

VOLKSWAGEN

AKTIENGESELLSCHAFT

Roadmap *E*

The most comprehensive electrification initiative in the automotive industry of all times



Joris De Bock, E-Mobility Business Models
Making The Change Happen, Berlin, 2nd July 2018

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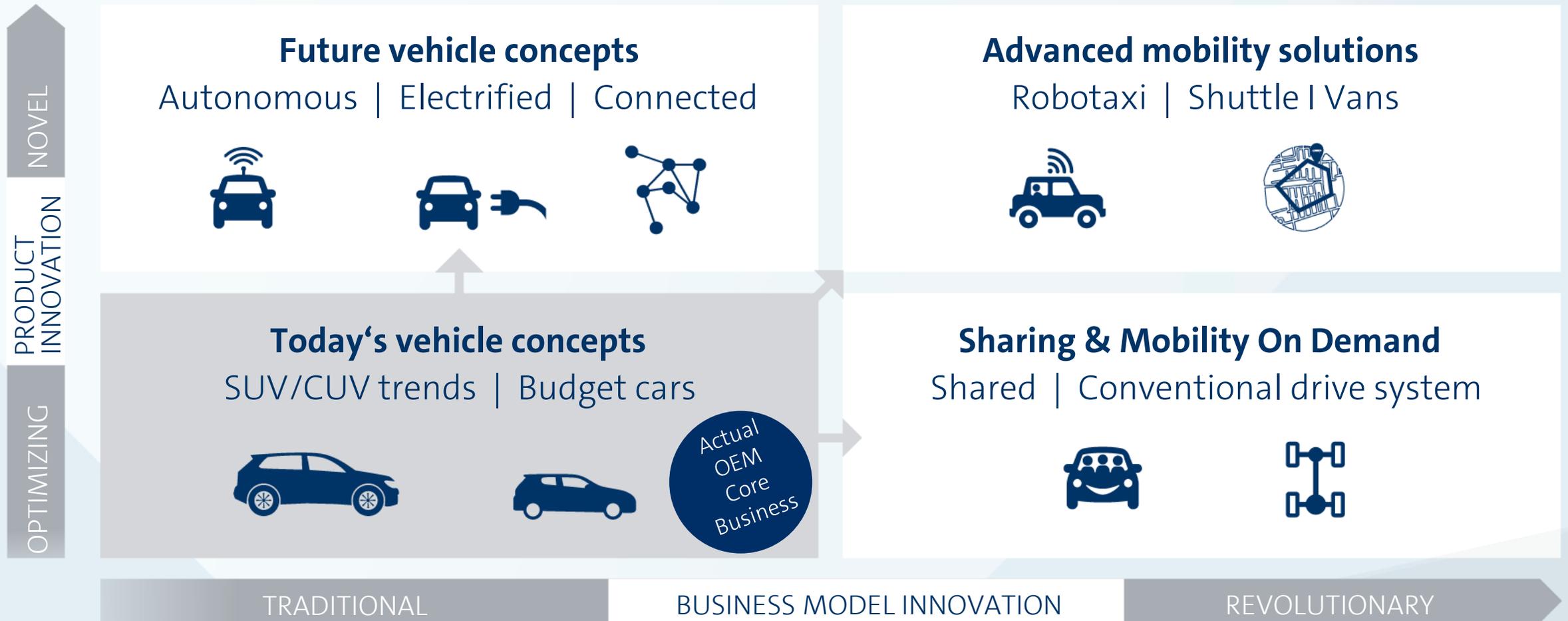
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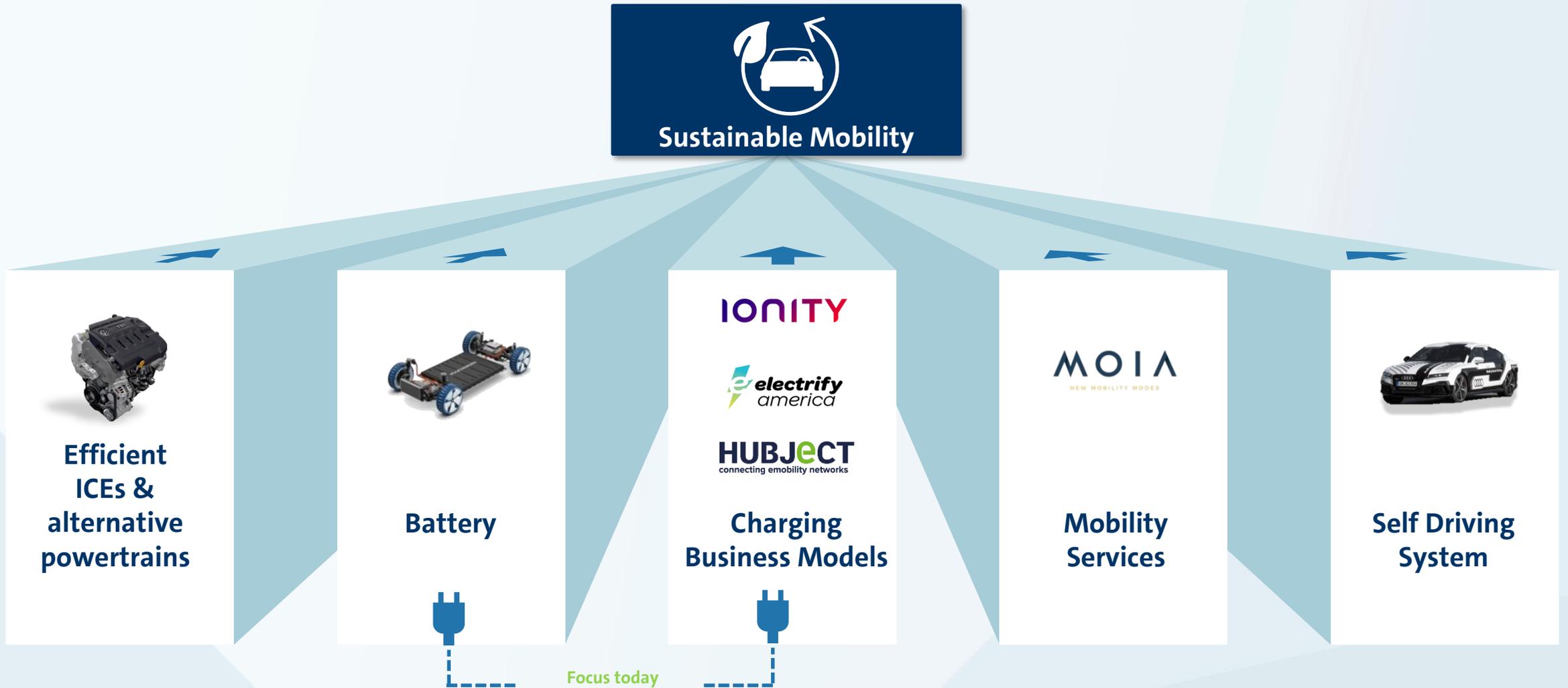
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The challenge: transforming Volkswagen Group along 2+1 dimensions



