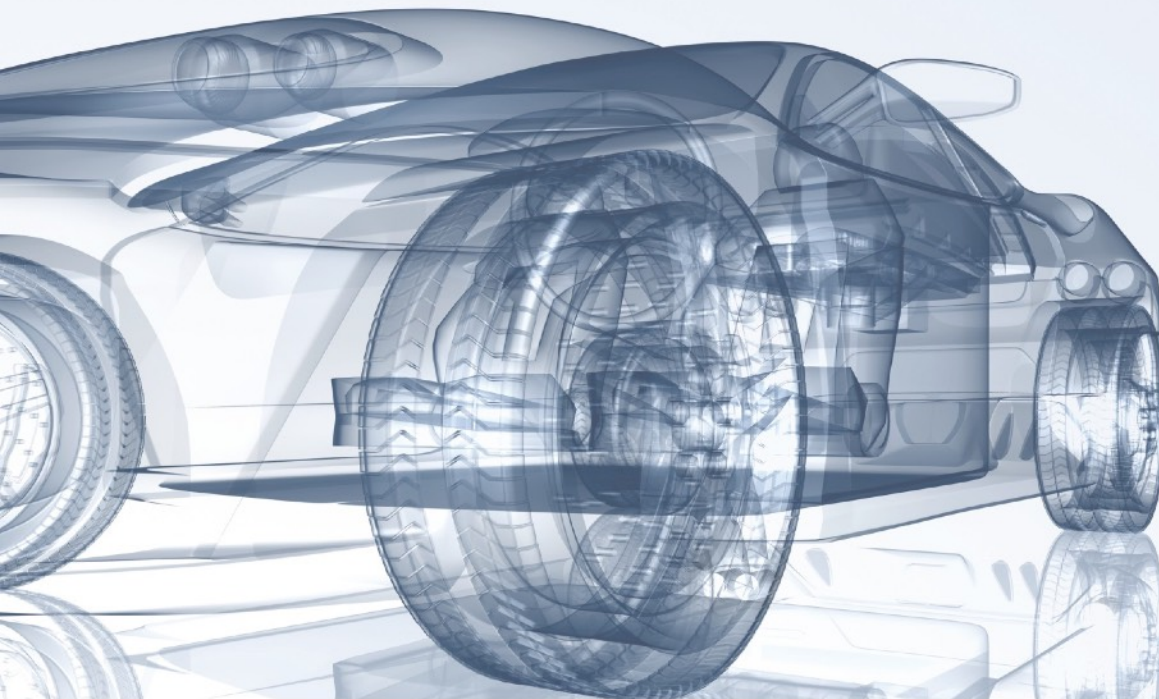


# evs 30



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Symposium & Exhibition

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