



CHAdemo

CHAdemo global footprint and advantages

Munich, 17 October 2017

Uwe Likar

CHAdemo Europe

Presentation plan

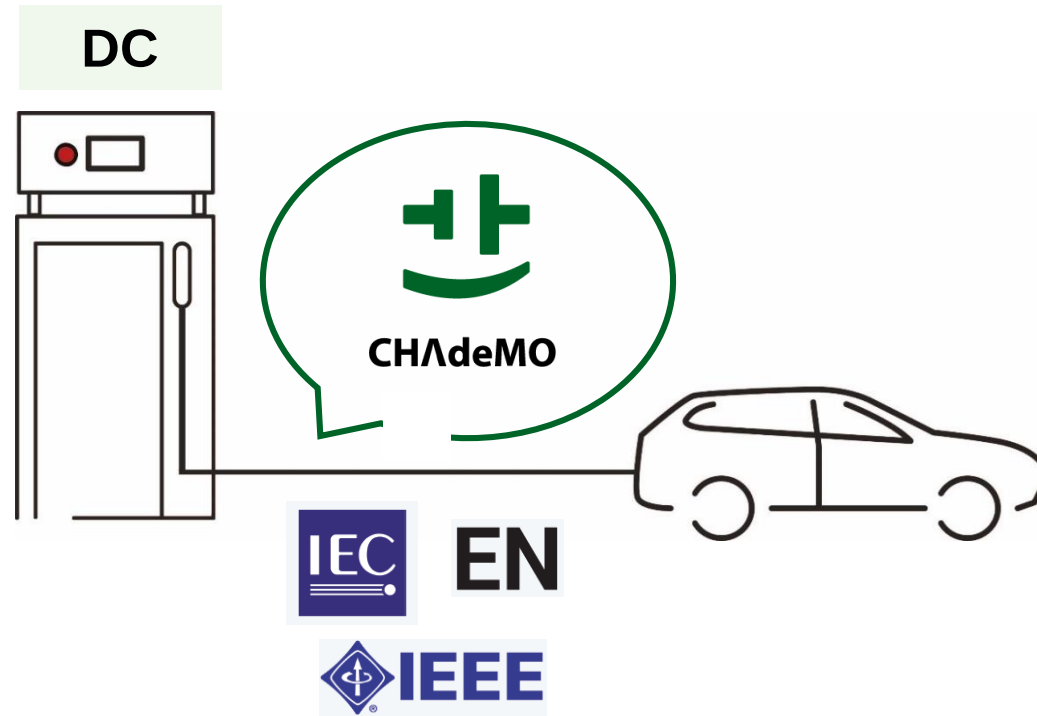
- What's CHAdeMO?
 - What's CHAdeMO?
 - History
 - Members
- CHAdeMO global footprint
 - Charger installation
 - EV market
- CHAdeMO advantages
 - Technical advantages
 - Certification
 - Future-proof features (high power / V2X)



What's CHAdeMO?

