VECTOR

CHAdeMO 2.0 and Interoperability To CHAdeMO 3.0

An Overview About the Japanese Charging Standard and How To Test It

V0.1 | 2021-03-29

Agenda

1.	CHAdeMO
2.	Conformance Tests
3.	CHAdeMO 3.0

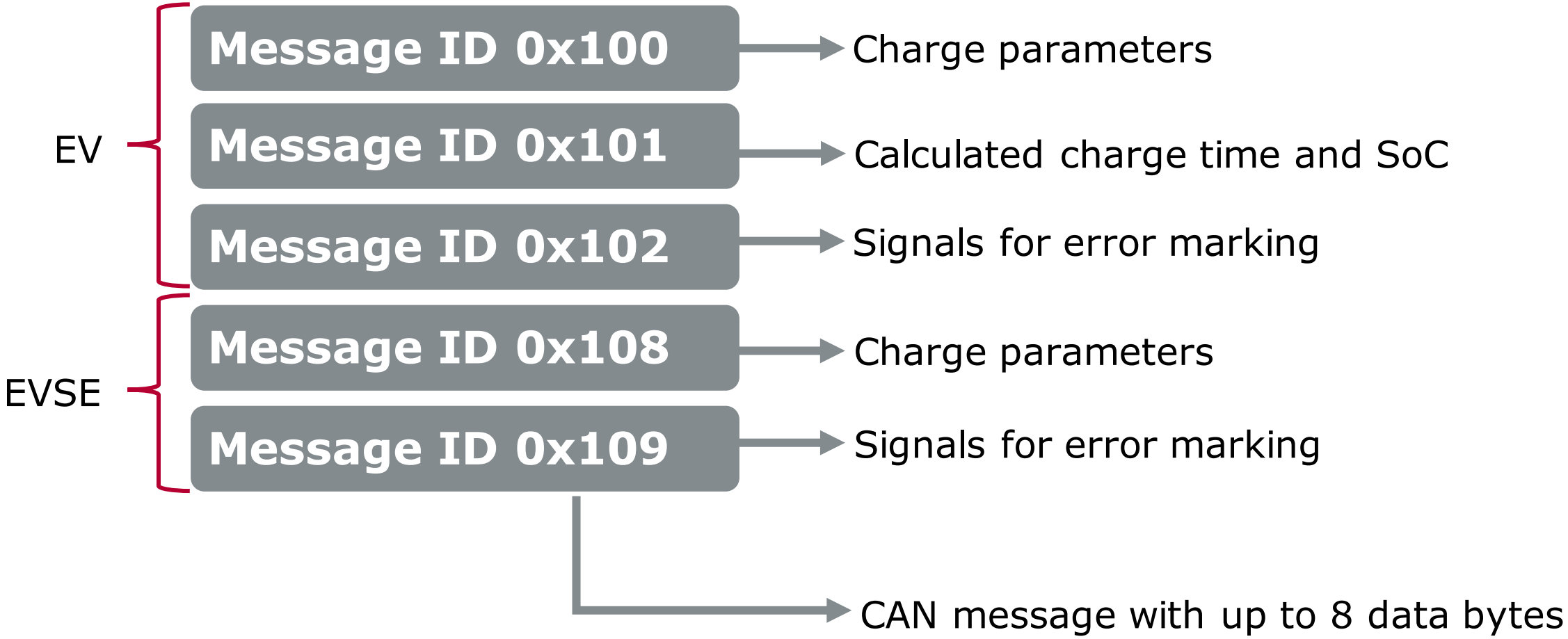
Definition

- "Charge de Move" or "Ocha demo ikaga desuka" - "How about a cup of tea?"
- Developed by the CHAdeMO Association
- First fast charging standard
- Only DC charging supported
- Communication via CAN bus
- Master-Slave (BMS = Master, Charging station = Slave)

