eLIPTIC
electrification of
public transport in cities

CIVITAS ELIPTIC 3rd Webinar:
Experiences from European cities in using electric public transport infrastructure for the charging of other e-vehicles

9 April 2018, 11:00 - 12:30

2020 CIVITAS

Horizon 2020
Programme

Welcome to the 3rd ELIPTIC webinar!

Time	Title	Presenter
11.00 – 11.15	Welcome message and introduction into ELIPTIC activities on multi-purpose charging infrastructure	Henning Günter, Rupprecht Consult
11.15 – 11.40	Using the London Underground electricity grid for the charging of electric buses and TfL service vehicles	David Talbot, Transport for London
11.40 – 12.05	Planning a charging infrastructure for electric vehicles using Barcelona's rail network	Oscar Puigdollers, Barcelona de Serveis Municipals
12.05 – 12.30	Legal and regulatory challenges in the use of multi-purpose electric infrastructure	Dr. Hartwig von Bredow, von Bredow Valentin Herz

The Webinar Team

Moderators

Henning Günter, Rupprecht Consult
- Moderator of the webinar-

Lisa Bloß, Rupprecht Consult
- Questions manager-

Panellists

David Talbot, TfL

Oscar Puigdollers, B:SM

Dr. Hartwig von Bredow, von Bredow Valentin Herz

Phone or internet connection

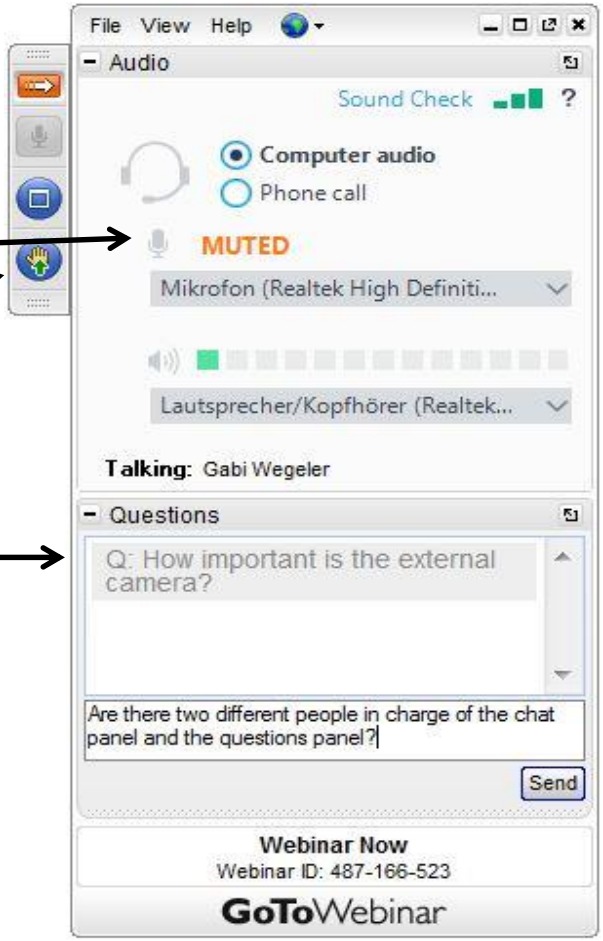
Dial-in options

Participation tools

Mute

Raise your hand

Questions



Quick poll: User background

- What kind of organization do you represent?

ELIPTIC – electrification of public transport in cities

- Horizon 2020 Research and Innovation project
- 33 partner in 8 Countries
- 20 use cases (demo + feasibility studies)
- Duration, 36 months: 01.06.2015 – 30.05.2018
- Coordinator: Freie Hansestadt Bremen
- Budget: 5,9 Million EUR

