



CHAdEMO

The CHAdEMO Story

Stuttgart, 11 October 2017

Takafumi ANEGAWA

March 15, 2010, CHAdeMO association was founded



March 11, 2011, Great East Japan Earthquake



March 12, 2011, Geneva Motor Show



Oslo Norway



Talin Estonia



CHAdeMO Today Association members

350

GLOBAL MEMBERS

36

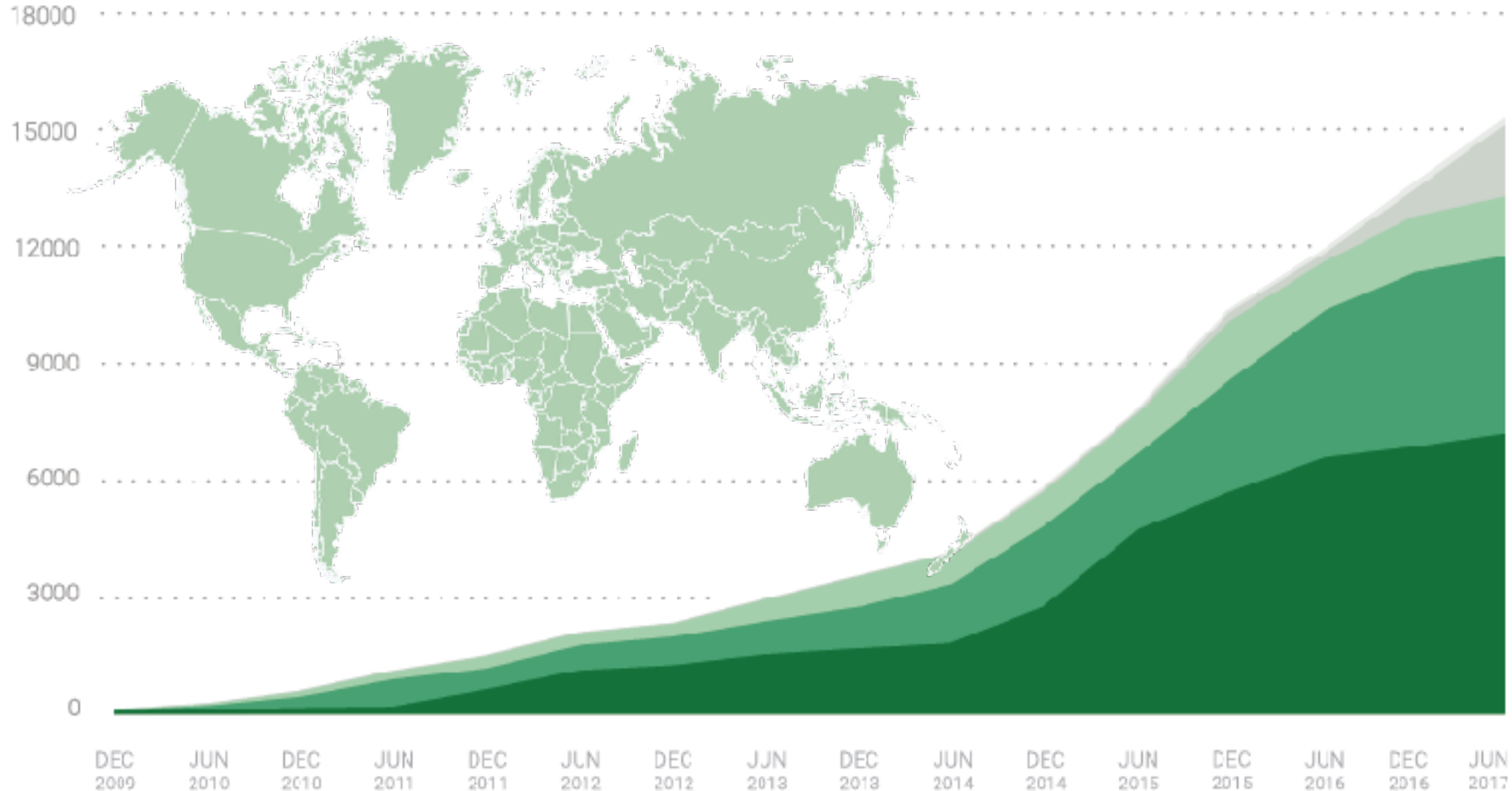
COUNTRIES



CHAdeMO Today

Charge point evolution

of connectors



Global
16500

2000

Asia

2300

North
America

5100

Europe

7100

Japan

CHAdeMO Today EV/PHEVs



Nissan: LEAF



Mitsubishi:
Outlander PHEV



Citroen: C-Zero



Toyota: Prius Plug-in Hybrid



Peugeot: iOn



Nissan: e-NV200



Tesla: Model S/X
(with adapter)