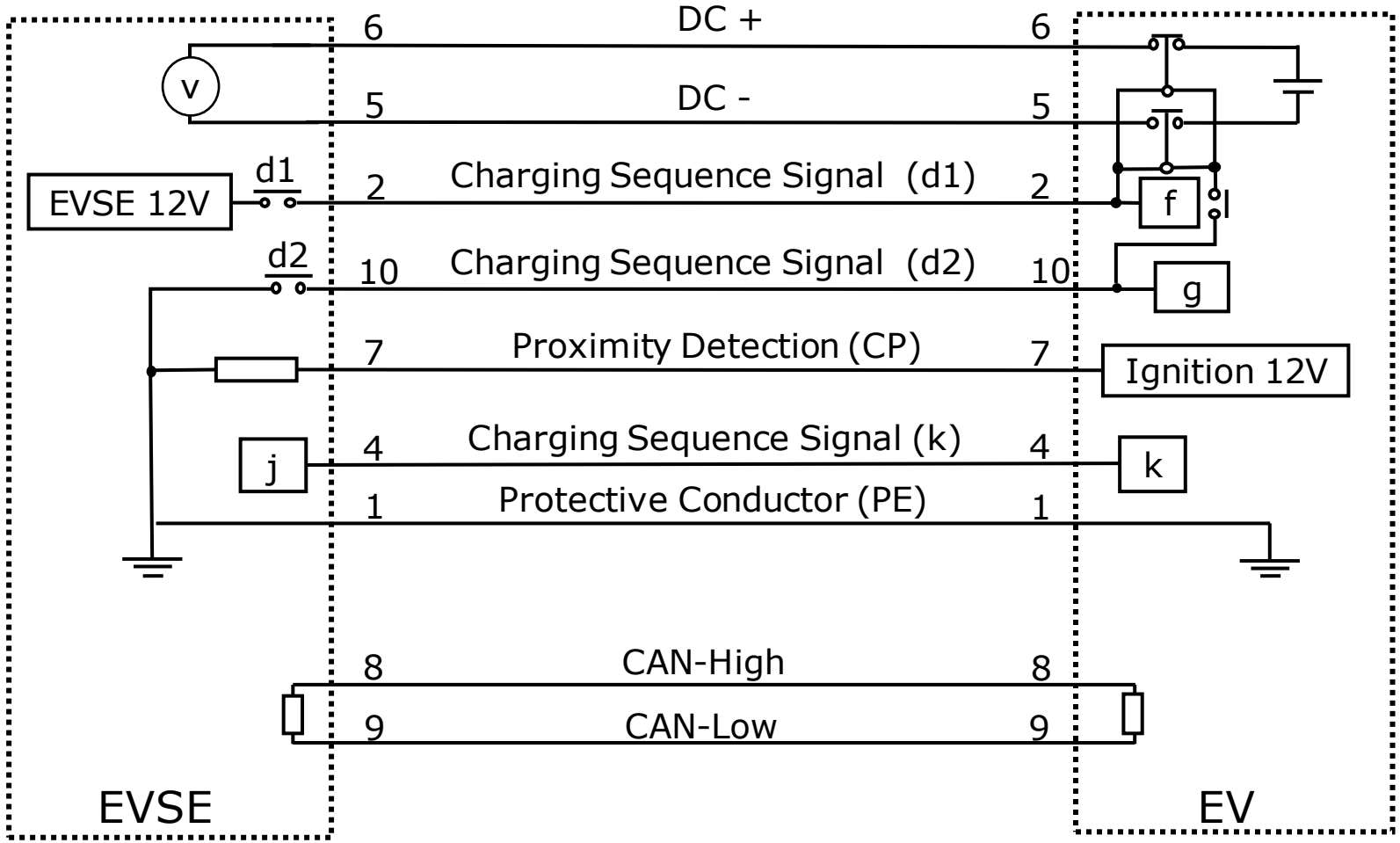
Source: https://www.chademo.com/

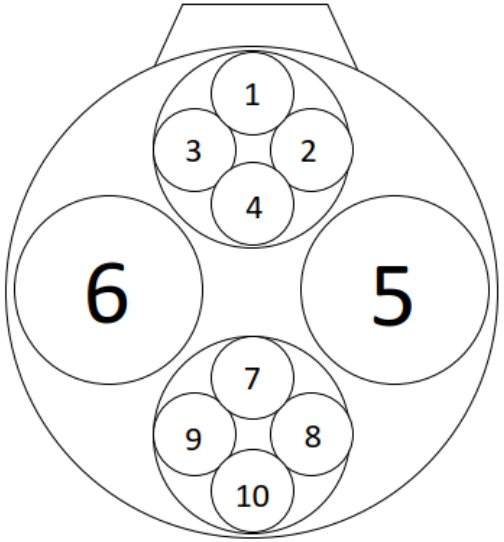
Source: https://www.chademo.com/products/connectors/

