



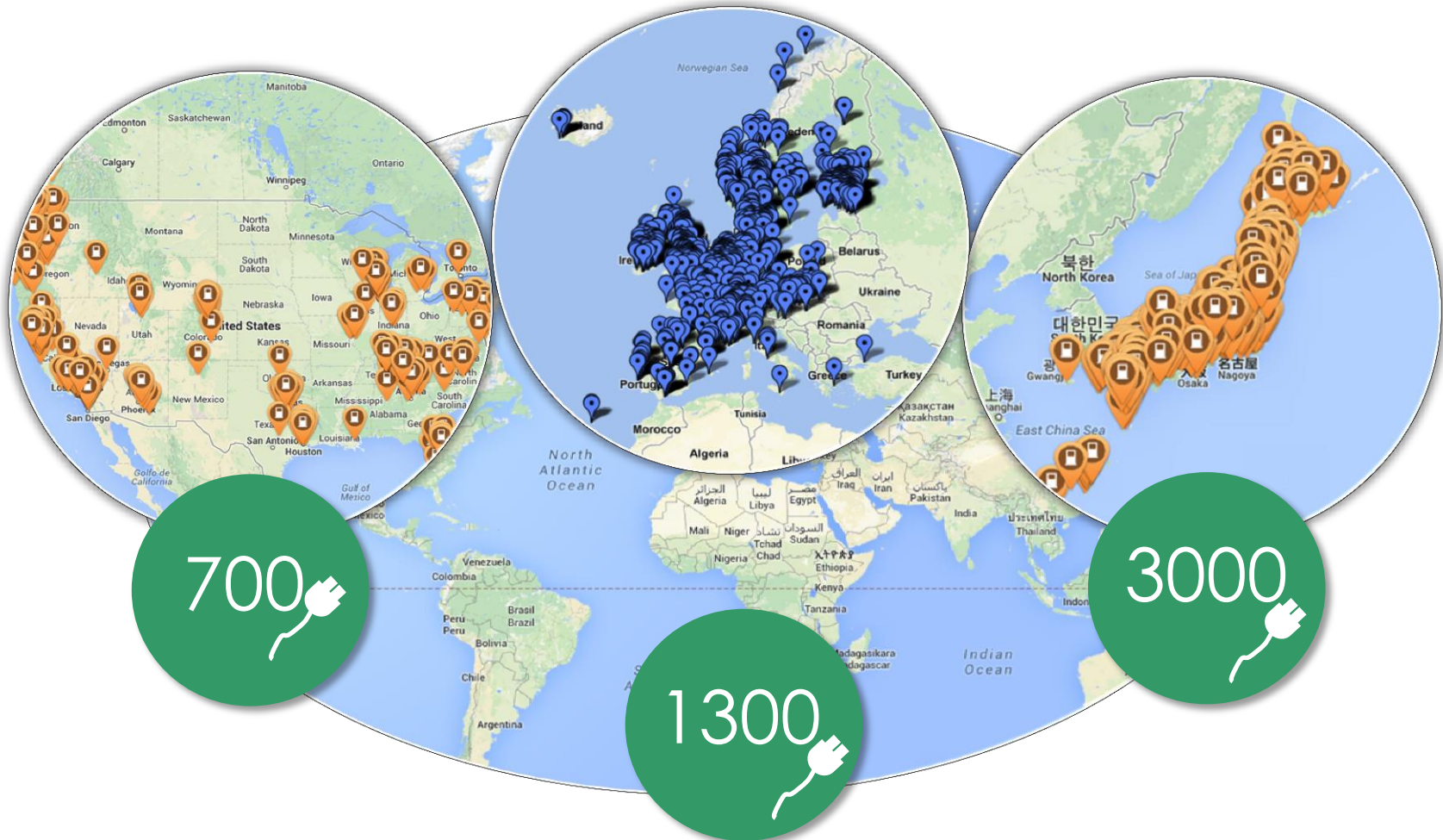
CHAdemo Europe Annual Member Meeting 5

CHAdemo Association
Munich, 23 October 2014

CHAdEMO global installation



- Around 5,000 CHAdEMO chargers are installed in the world



Note: as of September 2014

Programme Overview (1/2)



