

trolley:2.0

for smart cities



- **Partner:**
 - trolley:motion, Austria (Coordinator), AT
 - Barnim Bus Company mbH & Technical University of Dresden, DE
 - Evopro Group, Szegedi Közlekedési Kft. & University of Szeged, HU
 - Technical University of Delft & Power Research Electronics BV, NL
 - University of Gdansk, PL
- **Duration:** 04/18 – 09/20 (30 months)
- **Budget:** €2.887.580 - Funding: €1.958.590

Main goals

TROLLEY 2.0 aims

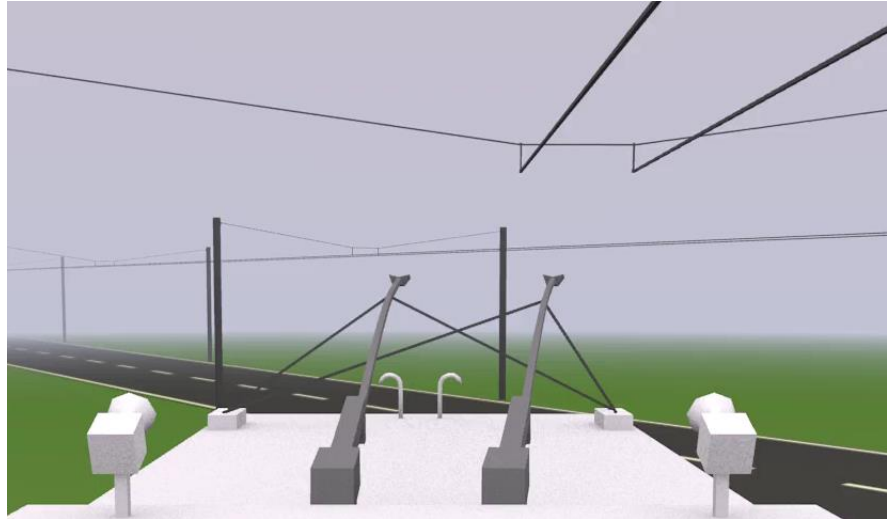
- to improve the efficiency of public transport based on **battery supported trolleybuses**
- and to integrate **new electro mobility services** based on a **smart trolley grid** as backbone for charging solutions in a smart city.



Prototypes & Innovations:



Conversion of an electric midi-bus into trolley-battery charging bus & testing of prototype bus in TROLLEY 2.0 partner cities (Evopro, all cities)