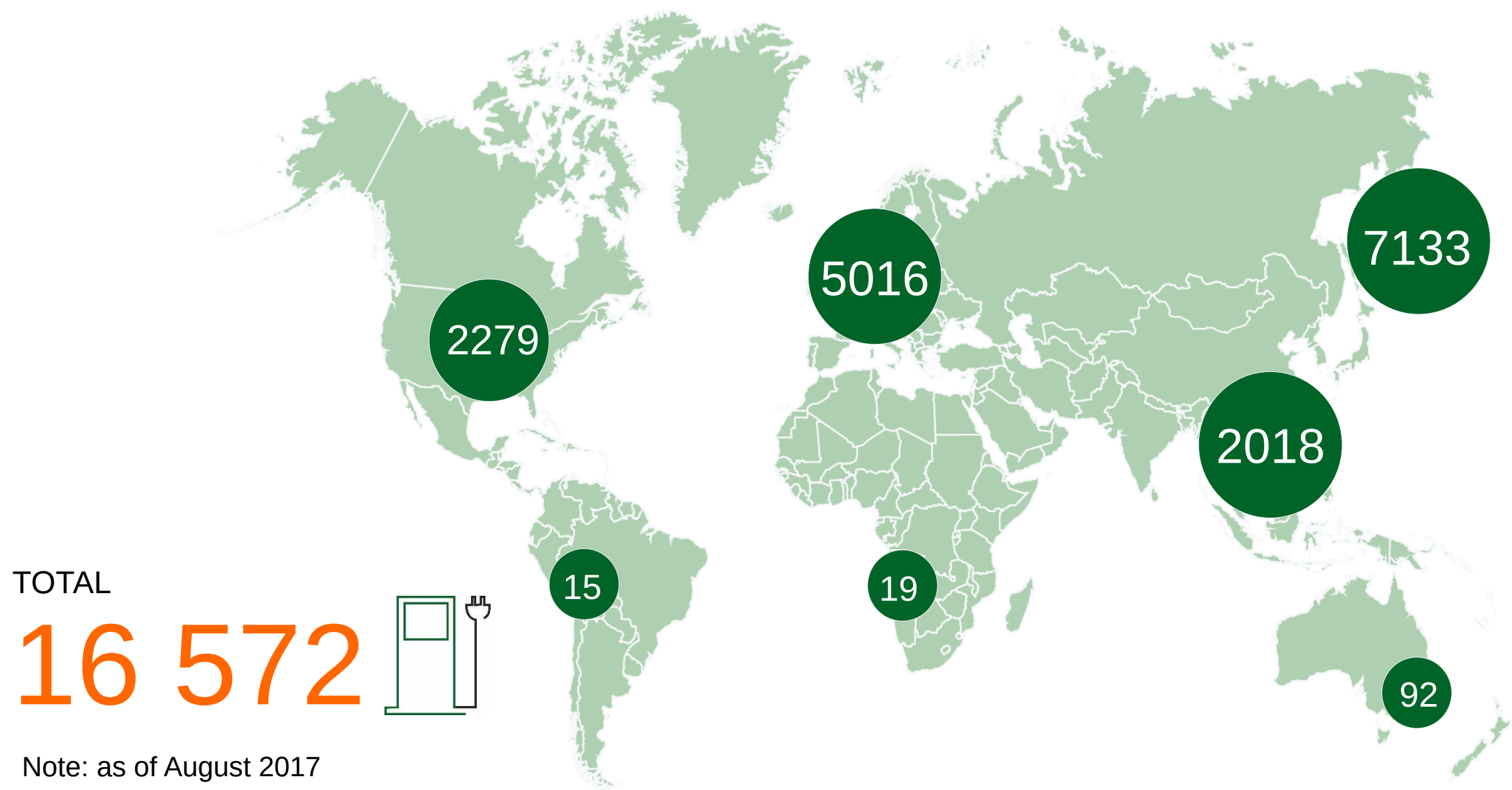
360
members

36
countries

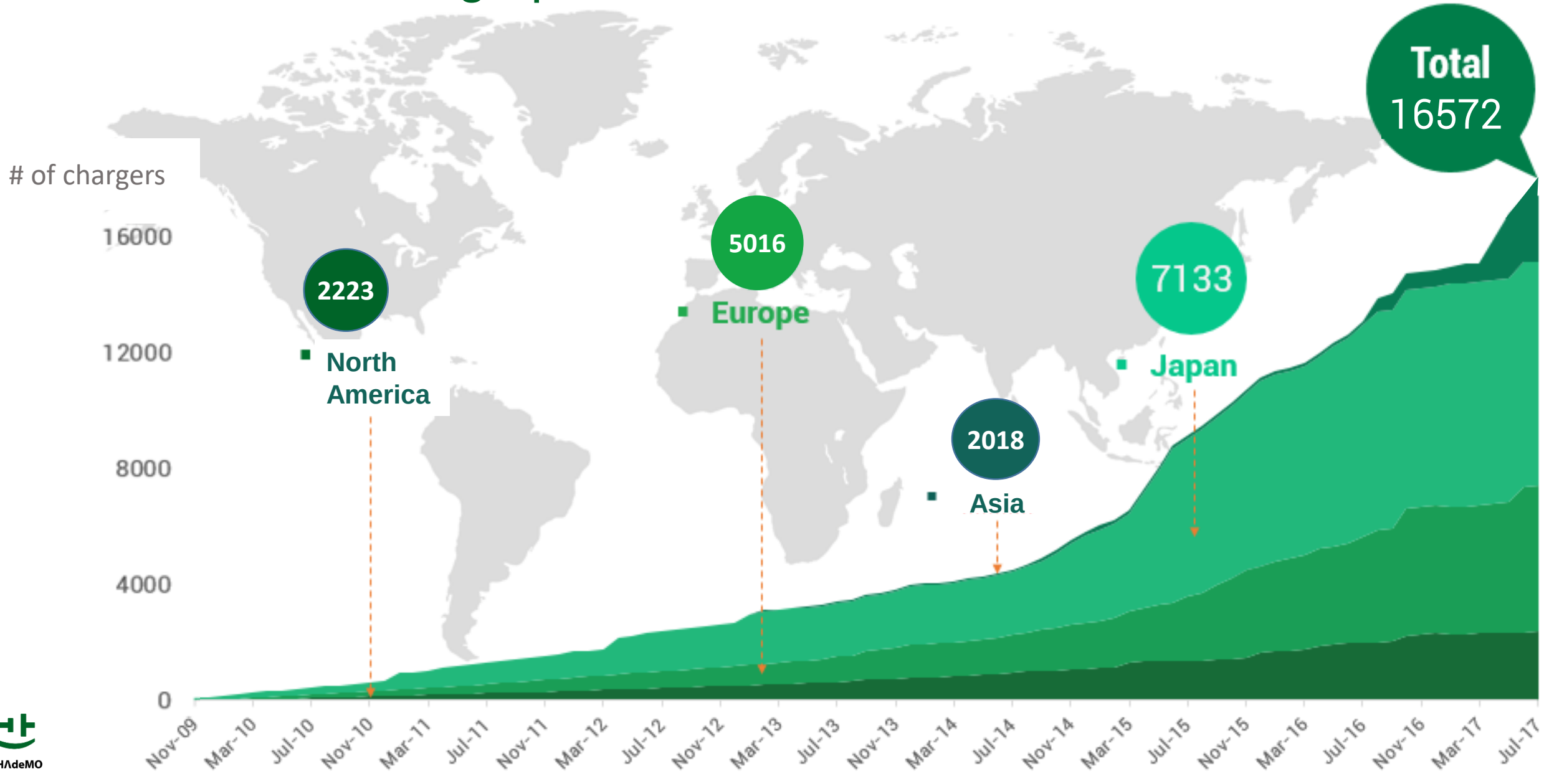


And many more..

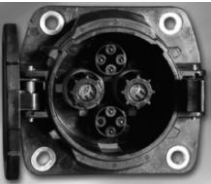
CHAdEMO global installation



CHAdemo charge point evolution



DC fast charging systems

	CHAdeMO (Japan)	CCS Combo1 (US)	CCS Combo2 (DE)	GB/T (PRC)	TESLA
Connector					
Vehicle Inlet					
 	✓	✓	✓	✓	
 	✓	✓ (SAE)			
 	✓		✓		Multistandard is the de-facto standard in Europe
 	✓	✓	✓	✓	
 				✓	
Max Power	200kW 600Vx400A	120kW 600Vx200A	200kW 1kVx200A	185kW 750Vx250A	?
Real-world Usage	50kW	50kW	50kW	50kW	120kW

CHAdemo EV/PHEVs



Nissan: LEAF



Mitsubishi:
Outlander PHEV



Citroen: C-Zero



Toyota: Prius PHV



Peugeot:iOn



Nissan: e-NV200



Tesla: Model S/X
(with adapter)