Citroen: e-Berlingo



Peugeot: Partner



KIA: Soul



Mitsubishi:
i-MiEV



Mitsubishi:
MINICAB MiEV



Subaru:
Plug-in Stella



Mahindra: e2o



Mazda: Demio EV



Honda: Fit EV



Toyota: eQ



Mitsubishi:
MINICAB MiEV



BD Otomotiv:
eSCUDO



LEVC TX

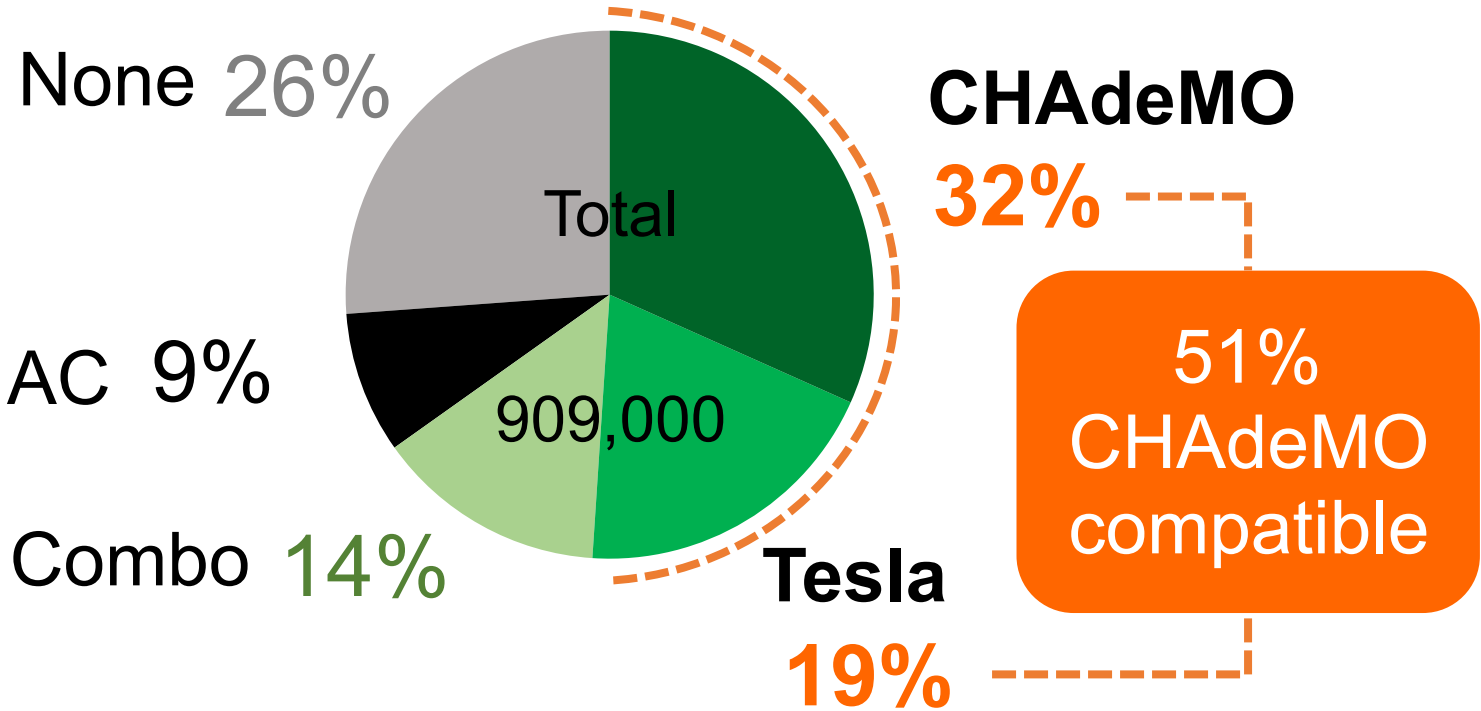


Dollinger:
B1

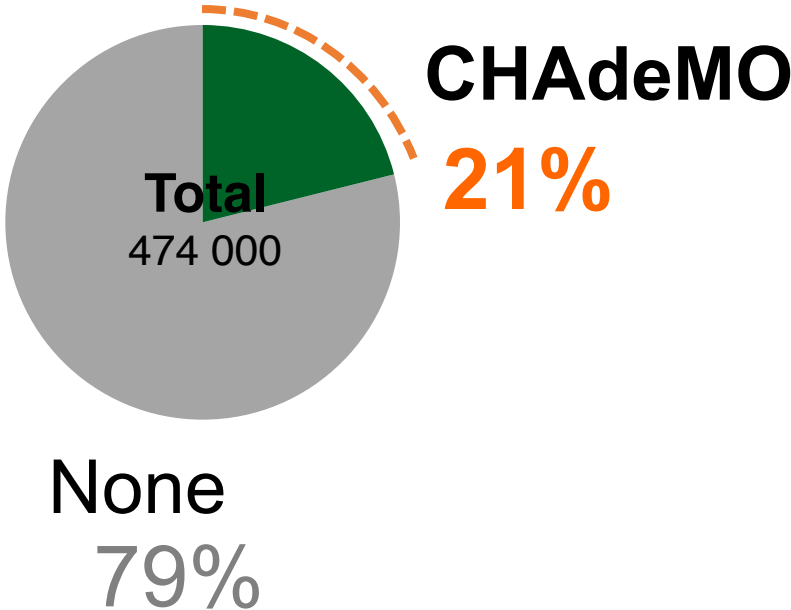
CHAdeMO Today

Global fast charging inlet share (ex-China)

