WP 2 – ELIPTIC Use Cases

B

Upgrading and/or regenerating electric public transport systems (flywheel, reversible substations)
ASSTRA is the National Association of Local Public Transport and it represents a network of more than 140 companies running urban, suburban and extra urban public transport services on:

- buses,
- tramway,
- trolleybuses,
- metropolitan railway,
- light rail (Except those operated by Trenitalia S.p.A.),
- waterborne transport,
- tourist and school services,
- parking areas,
- towing away of vehicles.
# The Principal Asstra Data

<table>
<thead>
<tr>
<th>Data Point</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associate members</td>
<td>144</td>
</tr>
<tr>
<td>Quotes of market urban transport</td>
<td>95%</td>
</tr>
<tr>
<td>Quotes of market extra-urban transport</td>
<td>75%</td>
</tr>
<tr>
<td>Public Transport Fleet</td>
<td>40,000</td>
</tr>
<tr>
<td>Regional Common</td>
<td>830 trains</td>
</tr>
<tr>
<td>Net extent</td>
<td>210,000 km</td>
</tr>
<tr>
<td>Kilometers</td>
<td>1,65 billion</td>
</tr>
<tr>
<td>Employees</td>
<td>100,000</td>
</tr>
<tr>
<td>Served municipalities</td>
<td>5,000</td>
</tr>
<tr>
<td>Passengers per year</td>
<td>5 billion</td>
</tr>
<tr>
<td>Turnover</td>
<td>9 billion €</td>
</tr>
</tbody>
</table>

[Source: ASSTRA, Financial data-Business Year 2015]
ASSTRA: WHAT IT DOES

Acts to create awareness of policy-makers and public opinion on the social, economical and environmental role of local public transport according to the principles of sustainable development.

Offers its members a wide spectrum of services such as legal, economic-financial and tax advice along with counselling in matters relating to trade unions, insurance, railways and technological progress.

Represents the interest of its members in front of governmental authorities, policy-makers, Trade Unions, economical, political and social organizations, both national, European and international.
Task 2.13 - Use Case coordination and monitoring [Starting Month 1, Ending Month 36]

The aim of this task is to ensure that the feasibility studies and demonstrations progress as planned. They will be coordinated and monitored according to the thematic pillars:

- Thematic Pillar A - UITP
- Thematic Pillar B - ASSTRA
- Thematic Pillar C - VDV
WP 2: THEMATIC TECHNOLOGY PILLAR B

ASSTRA is the Coordinator of Pillar B

Upgrading and/or regenerating electric public transport systems (flywheel, reversible substations)

To analyse smart energy management concepts for upgrading existing (electric) public transport infrastructure.

- To define optimised energy management at sub-stations in combination with recuperating braking energy and harging solutions for e-buses and other e-vehicles.
- To identify the potential of using ICT for smart and more efficient energy management (smart energy networks, real time information etc.).
- To demonstrate key technologies in relevant environments for increased operational and energy efficiency, i.e. flywheel energy storage device in trolleybus/tram sub-station and reversible sub-station for light rail or light rail tram operation on rail tracks for rural PT.
PILLAR B USE CASES

USE CASES

Demonstration in operational environment

Bremen

B.1: Recuperation of braking energy from trams: Refurbishment of a flywheel energy storage system
PILLAR B USE CASES

Feasibility study/
Technological concept

Brussels

B.2: Optimised braking energy recovery in light rail network

Lanciano

B.3: Light rail (tram) operation for rural rail track
Public transport providers are interested to reduce the power demand of their tram systems.

Reuse the braking power of the tramcars

Nowadays the braking power, which is recuperated to the catenary, is only used to 30%.
To use the braking current more efficiently, stationary flywheel energy storage systems can be a solution.
Flywheel storage systems are able to store braking energy, which can’t be used for an accelerating tram in the same section of the line, as kinetic energy of rotation.

The energy is stored until another tram in the same section of the line needs much power, for example for its acceleration. The tram with the high power demand will then be partly provided with power from the flywheel.
Such a flywheel energy storage system was installed in Bremen in a tram sub-station in 2012. As the provider of the technology went bankrupt, a regular operation could never be ensured.

In order to support BSAG’s future proofing and sustainability strategy of reducing fossil fuel consumption and to meet the target of efficient use of innovative vehicle technology, the reoperation and refurbishment of this storage system is planned. **This will require detailed analysis of the existing system and current technical/operational developments and solutions.**
The use case will focus on a **feasibility study** that will analyze the **implementation of a new urban tramway system** by upgrading the existing rail network of TUA.

The aim of the use case is **to provide an urban tramway through the use of train routes of the TUA** with the intention to use the railway line San Vito Marina - Lanciano - Crocetta for **tram-type services**.
The objective:

Reuse the existing railway infrastructure that is no longer used to provide a tram-type service, characterized by:

1. **High accessibility** by users, thanks to the low floor;

2. **High commercial speed** (the result of high performance in acceleration and deceleration);

3. **Less impact on traffic and roads in the town** (as railway-type street crossings will not be required).

Furthermore, in order to overcome potential interference with other existing infrastructure, the study will consider the potential for introducing **energy storage systems**.
The feasibility study aims to demonstrate the possibility to:

- Increase the accessibility of inland areas and the relationships between neighbouring towns
- **Discourage car use**
- Improve local **air quality**
- Enhance the **accessibility** of local public transport and implement the functional integration of transport modes

Reducing **pollution** and **congestion**
Thank you for your attention!!