



CHAdemo



2017
Activity Report
(1 April 2017 ~ 31 March 2018)



CHAdemo Association

From the President

First of all, I would like to express my gratitude to all members of CHAdeMO Association for your continued support for electric vehicles and fast charger promotion.

This year marks the 9th anniversary of our association, since its establishment in 2010. Looking back at FY 2017, I feel it was a year in which we not only enjoyed solid growth, but also strengthened our foundations for the next leap.



In terms of quantity, EV charging infrastructure has been growing strongly along with the trend of widespread electric vehicle adoption around the world and the number of CHAdeMO electric chargers has rapidly increased to over 18,000 globally. We expanded our network both within and outside Japan and our total number of members has reached 375. We believe this demonstrates society's trust in, and high expectations for, our association.

As for improvements in quality, it is notable that whilst CHAdeMO has already been successfully adopted by 30 models of vehicles and over 50 types of chargers in more than 40 countries with various electric power conditions, in order to make further improvements in safety and compatibility we have started a collaborative study with the IEEE in the US to include CHAdeMO in its certification system.

With regard to functionality expansion, we began taking applications for the 150kW charging certification based on the ver. 1.2 protocol that was published last March. We have received a great deal of enquiries regarding our new certification device from vehicle and charger manufacturers who would like to utilise it as a tool in their R&D. We also started working on CHAdeMO 2.0, a protocol which supports 350kW level charging. Moreover, we submitted an international specification for a pantograph-type high-power charger with automatic connecting system, to be used for large-sized vehicles such as buses, to the International Electric Committee (IEC) and we are aiming to publish the protocol in 2019.

The concept of V2X energy management, which utilises electric vehicles as part of the energy infrastructure, is becoming more and more important amid growing demand for the use of renewable energy and the need for a stable energy grid to address global

environmental issues and enhance international resilience. As the only charging standard capable of V2X functionality, CHAdeMO technology has been adopted in homes and demonstrated in smart-energy projects and more than 7,000 CHAdeMO V2X chargers currently operate within and outside Japan.

We will continue to make further efforts in the development of electric vehicles and EV charging infrastructure by maintaining active communication with stakeholders and promoting understanding regarding CHAdeMO. We would greatly appreciate your continued understanding and support.

Toshiyuki Shiga
President
CHAdeMO Association

Technical WG Activities

Continuing from the previous year, the Technical Committee discussed a revision proposal mainly focusing on functionality expansion for high-power charging. To this end, the Committee set up multiple SWGs to evaluate new technologies such as communication interfaces for harmonising EV and smart grids, and functionality expansion for larger vehicles such as buses and for wireless power transfer systems. The SWGs have undertaken these work streams in parallel.

Specifications WG

The Specifications WG issued revised editions in June and December to share relevant information such as that for high current control in a timely manner, reflect the outputs from SWGs in the specifications and maintain consistency with the IEC discussions. We also issued Draft Specification ver. 2.0, which supports high voltage charging up to 1 kV, on 26 February. This is the first revision involving an update to the protocol version since the issuance of ver. 1.0 in January 2012. In exchange for the improved convenience through the extended functionality, the requirements for maintaining backwards-compatibility with previous versions of vehicles and chargers have increased. For this reason, the Association has been working since 2016 on the development of a new protocol testing tool, which is designed not only for the certifying bodies to use in the certification tests, but also for manufacturers as part of their development tools. We announced the commercialisation of the new protocol test tool last year, but shipments are not expected to start until June 2018, as the development of the vehicle-side test function is on-going.

In addition, we have created "Performance Confirmation for CHAdeMO EV" to ensure vehicle quality and safety at the request of regions that are willing to evaluate CHAdeMO as a regional standard. We are planning to release this as a reference document.

WG deliberations have been held at the CHAdeMO office in Japan. However, with regard to functionality expansion for high-power charging and plug-and-charge (PnC), given the strong requests from overseas members, mainly in Europe, we held telephone conferences to share updates and exchange opinions in July and March in addition to the annual technical workshop at the European Annual Meeting in October.

High-power Charging SWG

The High-power Charging SWG discussed technical issues surrounding high-voltage charging, including the protection requirements for the vehicle system and the setting of a voltage category between the current maximum voltage of 500 V and the upper

limit of 1 kV. After evaluating both technical requirements and costs, the SWG reached the conclusion not to make an intermediate category.