CAN-Messages

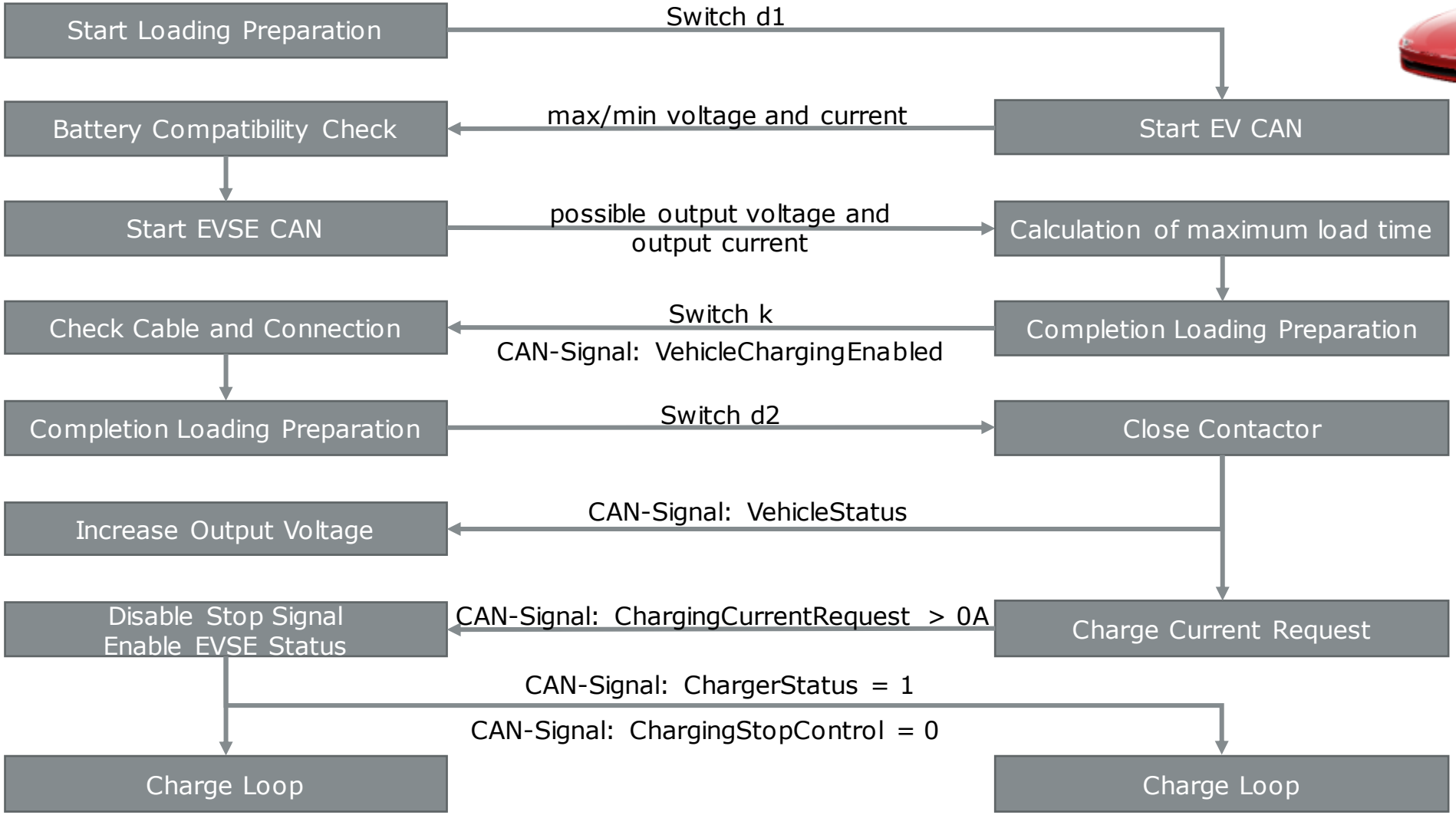


Circuit Diagram



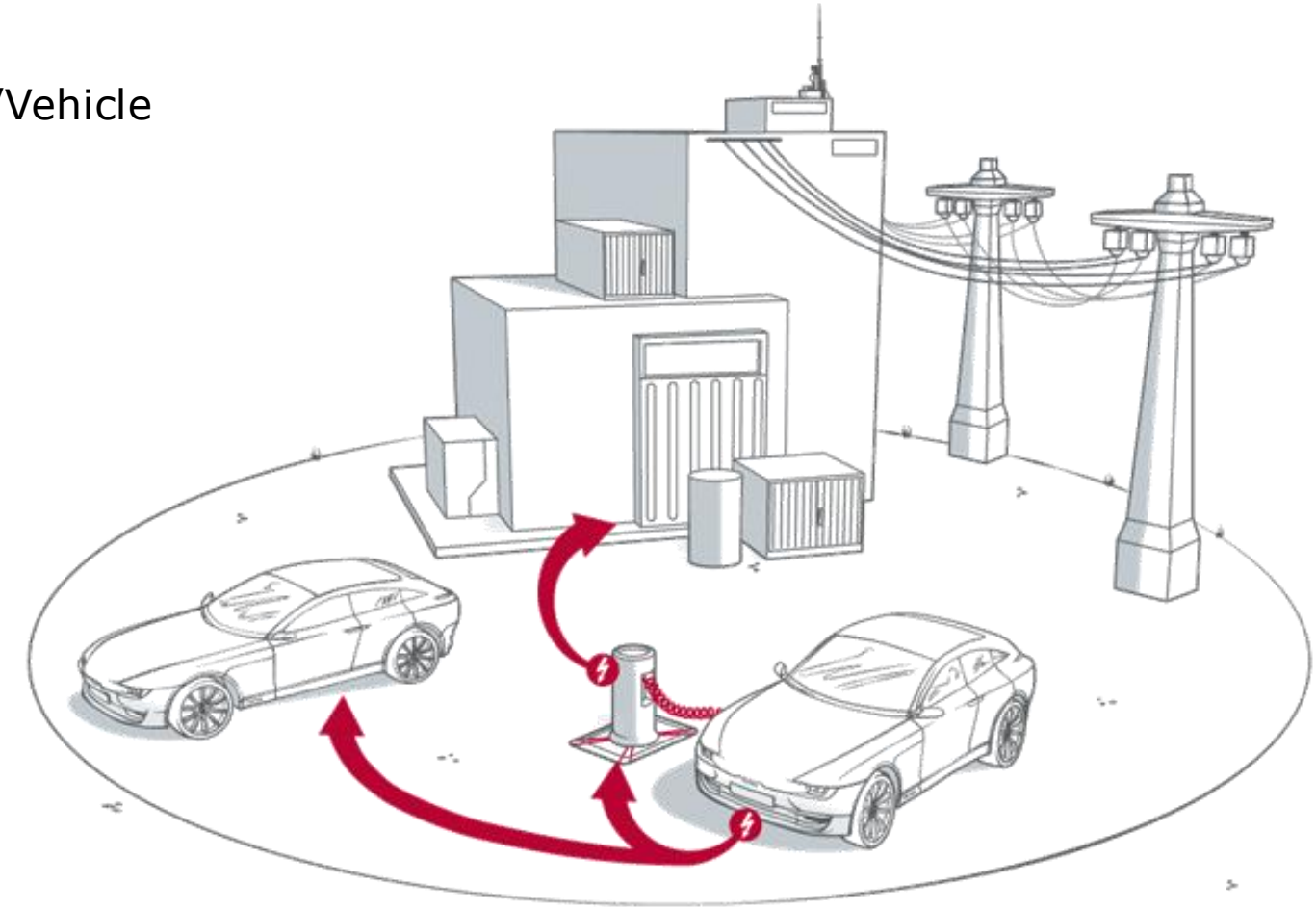


Communication Flow