■ CHAdeMO Europe Annual Member Meeting

- 09:00 **Registration**
- 09:15 **Introduction: meeting overview** by Tomoko Blech, CHAdeMO Europe
- 09:20 **IEC / EN standardisation** by Takeshi Haida, CHAdeMO Technical Group
- 09:35 **EU directive update** by Tomoko Blech, CHAdeMO Europe
- 09:50 **Third-party certification updates** by Klaus Kersting, IDIADA
- 10:05 **EU-Japan joint technical workgroup activities** by Tomoko Blech, CHAdeMO Europe
- 10:15 **CHAdeMO V2H extension** by Tomoya Imazu, CHAdeMO Technical Group
- 10:35 **CHAdeMO adapter for Tesla Model S** by Enric Asuncion, Tesla Motors
- 10:50 **Adapter demo** by Enric Asuncion, Tesla Motors (outside)
- 11:00 Coffee break
- 11:20 **CHAdeMO Europe strategy discussion** by all participants
- 12:00 **Networking Lunch**

■ (PM Option 1: Regular Member only) CHAdeMO Technical WG Seminar: Intro to CHAdeMO 1.0

- 13:00 **Afternoon session 1: CHAdeMO 1.0 and certification tips***
- 14:40 **Coffee Break**
- 15:10 **Afternoon session 2: CHAdeMO V2H extension***
- 16:30 **Final remarks and aperitifs**

Note: Networking lunch, coffee break and final remarks & aperitifs will be together with Fast Charging Europe Conference

* The technical discussion topics shall cater to the participants' needs

Programme Overview (2/2)



■ (PM Option 2: Open to public) Fast Charging Europe Conference

- **Keynote:** Running the biggest charger network in Europe by Simon Crowfoot, Managing Director, Electric Highway, Ecotricity
- **Session 1: Policy makers and municipalities on fast charging**
 - EVs and fast charger usage in Norway by Asbjørn Johnsen, Senior Principal Engineer, Transnova
 - How the UK became the country with the biggest number of fast chargers in the EU by Michael Coe, Office for Low Emission Vehicles (OLEV), UK Department for Transport
 - Barcelona's approach to fast charger planning by Angel Lopez, Program Director of Electric Vehicle, City of Barcelona
 - Best Practices from Japan: charge point planning for urban and suburban areas by Hiroyuki Aoki, CHAdeMO
 - Q&As
- **14:40 Coffee break**
- **Session 2: Charging operations and adjacent businesses**
 - Multi-system charger operations in Nordic countries by Markus Hökfelt, Head of Charge & Drive, New Businesses, Fortum HESS
 - Financing fast charging network via citizen participation by Gerald Simon, Head of Communications, Windenergie (W.E.B)
 - Rapid Charge Network (RCN): EU-funded multi-system charger corridor project by Anya Bramich, Marketing Manager, Zero Carbon Futures
 - ChargeMap: creating a reliable charger map with EV drivers by Yoann Nussbaumer, CEO, SAABRE
 - Q&As
- **16:30 Final remarks and aperitifs**

Note: Networking lunch, coffee break and final remarks & aperitifs will be together with Members-only Technical WG



IEC / EN standardisation

Takeshi Haida
CHAdEMO Technical Group



EU directive update

Tomoko Blech
CHAdEMO Europe

EU Directive on the deployment of alternative fuels infrastructure overview



OBJECTIVE

- To provide a general direction for the development of alternative fuels in the Single European Transport Area
- Binding targets
- Common technical specifications

PROCESS

- ✓ European Commission (Proposal)
- ✓ European Parliament (Plenary vote 15 April)
- ✓ Council of Ministers ^{New!} (Adopted 29 September)



- Entry into effect (Expected Fall 2014)

RESULT

- ✗ No binding targets
- ✓ Common technical specs to be applied 3 years after the law goes into effect

EU Directive final wording



- EU embraces multistandard chargers, aligning legislation with the market reality

Recital

- **15a**
 - Interface to charge electric vehicles could include several sockets outlets or vehicle connectors as far as one of them complies with Annex III.1.1 and 1.2, so as to allow **multistandard recharging**.
 - However, the choice for the EU **common** Type 2 and Combo 2 connectors for electric vehicles **should not be detrimental to Members States** having already invested in the deployment of other standardized technologies for recharging points **and should not affect existing recharging points** deployed before the entry into force of this Directive.
 - **Electric vehicles already in** circulation before the entry into force of this Directive should be able to recharge, even if they were designed to recharge at recharging points that do not comply with the technical specifications set out in this Directive.