Peugeot:
Partner Tepee



Citroen: E-Berlingo



Peugeot: Partner



KIA: Soul



Mitsubishi:
i-MiEV



Mitsubishi:
MINICAB-MiEV



Subaru:
Plug-in Stella



Mahindra: e2o



GLM:
Tommykaira
ZZ



Mazda: Demio EV



Honda: Fit EV



Toyota: eQ



Mitsubishi:
MINICAB-MiEV



BD Otomotiv:
eSCUDO



LEVC:TX

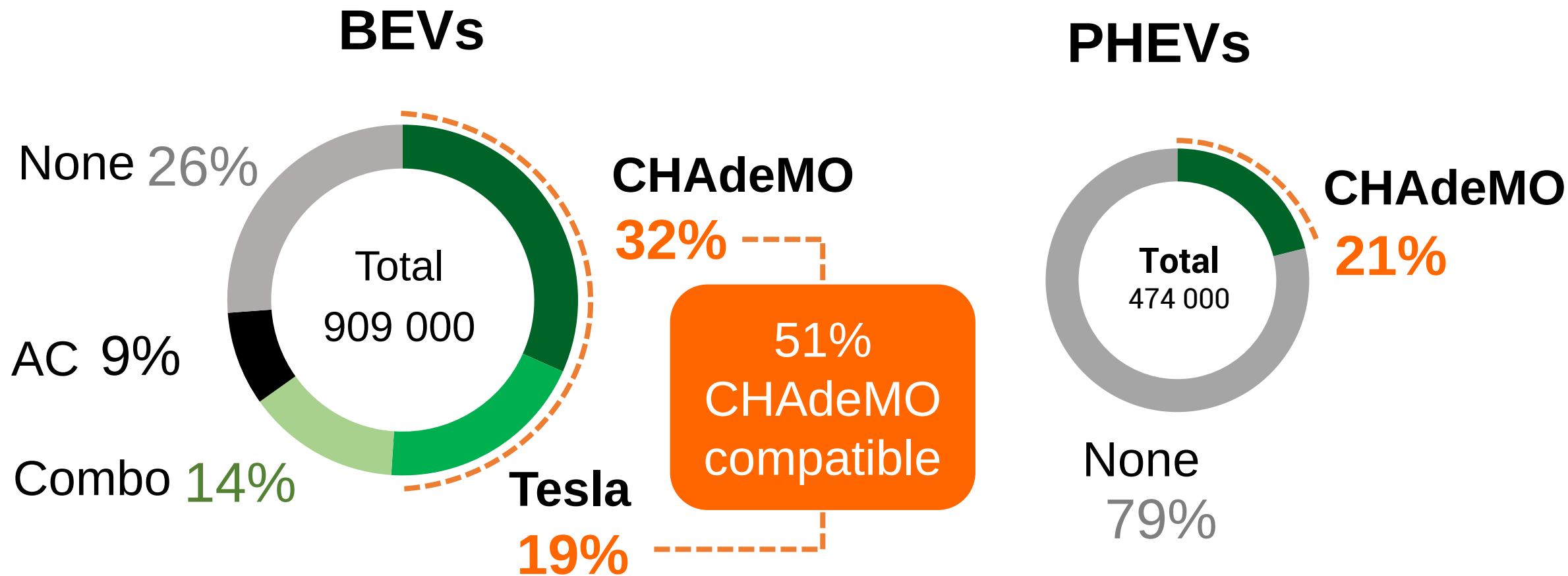


Bollinger:
B1

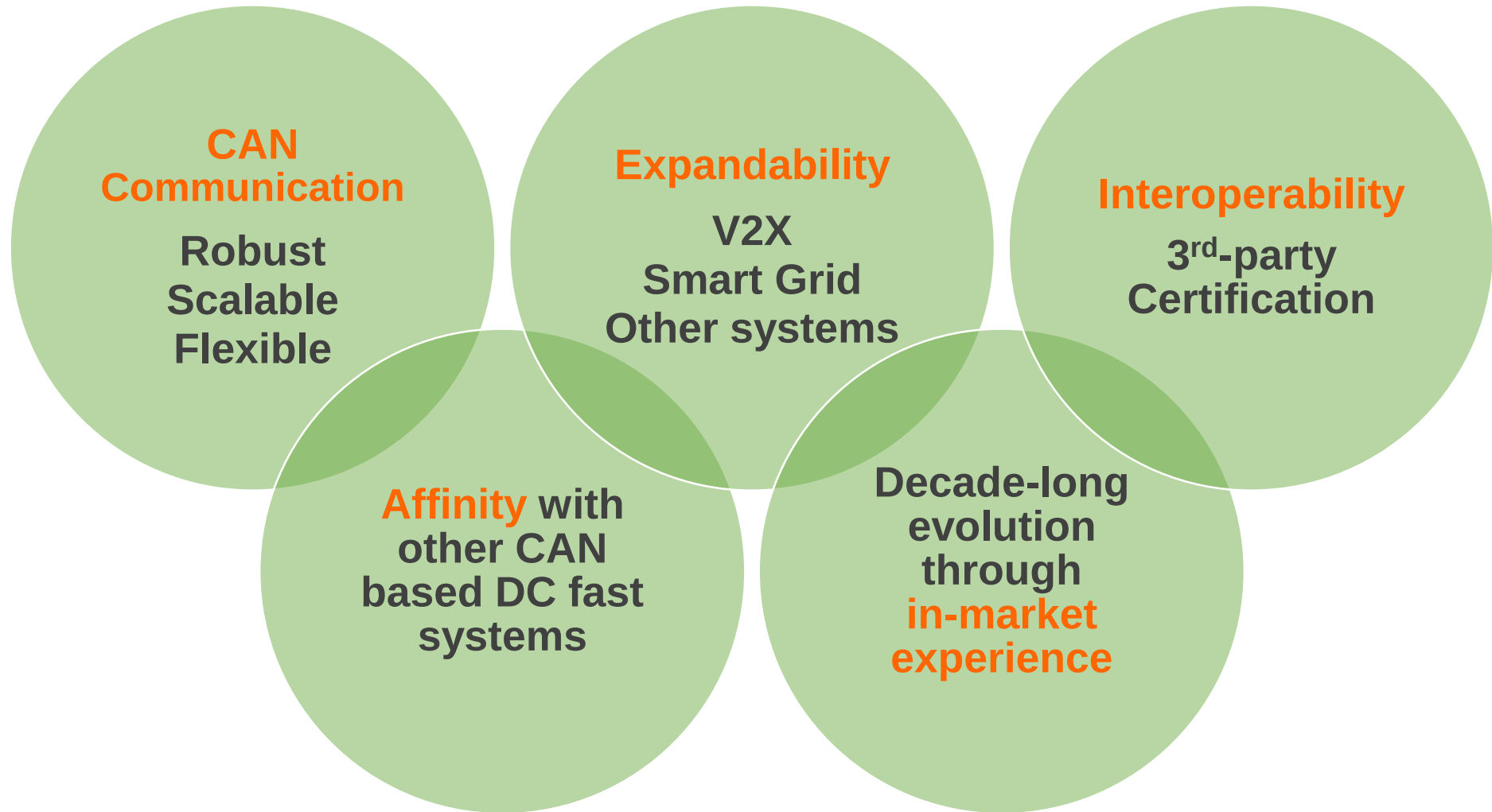


Hyundai:
Ioniq

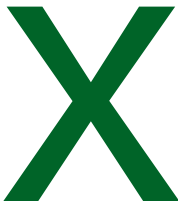
CHAdeMO global fast charging inlet share (ex-China)