BEVs



PHEVs

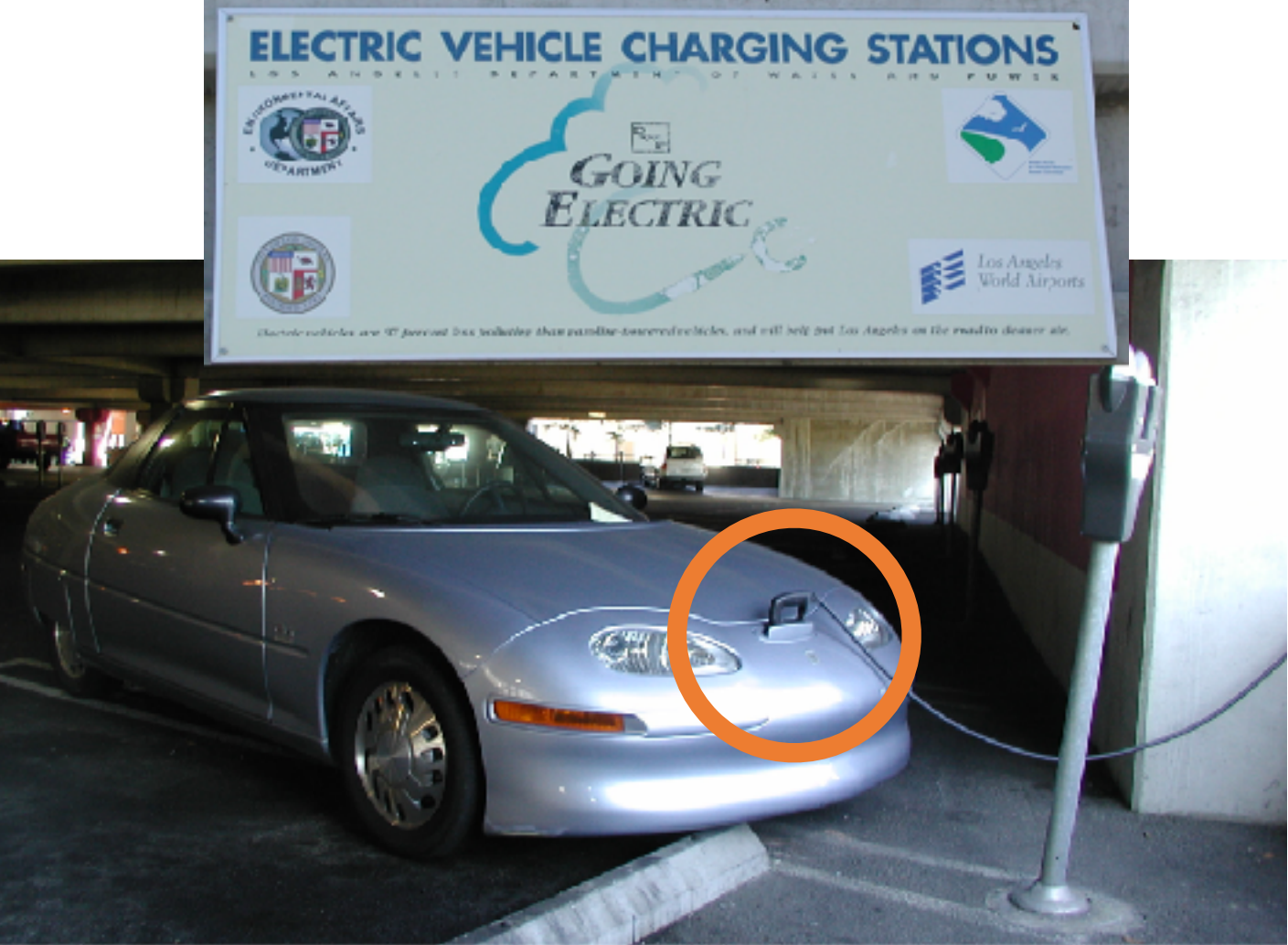


Source: IHS Automotive; 2010-2016 cumulative data; passenger vehicles only

I appreciate you all
for great contribution!