Building blocks to provide sustainable mobility solutions



Most comprehensive electrification initiative in the automotive industry with

Roadmap



- 80 new EVs (50 BEVs + 30 PHEVs)
- 20–25% Group sales intended to be purely battery-powered
- Own e-fleet requirements over 150 GWh of battery capacity

2017



- 3 BEVs, 8 PHEVs

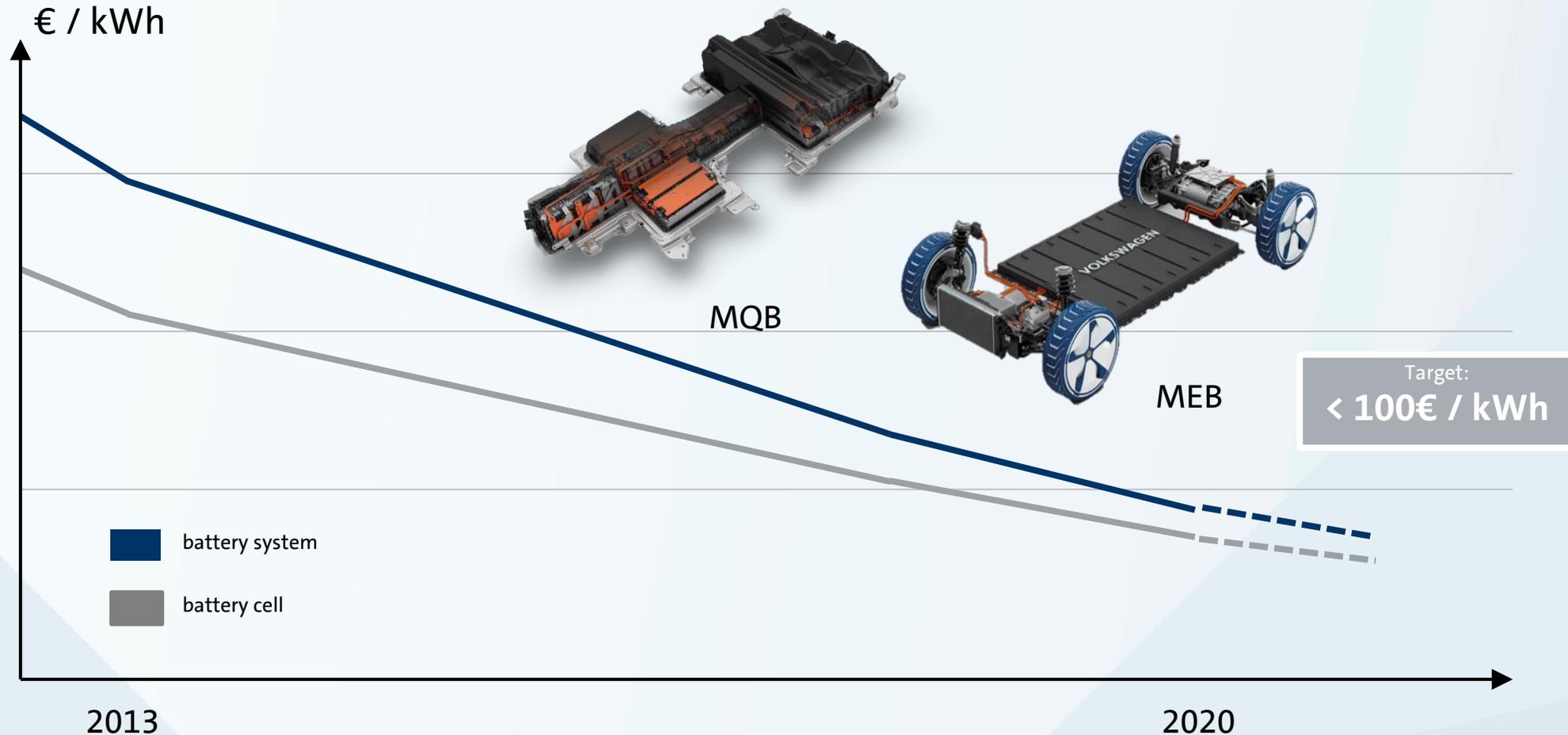
2025



- At least one electrified version for each of the Group's 300 or so models

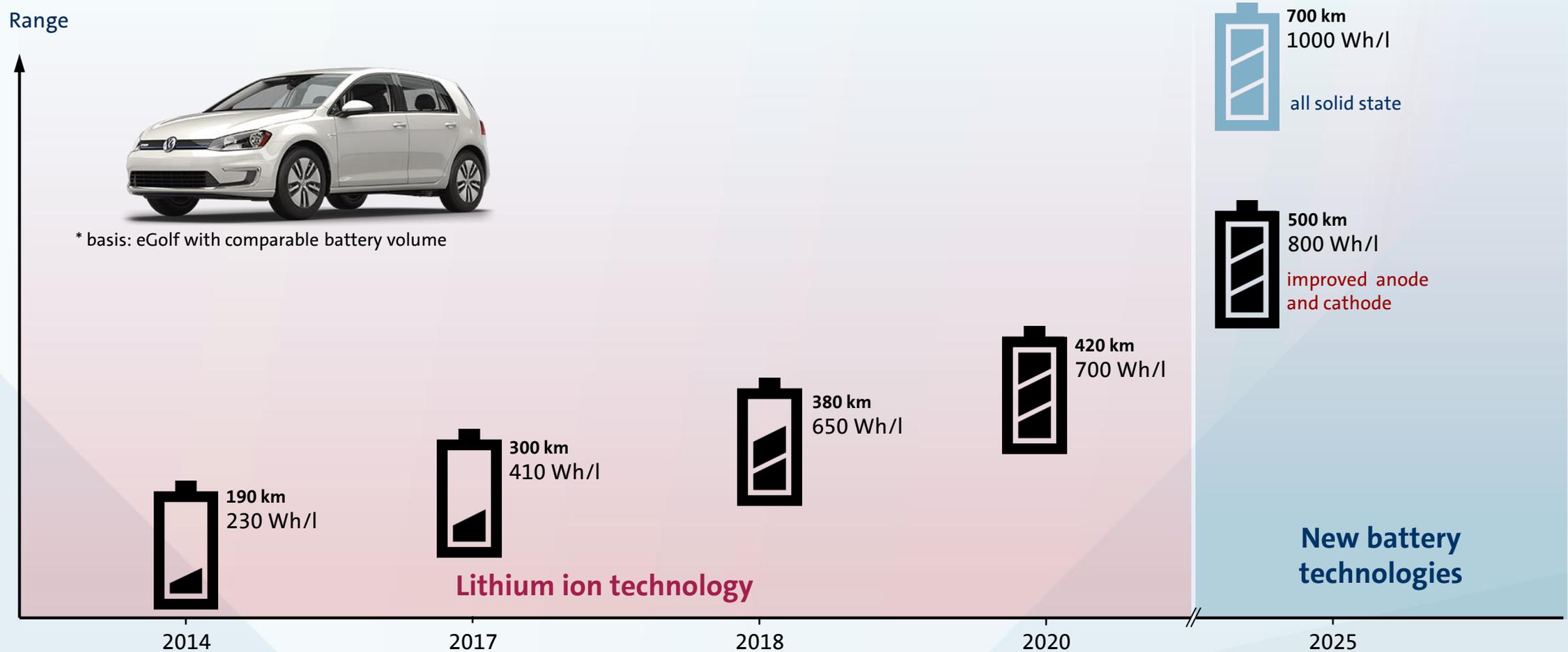