CHAdeMO Advantages



Importance of certification



50

CHARGER
MANUFACTURERS

230⁺

CERTIFIED
CHARGER
MODELS

20

AUTOMAKER
MEMBERS

400K⁺

EV/PHEVS WITH
CHADEMO

CHAdeMO certification system



- Unique **third-party** certification
 - Transparent and fair

JET

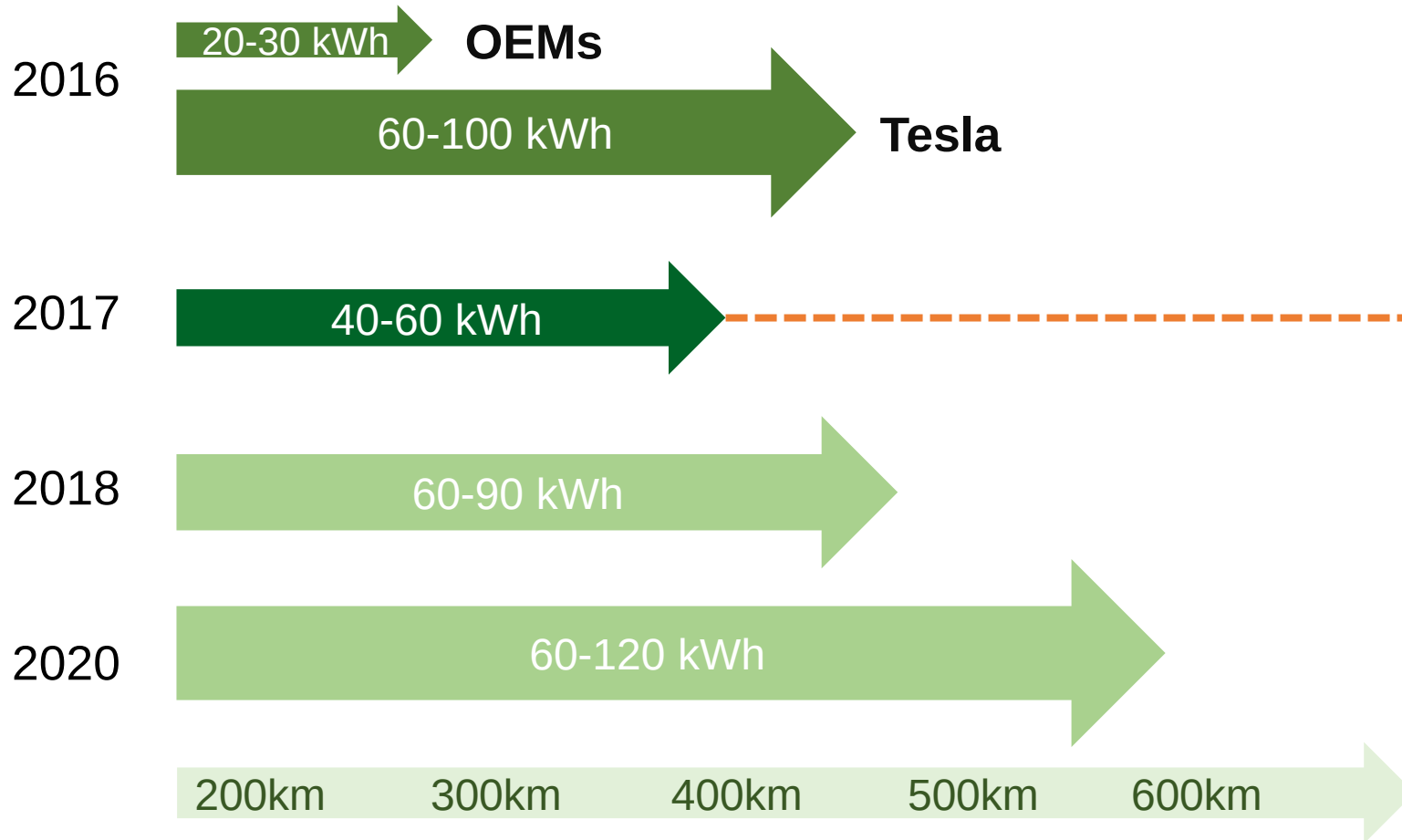


Applus[®]
IDIADA

CHAdeMO Certification Committee members

- Going **international** and **local**
 - China, USA, India and more
 - Respecting local requirements

Future-proofing CHAdeMO: Battery size evolution and autonomy



2017 European market entries:

Renault ZOE:

- AC fast
- 41 kWh
- 300 km



Opel Ampera-E:

- CCS
- 60 kWh
- 380 km



Tesla Model-3:

- Proprietary
- 50-70 kWh
- 350-500 km



Nissan LEAF:

- CHAdeMO
- 40 kWh
- 378 km



Future CHAdeMO with full backward compatibility


200_{kW}
(500V x 400A)
PUBLISHED


400_{kW}
(1000V x 400A)
UNDER STUDY

2016

2017

2018

- 200kW specifications final draft

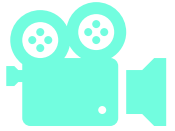
- **Standard published**
- **200kW connection tests and demonstration**

- First product expected

- 400kW draft specifications to be shared with members

...Depends on the location!

