E-buses charging standardization and interoperability

Mehrnaz Farzam Far

Standardization and interoperability: what they are and why they matter?

Standardisation and interoperability of e-bus charging is key to enable the upscale of HD-EVs fleets.

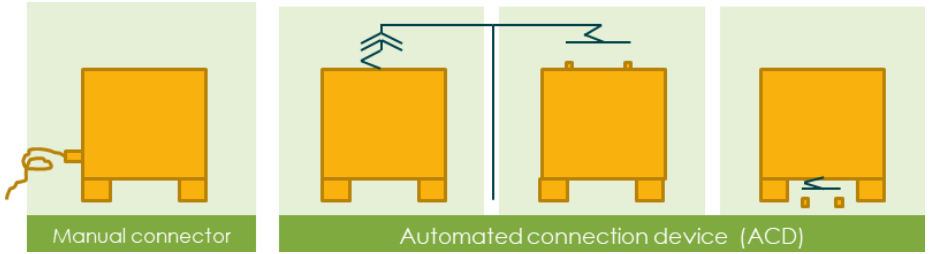
- It provides an indispensable basis for wider market penetration and enables the flexibility and optimisation of bus operations and higher rest value.
- It contributes to cost reduction of charge infrastructure by assuring functionality, compatibility, and interoperability.
- It does not bind the product choice to one solution or supplier.

Agreed standards encourage innovation, boost confidence and create suitable market conditions for further technological development, reducing deployment barriers and facilitating competition.

- Reliable, functioning interoperability between vehicles and chargers (of different vendors) is instrumental
- A standardized common test protocol secures compliance

Development of European Electric Bus Standardisation

2013	2014	2015	2016	2017	2018
• ZeEUS project	• AFI directive	• EC Mandate 533	• ZeEUS e-bus standardisat-ion group	• ASSURED starts	• ZeEUS ends • CEN-CENELEC recommendation



ASSURED Project

Fast and smart charging solutions for full-size urban heavy-duty applications

- Develop **innovative** heavy-duty and medium-duty **vehicle solutions**
- **Interoperable charging infrastructure** concepts
- Enhancing performances, comfort and safety while reducing the TCO and contributing to a competitive and sustainable mobility

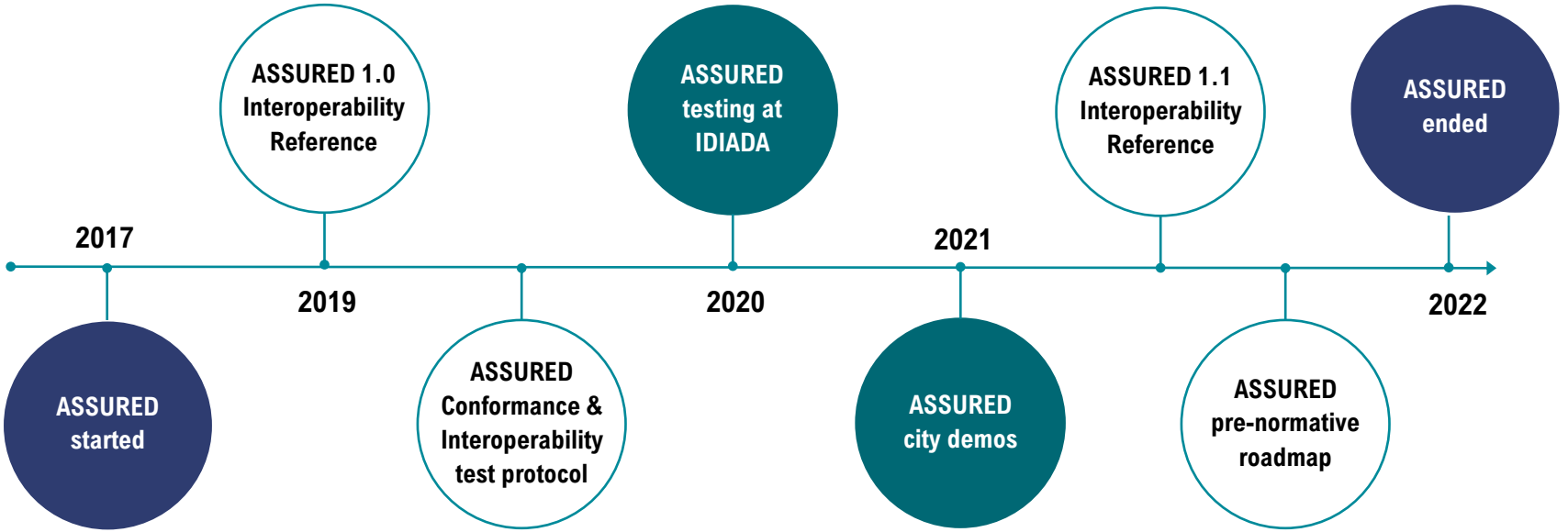
769850-ASSURED-H2020-GV-2017

Period: October 2017 - March 2022 (4.5 years)