Messe Stuttgart, Germany

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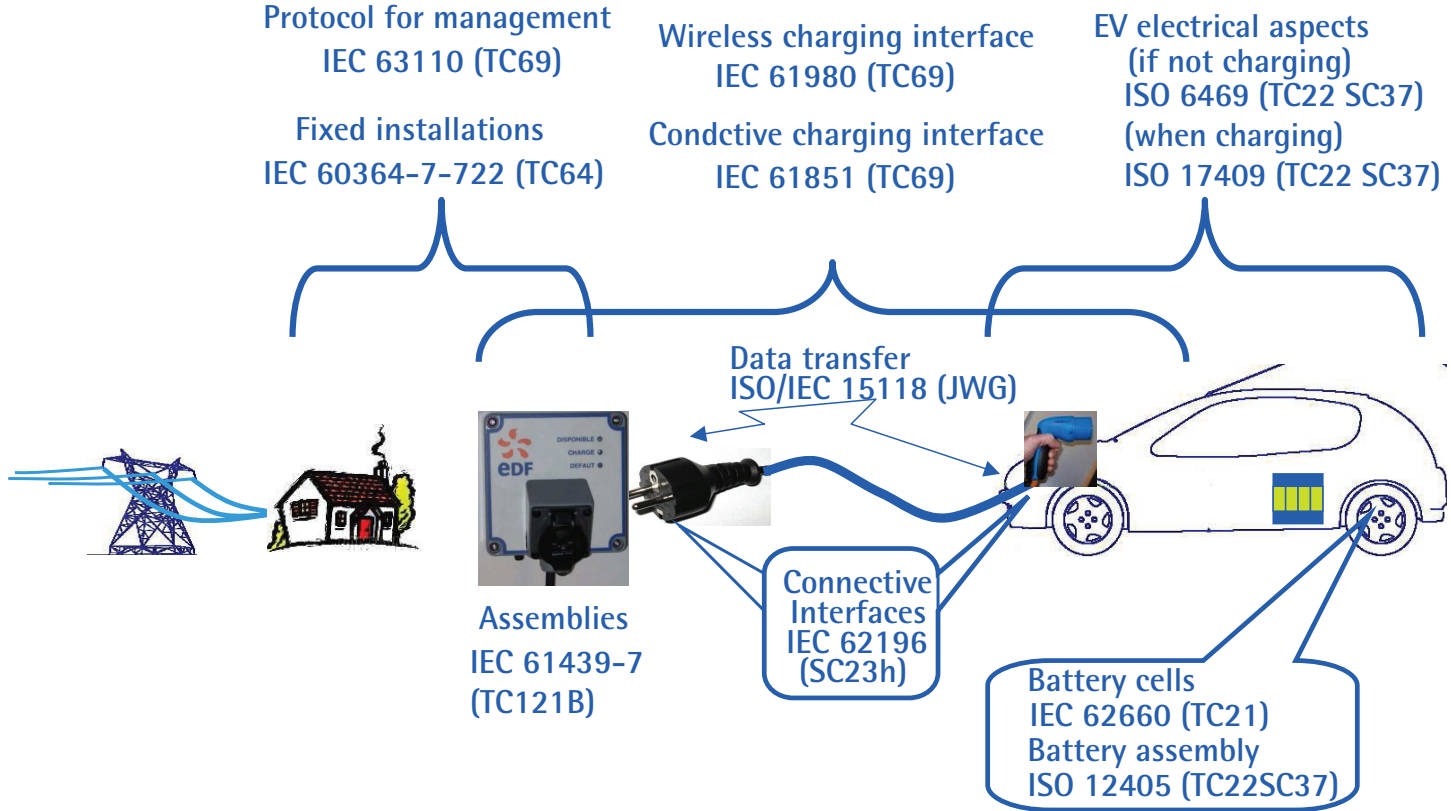
**swarco**