2030

Battery costs will decrease significantly by 2020

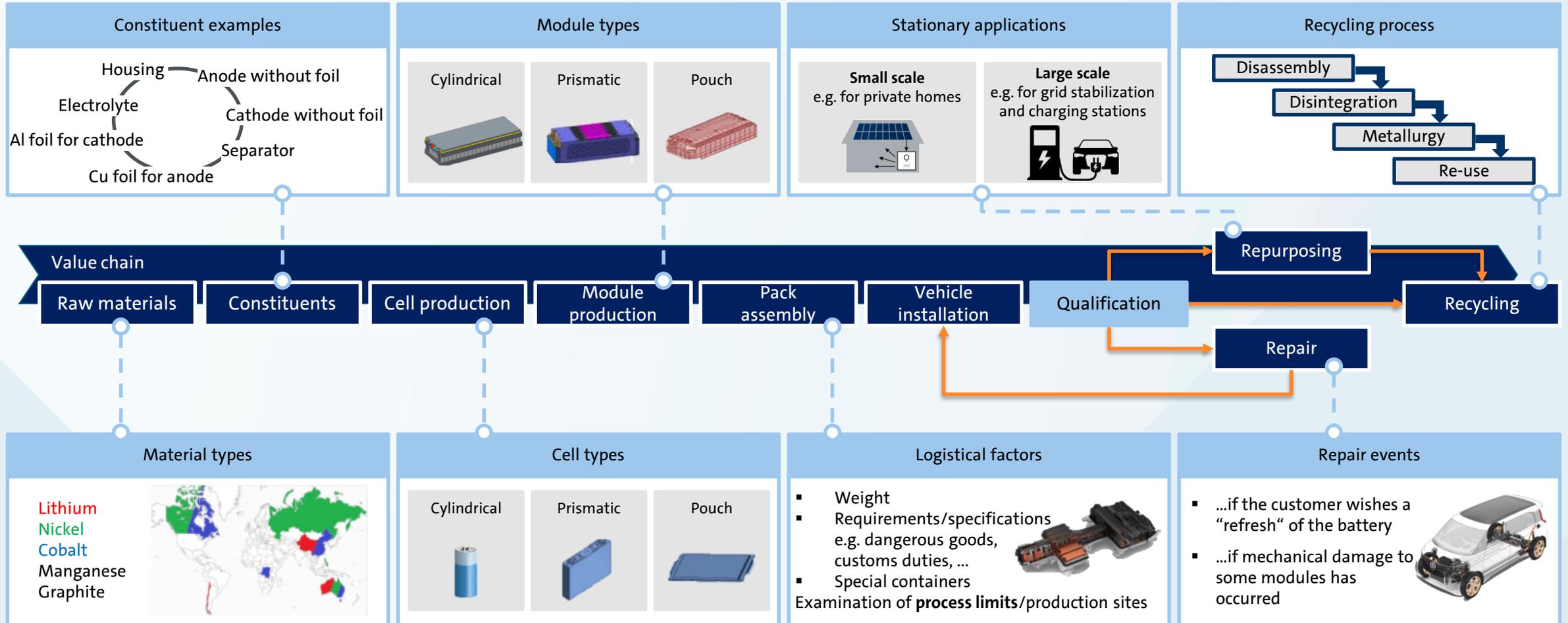


Advances in Battery Technology will improve Range

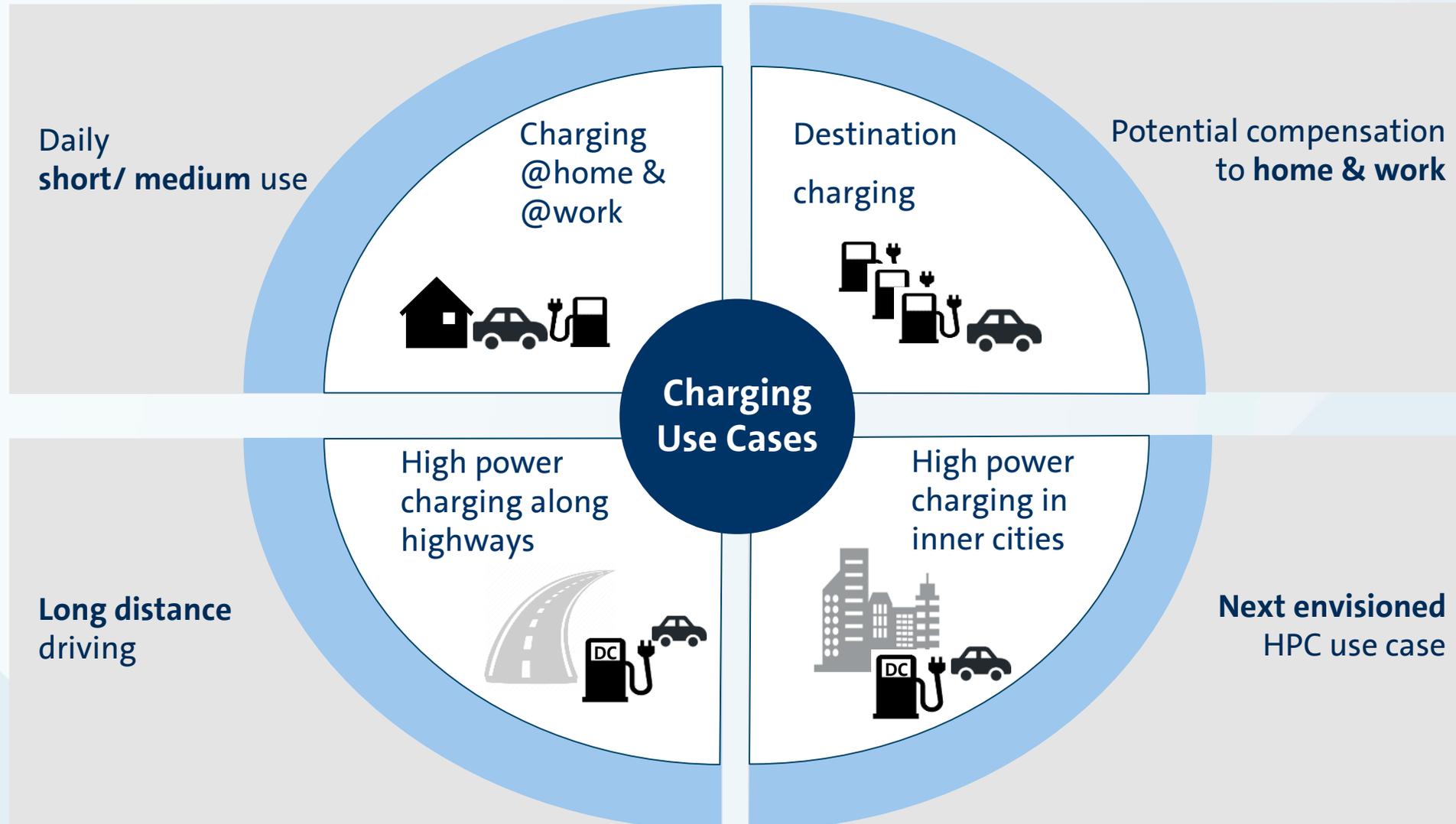
Roadmap battery cell chemistry and energy density



