



Zero Emission Urban Bus System

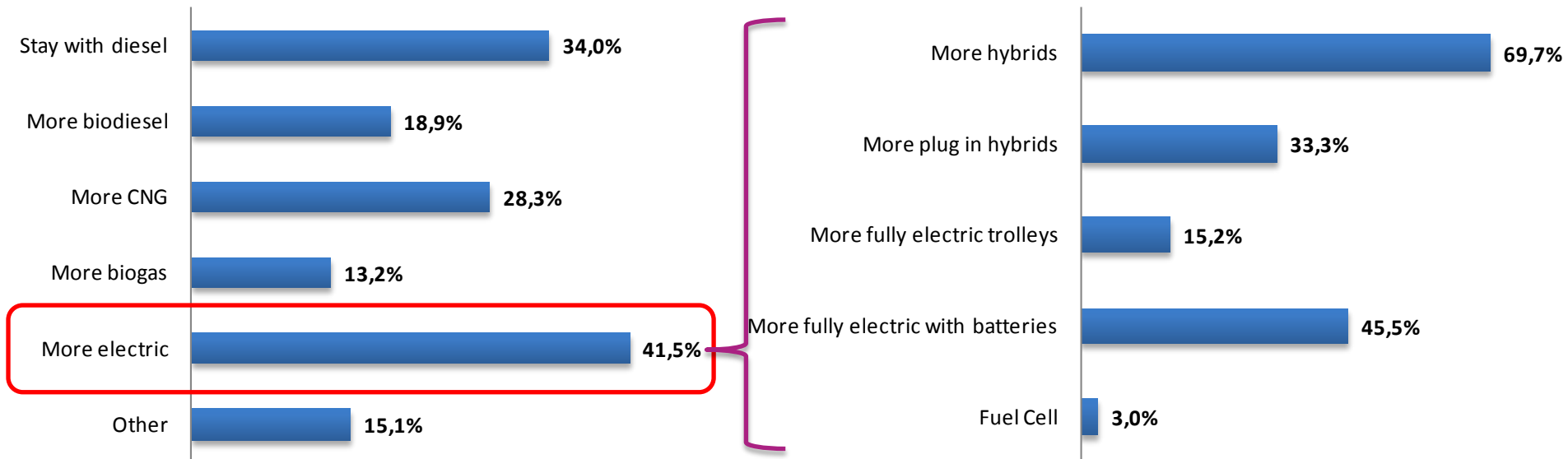
Umberto Guida, Head of EU Projects Unit, UITP

Electromobility: is it really a revolution for Public Transport?

- More than 50% of PT **already** electrified
- Electrification already produced a **revolution** in Public Transport..
- From **horses-powered** to **electric** trams
- UITP was there:
 - *The high cost of horses' maintenance vs. electricity traction was one of the key topics discussed at UITP's Berlin Congress in **1886**.*



Great Interest from Urban Mobility Actors



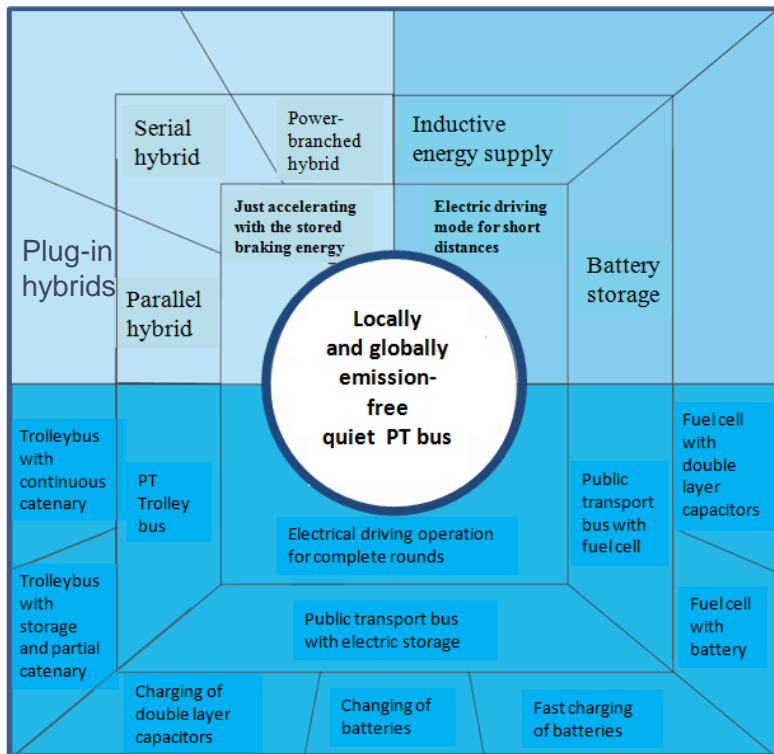
Future plans for propulsion technology change