Requirement Relaxation SWG

As a result of past specification revisions, the circuit design for chargers has diversified to cater for new functions such as multi-arm chargers and dynamic charging.

As such, to maintain safety and compatibility, we have established a Requirement Relaxation SWG, which aims to enable innovative designs that were not integrated in the conventional standard system configuration.

In this SWG, we called for proposals from our members based on the cases reported in the Certification WG. These were intensively deliberated upon between July 2017 and January 2018 and the results were reflected in the ver. 2.0 Draft.

External Charging SWG

We started the External Charging SWG in October 2017, aiming to examine how CHAdeMO should apply the technology stock to date to new charging infrastructure technologies like the upcoming wireless power transfer and pantograph power supply, which has already started to be implemented on electric buses.

This year, we held three meetings and exchanged views on the scope of application of the CHAdeMO protocol to wireless charging. A member company, Hasetec, reported on its pantograph system technology and on the progress of a high-power demo project for electric buses in Malaysia.



Photo: Hasetec

Connector SWG

IEC's TC 69 MT 5 is currently in charge of the revision of the DC charging standards, including those for high-power charging. Related to this, discussions on the relevant

standards, such as temperature monitoring and cooling required for charging connectors and cables supporting high currents, are also underway at IEC 62196-3-1 and IEC 62893-4. CHAdeMO's Connector SWG is working on evaluating measures for these issues while receiving support from the Japanese Electric Wire & Cable Makers' Association, Japan's national standards committee for cables.

Plug-and-Charge SWG

As the expectations for EVs as a distributed energy resource in smart grids increase, harmonised technology standards and interoperability between grid, energy management systems (EMS) and EVSE are being studied. In Japan, as the interface was specified in the ECHONET Lite WG of the Energy Resources Aggregation Business (ERAB) Committee, hosted by the Agency for Natural Resources and Energy, we have specified the extended functionality to support it in ver. 2.0 Draft.

The CHAdeMO specification prescribes the interface between EVSE and vehicle, while the interface for the upper-side host system can be designed to flexibly respond to the needs of each country/region. Integration of the discussions on the smart grid interface was proposed by the IEC. As a result, discussions on the use cases for handling EV as a distributed energy resource have started as part of the standard 63110, aggregating discussions that had been carried out separately on the EV side (TC 69) and the grid side (TC 57).

CHAdeMO's Plug-and-Charge SWG aims to make a proposal to improve user convenience by ensuring that there are no system inconsistencies between CHAdeMO and CCS, which use different EV communication methods.

Activities in IEC standardisation

IEC DC charging standard revision project TC 69 MT 5 started in 2014, when 61851-23/-24 were published. In addition to the establishment of the conformity test standard, which was the initial subject, new items such as high-power charging, multi-arm charger requirements, bi-directional power supply functions, etc. have been added and deliberations are still ongoing. The same revision items have also been added to the CHAdeMO revision content to mirror the IEC developments.

CHAdeMO works on the harmonisation of specifications as each WG submits opinions on the revised plans through JARI (Japan Automobile Research Institute).

Activities in IEEE standardisation

In the United States, we have been preparing to launch a project that aims to create a certification common with the CHAdeMO certification following the publication of CHAdeMO-compliant DC charging standard IEEE 2030.1.1. In November 2017, the

formation of the IEEE Electrical Vehicle Charging Conformity Assessment Steering Committee (EVC CASC) was officially announced.

Mitsubishi Motors US is the chair organisation of the SC, and UL, InterTek, Tritium and Nissan participate as members. Mr Alexandre Beaudet represents CHAdeMO on this SC.

This group will develop an IEEE certification scheme (ICAP) and will also revise the standard to include CHAdeMO's extended functions, such as high-power and bi-directional charging.

Japan-Germany next-generation charging standards dialogue

The Japan-Germany next-generation charging standards dialogue, JTWG, was held in Germany in October 2017 under the guidance of the Japanese and German governments, following the previous round of discussions held in conjunction with the high-power demonstration test in March 2017. We exchanged opinions on technical issues such as countermeasures for over-temperature due to high currents as well as ensuring compatibility in high-voltage charging.