2001, GM EV1 at Los Angeles Airport



Inductive Connector



2001, at EVAA in Sacramento California



Conductive Connector

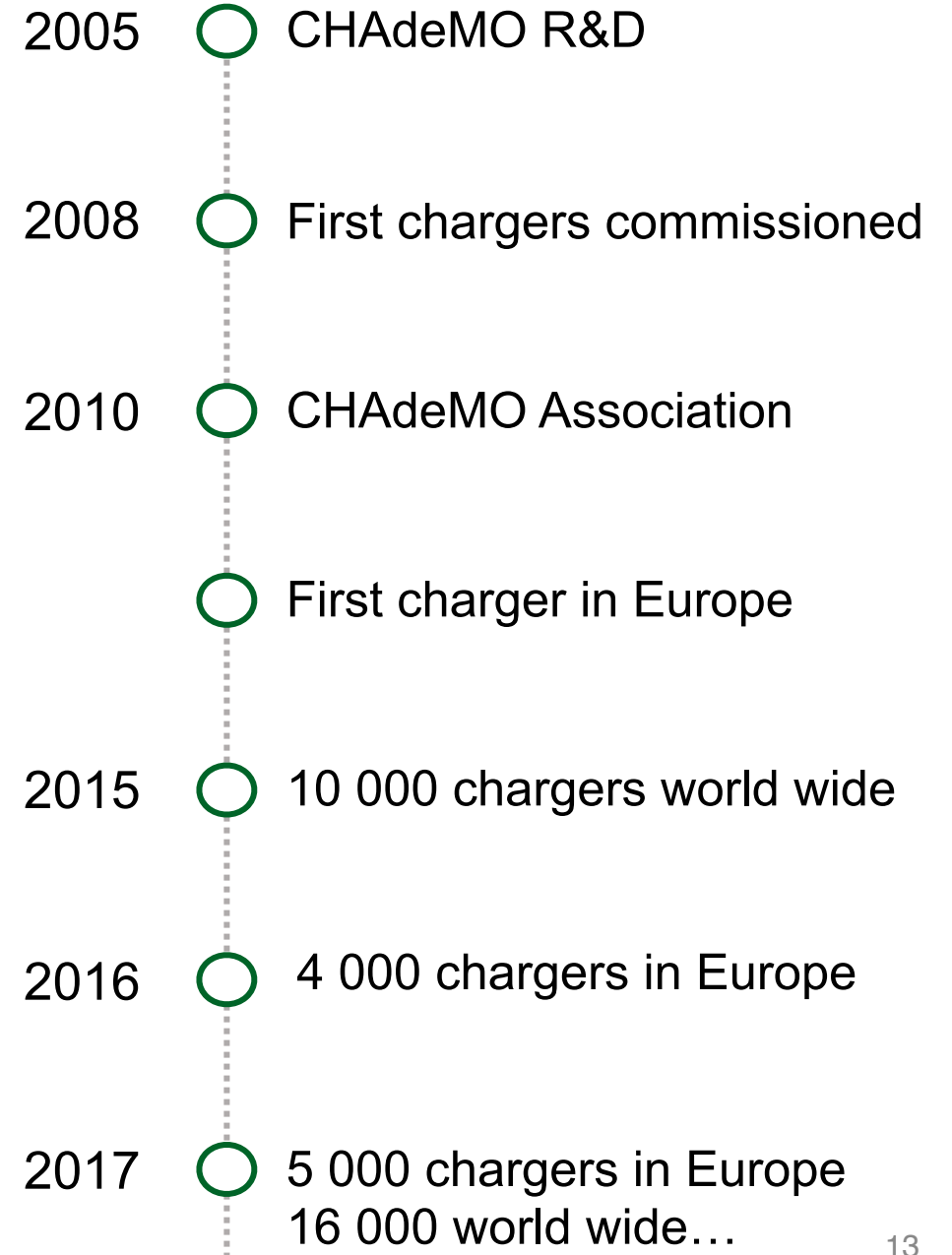


Consortium with history of trust

Consortium of stakeholders



- OEMs
- Charger manufactures
- Power distributors
- Charger operators
- IT/ communication