Source: 3iBS Project (DG-R&I)
70.000 bus / 130 M habitants
www.3ibs.eu



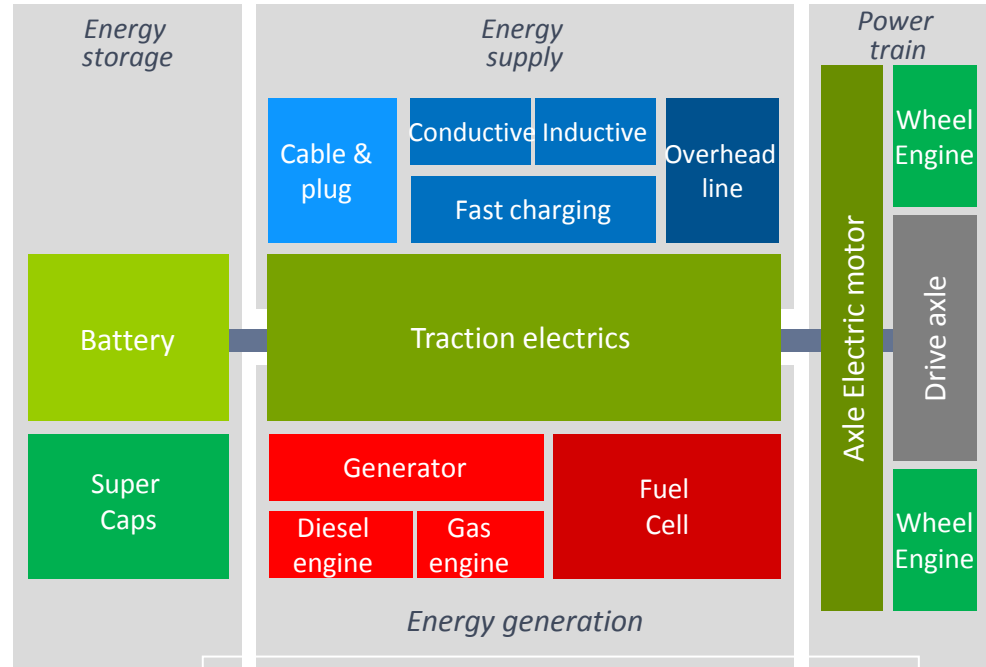
So...what's the problem?