Public relations activities

International Strategy WG

Discussions on charging infrastructure standardisation have begun in a number of regions where accelerated growth in the EV market is anticipated, including Asia. A new WG was set up to share CHAdeMO's market knowledge and experience across the board in order to support and accompany local standardisation activities to promote the acceleration of EV adoption.

In addition to representatives from the headquarters of CHAdeMO's member companies, representatives of branches in Europe, ASEAN countries and India participated in this WG. We strive to share the latest information on market trends and events in all countries and regions and discuss how best to respond to specific situations while maintaining coherence in CHAdeMO's global activities.

This year, we held WG meetings in July, September and December. In addition, to responding to ad-hoc regional requests, we participated in a conference in North Africa and responded to calls for public comments and expert opinions by a South Asian government.

ASEAN EV Summit

The first ASEAN Electric Vehicle Summit took place on 29 and 30 June 2017 in Manila, Philippines. Various representatives from policy-making bodies, electro-mobility organisations and industry got together and actively exchanged opinions.

From CHAdeMO, Dave Yoshida, Secretary General, explained the Association's technical strategy, safety features and installation numbers achieved around the world.



Technical support for charging infrastructure in Asian countries

In China, in cooperation with government agencies and the China Electric Vehicle Charging Infrastructure Promotion Alliance (EVCIPA), we worked on sharing know-how and jointly solving technical issues this year. Such technical exchanges and collaboration are expected to continue in the coming years.

In India, the government is considering establishing national standards for charging infrastructure and developing a charger certification system, aimed at nurturing domestic industries, to accompany their EV diffusion policy. We are supporting their activities by sharing our experience and knowledge on the promotion of electro-mobility, as well as on the certification system.

Infrastructure WG Activities

Infrastructure workshops were held three times, in April, October and February, during this fiscal year. Previously always taking place at the Electric Power Historical Museum in Yokohama City, this year we transferred the events to new venues in Shinagawa and Osaka, with support from Hitachi and Panasonic. Both companies served as host organisers.



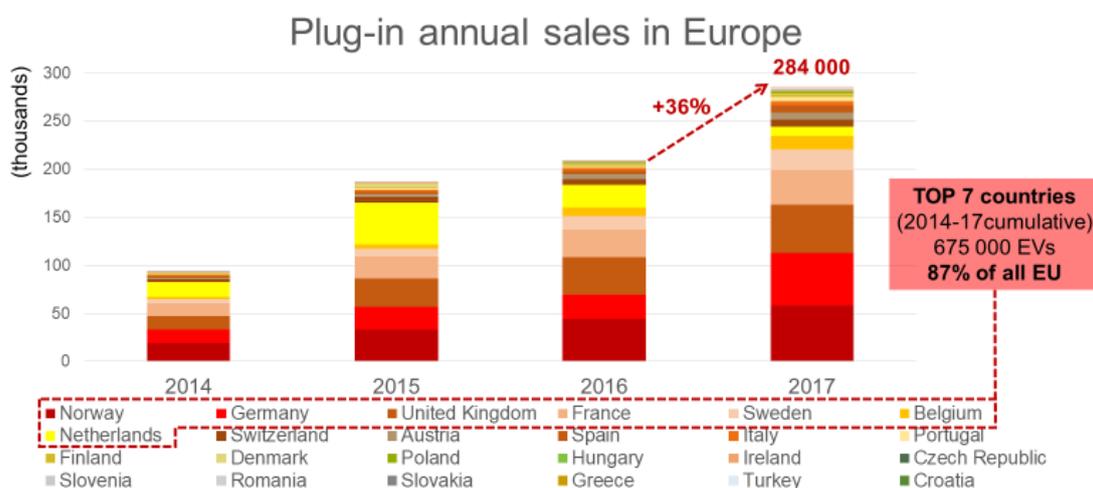
Topics selected for these meetings included technology trends such as wireless power transfer, a V2G demonstration project report, a smart city project report, new CHAdeMO plug-in vehicles and others.

With regard to the dissemination of charging infrastructure, a subsidized project by the Ministry of the Environment for road-side rest areas, “Michi-no-Eki”, and the new charging station search tool with advanced functionality were reported upon.