Competencies needed across the whole battery value chain



VW Group is taking direct control of all charging use cases

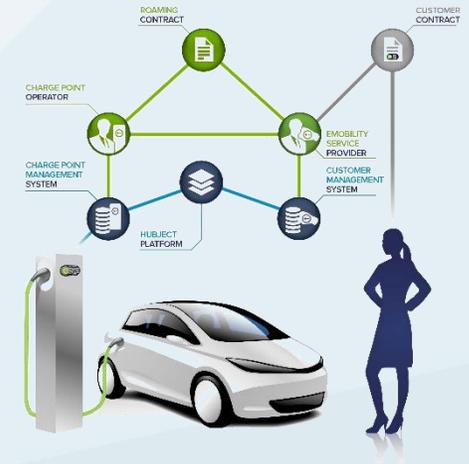


Since January 2017 the Volkswagen Group became a shareholder of Hubject



2012 Foundation	300 Partners
3 Continents	24 Countries
40 Employees	55.000 Charge points

- Since 2012, Hubject has been connecting different market players in order to create a digital and cross-border charging network for electric vehicles – the interchange network.
- Hubject's portfolio addresses:
 - Charge point operators
 - Emobility service providers
 - Energy suppliers
 - Fleet operators
 - Car sharing companies
 - Service card providers
 - Automotive manufacturers



IONITY: The pan-european high-power-charging network enabling e-mobility on long-distance routes

High-powered DC charging network for battery electric vehicles (BEV) covering long-distance travel routes in Europe



400 ultra-fast charging sites planned in Europe with an average of 6 charge points per station; distance between stations ~ 120km

Power levels up to 350 kW significantly reduce charging time compared to available systems

Installation of 20 stations in various European countries in 2018; full deployment by 2020

IONITY



Cooperation with several partners such as Tank & Rast, Circle K, OMV, Enel

Network is based on the Combined Charging System (CCS) standard which uses a connector that is fully compatible with most current and next generations BEVs

Latest news from our HPC Joint Venture IONITY

IONITY opens its first charging station in Switzerland

May 30, 2018

- Station is based in Neuenkirch near Lucerne on the A2 motorway (key north-south transit route)
- station is equipped with six high performance chargers
- support vehicles equipped with the CCS charging system



A61 Brohltal Ost: operations start with welcome offer

April 17, 2018

- IONITY has announced that it is commencing operations at its Brohltal-Ost site (Rhineland Palatinate)
- Drivers of an EV fitted with a CCS charging plug are welcome to use the station free of charge until May 31, 2018.

DESIGN CONCEPT - IONITY hedges its bets on futuristic form language

March 05, 2018

- At the Geneva International Motor Show, IONITY has revealed the design concept for its HPC network in Europe
- Simple structures and surfaces, smart interfaces and a mixture of robust lightweight materials merge together into a seamless 'charging experience'



Electrify America: Powering electric mobility from coast to coast and everyday stops in between

Investment of \$2 billion over the next 10 years in Zero Emission Vehicle (ZEV) infrastructure and education programs in the U.S.

Open network for all (even non VW Group) OEMs and business partners

Highway sites every 70 miles on average, but no more than 120 miles apart, so shorter range ZEVs available today will be able to use this network

1st cycle:
We will establish a network of ~4,700+ non-proprietary electric vehicle chargers in 17 metros and on highways in 39 states



Station chargers will be extremely powerful, capable of delivering 150 kW or 350 kW to vehicles

Public access for all ZEV drivers will be ensured through multiple technologies (Level 2 and DC fast charging: CCS Combo and Chademo connectors)

Ongoing process also at Electrify America

Electrify America Announces Partnerships to Install Ultra-Fast Electric Vehicle Chargers

April 23, 2018

- Installation will take place at more than 100 major retail, convenience and refueling locations in the United States
- Partners include Target Corporation, Brixmor Property Group, Kimco Realty Corporation, Sheetz, Casey's General Stores, DDR Corporation, and Global Partners LP's Alltown



Electrify America Installing Electric Vehicle Chargers at more than 100 Walmart locations

April 18, 2018

- Charging stations will feature Electrify America's DC 350kW Fast Charger
- "The expansion of Walmart's electric vehicle charging facilities with our ultra-fast charging systems will provide consumers with a quick and convenient way to charge their vehicles in the time it takes to make their Walmart purchases." (EIAm CEO Mark McNabb)



