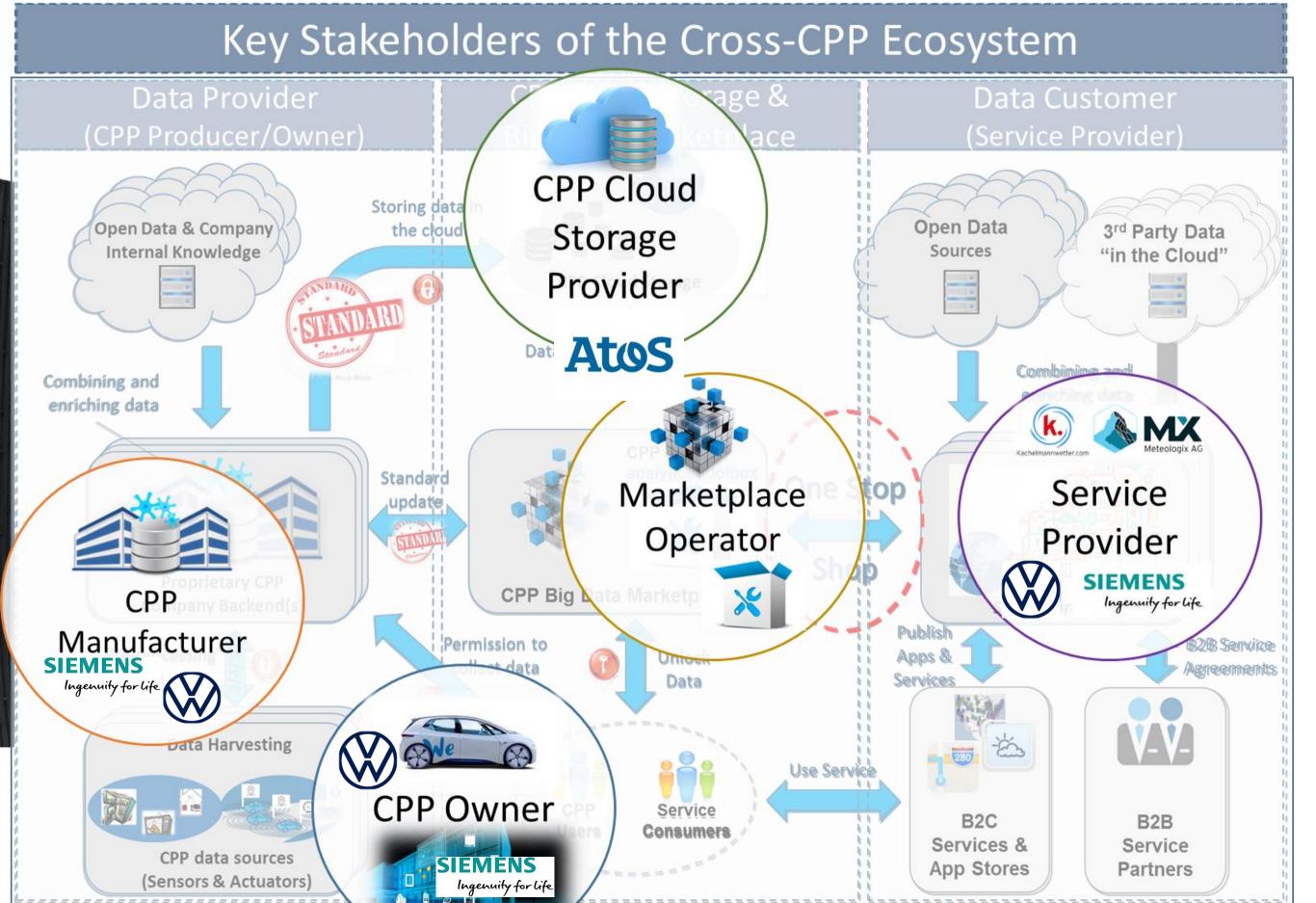

Cross-CPP Ecosystem

- ➤ **Standardized Cross Industrial Data Model**

  Flexible to incorporate CPP data coming from various industrial sectors.

- ➤ **CPP Big Data Marketplace with Analytics Toolbox**

  "One-Stop-Shop" provides Service Providers with a single point of access to data streams from multiple mass products.

- ➤ **Cross Industrial Services**

  The consortium partners have developed several innovative cross-sectorial services.

CPP Data Ecosystem

Driven by the needs of its key stakeholders

Key Stakeholders of the Cross-CPP Ecosystem

- ➢ **Standardized Cross Industrial Data Model**

  Flexible to incorporate CPP data coming from various industrial sectors.

- ➢ **CPP Big Data Marketplace with Analytics Toolbox**

  "One-Stop-Shop" provides Service Providers with a single point of access to data streams from multiple mass products.

- ➢ **Cross Industrial Services**

  The consortium partners have developed several innovative cross-sectorial services.