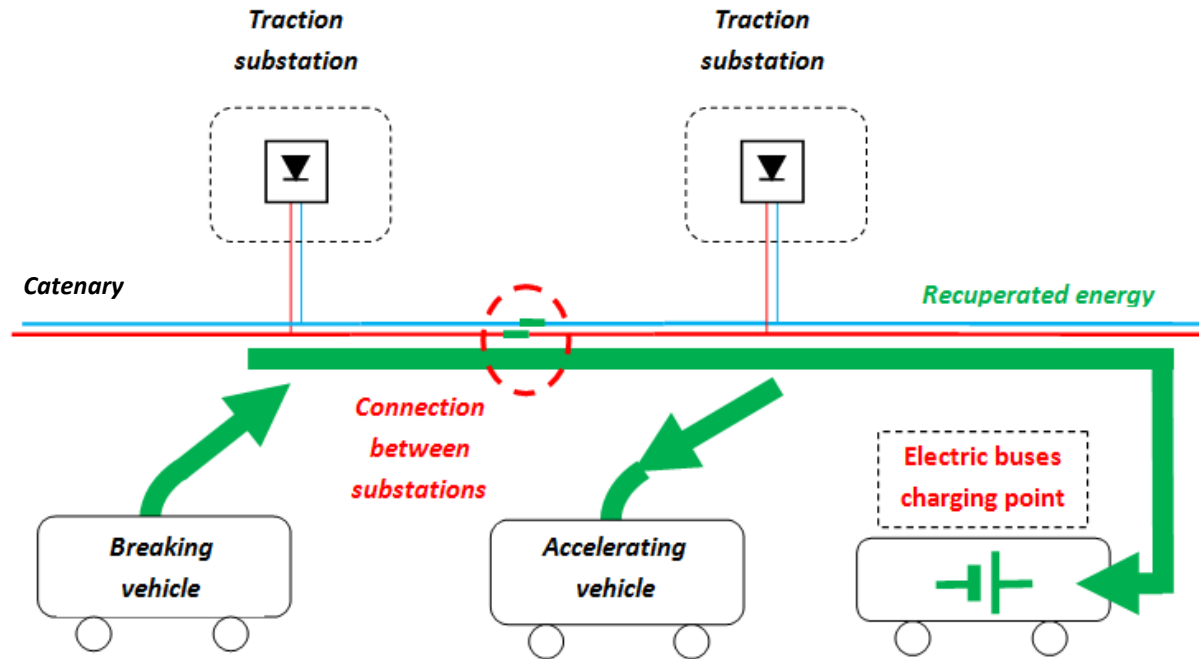


Testing of automated wiring technologies in TROLLEY 2.0 partner cities (Eberswalde, Szeged)



Testing of energy storage concepts integrated into trolley grid / substations (incl. 2nd life batteries) (TU Delft, PRE, Szeged)

Smart trolley grids:



Billateral energy supply & optimised usage of recuperation energy by balancing energy flow and levelling voltage drops (Gdynia)



Integration of RES into trolley grids
(TU Delft, PRE, Uni Gdansk/ Gdynia)

Networking and knowledge exchange with stakeholders: User Forum and Twinning Programme

- **Twinning arrangement with associated partners** to develop implementation scenarios & replication plans (Salzburg, AT; Solingen, DE; Arnhem, NL; Tychy, Lublin & Gdynia PL; Budapest, HU)
- **User Forum** to foster knowledge exchange (**workshops with 20-25 stakeholders & site visits**)

