



# Electrified Urban Bus Innovation

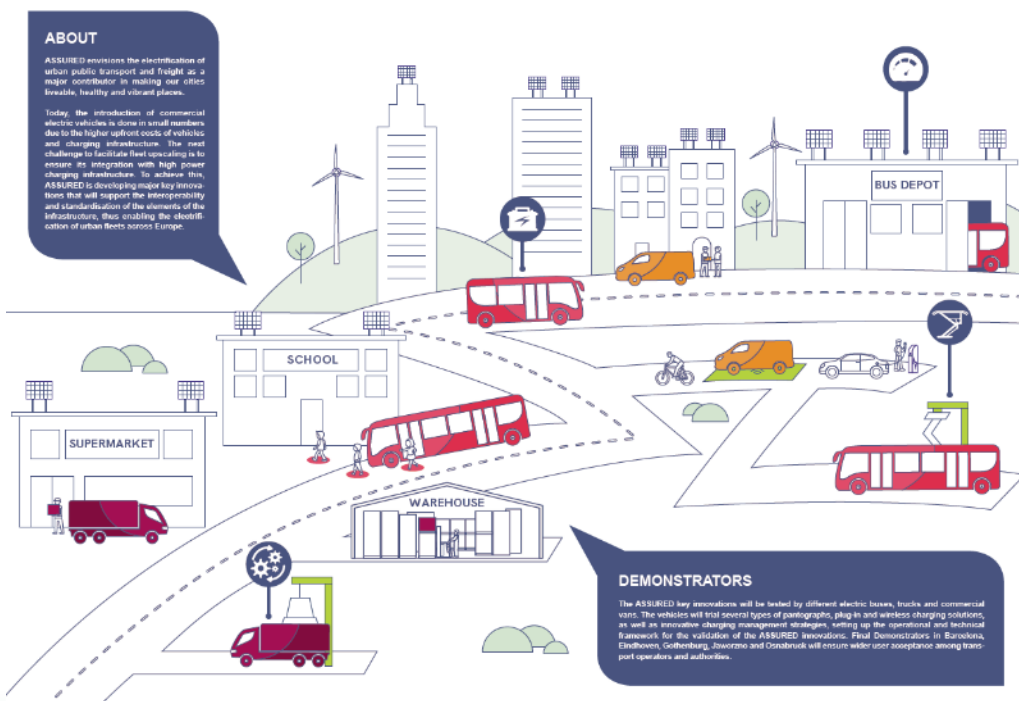
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# Towards larger e-fleets



GV WP “Electrified urban commercial vehicles integration with fast charging infrastructure”

Coordinated by **VUB**

Oct 2017 – **Sep 2021**

**€23.64 million**  
(€18.65 million EU funding)

**39** Partners

# Objectives

- Development of **ASSURED Key Innovations**
- Demonstration of
  - **8 Use Cases** distributed in **3 Pillars** (e-bus, e-truck, e-van)
  - Efficient **wireless charging** solutions (up to 100kW) for e-vans
  - **User Acceptance** demonstrators with public buses & trucks in 5 cities
- Evaluation and improvement of the **cost, energy efficiency, grid impact**
- Support to the **standardisation** bodies (i.e. CEN-CENELEC, ISO, IEC)



# Key innovations

- **Interoperable high power** charging systems up to 600 kW & high transfer efficiency.
- **Charger-vehicle interoperability and standardisation** to enable economic viability of urban HD and MD vehicles also without government subsidies.
- Innovative **energy storage systems & charging management strategies** to optimise energy efficiency and TCO.
- Smart tools for **fleet optimisation** through fast opportunity charging, considering operational costs and their impact on the power grid and battery ageing.



# Pillar I: e-Buses



Iveco  
Rorthais



Volvo  
Gothenburg



Irizar  
Bayonne



VDL  
Helmond



Vectia-CAF  
Castejón

# Pillars II & II: e-truck & e-van



Munich



Gothenburg



Turin

# Demonstrators for User Acceptance

Barcelona  
& Osnabruck

- Interoperability between buses and chargers of different brands

Gothenburg

- Interoperability between bus and urban trucks

Eindhoven &  
Jaworzno

- Smart charging for fleet upscale



# Interoperability

## Bus-Charger

- **2 cities:** Barcelona & Osnabruck
- PTOs/PTAs, OEMs, charging suppliers
- 6 buses trialled in real operation with **different chargers**

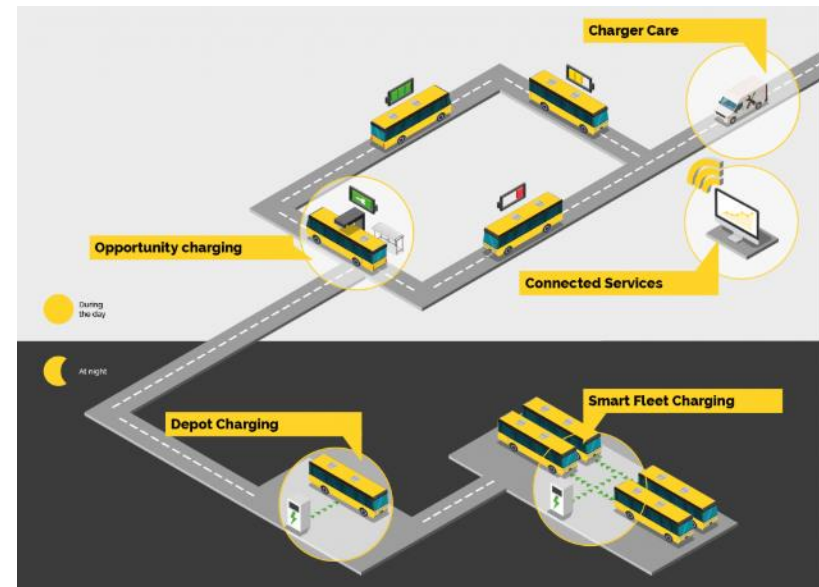
## Bus-Truck

- **1 city:** Gothenburg
- OEMs, charging suppliers
- 1 delivery truck trialled in real operation
- **Shared charging infrastructure** for e-bus and e-truck



# Smart charging management & efficiency

- **2 cities:** Eindhoven & Jaworzno
- **Fleet up to 100 buses**
- Impact on **grid & battery lifetime**
- Optimisation of **TCO**



# Project phases

Operational specifications & requirements and city needs

PHASE 0

- Standardization support & Development of Conformance/Interoperability Test Framework
- Interoperability and conformance tests of charging solutions

PHASE I

Use cases (6 HD urban buses)

PHASE II

- User Acceptance & Demonstration in Cities
- Evaluation of Use Cases and Demonstration

PHASE III

# Thank you!



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