Cross-CPP success story

https://cross-cpp.eu   twitter.com/crosscpp   linkedin.com/groups/8827695

1 Ecosystem

- ✓ Driven by the needs of Data Owners, Data Providers and Data Customers
- ✓ Brand independent, Open platform with standardized interface -> High attractiveness for SP
- ✓ Linking CPP data from different sectors enables higher quality content and NEW services world
- ✓ Economical solution for all value chain partners, due to a greater amount of data customers
- ✓ Data Providers can profit from Innovation Potentials by thousands of external experts

2 User Engagement

- ✓ Increase willingness to provide IoT data by data providers and data owners
- ✓ The data owner can fully control which data he provides to which Service Provider

ATB

Live-Demo: Cross-CPP data marketplace

Brand-independent data Marketplace to trade-off and monetize your data assets

API-based: unlock new data-driven services based on harmonized CPP datasets

Main features:

| Catalogue | Offer | Contract | Exchange | New data products and services |

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What do we want to showcase today?…

We aim to perform the step flow **from a Service Provider (Data Consumer) point of view** looking forward to **gather and process CPP data** using a Cross-CPP marketplace:

1. **Creates a Data Request** including all the *parameters, variables and configuration* available in the Discovery

   Data Consumer

2. Data Owner checks **Available Offers** to subscribe to them

   Data Owner

3. Data Owner **can Accept / Reject the Offer** (s) and transform into a **Contract**

   Data Owner

4. Data Consumer **start collecting data from Accepted Offers / Contracts**

   Data Consumer
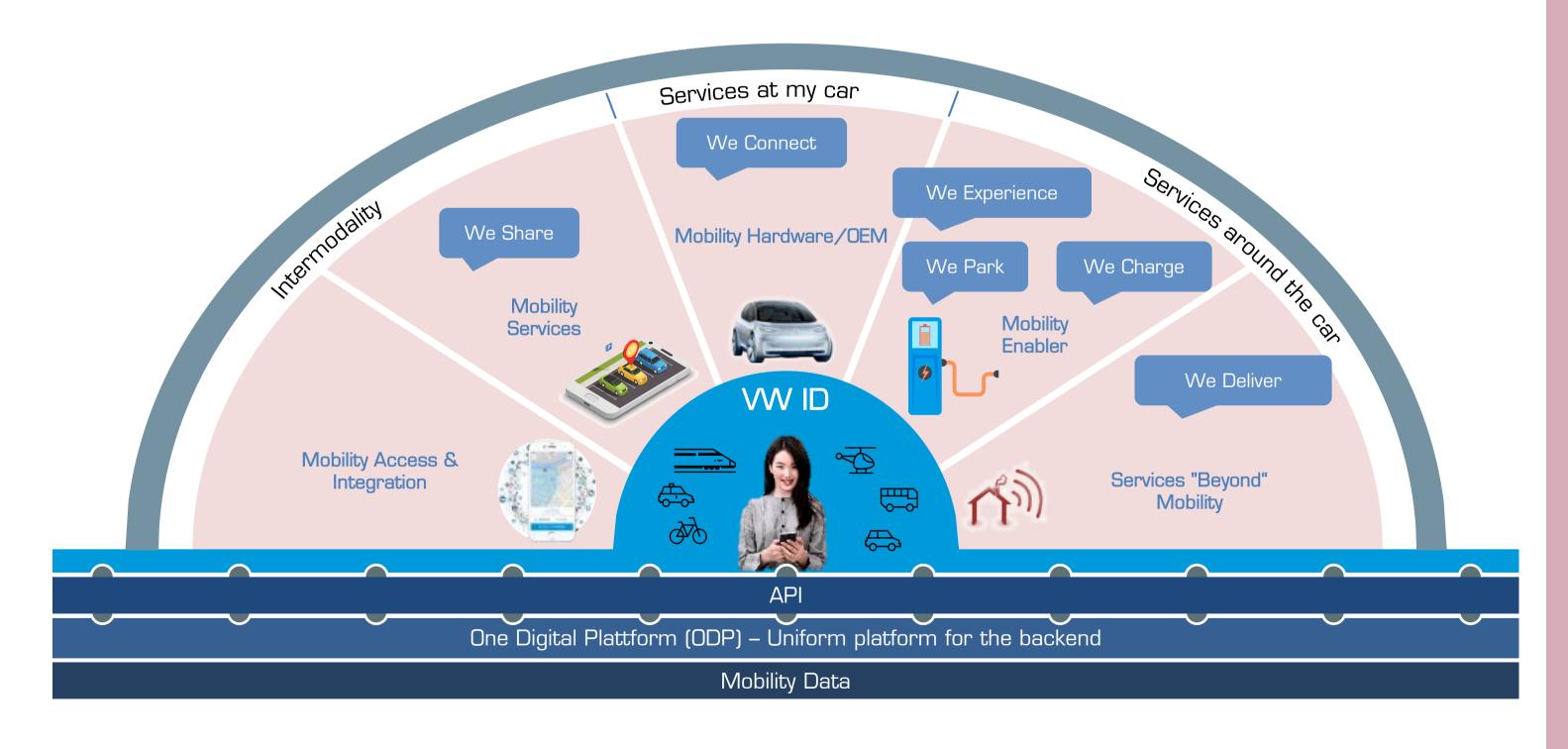
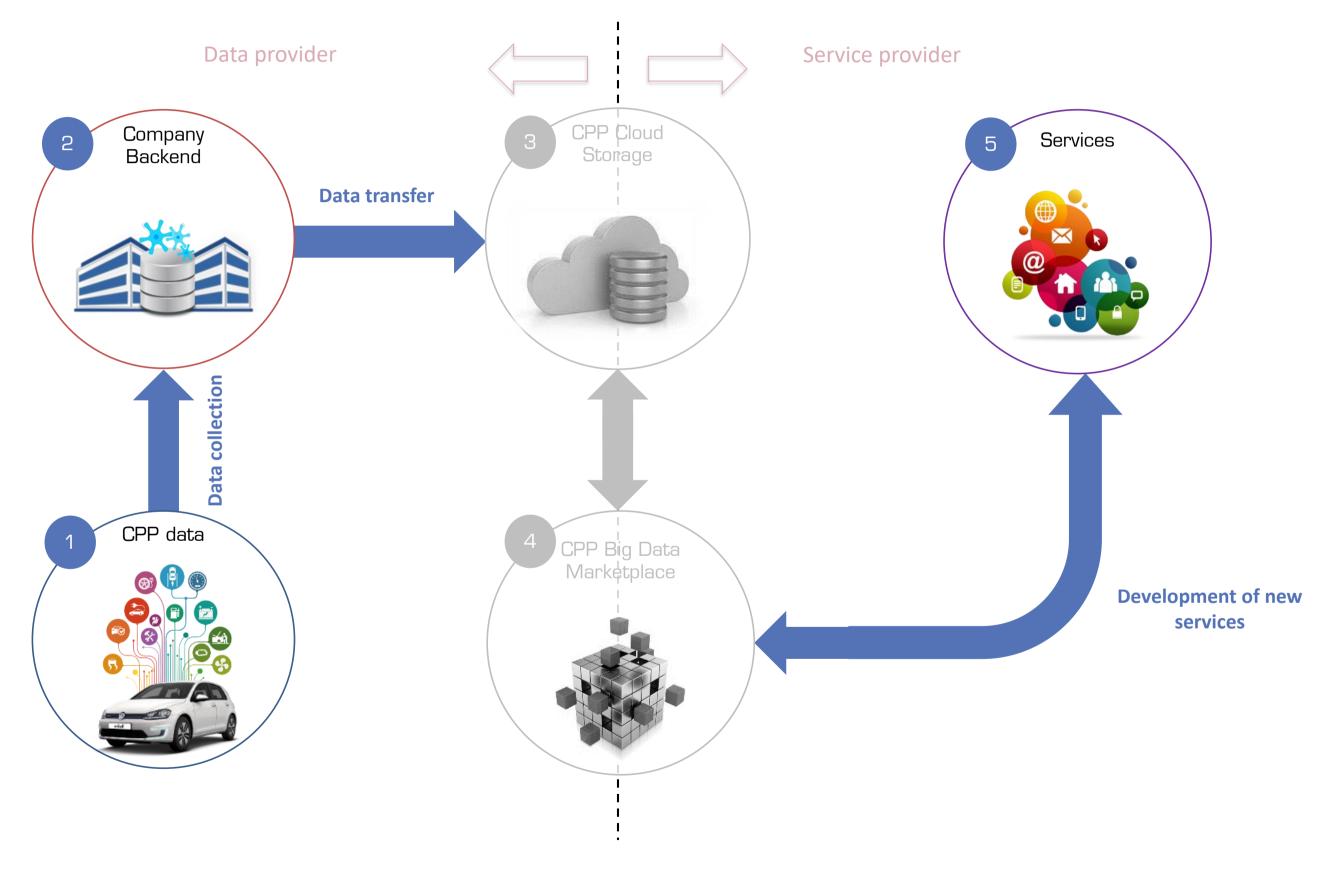# 3
VW Success story using Cross-CPP data-marketplace