Project total cost: EUR 23,648,132.51/ **EU contribution:** EUR 18,657,433.06

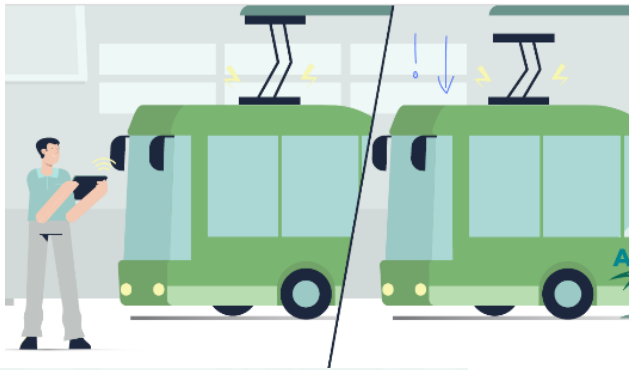
Partners: 39 partners from 12 countries representing industry, research centres and local governments

ASSURED activities on STD and INT



ASSURED 1.1 Interoperability Reference Available Online

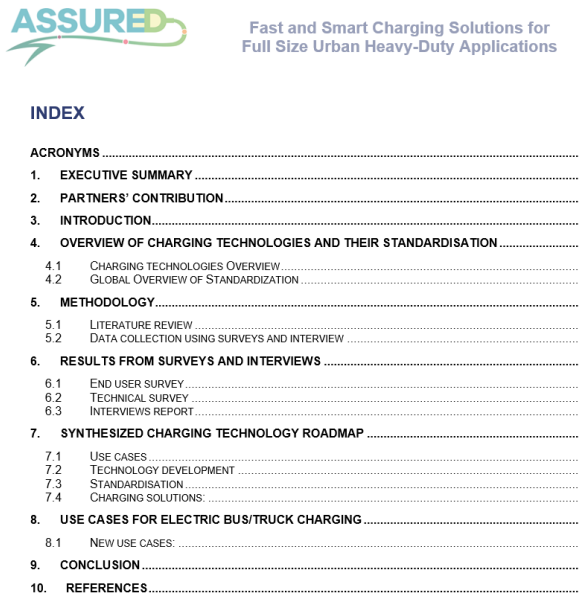
- Describes standards and definitions used in ASSURED
  - Mechanical interface
  - Electrical interface
  - Communication
  - Deviations & additional specifications



SCAN ME

ASSURED Pre-normative technology roadmap Available Online

- The roadmap supports:
  - future standardisation effort by providing the evolvement of various charging technologies aspects and their future requirements
  - end users in selecting their charging technologies by familiarising them with the charging technologies and concepts, and their perceived potential.



ASSURED

Fast and Smart Charging Solutions for Full Size Urban Heavy-Duty Applications

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ASSURED

Electric Bus Charging Laboratory

- Electrical installation capable to support super-fast chargers up to 600kW
- 1MW AC Grid capability
- IDIADAs EV & EVSE Simulator
- Tests under real power up to 500kW (1000V)
- ACD test station with ACD systems Type A and Type B installed and control system
- PLC and Wireless communication interfaces

PANTO UP 1000A

PANTO DOWN 1000A

CCS PLUG 500A

Test activity overview

Conclusions

Standards are to ensure full interoperability, but they must be understandable for the relevant stakeholders.

Beside standards, conformance and interoperability testing is required for full interoperability.

ASSURED 1.1 Interoperability Reference will be a living document after ASSURED project, with the coordination of UITP and support of ASSURED partners.

Upcoming project: eBRT2030 (HORIZON-IA)

- European Bus Rapid Transit of 2030: electrified, automated, connected
- Aim at creating a new generation of advanced full electric, urban, and peri-urban European Bus Rapid Transit (BRT) enhanced with novel automation and connectivity functionalities, to support sustainable urban transport by reducing cost/km/ passenger, TCO, GHG, and pollutant emissions and traffic congestion.

beyond
the obvious

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