- Installers
- Certification bodies
- R&D
- Municipalities
- ...



Consortium with history of trust

2006.11

Prototype EV and charger



2008.10

First installation in public area



Consortium with history of trust

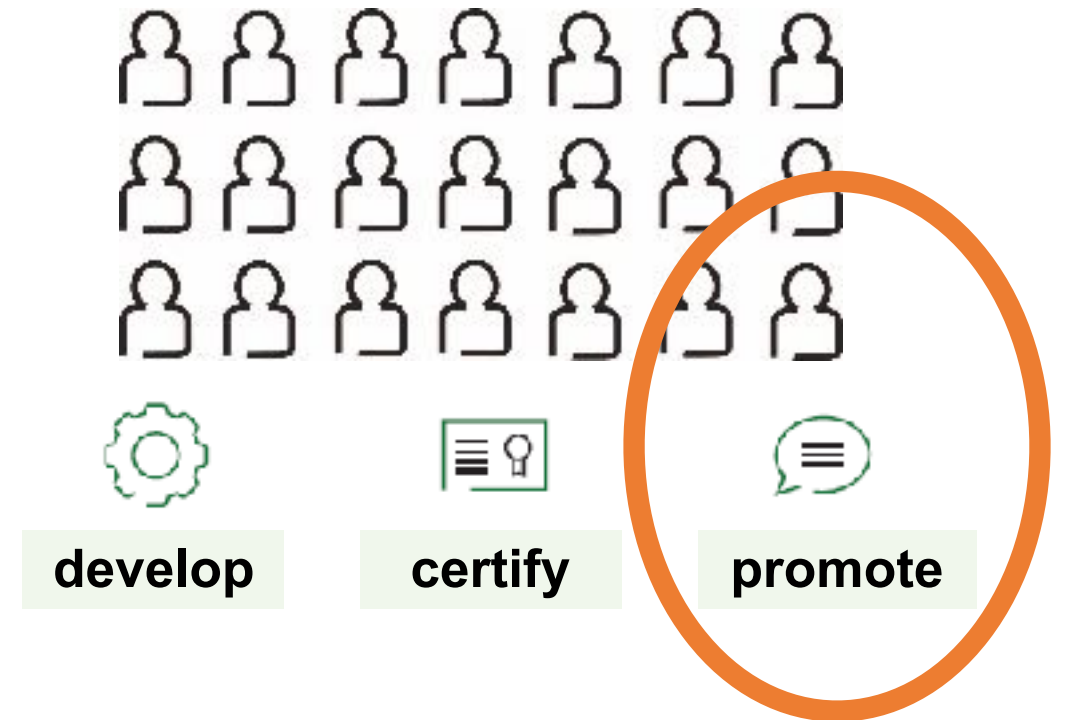
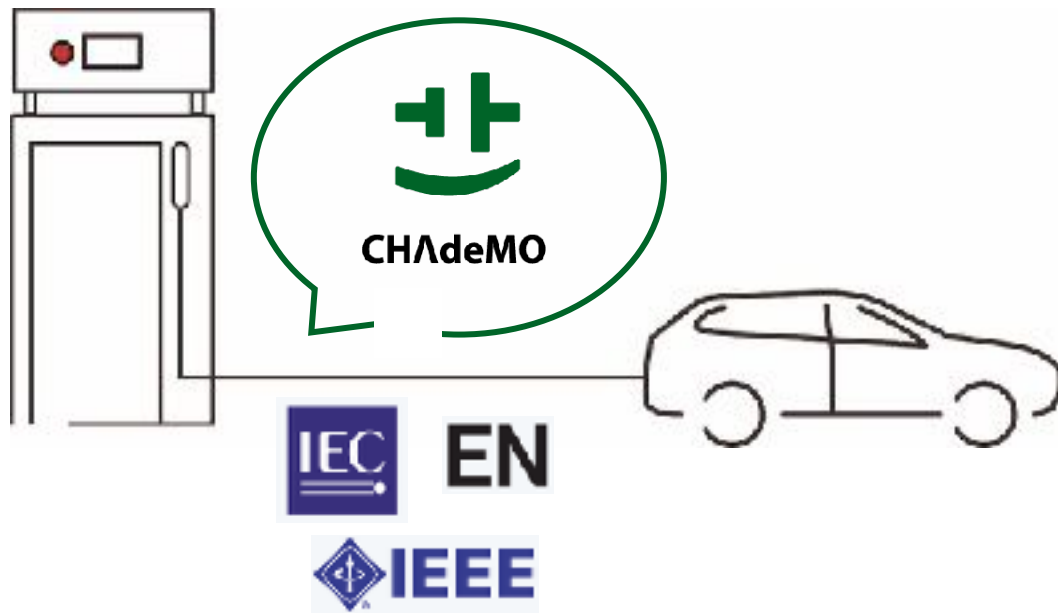
2010.12 Efacec charger in Lisbon