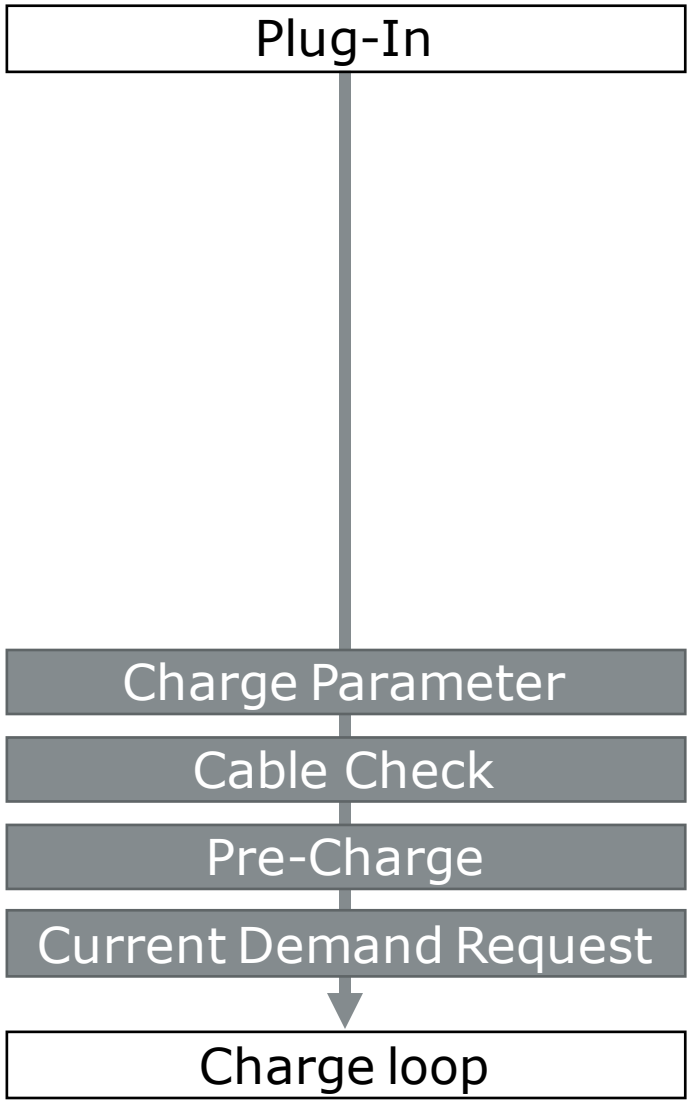


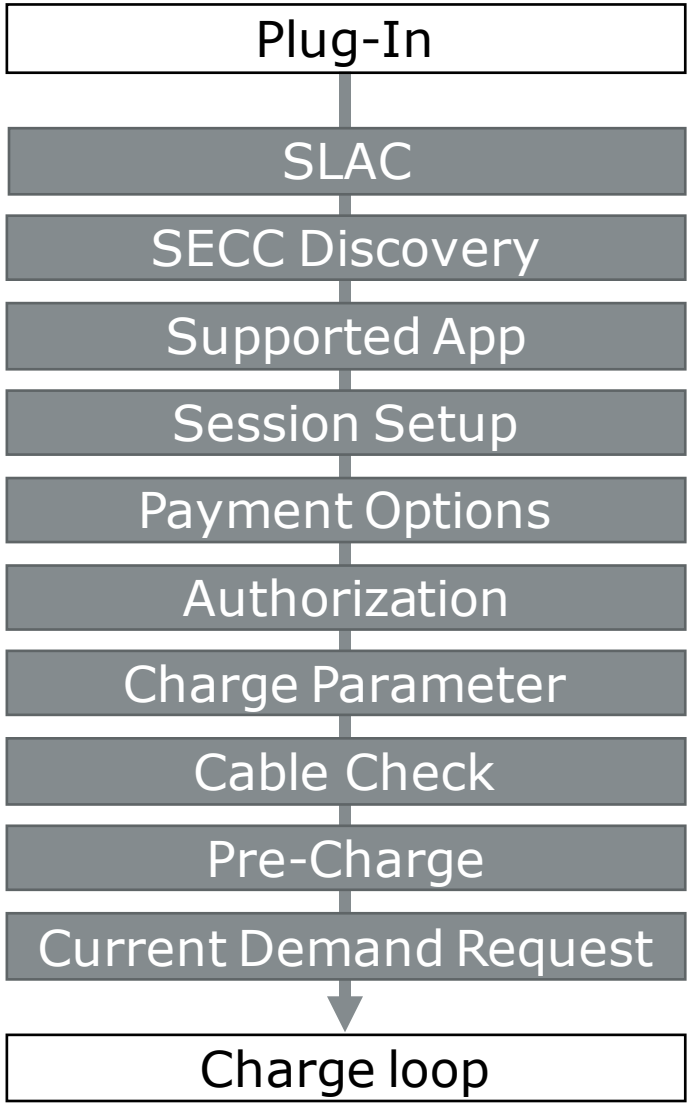
Special Features of CHAdeMO 2.0

- Dynamic Control
  - Charging station can increase or decrease "available output current" during charging
- V2L/V2H/V2V
  - Vehicle to Load/Home/Vehicle
  - Bidirectional charging