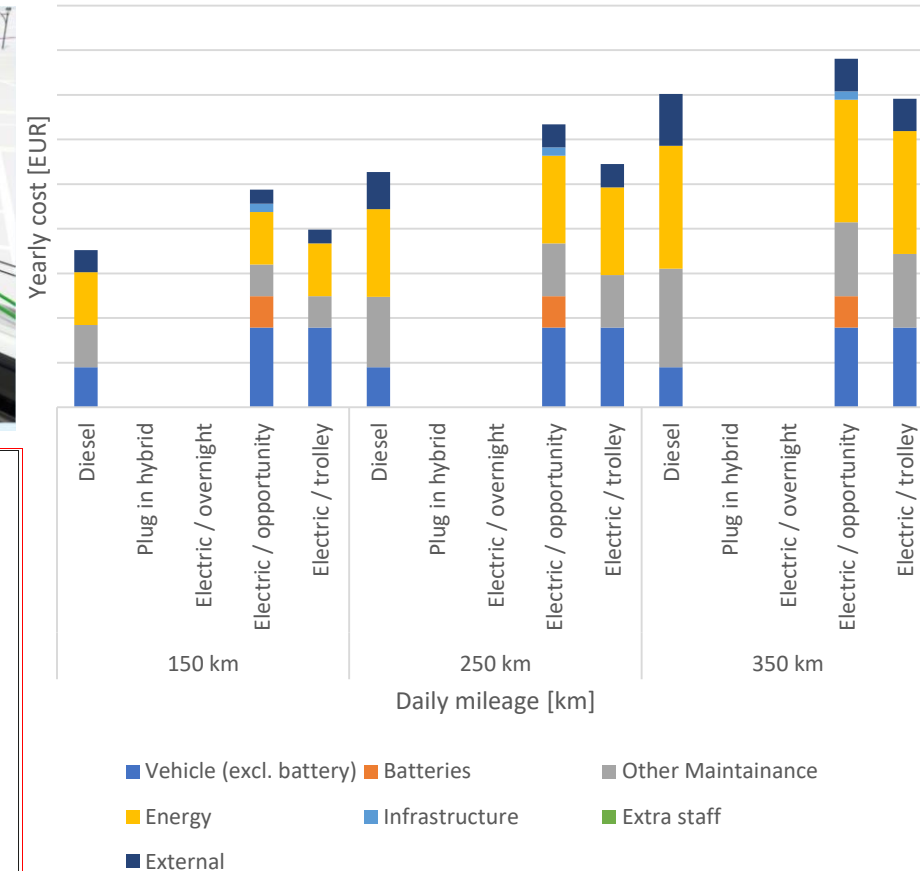


Trolley 2.0 User Forum Members

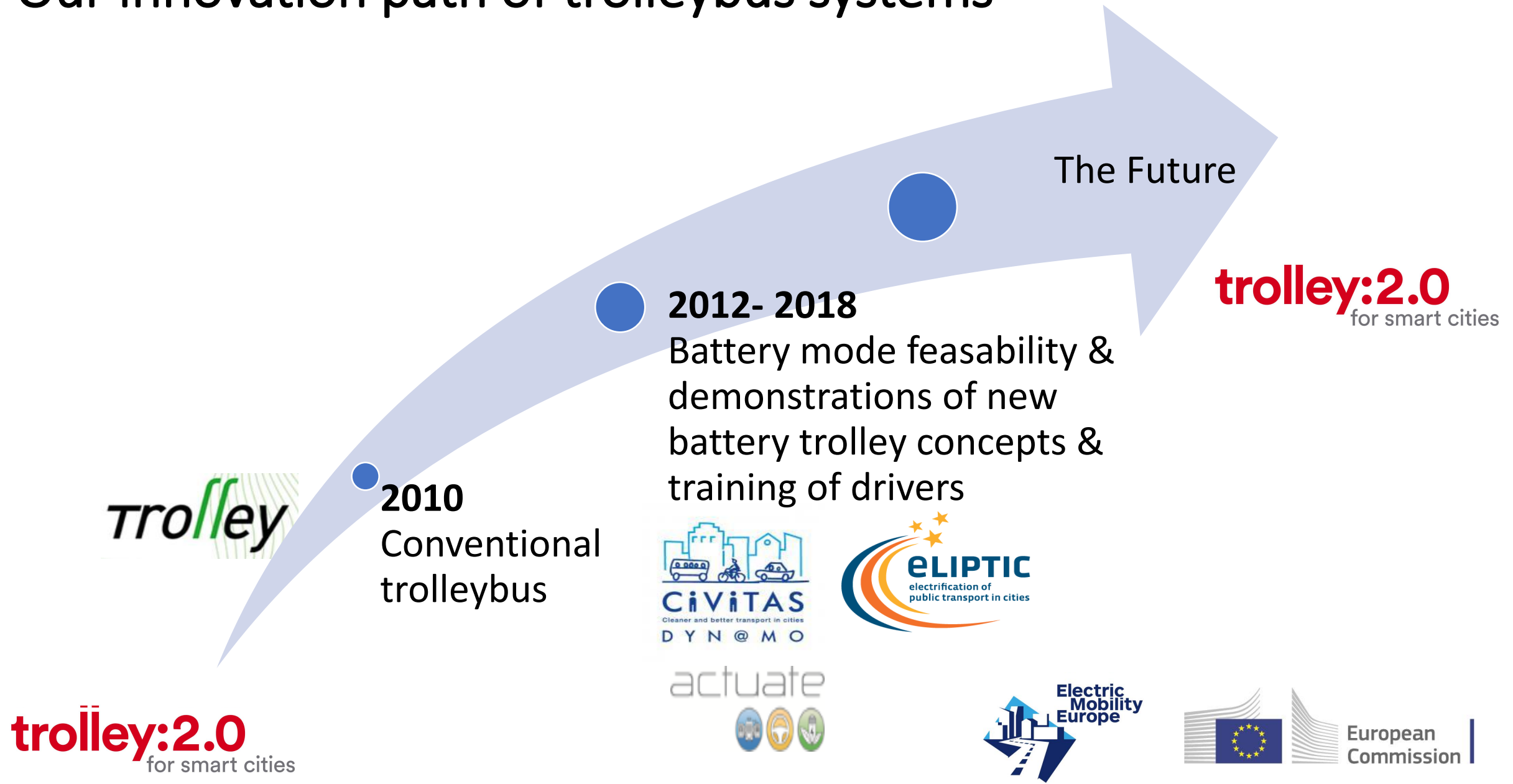
- Salzburg AG, AT
- Stadtwerke Klagenfurt, AT
- Stadtwerke Solingen, DE
- Budapest BKV, HU
- BVG Berlin, DE
- Stadtwerke Marburg, DE
- PKT Gdynia, PL
- MPK Lublin, PL
- TLT Tychy, PL
- Municipality of Arnhem, NL
- Hordaland County Council, (Bergen) NO
- PMDP Pilsen, CZ
- Maribor City Council, SI
- TPER Bologna, IT
- OSY Athens, GR