CHAdEMO in Europe

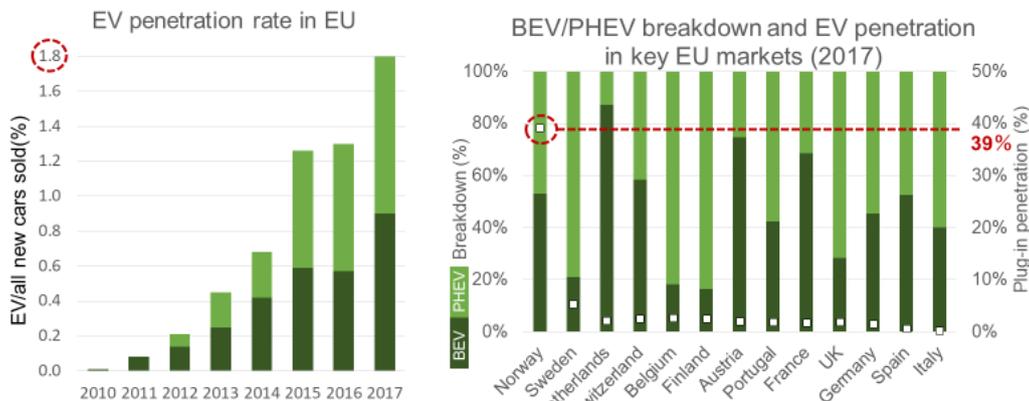
European EV market growth accelerates but EVs remain below 2% of all new car sales

European EV market growth was slow in 2016, but in 2017 unit sales saw a strong increase. The leading market in Europe is still Norway, but Germany has jumped to second place. In addition to these two countries, the top seven countries (the UK, France, Sweden, Belgium and the Netherlands) have contributed close to 90% of European EV sales over the past four years.



 Note: Passenger vehicles only
Source: IEA EV Outlook 2017, JATO

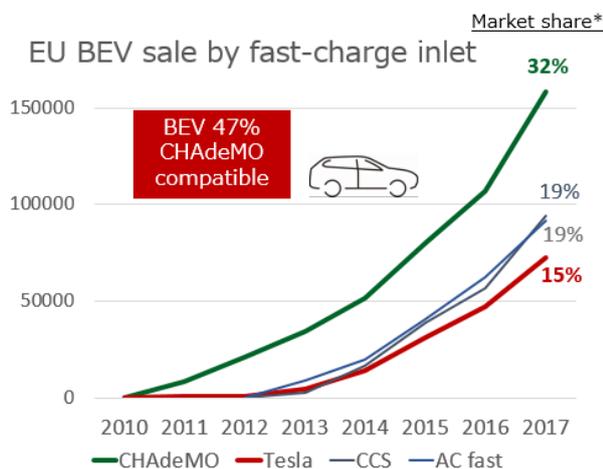
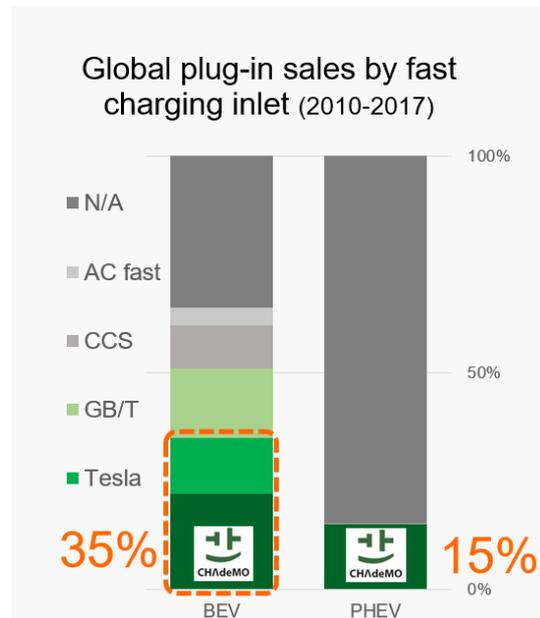
Nonetheless, the share of plug-in vehicles (BEV + PHEV) among new car sales in Europe is still below 2%. Apart from Norway, where the plug-in market share is approaching 40%, the penetration rate remains low in most countries, at around 1%. The ratio between BEV (dark green in the below graph) and PHEV (light green) varies by market, but altogether the number of sales last year in Europe was divided evenly between the two categories.