Emerging potentials of cross-sectorial data streams

Several services have been launched and more are about to come ...

VW Role within Cross-CPP

Data provider

Service provider

2 Company Backend

3 CPP Cloud Storage

5 Services

1 CPP data

4 CPP Big Data Marketplace

Data transfer

Data collection

Development of new services

Challenges for the provisioning of vehicle data for Cross-CPP

Starting point:

Vehicle data including gps position is needed → personal data

Alignment of the data provisioning with the state-of-the-art data protection guidelines of Volkswagen and GDPR (General Data Protection Regulations)

Imposing number of requirements on the data provisioning technologies and involved processes

Recruiting of volunteer test users

Contractual basis between Volkswagen and test users

Establish process to handle user requests

VW Service development within Cross-CPP

Weather-based Navigation Service

- Real time driver's warning about weather-related upcoming dangerous road conditions

- Navigation based on real-time and forecasted weather information to bypass weather-related danger spots

- Cross-sectorial data coming from vehicles and weather data from an external weather expert to generate very precise weather data for the service

Weather-based Navigation Service

Benefits of using Cross-CPP integrated data-marketplace solution

Improvement of existing services and establishment of diverse new cross-sectorial services by combining cross-industrial data

Cost lowering of the service platform solutions by sharing the costs among different data and service providers

Data provisioning to the outside world by one single point of access

High innovation potentials due to a world-wide network of service providers

4

Meteologix Services using cross-sectorial data streams

MK

Meteologix AG

Safe, easy and quick access to Big Data is very useful for service providers like us.
We can use it to enhance current services or develop new ones.

Why do we need « ground truth » ?
How does a weather forecast work?

