

Light EV Standardization

21st of September 2015

IAA new mobility world

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Category black = UNECE Trans WP. .29/1045
 Category blue = EU Type approval legislation 2002/24/EC
 •If a category refers direct to a value this value is regulated by legislation
 •L6e & L7e Weight without battery, technical requirements of (xx)
 •45km/h EU needs to be changed to 50km/h UNECE
 •20km/h GE needs to be changed to 25km/h
 •LEV can have also the addition "R" rang extended or "H" hybrid

↑ On-board charger > 3kW

↓ On-board charger < 3kW

only general information is not absolute

Reverse energy flow

UNECE R100

Category 2 = N(1,2,3)
Commercial EV/ Truck

Category 1-2 = M(2,3)
Bus

Category 1-1 = M1
(Full) Electric (Passenger) Vehicle (EV)
Range Extended EV (REV)

↑ Battery > 20kWh

↓ Battery < 20kWh

Category 1-1 = M1
City EV
Plug in Hybrid EV (PHEV)

Light Electric Vehicle (LEV) EU Type approval legislation

15kW motor power

Category 3-5=L5e
E-motor-trycicle Pedelec
E-motor-trycicle

Electric Cycles

4kW

Category 3-4=L4e
E-motor-cycle Pedelec (sidecar)
E-motor-cycle (sidecar)