Three thematic technology pillars

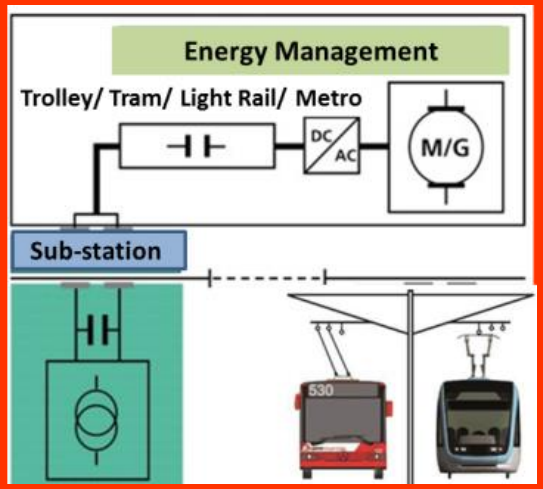
A

E-buses

Safe integration into existing electric PT infrastructure

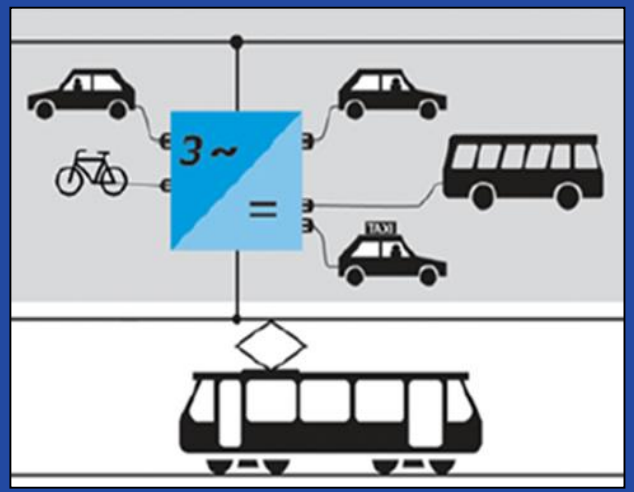
B

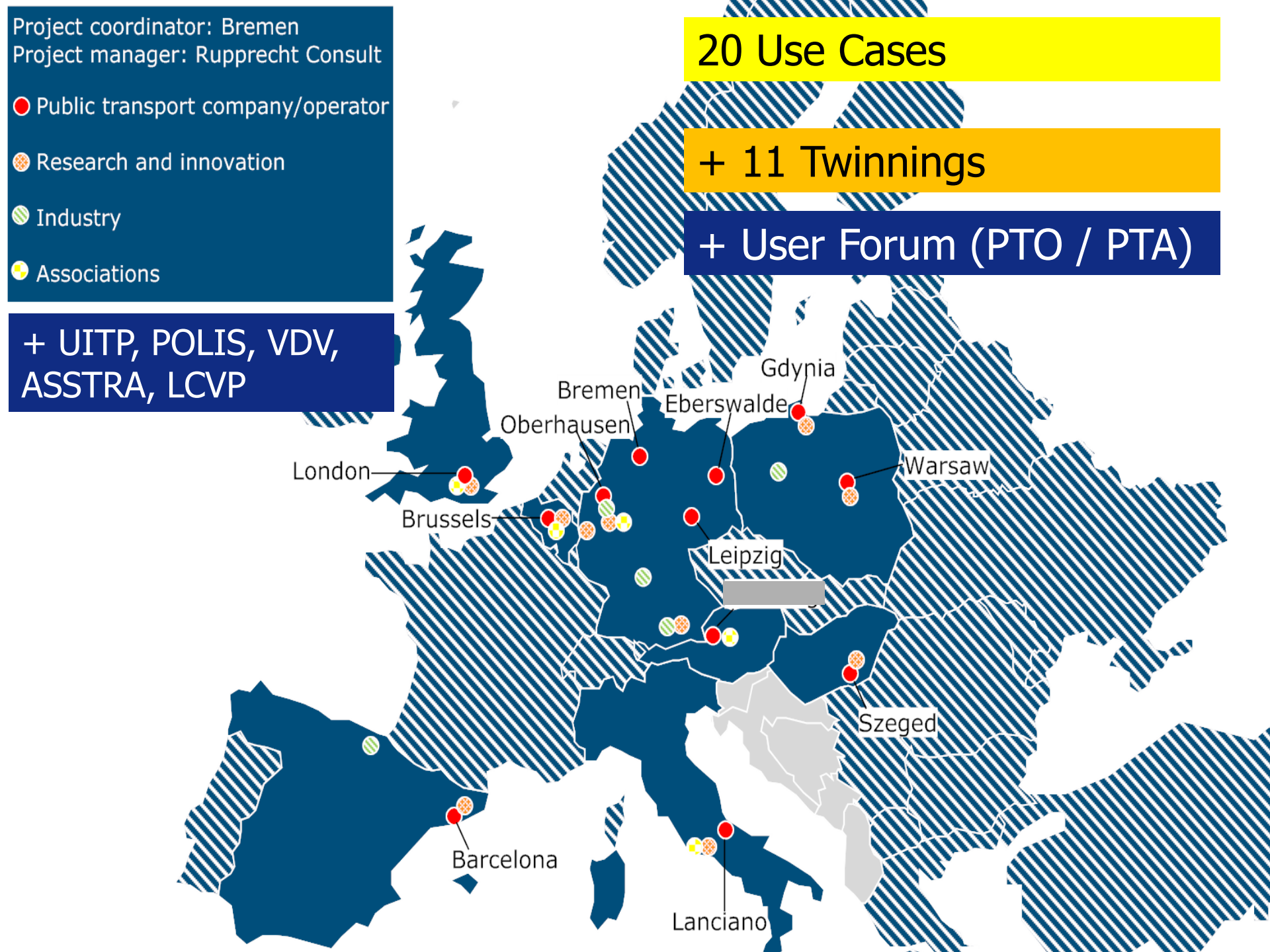
Energy efficient electric PT system



C

Multi-purpose use of electric PT infrastructure




Project coordinator: Bremen
Project manager: Rupprecht Consult
Public transport company/operator
Research and innovation
Industry
Associations
+ UITP, POLIS, VDV, ASSTRA, LCVP
20 Use Cases
+ 11 Twinnings
+ User Forum (PTO / PTA)
Gdynia
Bremen
Eberswalde
Oberhausen
London
Warsaw
Brussels
Leipzig
Szeged
Barcelona
Lanciano

Scenario comparison of bus charging technologies

Charging concept \ Battery concept		Low Capacity / High power	Medium Capacity / Medium Power	Large Capacity / Low Power
Opportunity-Charging	Public Grid	Barcelona, Brussels		
	Tram/Metro grid		Oberhausen, Leipzig, Warsaw, London	
Overnight-Depot-Charging				Bremen
Charging on route		Gdynia	Szeged, Eberswalde	

Factor 100

Passenger car		Bus (18m)
< 1 hour	Daily usage	12 - 16 hours
Small (- medium)	Engine size	big
50 - 60% Diesel	Fuel	95 – 98 % Diesel
Diesel: PM_{10} + NO_2 Gasoline: low	local pollutants	Diesel: PM_{10} + NO_2
500 l gasoline/ Diesel	Annual fuel consumption	40,000 l Diesel
~ 1,2 to	CO_2 emission p.a.	~ 100 to
	Total impact	Equals to app. 100 electric passenger cars

Factor 100

...but not 100 fold financial support!

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Pillar C – Multi-purpose Use of electric public transport infrastructure