More variation by destination type



- Lafon 24 kW DC Wallbox



- Delta 25 kW DC Quick Wallbox

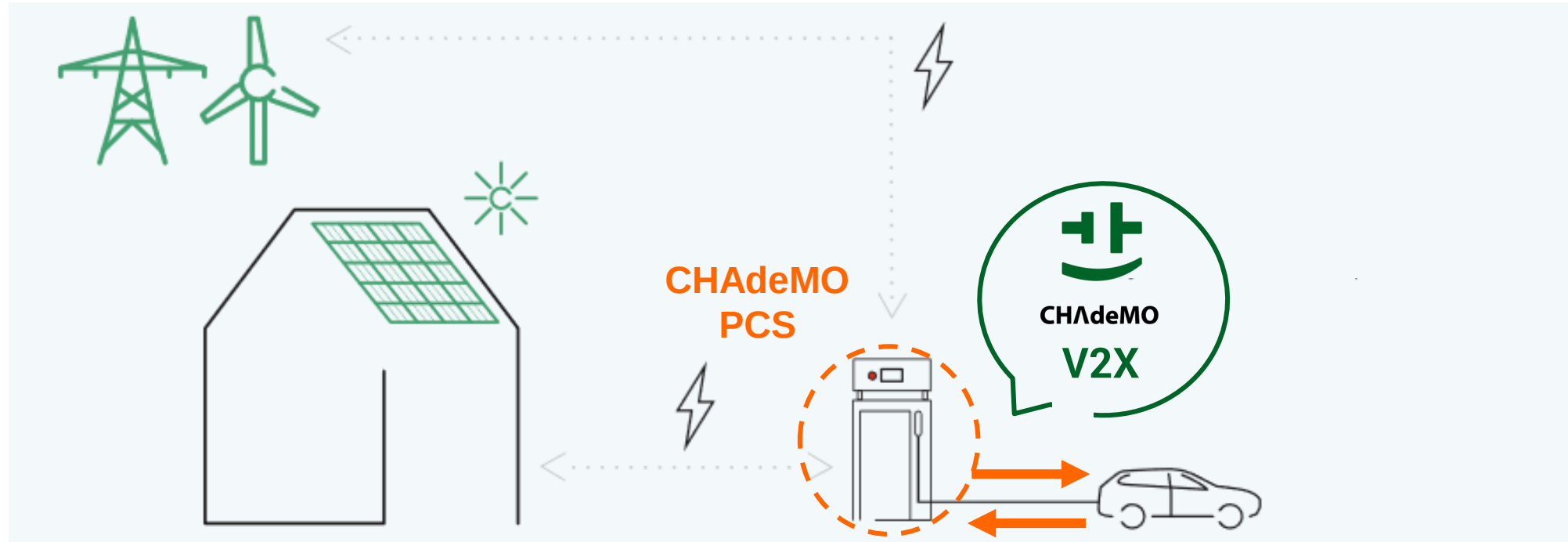


- ABB 24kW DC Wallbox



- CIRCONTROL 22 kW Quick Charger

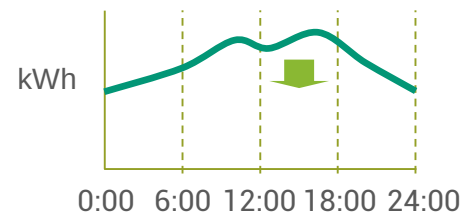
V2X: benefits



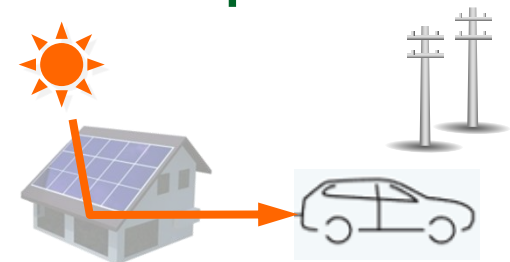
Back-up for blackout



Electricity peak shaving



Connecting with solar power



CHAdeMO V2X products on the market

V2V
(Vehicle)



V2L
(Load)



V2H
(Home)



V2H/G
(Home/Grid)



V2B/G
(Building/Grid)