Electrify America selects ABB, BTC Power, Efacec and Signet as charging equipment suppliers

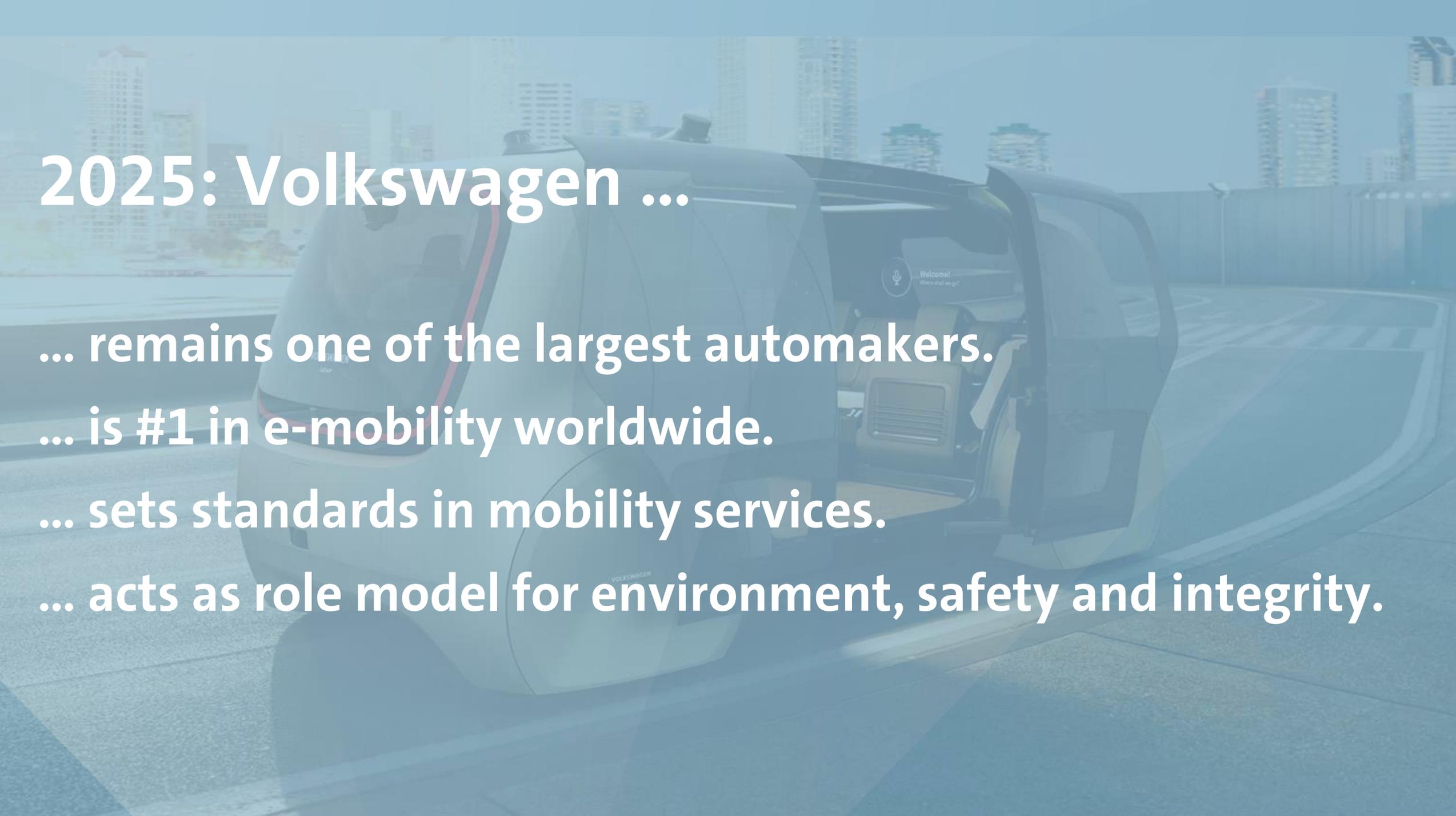
April 17, 2018

- DC Fast Chargers to provide charging speeds of up to 20 miles of range per minute

From strategy to reality



2025: Volkswagen ...



... remains one of the largest automakers.

... is #1 in e-mobility worldwide.

... sets standards in mobility services.

... acts as role model for environment, safety and integrity.