Comparison CHAdeMO and CCS Communication





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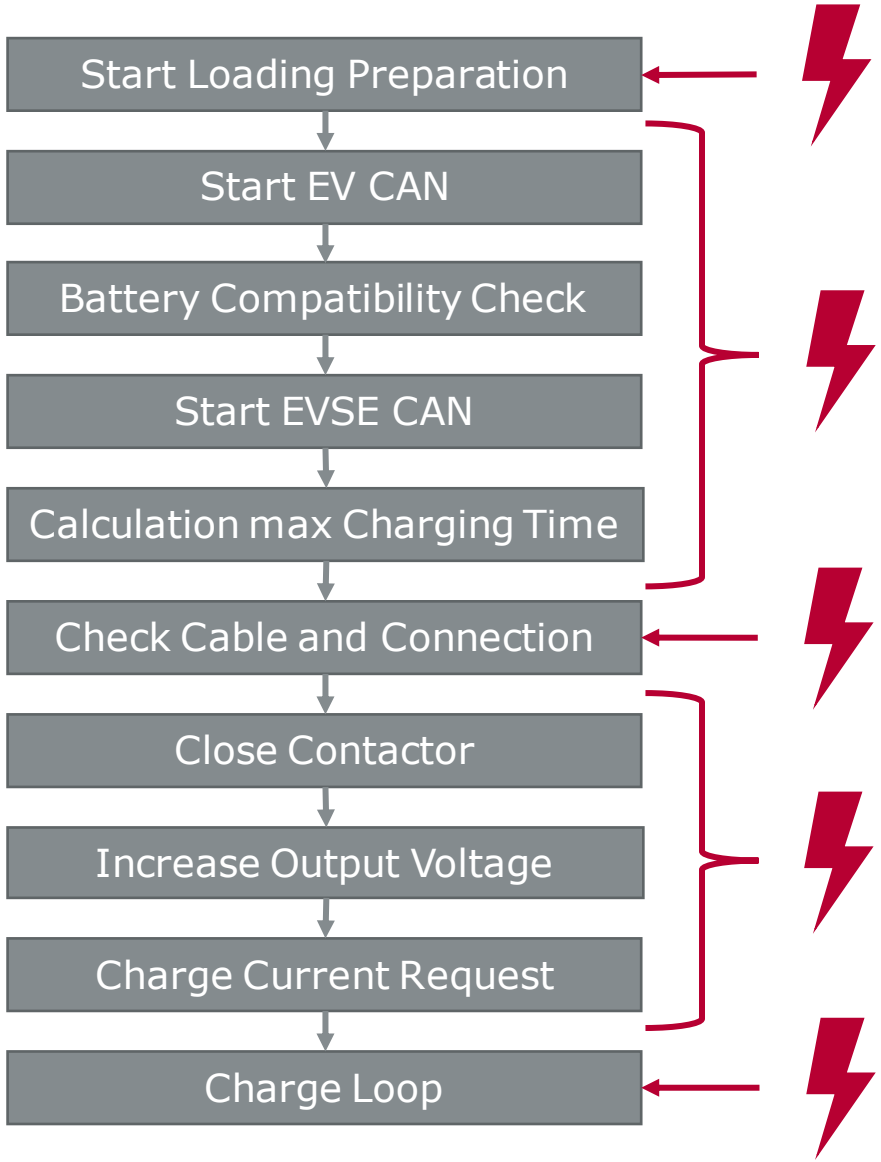
Definition of the Test Cases



- CHAdeMO only provides test specification for EVSE
- mainly includes tests for the charge loop and the hardware
- specified communication tests include various stop signals that can be applied in part to the entire communication
- tests can be transferred to vehicle tests

- Charger error
- Battery incompatibility
- Charging System Error
- Switch d1

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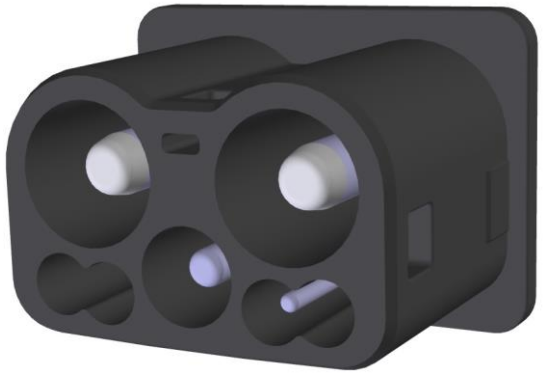
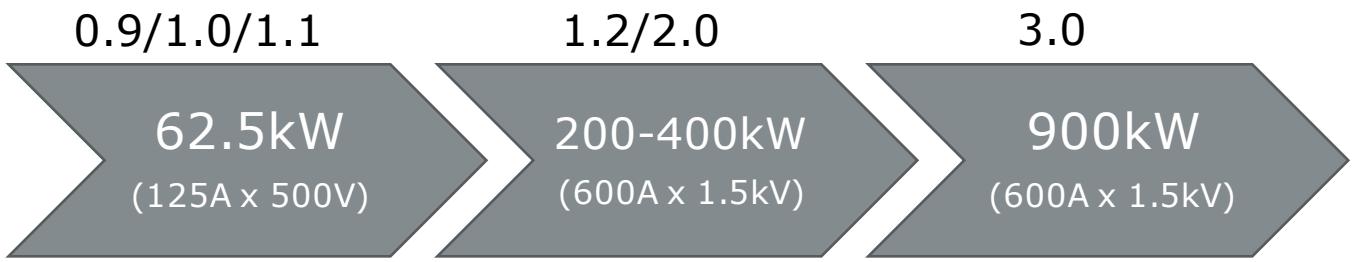
Main Differences