Articles and Annexes

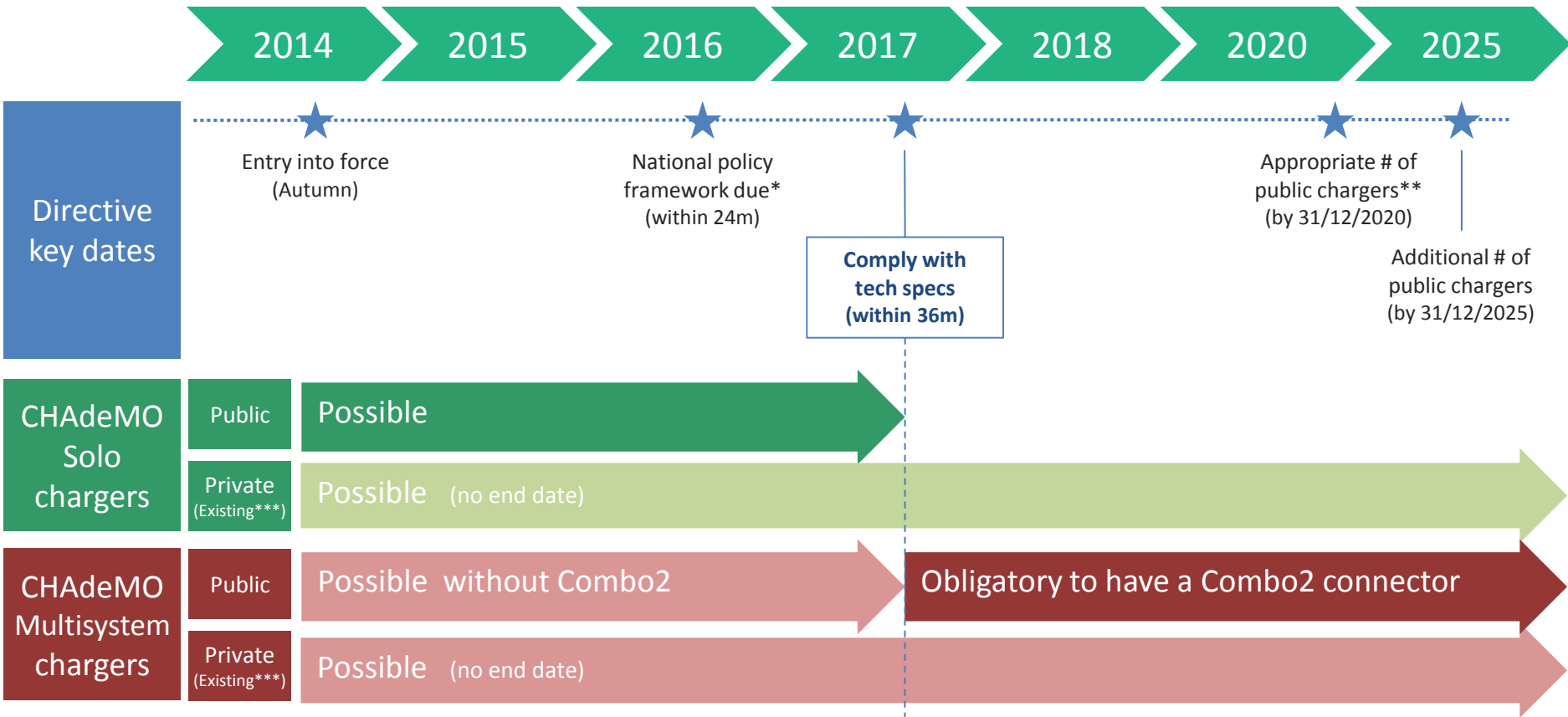
- **Article 4**
 - Member States shall ensure that high power recharging points* for electric vehicles, excluding wireless or inductive units, deployed or renewed as from [36 months from the date of entry into force of this Directive] comply at least with the technical specifications set out in Annex III.1.2.
- **Annex III 1.1.2.**
 - Direct Current (DC) high power recharging points for electric vehicles shall be equipped, for interoperability purposes, **at least** with connectors of Type "Combo 2" as described in standard **EN62196-3**