Category 3-1=L1e
E-Bikes Pedelec
Scooter

Category 3-5= L7e (L5e)
Quadricycles 400kg
Commercial Quadricycles 550kg

Category 3-2= L6e(L2e)
E-light quadricycles 350kg

C 3-2=L2e
E-Trycicle

C3-1=L1e
E-Bike-Ped.
Moped

0.25kW

Category 3-3=L3e
E-motor-cycle Pedelec
E-motor-cycle

EPAC

45km/h

20km/h

45km/h

100km/h

75km/h

50km/h

25km/h

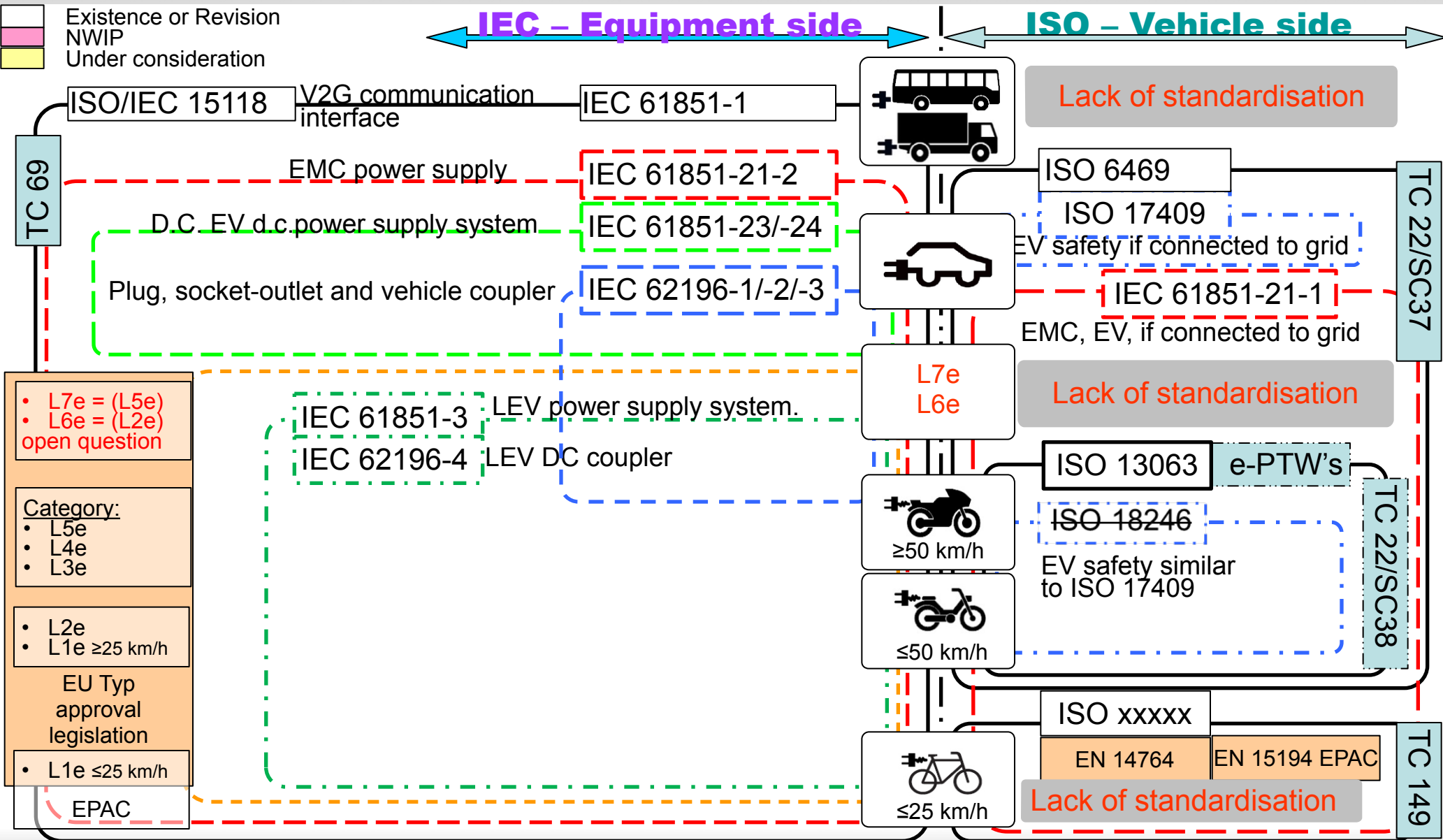
25km/h

50km/h

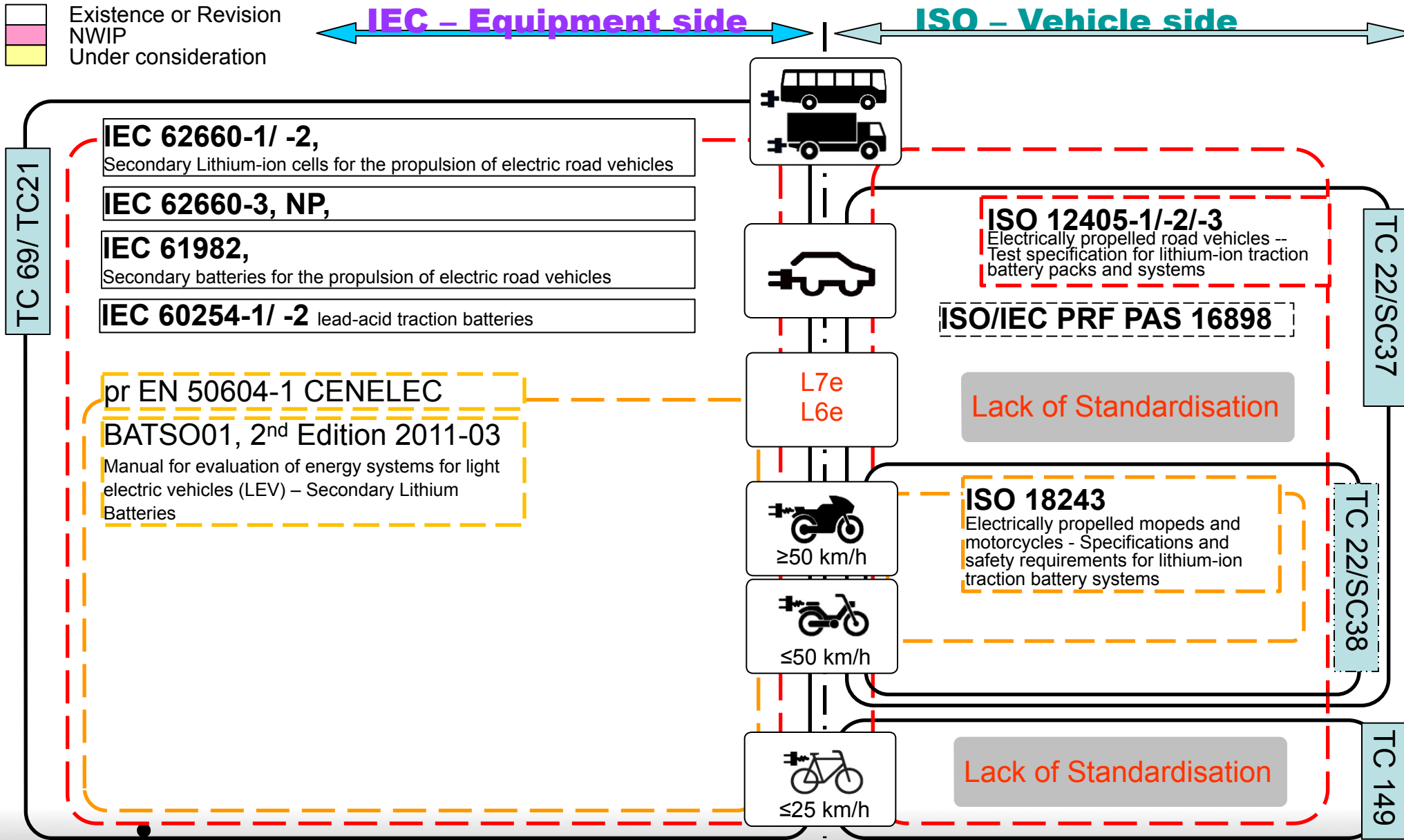
75km/h

100km/h

An overview of the standardization



An overview of the standardization

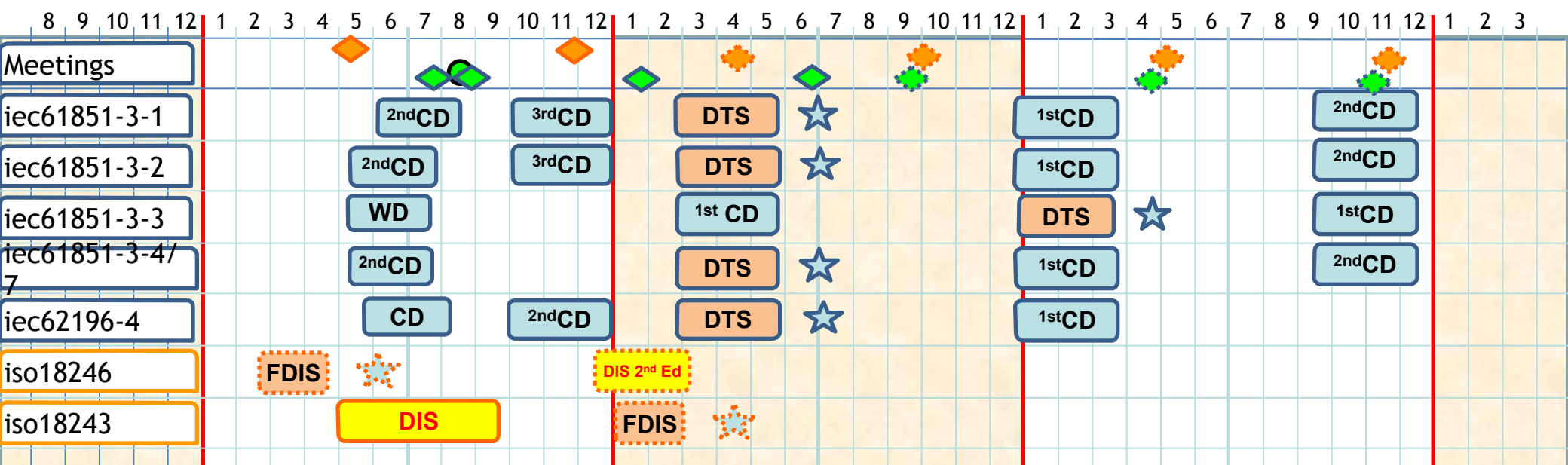


9/23/15

2015

2016

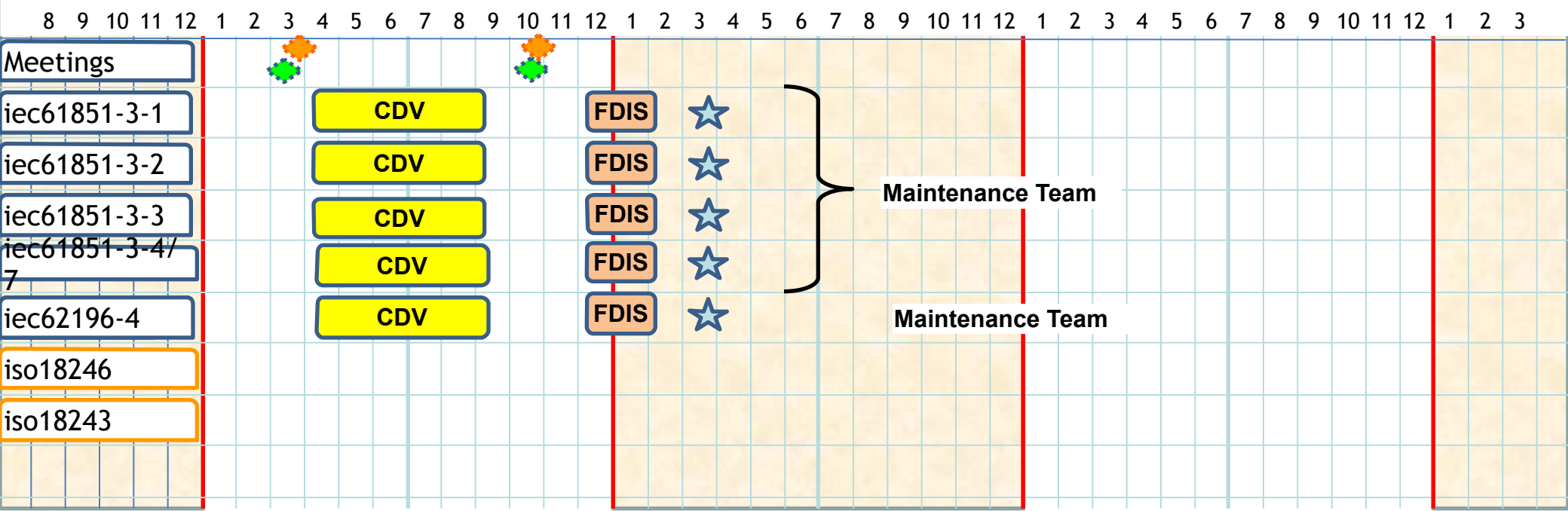
2017



2018

2019

2020



The present situation

- There are millions of electric two and three wheel vehicles
- Many of the manufacturers refer to the IEC 60335-2-29 for the design of the chargers
- This standard does not adequately cover the specific needs of this class of vehicle (charging outside ...)
- TC61 covers domestic applications and TC69 covers the charging of electric vehicles.
- TC69 wishes to work with TC61 to ensure that specific requirements be established that extend the IEC 60335-2-29 to this market.
- Initially this extra text will be included in a TC69 standard, and may be later adopted by TC61

Safety considerations

The safety concept in the IEC61851-3 series is based on several important points.

- Communication between the various devices (active or passive) in the "Energy Management System" (EMS) as described in the IEC 61851-3 series.
 - not communication as such, but the presence or absence of communication is one of the safety aspects;