Note: Passenger car only. Source: EAFO (EU28+EFTA+Turkey)

CHAdEMO-compatible EVs maintain the largest share amongst fast-chargeable plug-ins (Global/Europe)

In 2017, CHAdEMO remained the market leader in terms of fast chargeable EV stock. In total, 35% of BEVs worldwide can be charged with CHAdEMO: 22% with a CHAdEMO inlet and 13% are Tesla EVs that can use CHAdEMO chargers via an adaptor. The second largest share was attributed to the Chinese DC fast charge standard, GB/T, with 16% of the cumulative share (source: IHS Automotive). CHAdEMO is also top in the PHEV market, with a 15% market share, followed by CCS with 0.2%.



Source: EAFO, JATO

Note: Cumulative, *15% are not fast-chargeable

In Europe, 32% of electric vehicles (BEV) sold to date have CHAdEMO inlets. Along with Tesla, which accounts for 15%, nearly half (47%) of the BEVs running on European roads

are compatible with CHAdeMO.

Fast charger installation accelerates: over 6,000 in Europe

The installation of DC fast chargers in Europe continues to progress. In February 2018, the number of CHAdeMO chargers passed the 6,000-mark in Europe.

CHAdeMO chargers in Europe

6 260
TOTAL



Note: as of February 2018
Source: ChargeMap, EAFO, Zap-Map, NOBIL, Gireve, GoingElectric

Since 2014, multi-standard chargers with both CCS and CHAdeMO connectors became the *de facto*

standard and both connectors have been growing concurrently. The number of CHAdeMO charge points exceeded 4,000 in February 2017 and one year later it had already surpassed 6,000 units, which is a clear sign of charger deployment acceleration.

Installation of ultra high-power chargers starting

Following the announcement of a development plan by vehicle manufacturers, installation of next-generation chargers capable of high-power charging (150kW/200A or more) has started. EU-funded projects, as well as a vehicle manufacturer consortium-funded charging network plan entered the implementation phase. Charge point operators are busy preparing for the installation of high-power chargers that can handle future EVs in Europe, on top of conventional 50 kW multi-standard chargers.

CHAdeMO Association will also hold a connection test for high-power charging (CHAdeMO Specification ver. 1.2 or later) between next-gen EVs and chargers at the technical meeting & demo event scheduled to be held in Luzern, Switzerland this June. This will be a good opportunity to validate the development of high-power charging capabilities for both the EV and the charger sides and to further discuss technical issues.

European membership and member meetings

Our membership base in Europe continues to grow. The number of CHAdeMO European members has grown by 20% for two years in a row. A recent trend is the increased presence among our members of companies in Eastern European countries, such as Poland and Turkey. Our annual meeting, which is open to all members, was held in Stuttgart in October 2017 in conjunction with EVS30.

This European Member Meeting, held on 11 October, recorded the largest attendance of all the eight meetings we have held. Mr Anegawa, Representative Director of the Association, made a keynote speech in which he reviewed the history of CHAdeMO and

expressed gratitude for the contribution of European members in the development of CHAdeMO. He also presented some examples of CHAdeMO applications taking advantage of the robustness and flexibility of the CHAdeMO technology. Nine experts followed with presentations, their topics covering EV drivers' charging behaviours, high-power charging network projects and V2X demo projects, among others. These were well received by the audience.



Technical workshops for Regular members

This year, we hosted a face-to-face Regular member technical meeting and two teleconferences.

- **CHAdeMO 2.0 update teleconference**

On 12 July 2017, we held a teleconference on the CHAdeMO 2.0 standard with Mr Kamishima, leader of CHAdeMO's High Power SWG. Participating members from Europe, the United States and Australia discussed technical issues surrounding the next major update of the protocol, including high-voltage charging and plug-and-charge.

- **European technical meeting in Stuttgart**

On 12 October, we held the annual European technical meeting at a venue near the EVS30 exhibition. Active exchange of opinions took place on issues key to the on-going drafting of ver. 2.0 of the CHAdeMO standard.



- **Vehicle ID SWG teleconference**

On 26 March 2018, a small work group meeting on vehicle ID and plug-and-charge (PnC) was held to follow up on the draft release of CHAdeMO version 2.0. This group contributes to the creation of use cases for IEC 63110.

CHAdeMO joint stands in Hannover and Stuttgart

Already a tradition in its fifth year of co-exhibition, CHAdeMO Europe organised shared stands this year at two sites, Hannover Messe and EVS30 in Stuttgart, in response to our members' requests.