2013.5 SGTE charger in Lillstrom



WHAT is an objective of CHAdeMO?



Charging process is controlled by EV in CHAdeMO

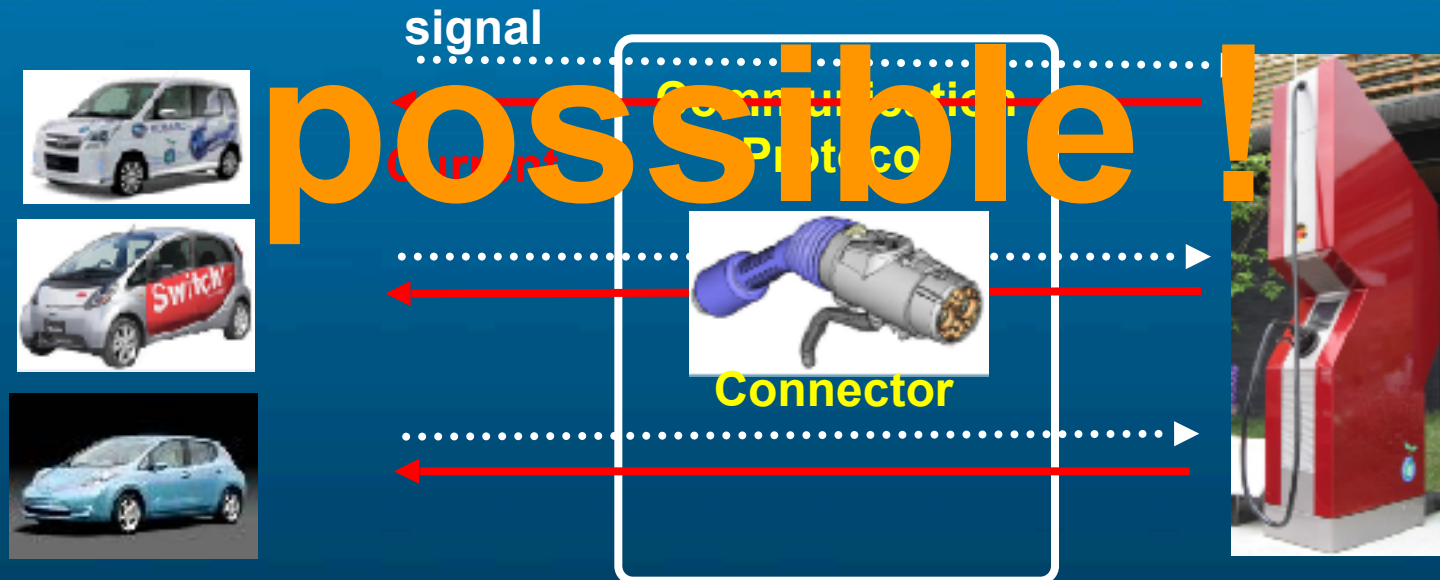
Problems:

- Battery improvement is so fast that it's **difficult to catch up every batteries' data**.
- Standardization to meet lowest speed battery disturbs battery improvement.