Exploitation and Dissemination: Tools, media & events

- Provide new knowledge on efficiency, regulation and conditions for market uptake:
 - **Tools** (CBA model, battery scalability for IMC, best-practice platform)
 - **Recommendations** on IMC implementation, regulatory frameworks, business case development
- **Synergies with ongoing initiatives/ projects and events:**
 - Clean Bus Deployment Initiative
 - ASSURED, new H2020 projects
 - TM, Busworld, UITP summit



Our innovation path of trolleybus systems



Smart cities & electric public transport – an integrative task!

Decarbonisation

Digitalisation

Automation

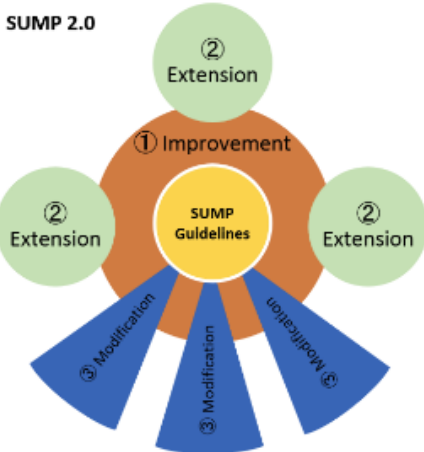


trolley:2.0
for smart cities

Smart policies

Smart planning

Interoperability



Electric public transport – push factors

Decarbonisation

Clean Air



trolley:2.0
for smart cities



MOBILITY AND TRANSPORT

European Commission > Transport > Transport themes > Clean transport, Urban transport > Clean and energy efficient vehicles

[Home](#) [Transport Modes](#) [Transport Themes](#) [Media Corner](#) [Facts & Figures](#)

Clean transport, Urban transport

Clean Vehicles Directive

The Directive on the Promotion of Clean Introduction of environmentally-friendly the operation of vehicles over their whole vehicles, as covered by the public procurement

If the impacts are monetised for inclusion calculating the lifetime costs linked to the

Documents on this website should facilitate



GREEN CITY PLAN HAMBURG

Masterplan für die Gestaltung nachhaltiger und emissionsfreier Mobilität in Hamburg

im Rahmen des

Sofortprogramms Saubere Luft 2017 – 2020





Electric public transport – push factors



Smart cities & electric public transport – an integrative task!

The future of transportation is a network of autonomous vehicles. Will you be a part of it?



Earn DAV Tokens by providing transportation services

Let your self-driving car give rides to passengers when you're not using it. Have your drone help with deliveries around town.



Go anywhere or send/receive anything in minutes

Send a package, book a ride, or have lunch delivered instantaneously. Utilize the efficiency for your business and supply chains.