Note: * high power recharging point : more than 22KW

EU directive key dates and CHAdeMO implications



- CHAdeMO chargers can be built as long as there are EVs needing CHAdeMO



Note: * this should include national targets (charge points), measures necessary to reach targets, designation of urban/suburban agglomerations, other densely populated areas and networks to be equipped with charge points. **in the designated areas. ***Existing chargers can continue operations with no need to retrofit or disinstallation.

EU Directive myths



Myths



CHAdeMO will be banned in Europe after 2018



CHAdeMO-only chargers can no longer be built



All CHAdeMO chargers will have to be retrofitted with Combo2 connectors



Third-party certification updates

Klaus Kersting
IDIADA



EU-Japan joint technical workgroup activities

Tomoko Blech
CHAdemo Europe

CHAdeMO Europe Tech WG



BEGINNING

- CHAdeMO Europe Annual Meeting 4 (20/11/13) in **Barcelona**
- Proposal to start anew the European Technology Work Group to actively participate and exchange with Tokyo in R&D of CHAdeMO

MEETINGS HELD

- 27 Jan 2014
- 10 Feb 2014
- 10 Mar 2014
- 2 Apr 2014
- 7 May 2014
- 26 June 2014
- 4 Sept 2014
- TODAY

MEMBERS

- ABB
- Circontrol
- ENDESA
- EVTEC
- GH Electrotermia
- IDIADA
- Ingeteam
- Mitsubishi
- Nissan

Grey = European meeting

Red = joint meeting with JPTechWG

Tech WG progress



Topics covered

- **Improvements to the current protocol**
 - Dynamic value of available power during charging (smart charging)
 - CHAdeMO V2H addendum topics
 - CAN manufacturer code
 - Connector lock
 - Inrush current measurement position
 - Output voltage range
 - Lower capacity charge
 - Connector proximity detection
 - Main circuit ELCB
 - Reverse current prevention diode
 - Insulation test
 - Vehicle capacity component
 -

Going forward

- **BRAINSORMING:**
 - Evaluation of activities till now
 - **Likes**
 - **Points we can improve**
 - Ideas on:
 - **Additional and new topics**
 - **Organisation**
 - **Format (currently WebEx)**
- **New members welcome**
 - Inform Tomoko
- **Next meeting**
 - TBC (late November?)