How CHAdeMO charger works

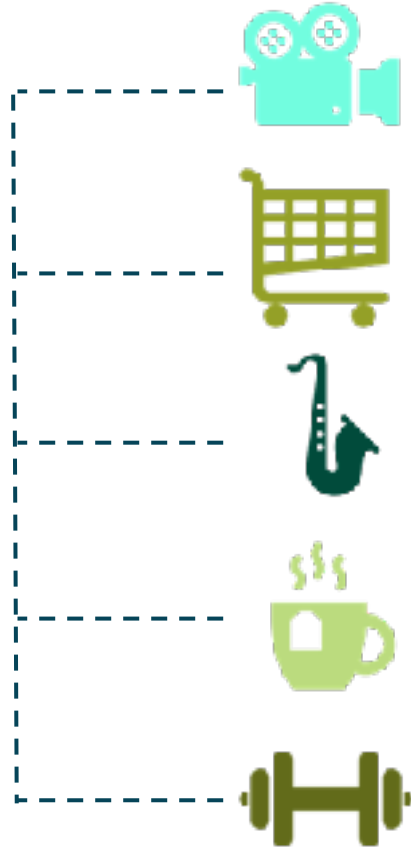
- **EV computer unit decides** charging speed based on BMS observation.
- Charging current signal is sent to charger using CAN bus.
- Charger supplies DC current following the request from EV.

**Keep it flexible
as much as
possible!**



Diversifying products for diversifying charging needs

Semi-fast charger product examples



- Lafon 24 kW DC Wallbox



- Delta 25 kW DC Quick Wallbox



- ABB Terra 23 CJG 20 kW





- CIRCONTROL 22 kW Quick Charger

High power CHAdeMO with full backward compatibility

High Power

High Voltage


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


400_{kW}
(1000V x 400A)
IN THE MAKING



- 200kW specifications final draft

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

- First product expected

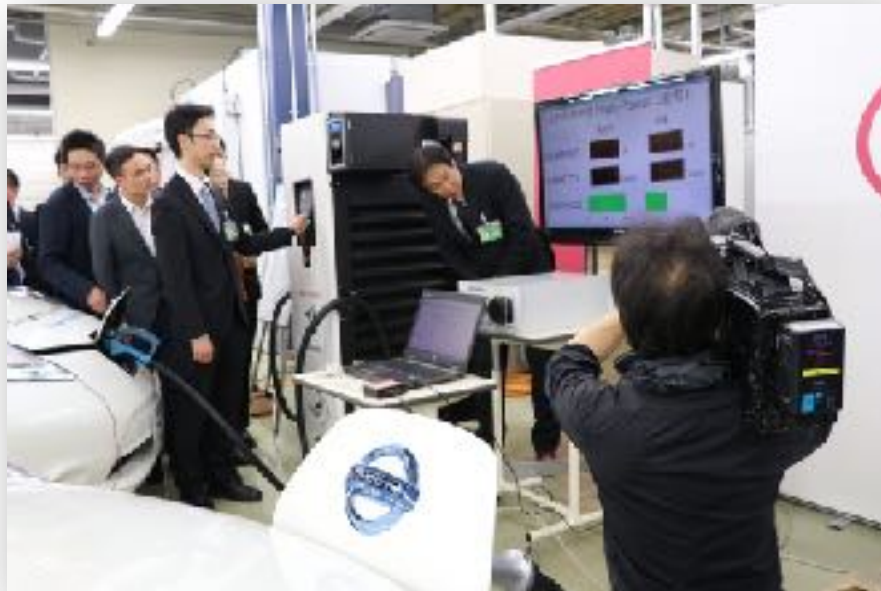
- 400kW draft specifications to be shared with members