- **Hannover Messe 2017 (April 2017)**

CHAdeMO's exhibition at Hannover Messe marked its fifth occasion. We exhibited at a 56m² booth jointly with eight members. Various CHAdeMO chargers from 24kW to 150kW and a V2G power module surrounded the Leaf on the stand.



- **EVS30 (Stuttgart, October 2017)**

EVS30, the world's largest international conference, was held in Stuttgart in 2017, before making its way to Kobe this year. At a compact 66m² booth, a Leaf and an Outlander were displayed together with a wide variety of CHAdeMO-flavoured products from six member companies. The brand-new Leaf attracted visitors from all over the world.



PR opportunities

To disseminate information on CHAdeMO's advantages and with the aim of accelerating EV adoption in general, CHAdeMO continues to actively seek opportunities to convey its message and to enhance its communication tools.

▪ Conferences & presentations

At the European Secretariat, we strive to seize every opportunity to participate in events related to electro-mobility.

For EVS30 (Stuttgart, Germany), we presented an article in which we attempted to quantify the capacity V2X can offer to help with the Grid, as compared to mono-directional smart charging. Furthermore, we emphasised the advantage of CHAdeMO as the only international charging standard enabling V2X with production EVs. Concerning V2X, we made presentations at the IEA/EPRI expert meeting in Paris and a workshop in the UK, where deregulation of the power industry is well advanced and several demonstration tests have begun.

We also had the chance to participate in diverse events, both at the European level (European Battery, Hybrid and Fuel Cell Electric Vehicle Congress in Geneva, World Mobility Summit in Munich, etc.) and the national/regional level, such as stakeholder meetings focused on the electrification of transport in various countries and regions. During this fiscal year, we experienced the geographical expansion of EV adoption, as we had the opportunity to report on CHAdeMO at a Spanish national conference, an end-of-demonstration project meeting in the Basque Region, an electro-mobility promotion conference in Kiev and a conference in Morocco, to name but a few.

▪ Newsletters for the public

For the first time in CHAdeMO Europe's history, we have sent Newsletters to general readers who signed up from our website. This is still at an experimental stage, but we received over 200 subscriptions without performing any publicity!

Activities in FY 2017

	2017 April	May	June	July	August	September	October	November	December	2018 January	February	March
Board of Directors		★	★General mtg		★			★				★
Steering committie	★	★		★		★	★		★	★	★	
General Assembly			★(5/31) General Assembly				★(10/11)European meeting					
Technical Workshop			★(6/8) Specifications Ver.1.2ed 2		★(7/12) European Tech workshop(Telcon)		★(9/8) Starting 1.2 Certification tests		★(12/19) Specifications Ver.1.2ed 3		★(10/11)European Tech workshop	
							★(10/6) Technical manual revision		Specifications Ver.2.0 Draft(2/26)★		EU Vehicle ID SWG (3/26)★	
Infrastructure Workshop	★(4/18) #28@Yokohama						★(10/6) #29@Shinagawa				★(2/19) #30@Osaka	
Location Information W	★(4/27) Update					★(9/20) Update						
International standardization												
IEC TC69/MT5		★Japan					★US	★China				
IEC TC69/PT63110						★France		★Germany		★Italy		
IEC PT61851-23-1		★Switzerland		★France			★UK			★Netherlands		
IEEE PT2030-1 (CHAdEMO)								★ Formation of CASC				
Certification test				★ENEL		★TakaokaToko(V2H) ★BTC Power	★SIGNET EV Inc. ★Nichicon(V2L)			★HONDA(V2H)		★Nichicon(V2L) ★Nichicon(V2H) ★TakaokaToko
PR activity, etc.	★(4/24-28)Hannover Messe					★(9/13) EVEX2017 Panel				★(1/31) LEVEL V2G workshop		
			★(6/29-30)ASEAN EV Summit			★(10/9-11) EVS30@Stuttgart				(3/1) EVIM2018 ★		
			★(6/21)AZKARGA project report (Bilbao)			★(10/10) IEA/EPRI expert workshop				(3/15) EE VC ★		
	(7/12)Green AIB Conference (Marrakesh)★					★(10/17) World Mobility Summit						
						★(10/26-27) European EV Congress						