 - communication can be done only if ALL circuits are closed, or simply all plugs or vehicle connectors are fully inserted. As long as this is not met, ALL devices are switched off (inactive) i.e. no contact voltages with more than 12 V DC (communication voltage) at any location of the system;
 - until all devices in the system have agreed to work together, the system is not switched on, the switches of the single active devices are set to "Off".

There are some more requirements to be fulfilled to get the system in work "active".

Safety considerations

- The above mentioned issues force the JPT61851-3 to cover ALL the devices in one series of standards. The battery system and the voltage converter unit (VCU) (everyday language "charger") are not independent units, which can be specified independently. This is one of the reasons we call the "charger" VCU because it is not a simple and stupid "charger" it is an active device in a complete system which has to be handled by a single group.
- By the way it should be mentioned that the IEC 61851-3 series fulfills an important mandate of the EU Commission, the mandate M468 the EU Commission is asking explicitly for a single charger for all electric vehicle. That this demand is going too far is clear, with the Standard IEC 61851-3 the mandate can be met for the light-EVs.
- As known from the mobile phones, the "charger" has a much longer life expectancy than the battery and the EV. (This was one of the reasons for the mandate 468).

Safety considerations

This concerns in particular:

- *Classification*

- *Characteristics of EV supply equipment and output*