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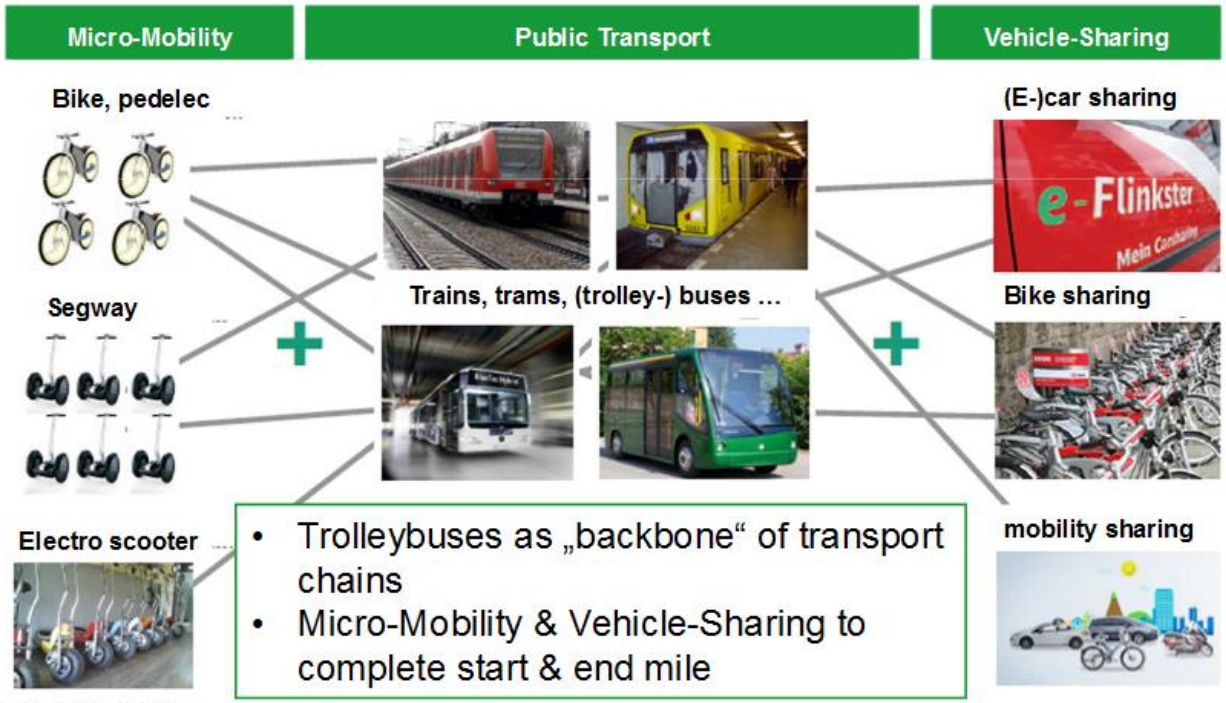
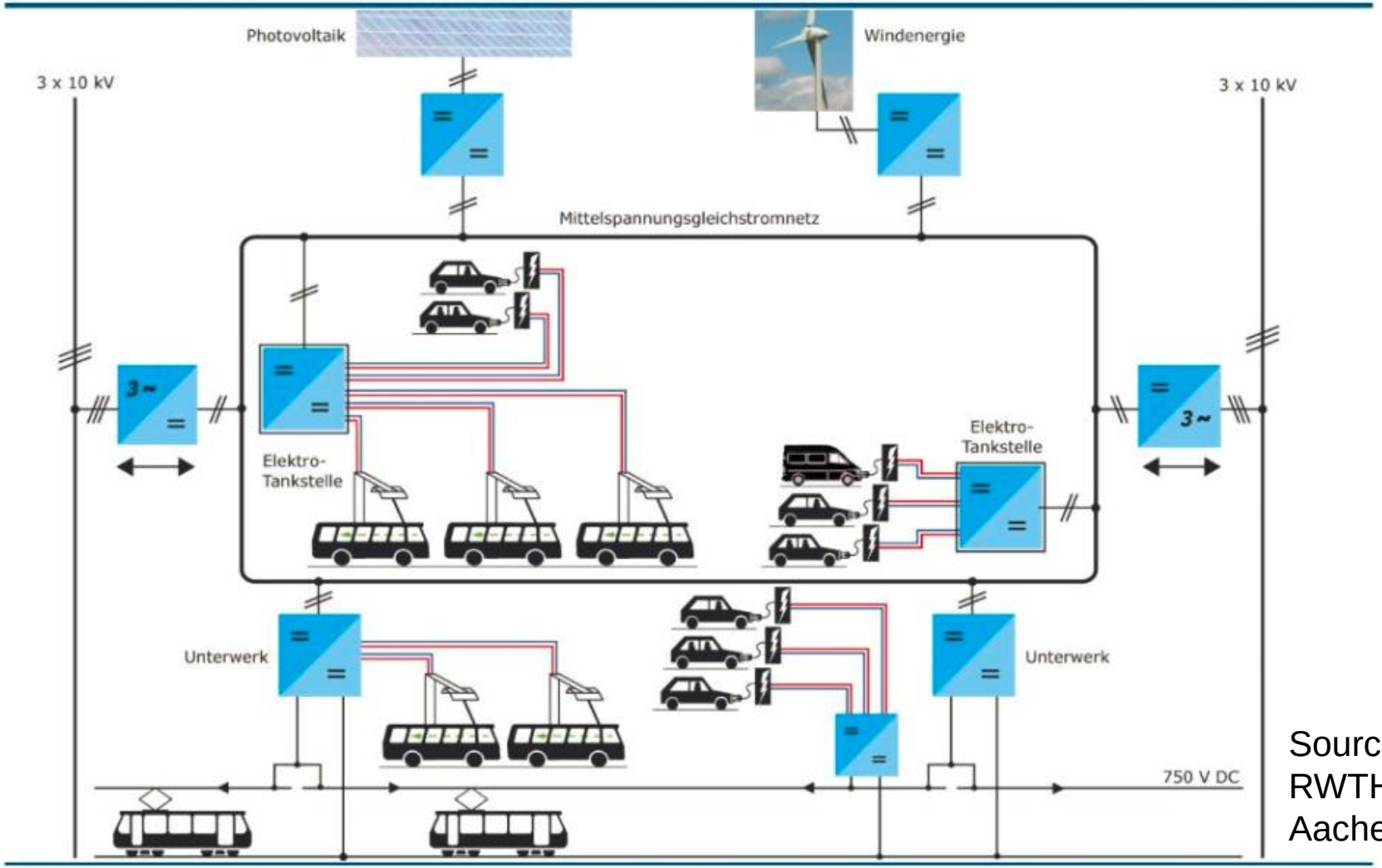
Electrification of public transport