CHAdEMO V2H extension

Tomoya Imazu
CHAdEMO Technical Group



CHAdEMO adapter for Tesla Model S

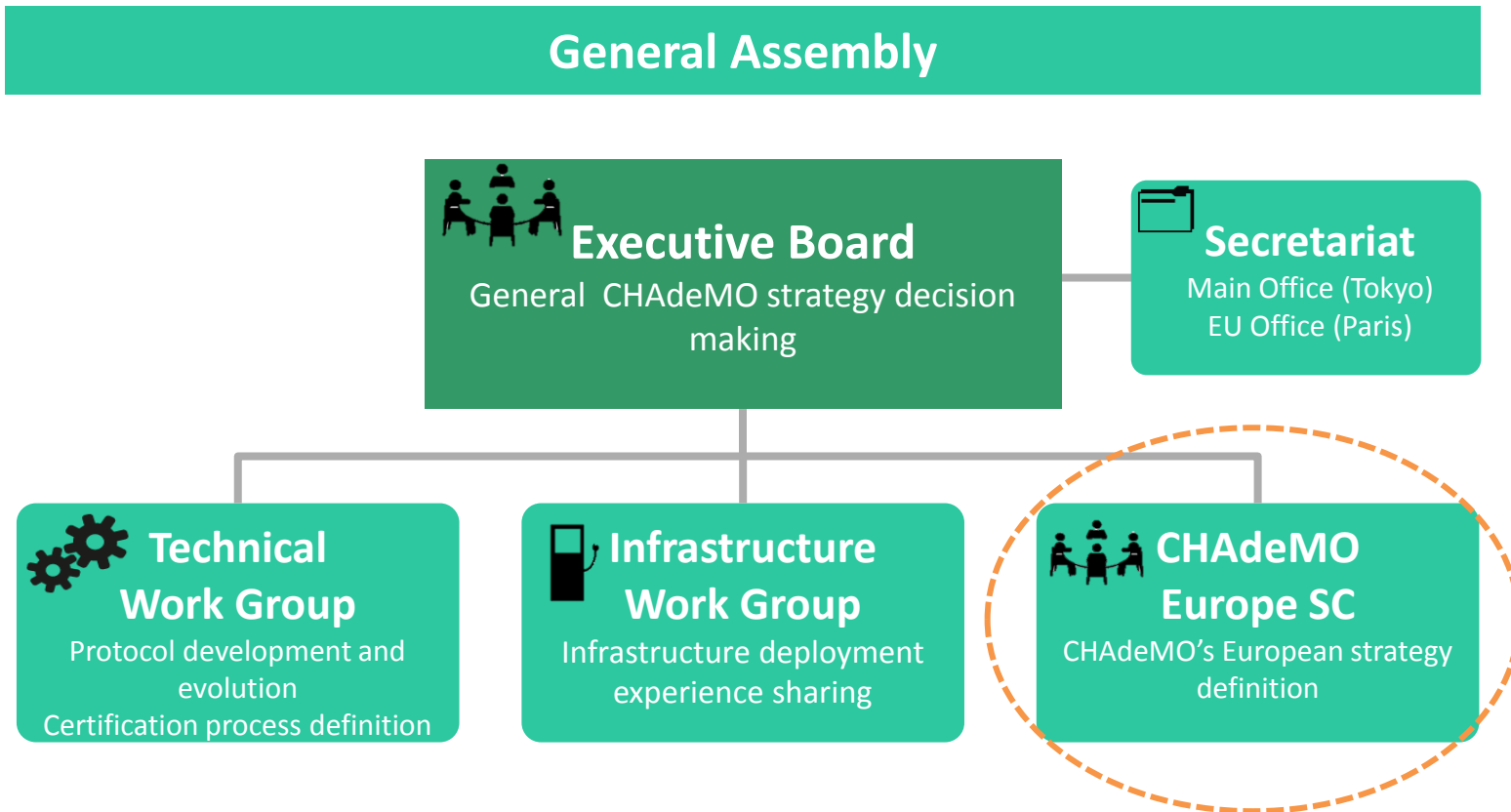
Enric Asuncion
Tesla Motors



CHAdemo Europe strategy discussion

All members
CHAdemo Association

CHAdEMO organisation



CHAdeMO today



CHAdeMO Mission

- Creating the optimal fast charging standard compatible with all EVs and deploying the infrastructure in order to accelerate the realisation of e-mobility globally

Translates into..

- Accelerate the realisation of e-mobility globally
 - By “*creating the optimal fast charging standard*”
 - Maintain and improve the protocol with constant feedback from the market
 - By “*deploying the (CHAdeMO) infrastructure*”
 - Continue to push for the installation of CHAdeMO

What we do today

- Technology
 - Develop and revise protocol (1.0, V2H...)
 - Participate in standardisation work (IEC/EN, IEEE...)
 - Certify to ensure compatibility (Third-party certification)
- Communication platform
 - PR (web site, articles, data gathering, position statements, trade fairs..)
 - Forum (meetings, conferences, technology/infrastructure workshops..)