- Meteorological parameters are calculated for each grid point all over the world

- Distance between grid points decides about forecast quality

- Initialization fields decide about forecast quality
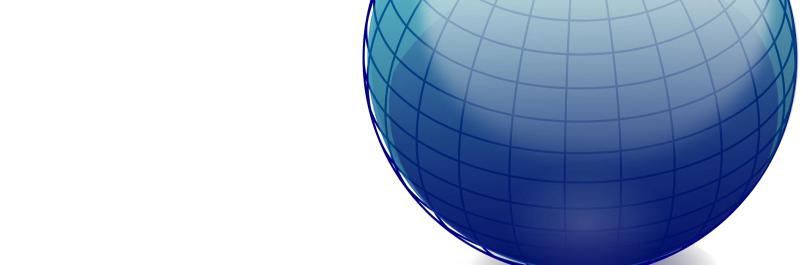
Ground truth describes **actual measurements** and observations of weather stations (or CPP) that are used for initialization of the weather model, so it "knows" where to start from.
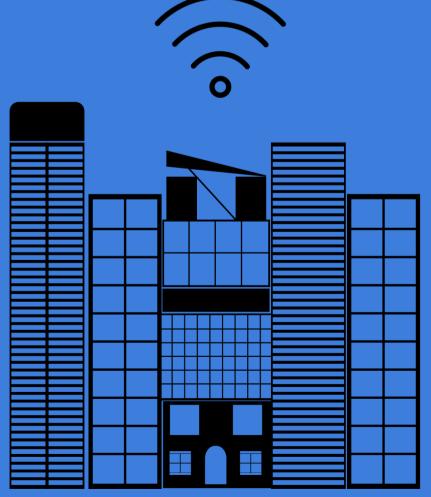
SERVICE

UltraHD
(100m urban model)

Meteologix AG

Why do we need « ground truth » ?

The more measured data a weather model has from its point of initialization, the better the forecast will be as there will be less inaccuracy to begin with.
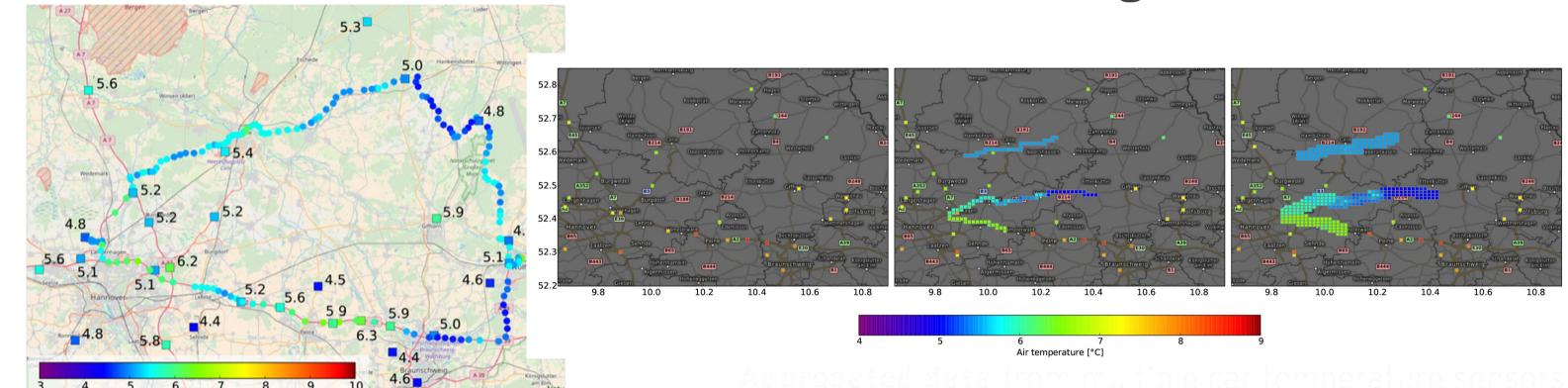
**Temperature signals from driving cars can be used to enhance
the initial fields of a weather model resulting in better**

Temperature data from car sensors

Aggregated data from multiple car temperature sensors

SERVICE

UltraHD
(100m urban model)

Meteologix AG

Efficient Data Assimiliation is crucial

Coarse weather models cannot handle the new CPP data well and will too often reject the « foreign » data as it does not fit.

For Cross-CPP we thus built a high-resolved weather model that can handle CPP data optimally.
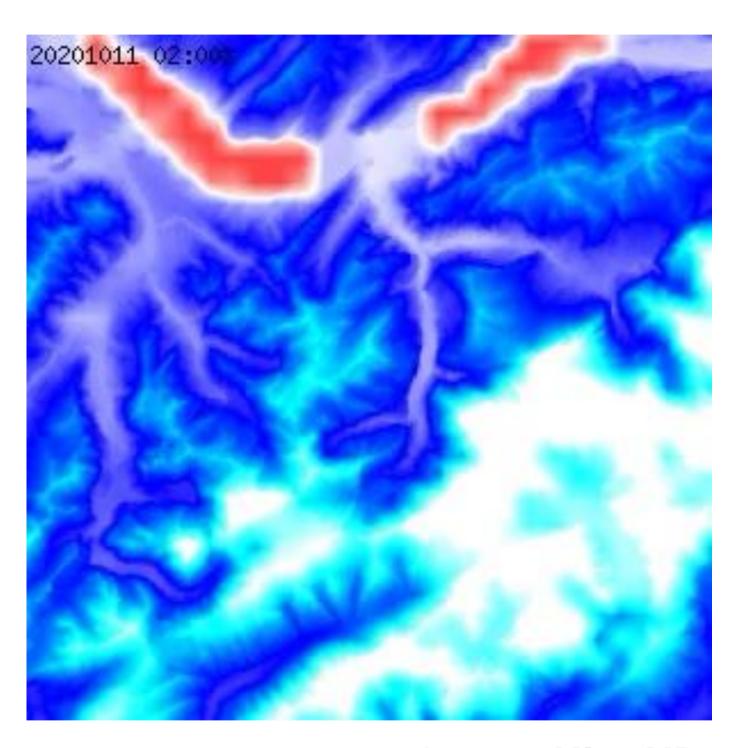
UltraHD- 100m model (urban weather model)