Reduce costs and energy consumption of electric public transport by optimising infrastructure and rolling stock



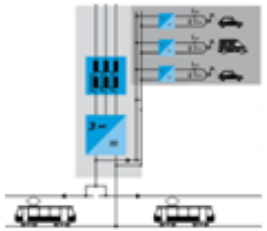
Source: Spath, IAO, 2011

Multi-purpose public transport grid with integrated REs



Source: RWTH Aachen

Pillar C use cases: guiding questions

	**Multi –purpose use of electric public transport infrastructure** C
Bremen: C.1: From uniqueness to system: Extension of existing multimodal mobility hub station	
London: C.2: Use of metro sub-station for (re)charging TfL fleet vehicles (e-cars & e-vans) and zero-emission capable taxis	
Barcelona: C.3: Use of metro/tram infrastructure for recharging e-cars (municipal fleet and private e-cars)	
Leipzig: C.4: Use of tram network sub-station for (re)charging e-vehicles	
Oberhausen: C.5: Fast-charging stations for e-cars powered from the tram network	
Szeged: C.6: Multipurpose use of infrastructure for (re)charging trolley-hybrids & e-vehicles	

- Where to place multi-purpose charging infrastructure?
- What different parties need to be involved?
- What are the economic advantages to use existing electric PT infrastructure? Is there a business case?
- What are the legal barriers preventing the multi-purpose use of PT infrastructure?

Any questions ?

Our next presentation

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Experiences from Oberhausen, Germany

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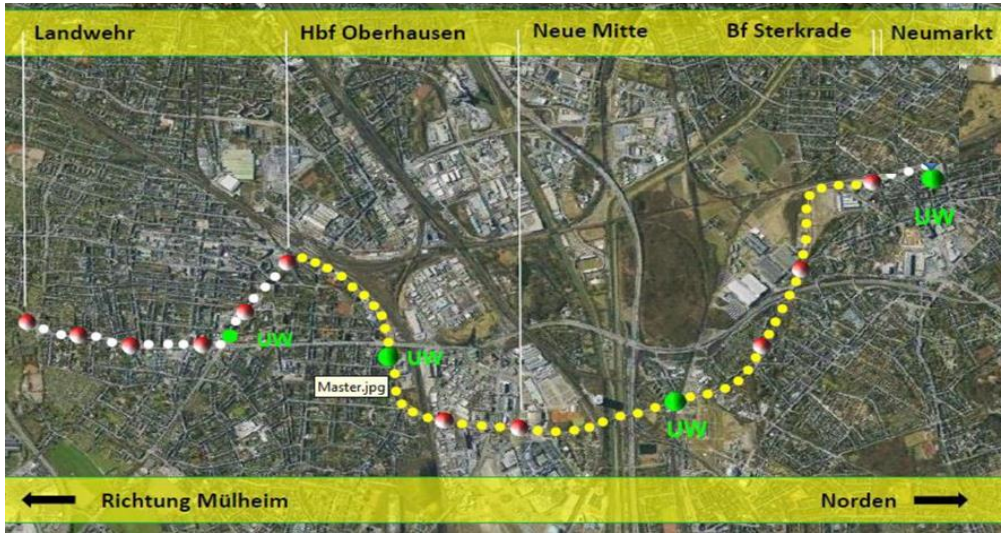
ELIPTIC example: Oberhausen