Board meetings/WG

Board of Directors / Steering committie

	date	Main Agenda
75th SC	15-Apr	FY2012 Action plan, General Assembly plan
76th SC	30-May	General Assembly plan, Tademark guidelines
Founding B of D	1-Jun	General Assembly plan, Tademark guidelines
77th SC	3-Jun	IEC Activity, PR Action plan, V2H extension
1st B of D	8-Jul	Tademark guidelines, V2H extension
78th SC	8-Jul	PR Action plan, CHAdeMO Europe report
79th SC	9-Sep	Certification system, supplementary budget
2nd B of D	7-Oct	JIS Standard, pacemaker, managaement of secretariat
80th SC	11-Nov	JIS Standard, pacemaker, managaement of secretariat
3rd B of D	16-Dec	Certification, pacemaker, managaement of secretariat
81st SC	13-Jan	Pacemaker, OEM charger, PR measures
82nd SC	17-Feb	Interpretation of Technical Standards, Patent policy
4th B of D	10-Mar	Managaement of secretariat, Ver1.0 compatibility

Boad members : Nissan, Mitsubishi motors, Toyota, Subaru, TEPCO, HONDA, HITACHI, Panasonic, Dave Yoshida(secretary)

Infrastructure Workshop			
Date	Particip ant	Main agenda	Presenter
28th 18-Apr	108	Activities of CHAdeMO Technical Workshop	CHAdeMO Technical Workshop
		Technology trends in wireless power transfer	WASEDA Univ. Environmental Research Institute
		Prius PHV Introduction	TOYOTA
		CHAdeMO development tool CRAMAS	FUJITSU TEN
		Activities of COOL CHOICE (CO2 emission reduction project)	Taiju environmental system
		Coolong sysytem for fast charger	HYDAC
		CHAdeMO Association Activity plan	CHAdeMO secretary
29th 6-Oct	143	Smart Grid demonstration project - JUMPSmartMaui	HITACHI
		Electric DRIVE STATION	Mitsubishi motors
		Introduction of Design experience	HITACHI
		Introduction of new LEAF new model	NISSAN
		Evs mart: EV charging Advisor (Support tool)	Ayudante
		CHAdeMO Association Activity plan	CHAdeMO secretary
30th 19-Feb	90	Greetings	Representative Director Takafumi Anegawa
		Promotion of New Energy Industry in Osaka	Osaka Prefectural Government
		Virtual Power Prant project and Future prospects	KEPCO
		Panasonic's approach to VPP	Panasonic Eco Solutions company
		Panasonic's approach to Smat City	Panasonic business solutions
		CHAdeMO Association Activity plan	CHAdeMO secretary

Specifications WG

	date	Main Agenda
24th	14-Apr	2018 Schedule, ver.1.2 revision, New SWGs building
25th	19-May	IEC MT5 feedback, Test specification review
26th	2-Jun	Specification 1.2, `rotocol check sheet review
	8-Jun	Publicaioin of Specification ver.1.2 ed 2
International TelCo	12-Jul	ver.1.2 updates, ver.2.0 strategy
27th	28-Jul	Progress of SWG, Vehicle certification, IEC MT5
28th	31-Aug	Progress of SWG, Vehicle certification, IEC MT5
29th	28-Sep	Progress of SWG, High voltage categoly, IEC MT5
30th	9-Nov	Progress of SWG, Vehicle certification, IEC MT5
31st	14-Dec	ver.1.2ed 3 review, IEC MT5,
	19-Dec	Publicaioin of Specification ver.1.2ed 3
32nd	25-Jan	Progress of SWG, IEC MT5, ver.2.0 review
	26-Feb	Publicaioin of Specification ver.2.0 Draft

WG members :

TEPCO(chair), Nissan, Mitsubishi motors, Toyota, Subaru, Honda, Suzuki motors, Mazda, Isuzu, Tesla, Takaoka Toko, Nichicon, Hasetec, HITACHI, Takasago, NS-Texteng, YAZAKI, Sumitomo Electric Industries, Shindengen, Kikusui, FUJITSU TEN, Vector Japan, UL Japan, TUV Rheinland Japan, Hyundai motors

High power charging SWG

	date	Main Agenda
21st	29-May	Heat management, IEC MT5, voltage deviation
22nd	12-Jun	Countermeasures for over-temperature
23rd	26-Jun	High voltage categoly, cost evaluation

SWG members :