A new weather model from scratch to resolve small scale weather events and ingest CPP sensor data efficiently.

Especially useful for
- cities
- wind parks
- power plants

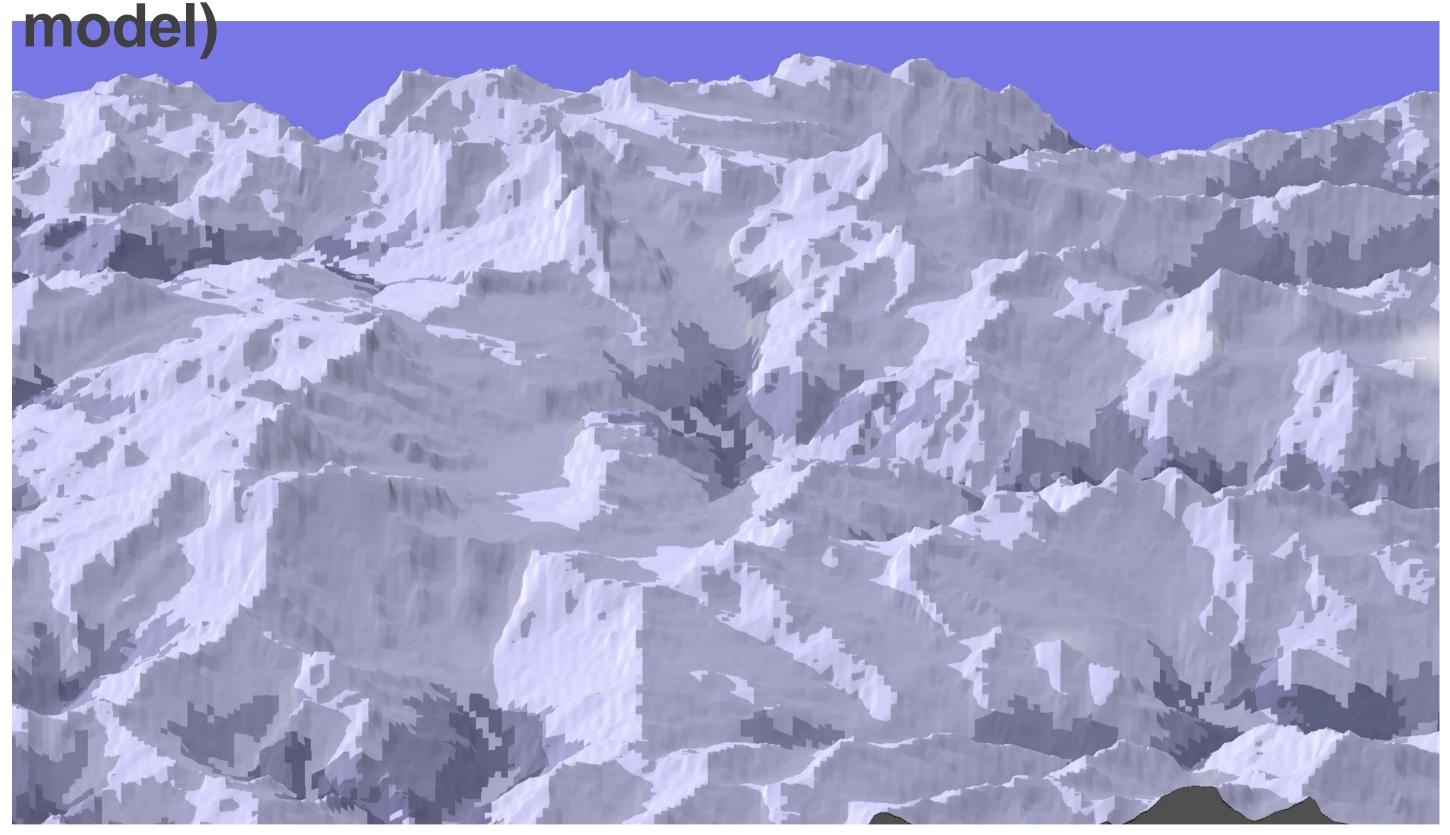…and hard to forecast terrain like mountains/valleys.