- Output voltage range extended to 150-1500Vdc
- Output current range extended to 0-600Adc
- Output power range extended to 0-900kW
- New ChaoJi connector
  - Combines GBT (ChaoJi 1) and CHAdeMO (ChaoJi 2)
- Changed and expanded communication
  - Connector latch status (ID:0x102)
  - Charger ID (ID:0x108)
  - Insulation check completion flag (ID:0x109)
  - Welding check status flag (ID:0x109)

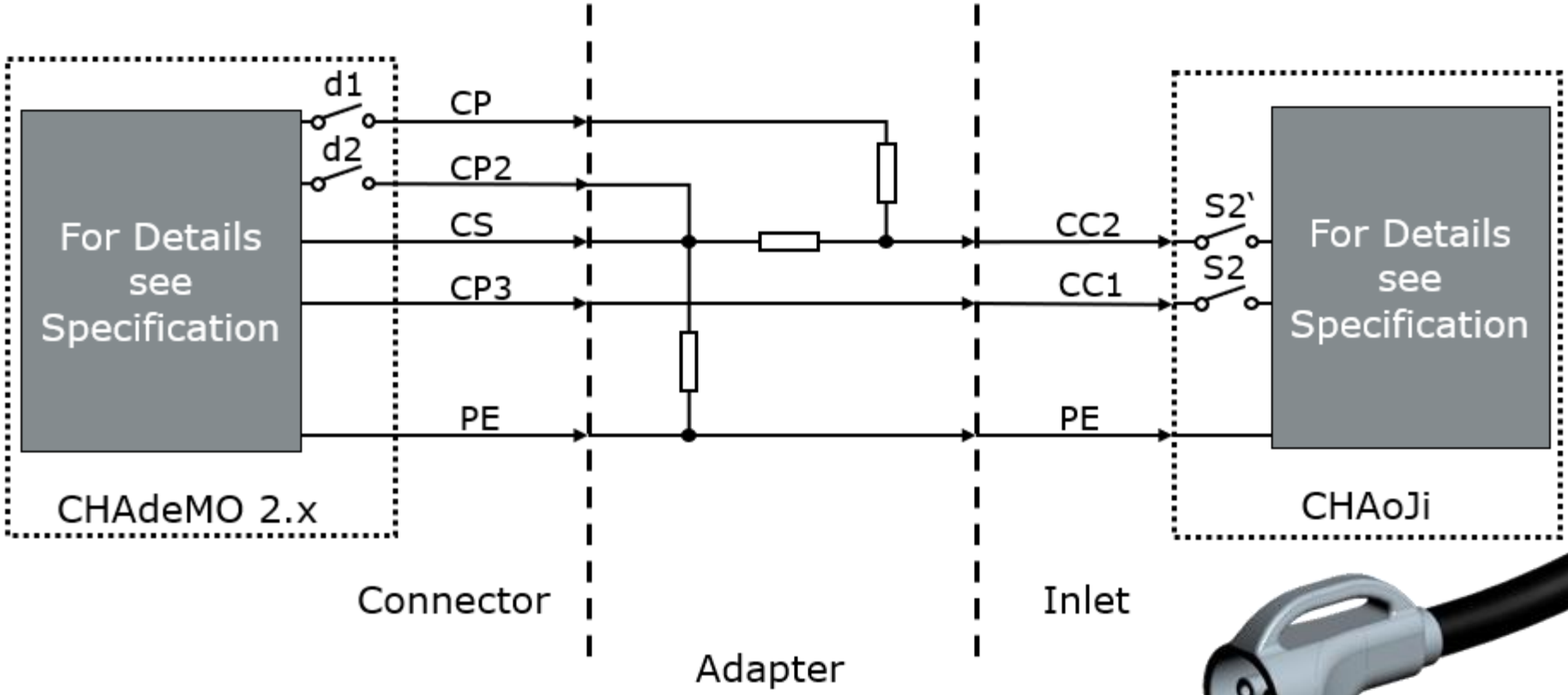


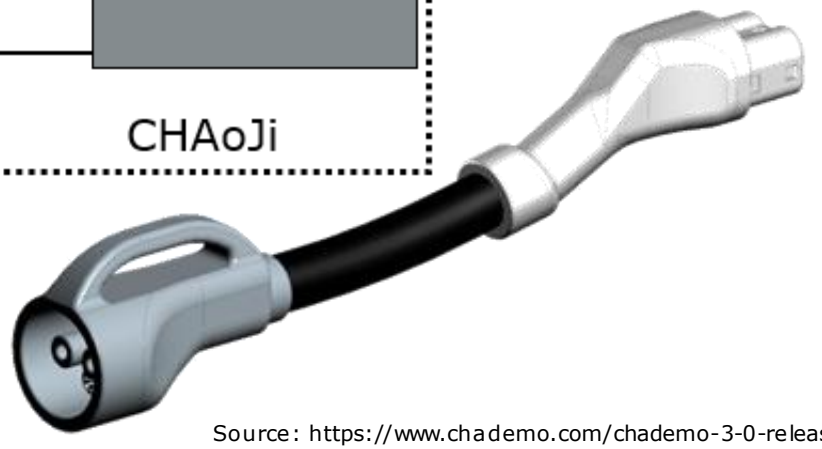