# International standardization of charging infrastructure: achievements and new developments

*P. Van den Bossche, VUB-MOBI, IEC TC69*

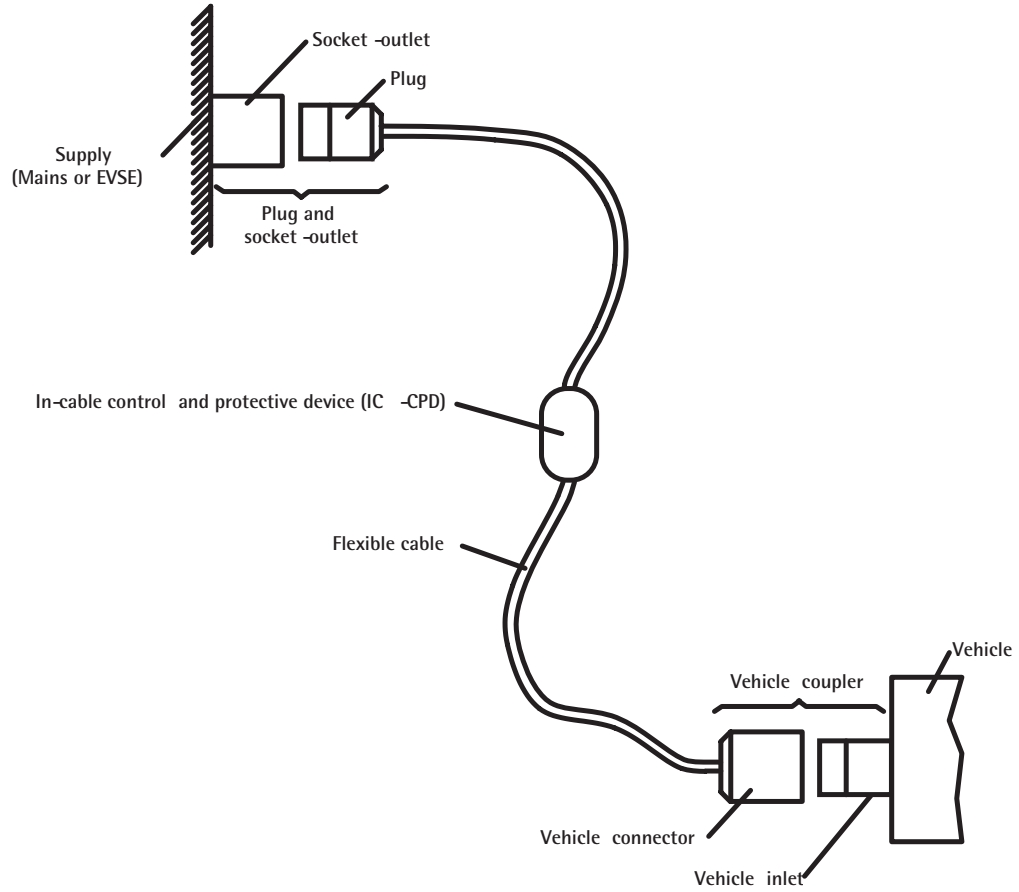
# Standard scene



# Conductive charging - IEC61851

- Third edition of IEC61851-1 now published
- Charging modes
  - Mode 1: deprecated
  - Mode 2: IC-CPD
  - Mode 3: a.c. charging with pilot
  - Mode 4: d.c. charging

# Conductive connection



# AC accessories

- Type 1 connector/vehicle inlet
- Type 2 plug/socket outlet and connector/vehicle inlet
- Good standardization
  - Type 1 connector (Case C) in US
  - Type 2 socket outlet in (Case B) in Europe



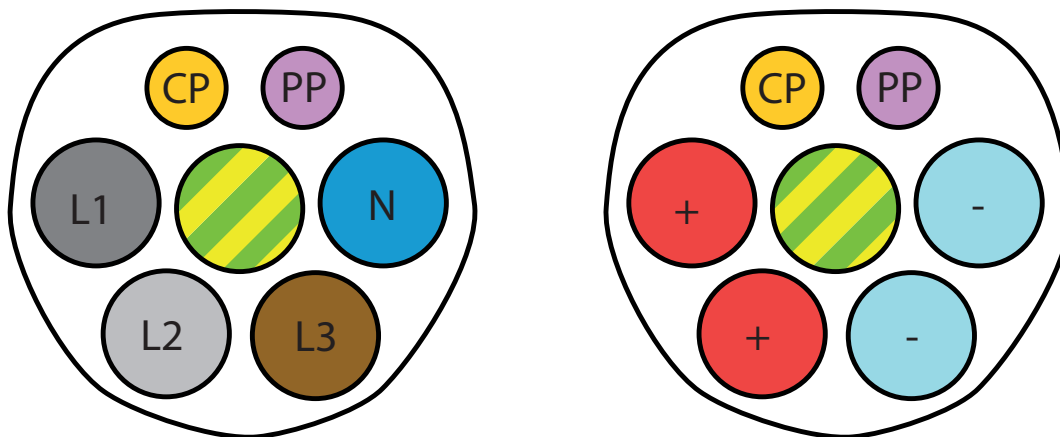
# DC accessories

- Coexistence of different solutions
- IEC 61851-23
  - CHAdeMO
  - CCS
  - Chinese system
- 3 way charging stations
  - CHAdeMO, CCS, 43kW AC



# DC over AC pins

- Still under consideration in standards
- Reduction of car body real estate
- Reticencies from electric sector
- Tesla in Europe