20201011 02:00

Output UltraHD
Skin Temperature
Forecast

SERVICE

UltraHD
(100m urban model)

MX
Meteologix AG

UltraHD- 100m model (urban-scale weather model)

"Visualisation of a simulated flow over mountains from northern directions in the region around Zermatt using the UltraHD model"

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SERVICE

UltraHD
(100m urban model)

Meteologix AG

- Data ingestion and assimilation **dramatically enhanced**

- **>> Requirement for the use of CPP data sources**

- Energy Companies need high-precision forecasts for small-scale regions

- **Urban planners** and **City Administrations**

- **B2C:** Weather Warnings

The UltraHD is on the European Commission's Innovation Radar

SERVICE 1

UltraHD
(100m urban model)

Meteologix AG

SERVICE 2

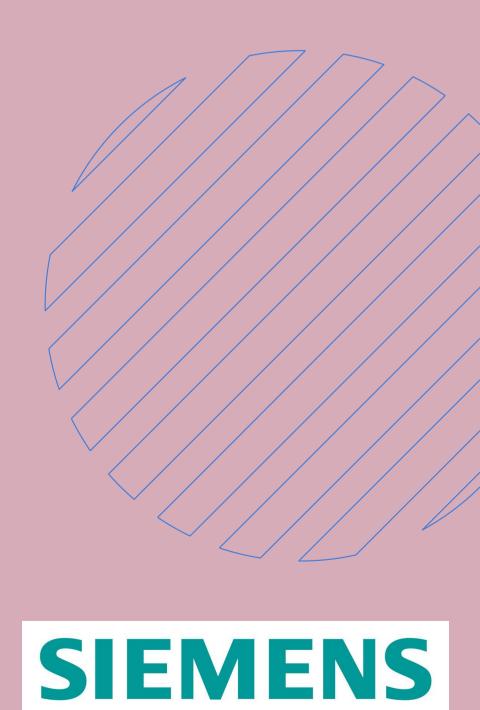**Processing CPP data (e.g. building weather stations) to generate Smart Building Weather Forecasts**

SERVICE 3

Processing real-time vehicle data to warn drivers from adverse weather events (Aquaplaning, hail [...])
>> together with Volkswagen

SERVICE 4

Processing real-time vehicle data to create live precipitation maps in regions that are not covered by (expensive) weather radars

5

The future of e-mobility empowered by Cross-CPP

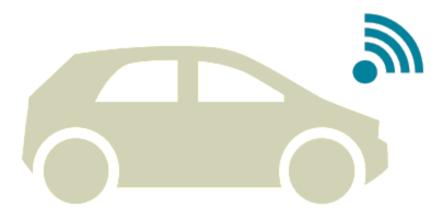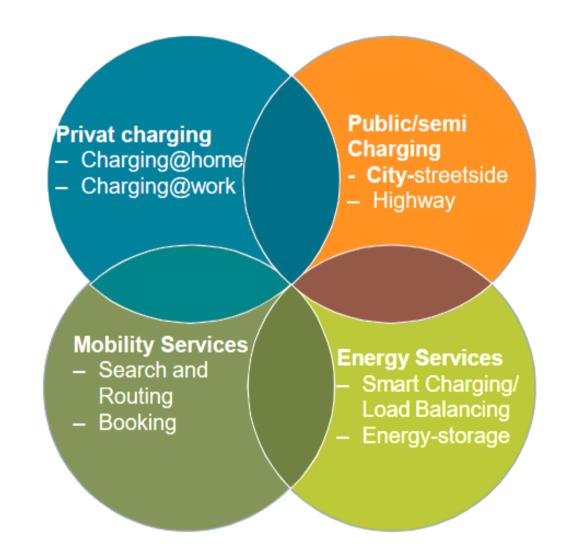EUROPEAN BIG DATA VALUE FORUM 2020