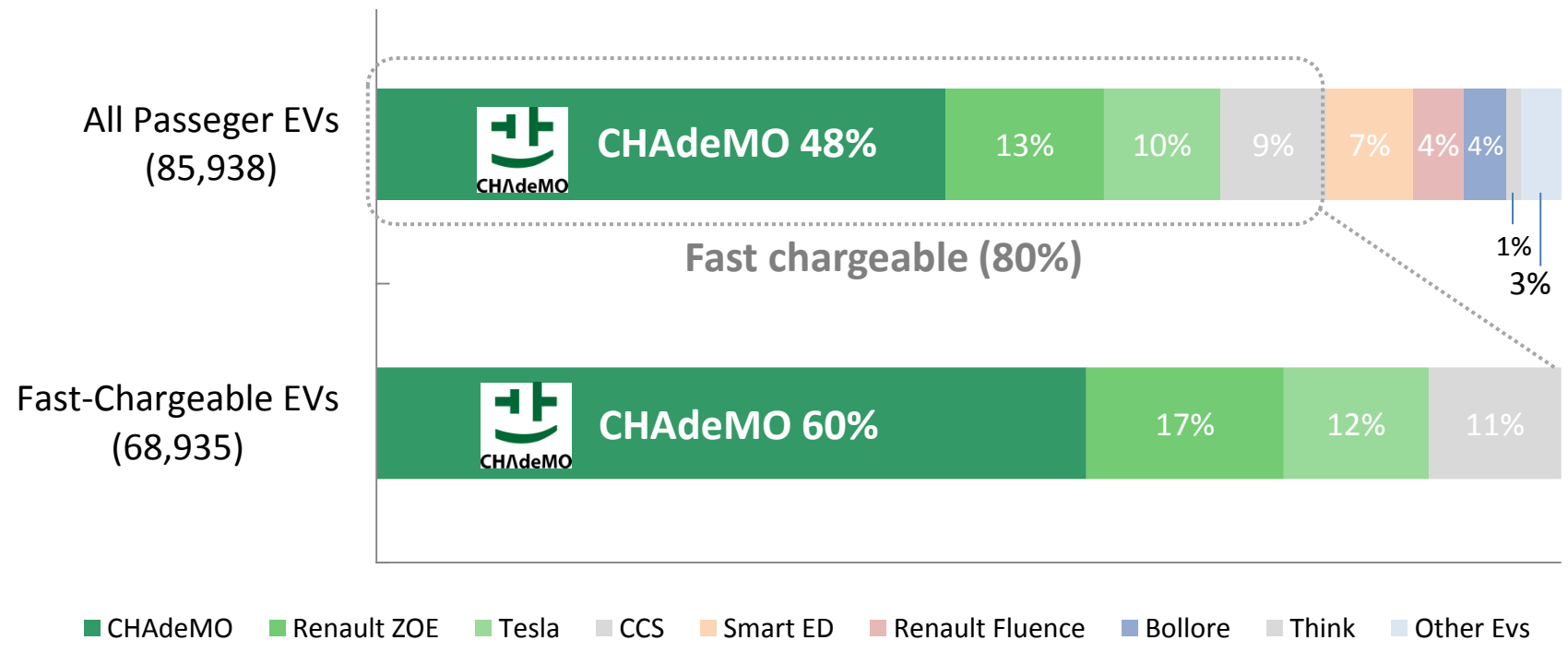
CHAdeMO Europe strategy

Context: European EV market snapshot



- A great majority of fast-chargeable EVs in Europe are CHAdeMO compatible

CHAdeMO EV market share in Europe



■ CHAdeMO ■ Renault ZOE ■ Tesla ■ CCS ■ Smart ED ■ Renault Fluence ■ Bollore ■ Think ■ Other Evs



Note: Data based on registrations from 1 January 2010 to 31st May 2014, not including electric light commercial vehicles (LCVs) or e-quadracycles.

CHAdEMO Europe strategy

Context: EU directive



EUROPEAN COMMISSION

PRESS RELEASE

Brussels, 29 September 2014

Clean fuels for transport: Member States now obliged to ensure minimum coverage of refuelling points for EU-wide mobility

New EU rules have been adopted today to ensure the build-up of alternative refuelling points across Europe with common standards for their design and use, including a common plug for recharging electric vehicles. Member States must set and make public their targets and present their national policy frameworks by end-2016.

"Alternative fuels are key to improving the security of energy supply, reducing the impact of transport on the environment and boosting EU competitiveness", said Commission Vice-President Siim Kallas, commissioner for transport. "With these new rules, the EU provides long-awaited legal certainty for companies to start investing, and the possibility for economies of scale. EU Member States requested flexibility in deploying the infrastructure. It is now up to them to develop the right national policy frameworks."

Up to now, clean fuels have been held back by three main barriers: the high cost of vehicles, a low level of consumer acceptance, and the lack of recharging and refuelling stations. This is a vicious circle. With the new "directive for the deployment of the alternative fuels infrastructure", Member States will have to provide a minimum infrastructure for alternative fuels such as electricity, hydrogen and natural gas, as well as common EU-wide standards for equipment needed and user information. Access to liquefied natural gas (LNG) for inland barges and maritime ships will provide a realistic option to meet challenges on lower emissions, in particular stricter sulphur emission limits in sensitive areas.