Source: https://www.chademo.com/chademo-3-0-released/



Interoperability Connector

- Backward compatibility is achieved by use of an inlet adapter
- Adapter combines CP, CP2 and CS to CC2





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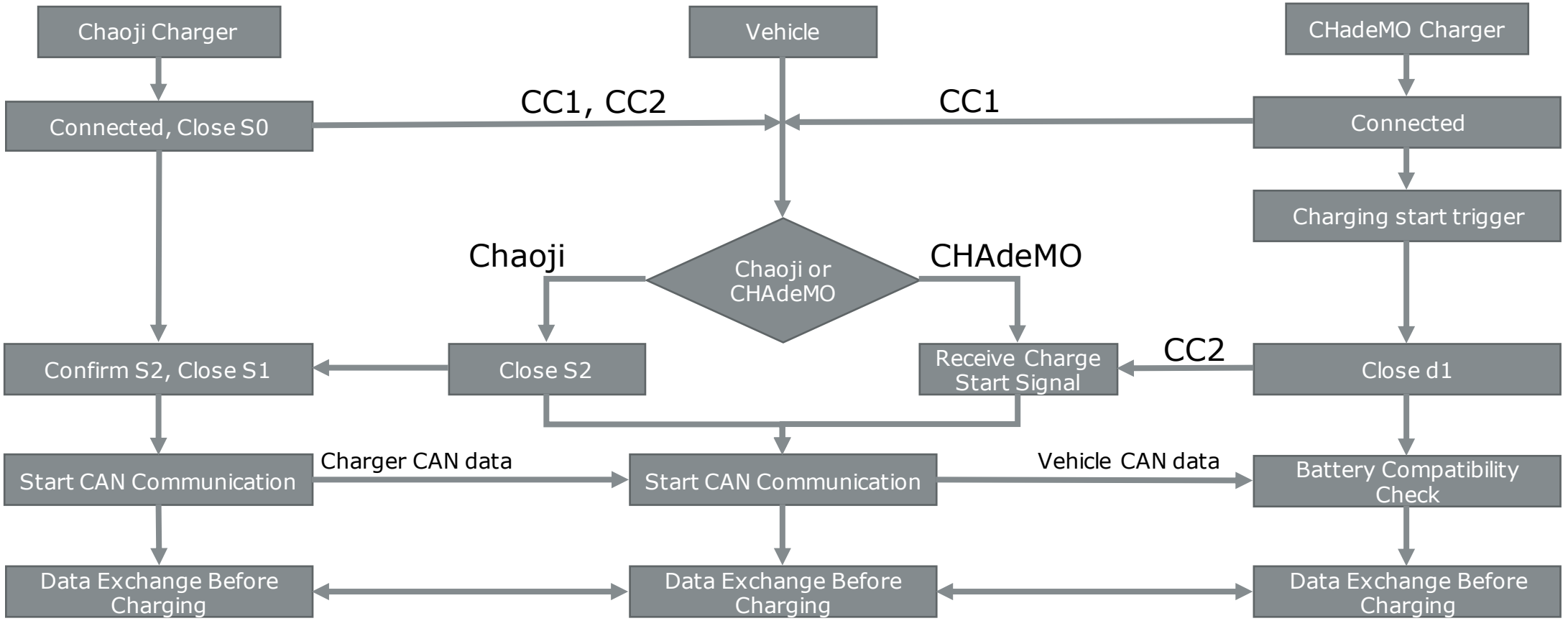
Interoperability Communication

CC1 and CC2 signal whether communication is in accordance with CHAdeMO 3.0 or 2.x



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