Large set of available solutions



Options for Electrified Buses

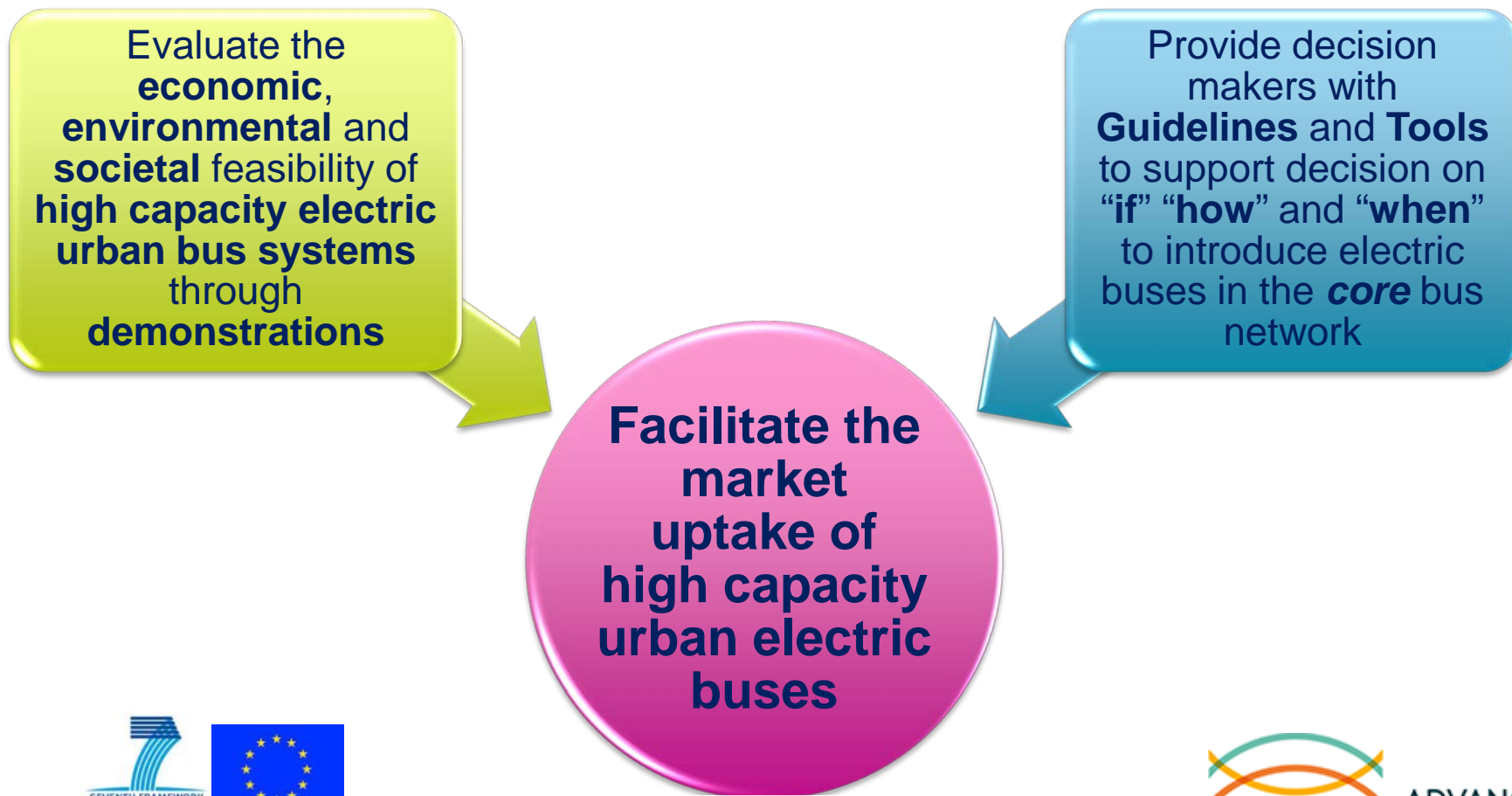
No "one-fits-all"
Technologies have "*best operational conditions*"



Electric Bus conceptual scheme



ZeEUS – Zero Emission Urban Bus Systems



40 partners, 10 Countries, Coordinator: UITP
Total budget: 22Meuro / EU funding 13.5 Meuro
42 Months (until March 2017) www.zeeus.eu



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ZeEUS Philosophy

Extend fully-electric solution to the core part of the urban bus network

Consolidated solutions for electric bus systems are already today in the streets.