SIEMENS

Siemens E-Mobility Areas of Interest

Changing of EV Driver behavior

- Autonomous driving
- Sharing Business models (EV, Infrastructure)
- Intermodal mobility services
- New Business models (pay per use, flat fees)
- EV to avoid overload situations everywhere in the network; optimise power flow
- Integration of value-Added-Services
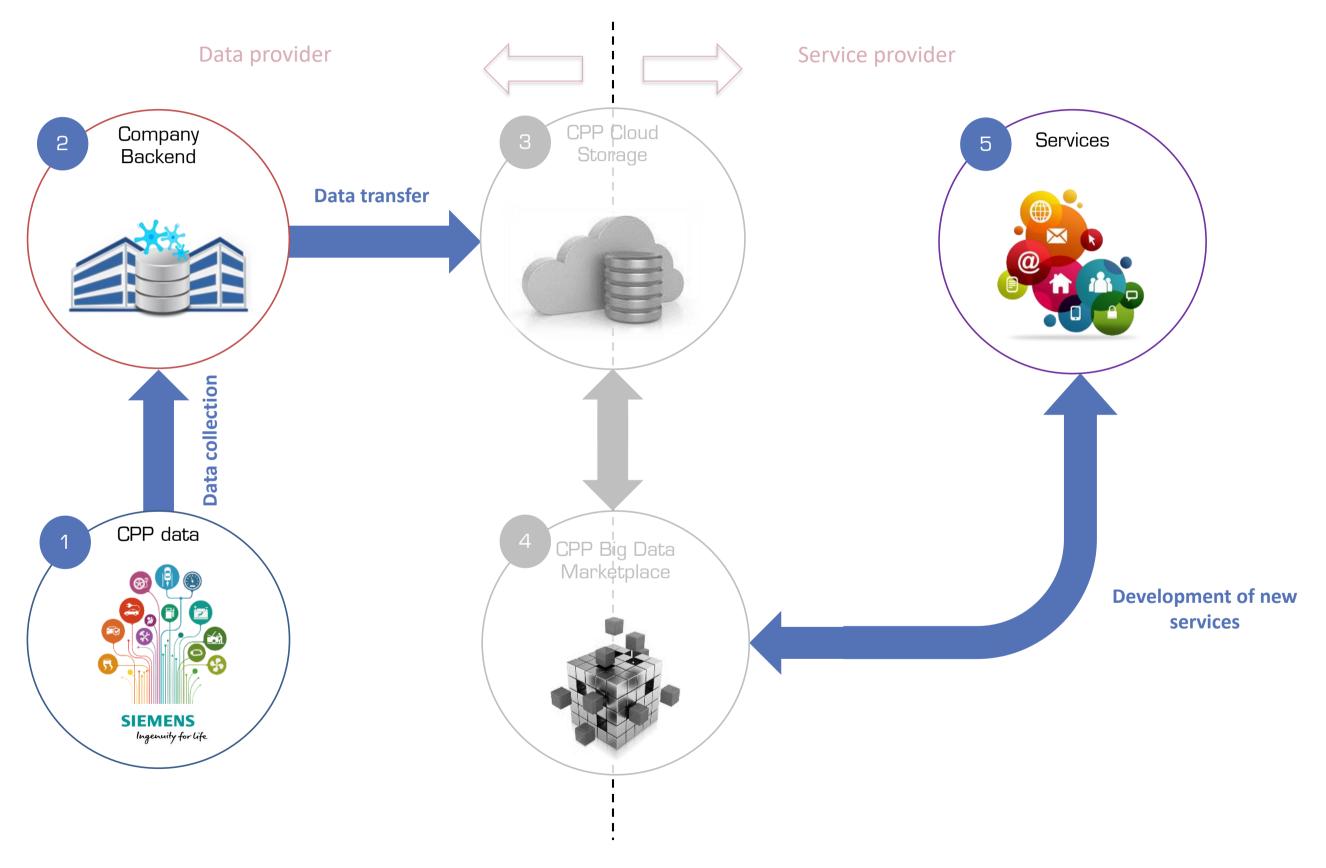
Impact on charging services

Privat charging
- Charging@home
- Charging@work

Public/semi Charging
- **City**-streetside
- Highway

Mobility Services
- Search and Routing
- Booking

Energy Services
- Smart Charging/ Load Balancing
- Energy-storage

SIEMENS

Siemens Role within Cross-CPP

Data provider

Service provider

2 Company Backend

Data transfer

3 CPP Cloud Storage

5 Services

Data collection

1 CPP data

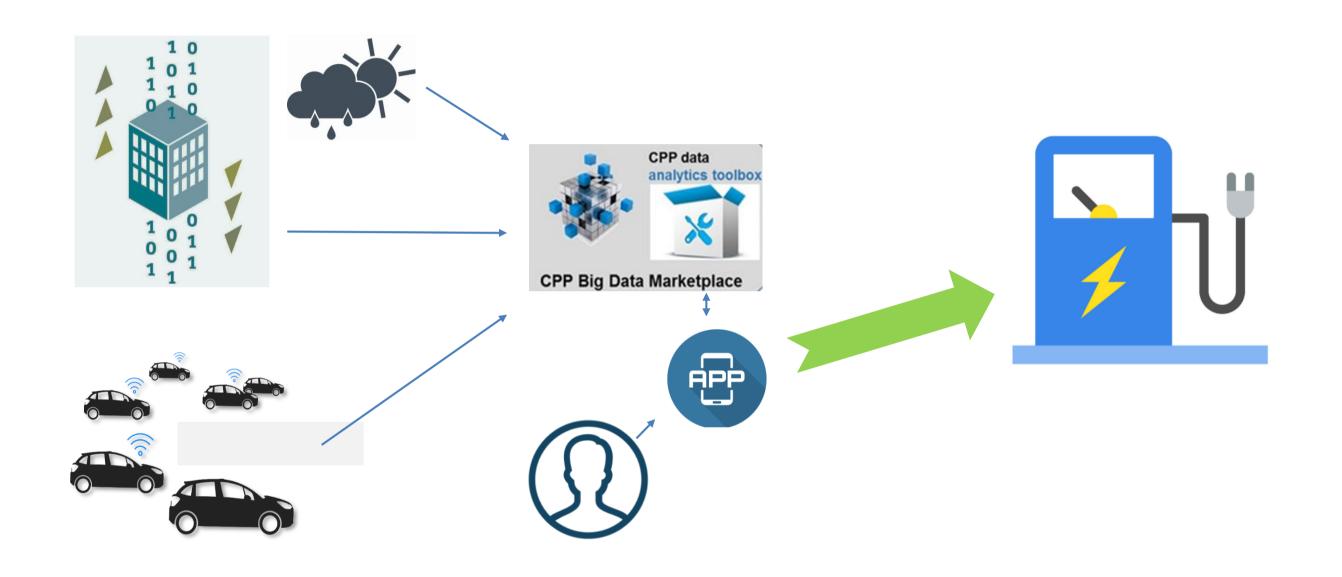**4** CPP Big Data Marketplace

Development of new services

SIEMENS

The Future of E-Mobility Empowered by Cross-CPP

SIEMENS

Data Signals Needed for Service Development

Vehicle Data
- *Charging mode: binary signal (0: immediate charging mode; 1: time-delayed charging mode)*
- *Charging plug inserted: binary signal (0: disabled; 1: enabled)*
- *Charging plug locked: binary signal (0: unlocked; 1: locked)*
- *Charging activated: indicates an active charging process. Binary signal (0: active; 1: inactive)*
- *Charging battery level: in %. Range: 0 (empty)-100% (fully charged). Resolution: 0.5%*
- *Remaining charging time: time until battery is fully charged in minutes. Range: 0 – 630 min.*
- *Event based message for Battery level below 10%*
- *GPS position*
- *Speed*
- *Power consumption*
- *Final destination*