High power charging test/demo

High Power

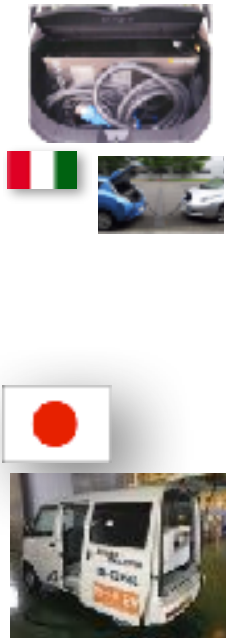
Connection tests in Ise, Japan (03/2017)

- 8 OEMs (5 Evs) and 7 charger makers (3 chargers)
- 250-310A/100+kW



CHAdeMO V2X products on the market

V2V
(Vehicle)



V2L
(Load)



V2H
(Home)



V2H/G
(Home/Grid)



V2B/G
(Building/Grid)



V2G
(Grid)



All possible with CHAdeMO!



VPP
DR



OFFICE/HOME
CHARGING

Lower
Power

Billing
Authentication
PnC

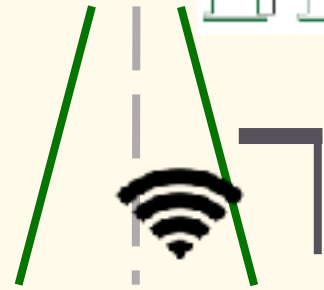
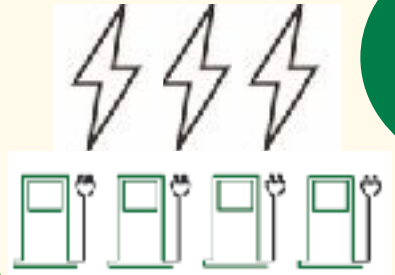


DESTINATION
CHARGING



High
Power

High
Voltage



Dynamic
Wireless
Pantograph

PATHWAY
CHARGING

Vehicles
of all size




Geographic
diversity

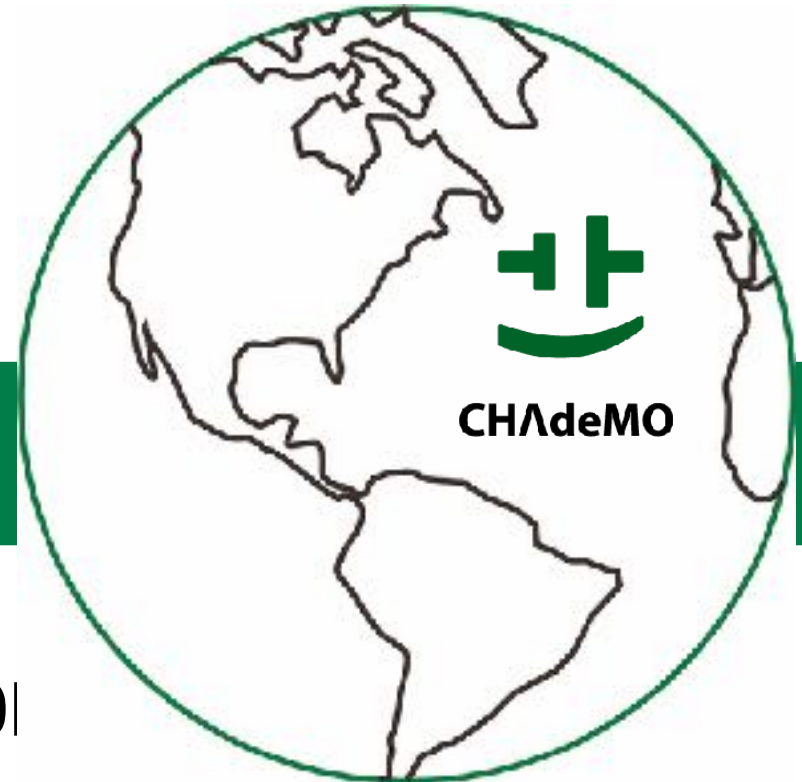


Summary:

- CHAdeMO is a leader in fast charger installation and EV market

Thank you all for great contribution!

- CHAdeMO ensures interoperability
 - 20kW →  → 200kW → 400kW
 - V2X
 - By core protocol flexibility and members' contribution



CHAdeMO

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Let's keep flexibility to support EVs and EV users!

CHAdeMO V2V EV rescue EV



Electric Ship (Tokyo University of Marine Science and Technology)