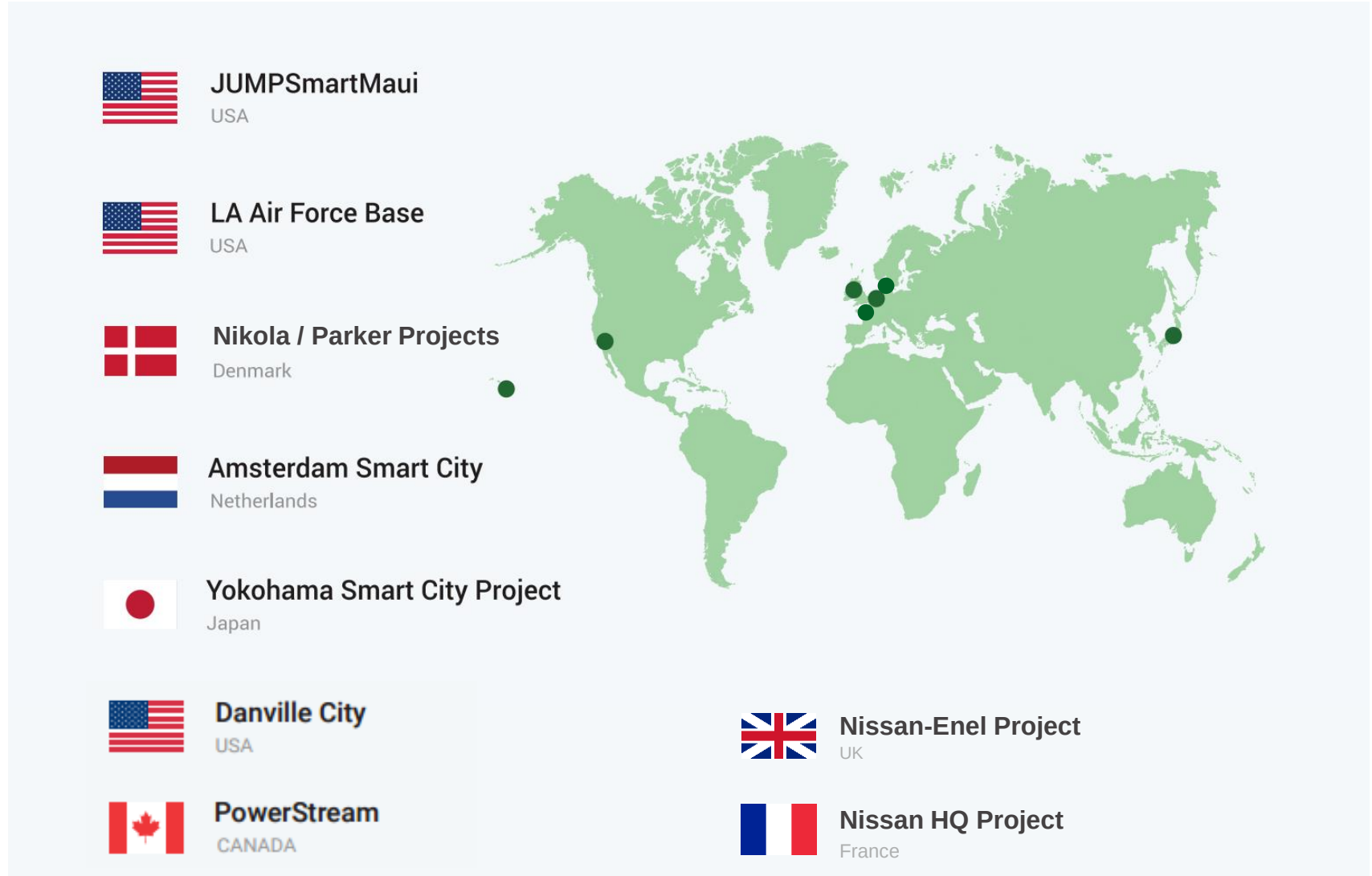


V2G
(Grid)



V2X PROJECTS

Examples



V2X: business applications



- Grid integrated vehicle fleet
- Frequency regulation to Danish TSO
- V2G hub generating 1000€-1400€ /EV/yr



Source: <http://parker-project.com/>



THE MOBILITY HOUSE

- Bi-directional charging w/ PV integration
- Independent self generation / consumption



Source: <http://www.mobilityhouse.com/>

Summary:

- CHAdeMO is the leader in fast charger installation and EV market share
- CHAdeMO has a number of advantages including compatibility
- CHAdeMO is future-proof
 - High power: 200kW → 400kW
 - Medium power
 - V2X



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