Building data
- *E-charger availability*
- *Status*
- *Type of charger (voltage level, fast charger, power class)*
- *A quarter-hour maximum (maximum energy consumption for specific time period)*
- *Power load*
- *Electrical energy consumption*
- *Proximity charging current*
- *Room temperature*
- *Basics Cross CPP Information*
- *Year of the construction*
- *Number of floors in the garage*
- *Number of floors*
- *Number of rooms*
- *Color of the building*
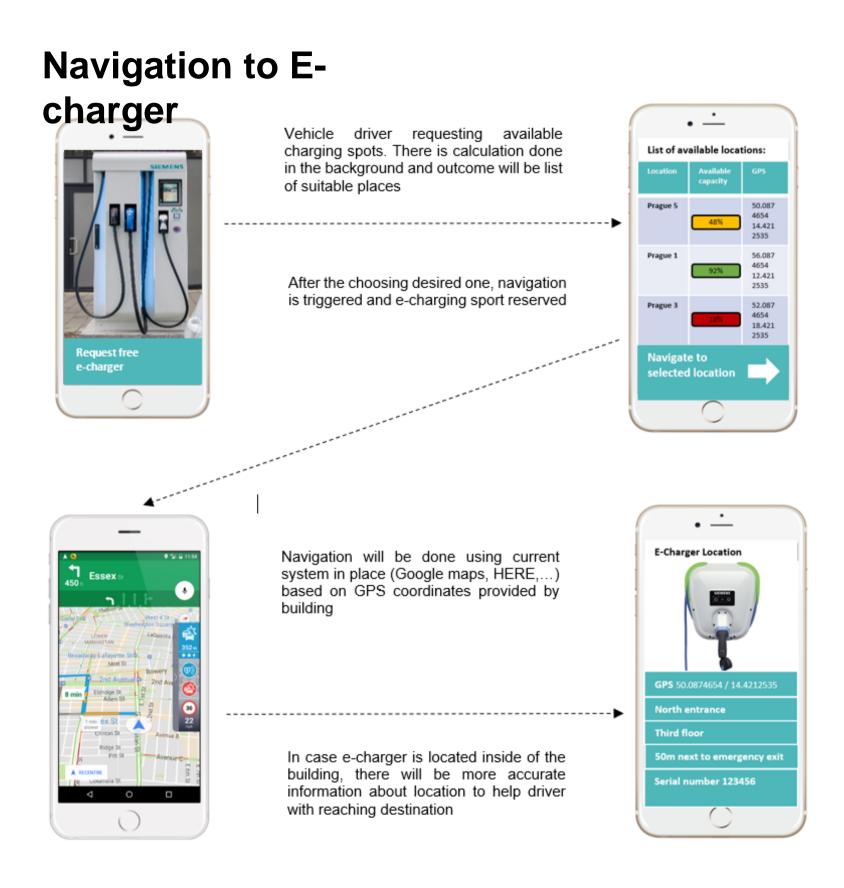- *Address*

Weather data (for the future development)
- *Sun intensity*
- *Expected forecasted values*
- *Outside temperature*
- *Outside humidity*
- *Relative humidity*
- *Absolute humidity*
- *Wind speed*

Depending on the report type and meter data available, the typical reporting period (for example one day, one year etc.) and data resolution are following:
- 5 minutes
- 15 minutes
- One hour
- 24 hours
- Weekly
- Monthly
- Yearly
- Or the range of specifics period can be defined by the user

SIEMENS

Desired E-Charging Service Application

Navigation to E-charger

Vehicle driver requesting available charging spots. There is calculation done in the background and outcome will be list of suitable places

After the choosing desired one, navigation is triggered and e-charging sport reserved

Navigation will be done using current system in place (Google maps, HERE,…) based on GPS coordinates provided by building

In case e-charger is located inside of the building, there will be more accurate information about location to help driver with reaching destination

Charging Process

Vehicle driver confirms connection to e-charger and starting of charging process

Status of charging is shown. Values changing depending on energy performance of the building and allocation of energy

If enough resources, vehicle driver can change the reservation or confirm that process is finished

SIEMENS

Business Outcomes

Business Opportunities

- E-charger providers
- Facility managers
- Shopping malls
- City center infrastructure
- Municipalities
- Fleet operators
- Payment for the e-charging service providers

Sustainability

- Less time needed for finding suitable spot
- Less pollution produced by vehicles
- Improvement of infrastructure, support of brownfields
- Controlled energy consumption
- Effective usage of generated electrical energy
- Support of renewable energy sources

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