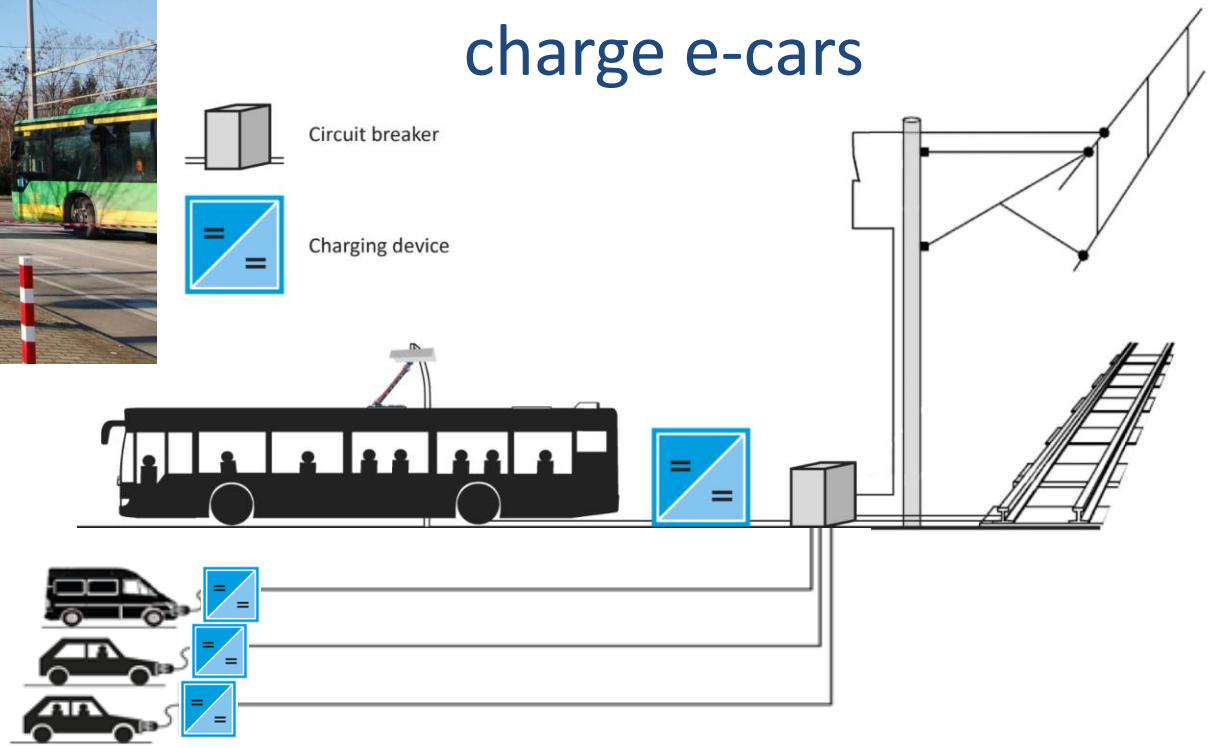


Separated route for the mixed operation of trams and buses
→ Good solution: Opportunity charging

Tram-powered e-bus charging stations (at Sterkrade station)

Extension of the bus charging device with 3 fast chargers for e-vehicles

Re-selling energy to private customers to charge e-cars



Experiences from Oberhausen

Main issue: calibrated/ standardized DC metering system not available

- 18 months-long struggle with gauging office/ bureau of standards („Eichamt“) to receive permit
- Result: exceptional and preliminary permit – charging allowed with the help of vouchers (1x charging - 15€; cannot be calculated by time or per kWh)
- Need for new regulations + funding for DC infrastructure + investments/ research by charging infrastructure manufacturers necessary

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Concluding remarks

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Preliminary results from the ELIPTIC experience: currently existing barriers in the field of multi-purpose charging

- It is **technically possible** to use tram/ metro/ trolleybus energy infrastructure to charge other e-vehicles
- The **internal use of energy is less complicated** (ex. London) **than re-selling energy to third parties** (ex. Oberhausen)
- Many **uncertainties** stemming from the **shortcomings of the current energy law** (taxation, administrative requirements, measuring/ distinction)
- Whether there is a **business case** depends on various factors (time of charging, energy capacities of grid, distance to substations, etc.)
- **Needs assessment/ demand estimation:** suitable locations; what and where is demand for electric charging points? (ex. Barcelona)
- **Technical constraints**: Voltage stability concerns, lack of charging systems/ chargers on the market (few manufacturers), lack of standardised DC metering systems for billing and charging

Thank you for your attention!

Join us at the ELIPTIC Final Conference, Bremen, 26/27 April, Registrations open

http://www.eliptic-project.eu/events/eliptic-final-conference

Website: http://www.eliptic-project.eu/

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