- *Protection against harmful ingress of water*
- *Special environmental conditions*
- *Protection against electric shock*
- *Rated Voltages*

- *Protection against access to live parts*

- *Moisture resistance*

- *Protection against ingress of water*

- *Components*

- *Plugs and socket-outlets and vehicle couplers*

- *Supply connection and external flexible cords*

- *Portable voltage converter units*
- *Appliance Inlets and interconnection cords*

- *The mechanical resistance,*

- *The insulation level between the AC input and the DC output,*

- *The marking.*

More Information:

- Working in the field of electro mobility since 1986
- Manager of Elektromobil Club of Switzerland between 1993 and 2009
- Manager of Park & Charge since 1998
- Manager of LEMnet since 1998
- Member of IEC TC64, 60364-7-722
- Member of IEC TC 69, 61851-1/-21/-22/-23/-24
- Member of IEC TC 69, 62840 Battery Swap Systems
- Member of IEC TC 77, EMC, Cispre
- Convenor ISO/IEC JPT 61980 Wireless power transfer
- Convenor ISO/IEC JPT 61851-3 LEV, Light electric vehicles
- Convenor ISO/IEC JPT 62196-4 LEV, Vehicle-coupler
- Member of IEC TC 23h EV couplers IEC62196-1/-2/-3
- Member of IEC TC 23e IC-CPD, IEC62572
- Member of ISO TC22/SC31/SC37/SC38/SC40 and TC149
- Member of eM-CG (e-Mobility Coordination Group of the EU)
- Member CENELEC TC69x
- Convenor CENELEC TC69x WG3 Wireless power transfer
- Convenor CENELEC TC69x WG5 Light electric vehicles, two- and three-wheel vehicles
- Member of CENELEC TC23bx, TC21x
- Member of CEN 301
- Member of CEN 333

More Information:

Thanks for your attention

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