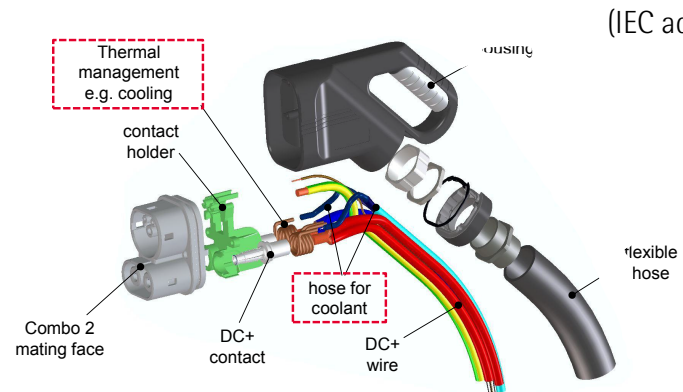
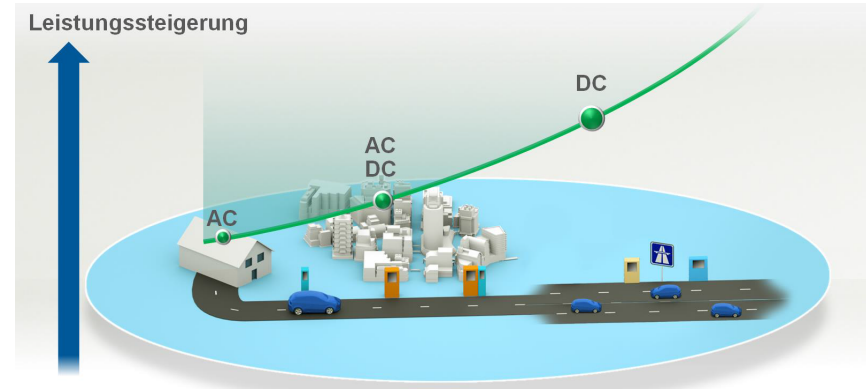
# Automatic connection systems

- IEC61851-23-1
- Protocol as for CCS (IEC61851-23)



# High power charging

- Thermal management
- Various actors
- Ad hoc group

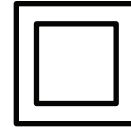


(IEC ad hoc group)

