

Promoting **clean** public transport

# Trolley

## Context of TROLLEY Research and Innovation Roadmap

Siegfried Rupprecht

Rupprecht Consult –  
Forschung & Beratung  
GmbH, Germany

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# The TROLLEY Project

## An INTERREG Project from Central Europe Programme, presenting a Research and Innovation Roadmap in Brussels?

The TROLLEY Project delivers

- ▶ strategies for **implementation** of trolleybus systems
- ▶ innovative trolleybus **promotion strategies**
- ▶ an **updated image** of trolleybuses

**TROLLEY: "capitalisation activity" of the Central Europe Programme**



# TROLLEY Roadmap – Process



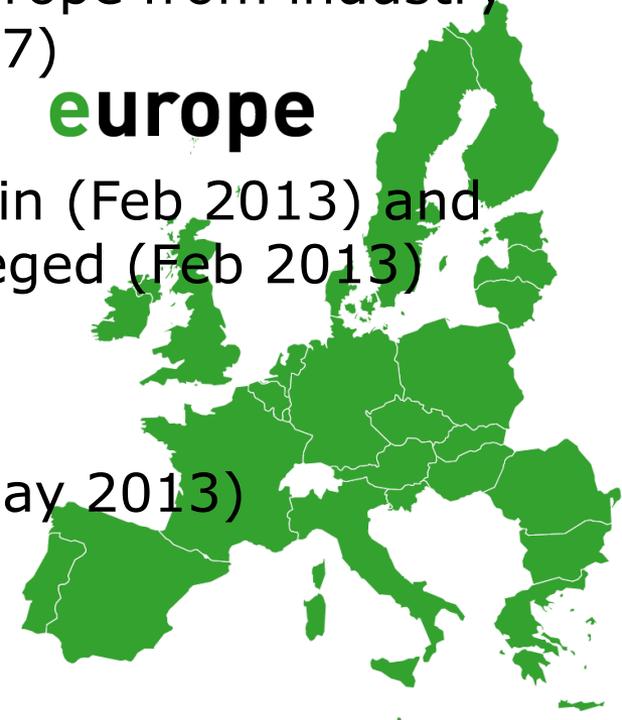
## Phase 1 (Feb 2010 – Jan 2013):

- Three TROLLEY **Advisory Board** Meetings
  - strategic focus of cooperation beyond the project
  - future research and policy needs
- Three TROLLEY **City-Industry** Summits
  - stakeholder dialogue: authorities, operators and industry
  - future needs for innovative trolleybus systems



## Phase 2 (Jan 2013 – May 2013):

- TROLLEY adds a "capitalisation activity" (strategic label of CE Programme)
- **Interviews** with 25 stakeholders across Europe from industry (7), authorities/ operators (11), academia (7)
- **Verification & discussion** at **europa**
  - Round tables in Vienna (Feb 2013), Berlin (Feb 2013) and Gdynia (March 2013); conference in Szeged (Feb 2013)
  - Workshop today
- **Research and Innovation Roadmap**
  - Review and exchange with UITP (Apr/ May 2013)
  - Final version (May 2013)



## Phase 2 (Jan 2013 – May 2013):

- If you are interested to participate in the TROLLEY Roadmap process, please contact:

- Dr. **Marcin Wolek**, University of Gdansk, PL

Email: [mwol@wp.pl](mailto:mwol@wp.pl)

Tel.: +48-58-52313-45

- Dr. **Wolfgang Backhaus**, Rupprecht Consult GmbH, DE

Email: [w.backhaus@rupprecht-consult.eu](mailto:w.backhaus@rupprecht-consult.eu)

Tel.: +49-221-606055-19

# Electromobility discussion since 2010

- ▶ from **e-car** to (also) **e-bus**
- ▶ from **(only) battery** to "**hybrid solutions**"
- ▶ from **smart grid** to **smart city**
- ▶ from being "the solution" to being part of a more **fundamental change process**



# European transport goals

- ▶ mix of **policy** measures
  - ▶ increase energy efficiency
  - ▶ accelerate shift to clean modes
  - ▶ develop & use cleaner vehicles widely
- ▶ recent **strategic** EU initiatives
  - ▶ "Smart Cities & Communities" Innovation Partnership
  - ▶ Strategic Transport Technology Plan
  - ▶ "Clean Power for Europe"
- ▶ **how can we go from where we are now to where we need to be in 10, 20, 30 years?**
  - ▶ what are short and medium term **realistic impacts** of electrification of urban transport?
  - ▶ what is **working already** and can be used to build on?



# Questions for today?

- ▶ what is a trolleybus/ **e-bus**?
  - ▶ innovation in e-bus models & infrastructure
- ▶ what are **costs** and **benefits** for operators and for society?
  - ▶ technical stability/ usability in day-to-day operation
  - ▶ cost effectiveness (vehicle and infrastructure)
  - ▶ energy and environmental impacts
  - ▶ external costs
- ▶ what are **regulatory** and standardisation requirements?
- ▶ what are **research** and **demonstration** needs?



# The next generation "e-bus"

- ▶ **smart vehicle**: silent, emission-free (well-to-wheel), comfortable, energy & cost-effective
- ▶ fulfilling **EBSF** standards
- ▶ rational and context-aware **combination** of
  - ▶ flexible **energy supply & charging** concepts (grid-based, contactless, autonomous)
  - ▶ intelligent **energy storage** (batteries, supercaps, hydrogen/fuel cell, network, other)
- ▶ integral part of an intelligent **energy network**
- ▶ contributing significantly to a **sustainable city**
  - ▶ EU policy goals (White Paper, "smart cities")
  - ▶ cost-effective provision of personal mobility
- ▶ building on **existing know-how**:
  - ▶ today (almost all) e-buses are trolleybuses!



**Alexandra Weiß (Project Coordinator), Salzburg AG**

Tel. +43-662-8884-6163 [ebus@salzburg-ag.at](mailto:ebus@salzburg-ag.at)

**Wolfgang Backhaus (Project Manager), Rupprecht Consult**

Tel. +49-221-606055-19 [w.backhaus@rupprecht-consult.eu](mailto:w.backhaus@rupprecht-consult.eu)

**[www.trolley-project.eu](http://www.trolley-project.eu) and [www.ebus.eu](http://www.ebus.eu)**