The directive sets a regulatory framework for the following fuels:

Electricity: The directive requires Member States to set targets for recharging points accessible to the public, to be built by 2020, to ensure that electric vehicles can circulate at least in urban and suburban agglomerations. Targets should ideally foresee a minimum of one recharging point per ten electric vehicles. Moreover, the directive makes it mandatory to use a common plug all across the EU, which will allow EU-wide mobility.

■ EU directive

- Expected roll-out of infrastructure deployment by 2020
- Multi-standard chargers



CHAdeMO Europe Strategy

Brainstorming



What do we
aspire to become?

- General open DC fast charging platform of discussion in collaboration with other standards and stakeholders (EU, etc)
- Multi-system charger forum (testing, certification, user accessibility, user interface)

By doing what?

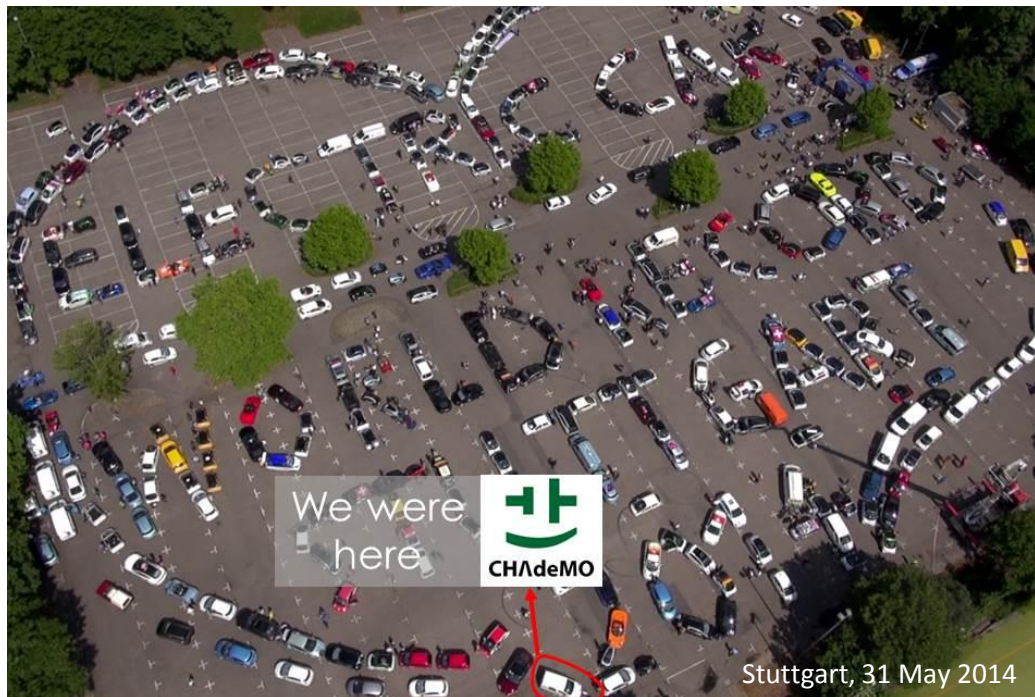
- Additional technology focus?
 - DC fast charge platform with CCS to win better trust for DC charging in general
 - Multi-system charger
 - V2H
 - Increasing power and voltage
 - Dc wall box
 - Vehicle-side certification
 - Standard for multi-charger interface
 - Making emergency button optional to avoid vandalism
 - Application to industrial segment, such as heavy duty EVs with higher voltage
 - Inductive charging
- Additional types of activities?
 - FC installation guide for municipalities
 - Collaborate with other standard for more general DC charging platform
 - Source of navigation data
 - User accessibility for multi-standard charger including colour schemes
 - Joint certification for multi-standard charger



Thank you!



CHAdeMO activities are supported solely by our members' fees.
PLEASE make sure to pay your annual fees.
If you are not sure about your company's payment status, come to us.



We were
here



Stuttgart, 31 May 2014