- Full-size trolley-buses
- Full electric battery mini/midi vehicles
- Full-size diesel-hybrid buses

The market for these solutions has been already developed

ZeEUS looks to the next challenge

- Vehicles of larger capacity (12m and more / double deckers)
- Urban-optimised mobility concepts and infrastructure

From plug in hybrid to full electric System Approach adopted (EBSF)

- Vehicle – Grid Interaction

IRIZAR



VOLVO



SOLARIS



SKODA



ZeEUS Buses

VDL



VAN HOOL /
VOSSLOH



ALEXANDER
DENNIS



ZeEUS - Guidelines & Tools for Pre-Commercial Support 1/2

Support decision makers to decide **if**, **how** and **when** to introduce electric bus systems in the Public Transport network

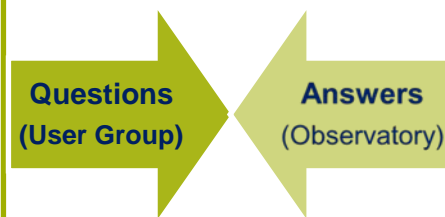
ZeEUS Observatory

Monitor of EU/world/National activities: on-going pilots, demonstrations, tenders, regulations, new technological or behavioral developments

ZeEUS User Group

Cities interested in e-buses but not yet moving to

Observe, Discuss



ZeEUS Vision: “why” electric buses?

ZeEUS Electrification Roadmap: research and implementation

Standardisation

- ZeEUS Standardisation **Steering Group**

Harmonise EU activities on eBus standards & support CEN/CENELEC
Link with EC directive on “*Deployment of Alternative Fuels Infrastructure*”

- Contribute to **E-SORT** development and validation

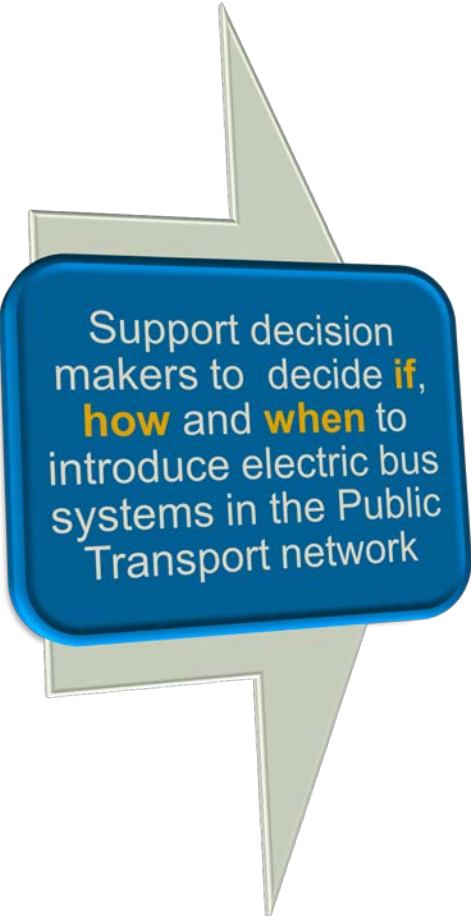
New chapter of UITP SORT cycle for full-electric buses

SoRT

Regulatory frame

- Link with EU Directive on “*Deployment of alternative fuels infrastructure*”
- Guidelines for including electric buses infrastructure in **National Policy Frameworks** (NPF)

ZeEUS - Guidelines & Tools for Pre-Commercial Support 2/2



Support decision makers to decide **if**, **how** and **when** to introduce electric bus systems in the Public Transport network

Funding schemes, tools and procurement guidelines

- Interaction with EIB and other funding entities
- Synergies with Structural and Regional Funds
- Update of UITP tender structure including eBus

Strategy for optimised interaction with the power grid

- Optimised **overnight charging** strategy / business model
- Strategy for **re-using existing PT power network** for fast charging at bus-terminal / stop

Introduction of electric Buses in urban fleets

- Recommendations for **urban / spatial planning**
- **Operational concepts** and **migration scenarios**

Education modules and workshops for university

Training for drivers and maintenance staff



DIPARTIMENTO DI INGEGNERIA
CIVILE EDILE E AMBIENTALE



HOCHSCHULE LANDSHUT
UNIVERSITY OF APPLIED SCIENCES



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