Service providers keep everything running smoothly

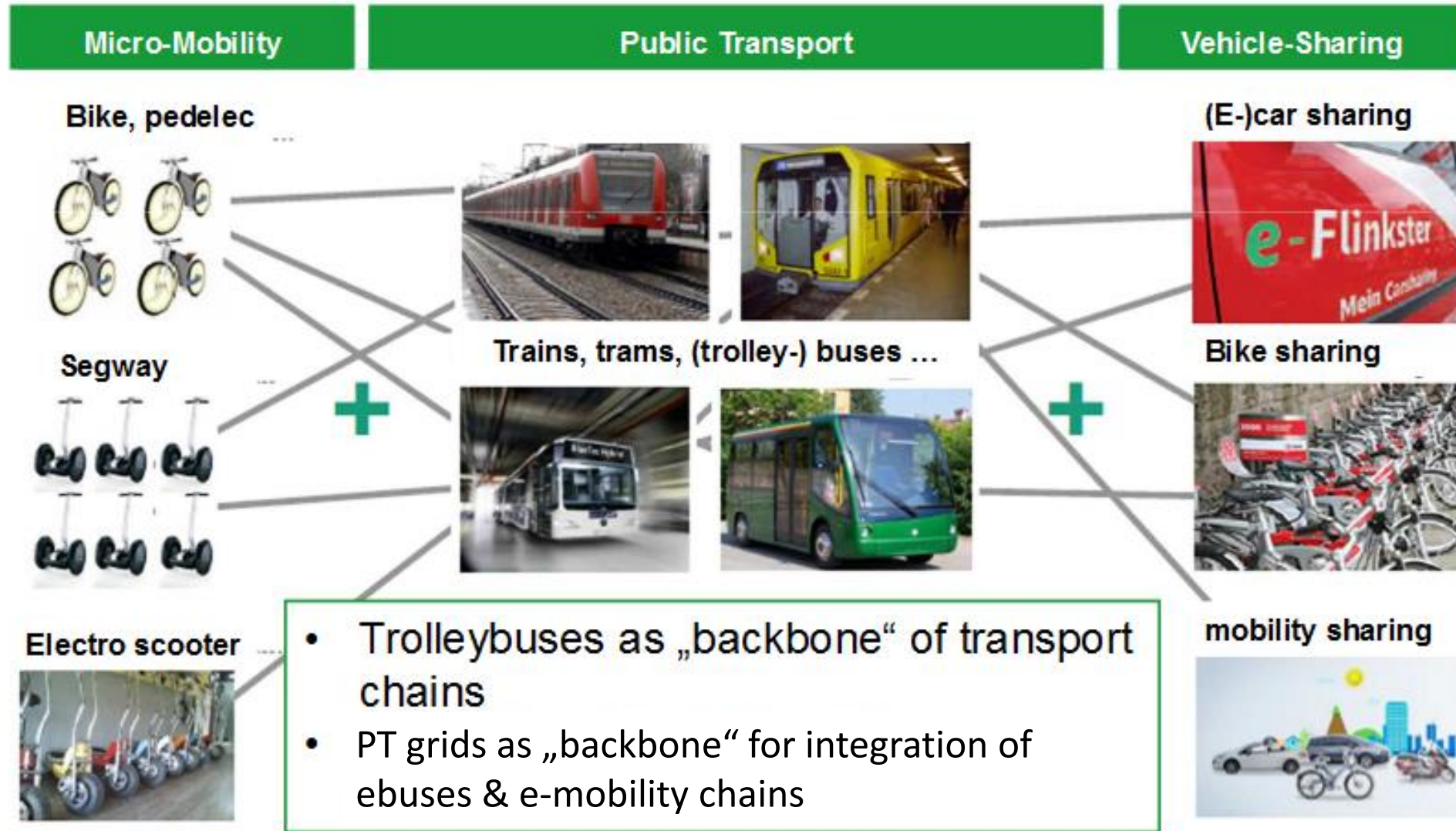
Benefit from the efficiencies of service providers who keep your vehicle charged, clean, and operational. Become a service provider and earn DAV Tokens.

Source: Bitcointalk: [@sammygye](#)

Smart cities & electric public transport – an integrative task!



Electric public transport as backbone in smart cities



Source: Spath, IAO, 2011

Let's be smart together!

Thank you for your attention!

Alexandra Scharzenberger

trolley:motion

Tel. +43 664 4141 866

scharzenberger@trolleymotion.eu

www.trolley-motion.eu

Wolfgang Backhaus

Tel. +49 221 606055 19

w.backhaus@rupprecht-consult.eu