Nissan(chair), Mitsubishi motors, Toyota, Honda, Isuzu, Yazaki, Fujikura, Sumitomo Electric Industries, Japan Aviation Electronics, Shindengen, NS-Texteng, Nichicon, Hasetec, UL Japan, TUV Rheinland Japan, TEPCO

External charge SWG

	date	Main Agenda
1st	5-Oct	SWG scope and system requirements
2nd	6-Nov	Pantograph System summary
3rd	11-Dec	Overall schematics of System A station with ACD and vehicle

SWG members :

Hasetec(chair), Nissan, TEPCO, SUBARU, Isuzu, Mitsubishi motors, Sumitomo Electric Industries, JET, ENEL

Requirement relaxation SWG

	date	Main Agenda
1st	10-Jul	Proposal items from the certification WG review
2nd	14-Sep	Filing questionnaire items
3rd	6-Nov	Filing questionnaire items, Current-limiting fuse
4th	11-Dec	Filing questionnaire items, Non-isolated system
	16-Jan	Mail deliberation on suggestion items

SWG members :

Takaoka Toko(chair), Nissan, Nichicon, Hasetec, Sumitomo Electric Industries, Shindengen, Mitsubishi Electric, TUV Rheinland Japan, TEPCO

Plug and Charge SWG

	date	Main Agenda
1st	7-Dec	Market needs and technical issues
2nd	16-Dec	Vehicle ID, Image of the activity outcome

SWG members :

Nissan(chair), Toyota, Honda, Mitsubishi motors, Isuzu, Hitachi, Panasonic, Mitsubishi Electric, Sumitomo Electric Industries, , TUV Rheinland Japan, TEPCO, Enegate, KEPCO, NCS, Nihon Unisys, Japan Charge Network, Vector Japan

V2H WG

	date	Main Agenda
Review(e-mail)	1-Aug	V2H/L Test Specifications revision(error correctior
41st	29-Mar	Guideline revisoin(Vehicle ID)

WG members :

Nissan(chair), Mitsubishi motors, Toyota, Honda, Panasonic, Sharp, Hitachi IE system, Mitsubishi Electric, Takasago, Nichicon, YAZAKI, Sumitomo Electric Industries, TSUBAKIMOTO CHAIN, TEPCO, UL Japan, TUV Rheinland Japan, IDIADA, JET

Connector SWG

	date	Main Agenda
Review(e-mail)	27-Mar	Performance confirmation V1.2 (Final)
Review(e-mail)	21-Jul	Performance confirmation V1.2 (Revision)

Connector SWG members :

Yazaki (chair) , Fujikura, Sumitomo Electric Industries, Japan Aviation Electronics, DAIDEN, Hitachi Cable, FURUKAWA ELECTRIC, TEPCO (secretary)

European SC meetings

date	Main Agenda
7-Apr	HPC test, PR strategy, spring events
23-Jun	Spring event reports, autumn events
14-Sep	Autumn event planning, member meeting
23-Nov	Autumn event reports, communication strategy
15-Feb	Communication strategy, EU tech event

SC members: ABB, ESBeCars, Idiada, Mitsubishi, Nissan

Observers: Enel/Endesa, PSA

European Tech WG

date	Main Agenda
12-Jul	High power (telco)
12-Oct	2..0, R&D Roadmap (Stuttgart)
26-Mar	Vehicle ID SWG (telco)

WG participants:

ABB, Alpitronic, AutoEnterprise, ChargePoint, Circontrol, comemso, DBT-CET, Delta Electronics, Enel/Endesa, Efacec, EVTEC, Ingeteam, ITE, JAE Europe, Magnum Cap, Mitsubishi Motor R&D Europe, Mitsubishi Motors Corporation, Nexton, Nissan, Nuvve, Phihong Technology, PSA, Recargo, SCAME PARRE, Siemens AG, SignetEV, Subaru Corporation, Sumitomo Electric Industries, Takaoka Toko, Tepco, Tritium, uYilo eMobility Programme, Vector Informatik, Wynnertech, Yazaki

International Strategy WG

date	Main Agenda
27-Jul	Global snapshot, principles of WG
11-Sep	Regional situation, info sharing, PR strategy
15-Dec	Regional updates, messaging

WG participants:

FaBSCo, Honda Motor Company, Mitsubishi Motors Corporation, Nissan, Sumitomo Electric Industries, Takaoka Toko, Tepco UK, Yazaki