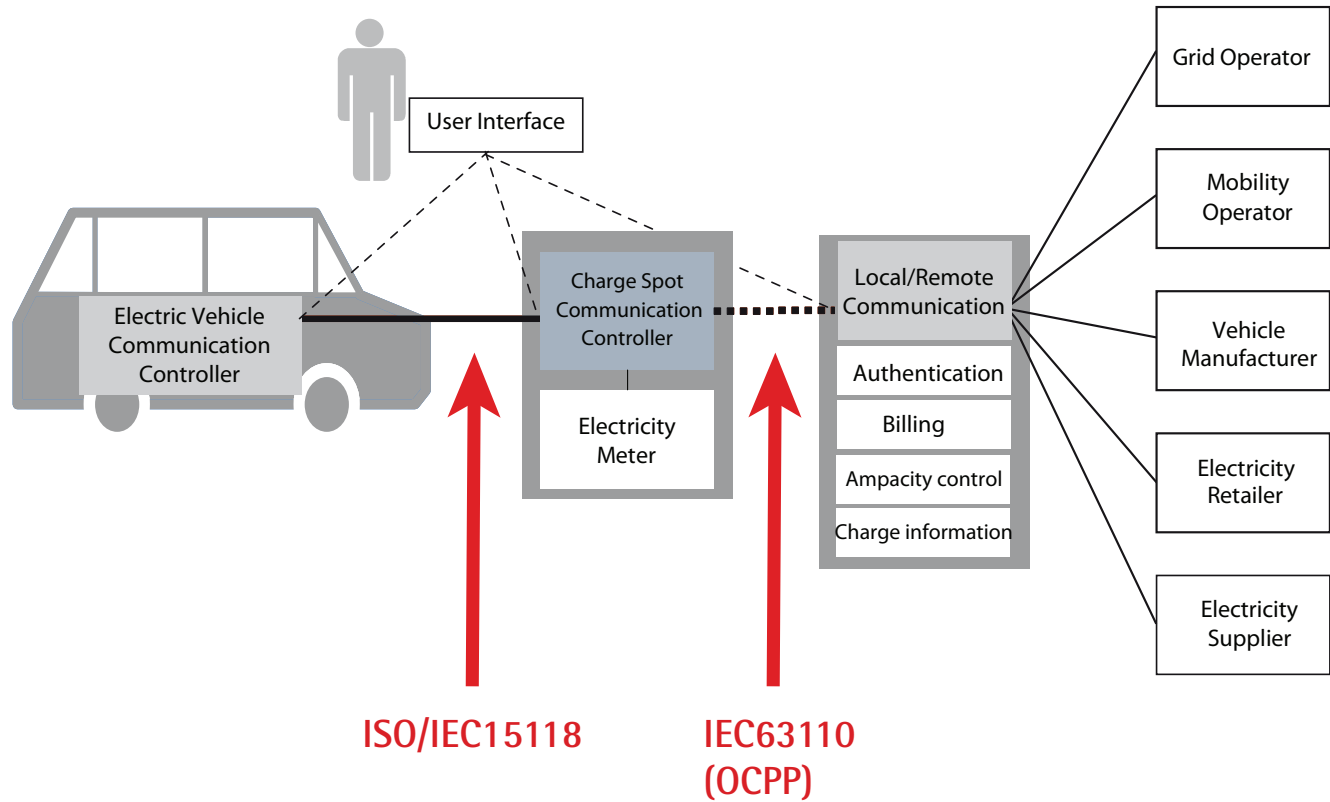
(IEC ad hoc group) 10

# Light electric vehicles

- IEC 61851-3 series
- Definition of scope
- Protection against electric shock
  - double or reinforced insulation
  - (in part 1: protective conductor)



# Communication

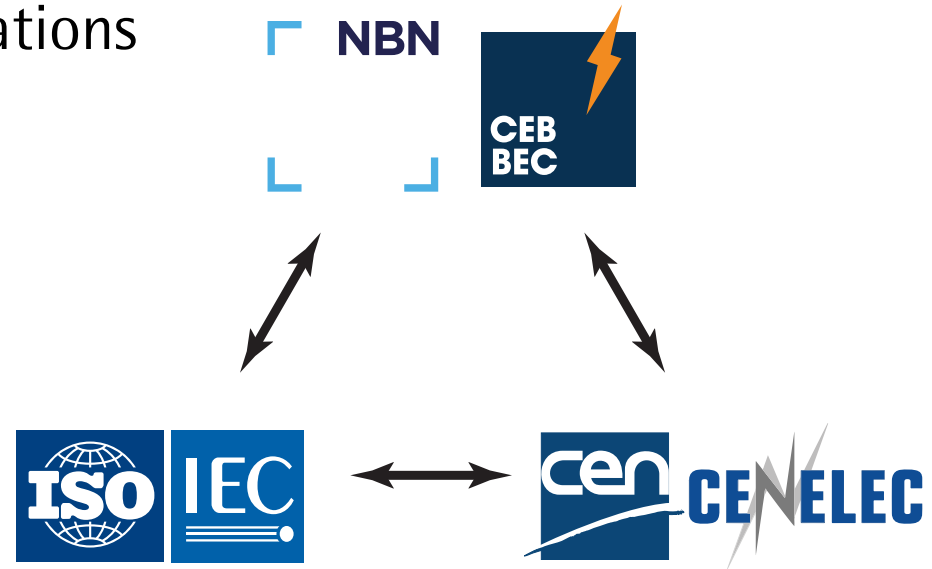


# Wireless charging

- IEC 61980 series
- Part 1 (general characteristics) published
- Parts 2 and 3 under development as TS
- Safety issues: EMF and thermal risks
- Interoperability issues

# Global, regional and national standards

- Adaptation of global standards
- Interaction with regulations
  - EU directives
  - Wiring regulations



# Conclusions

- The House of Standardization

