



# SUITS

.....

Building Small-Medium (S-M) LAs' to implement urban freight transport measures'

## Presentation



# SUITS Capacity Building Programme

## Outline of the course



### **Welcome session**

### **Chapter 1: Introduction**

### **Chapter 2: Urban freight transport (UFT) measures**

### **Chapter 3: Value for S-M cities (Challenges, Benefits and Beneficiaries)**

### **Chapter 4: Successful Case studies or Best practices of SUITS cities**

### **Chapter 5: Innovative financing, procurement, partnership**

### **Chapter 6: Process and implementation aspects**

### **Chapter 7: Available tools and guidelines**

***This material is result of WP5 of SUITS project***

# Terminology

## The following terms will be extensively used throughout the course:

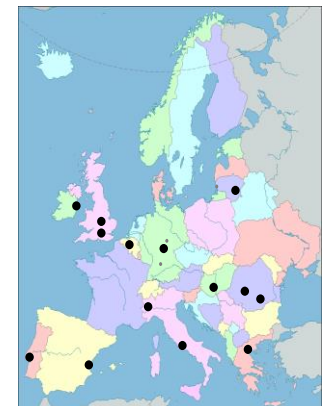
- **SUITS** “Supporting Urban Integrated Transport Systems: Transferrable tools for Authorities”
- **CBP** “SUITS Capacity Building Program”
- **SUMP** “Sustainable Urban Mobility Plan”
- **LAs** “Local Authorities”
- **S-M cities** “Small-medium size cities, i.e. cities with population ranging between 50,000 and 250,000 residents in their urban centre”
- **UFT** “Urban Freight Transport”
- **SIA** “Social Impact Assessment”
- **LZT** “Limited Traffic Zone”
- **UCC** “Urban Consolidation Centres”
- **IoT** “Internet of Things”
- **SULP** “Sustainable Urban Logistics Plan”
- **IPPP** “Civil society organisation”
- **NGO** “Non-governmental organization”

## Supporting Urban Integrated Transport Systems: Transferable tools for authorities

- **Funded under:** H2020-EU.3.4. - SOCIETAL CHALLENGES - Smart, Green And Integrated Transport
- **Topic:** MG-5.4-2015 - Strengthening the knowledge and capacities of local authorities
- **Funding scheme:** RIA - Research and Innovation action
- **Coordinator:** Coventry University
- **Total cost:** approx. EUR 4M
- **Duration:** 4 years (From **Dec 1<sup>st</sup> 2016** to **Nov 30<sup>th</sup> 2020**)
- **22 Partners** (see map)
- **Project Website:** <http://www.suits-project.eu/>

### Coordinator

- UK: Coventry University Participants
- UK: Arcadis, Transport for West Midlands
- Italy: Politecnico di Torino, RSM, Eurokleis, Citta di Torino
- Ireland: Interactions
- Greece: Lever, Sboing, Makios, Municipality of Kalamaria
- Spain: ITENE, INNDea
- Romania: Integral Consulting, Municipality of Alba Julia
- Portugal: VTM
- Hungary: Logdrill
- Germany: Wuppertal Institute, Technische Universitat Ilmenau
- Lithuania: Smart Continent
- Belgium: SIGNOSIS



## Support Small Medium Local Authorities in developing SUMP's by:

- Without capacity building and the transformation of transport departments into learning organisations, training materials will not provide the step change needed to provide innovative transport measures.*



# Course Framework: SUITS Project

## Expected outcomes of SUITS project



Transformation of transport planning departments in Small Medium cities into change agents. Through development of:

- A validated **capacity building programme** for transport departments
- Resource-light **learning assets** (modules, e-learning material, webinars and workshops), based on stated needs
- **Decision support tools** to assist in:
  - procurement,
  - innovative financing,
  - engagement of new business partners,
  - handling of open, real time and legacy data.
- **Better Integration/use of freight and passenger data**

# SUITS Modules



- Module 1: "Building S-M LAs' capacity to implement emerging transport technologies" (*ITS, Electric mobility, CAVs etc.*)
- Module 2: "Building S-M LAs' capacity to introduce innovative transport schemes" (*MaaS, Uber, Business Models etc.*)
- Module 3: "Building S-M LAs' capacity to implement urban transport safety & security measures for all/vulnerable users" (*passenger and freight vehicles etc.*)
- Module 4: "Building S-M LAs' capacity to implement urban freight transport measures" (*SULPs, Crowdshipping, cargo bikes etc.*)
- Module 5: "Data collection and analysis tools for integrated measures".
- Module 6: "Innovative Financing, procurement and business models".

Modules 1,3, 4: Delivered as classroom courses

Module 2: delivered as classroom course and webinar / e-learning

Modules 5, 6: delivered as e-learning courses / webinars



# Digital badges

Following the completion of the workshop exercises, you are entitled to **SUITS digital badge!**



It will be sent directly to your email account through the <https://mydigitalbadges.net/> platform. There is information encrypted in the picture related to the course.

- save this picture (badge) as png file.
- create an account on Mozilla's backpack  
<https://backpack.openbadges.org/backpack/welcome>
- upload the badge

This is the place where you can store all badges you receive from SUITS but also from other webinars, e-learning etc.

*The platform, developed by our partner SBOING, can be used by multiple organizations (local authorities, companies, institutions, etc.) to design, issue, award, display and manage their own digital badges.*



## Chapter 1: Introduction



## Module's purpose

**Overall module's aim:** To increase the capacity of S-M cities, to implement and monitor the Urban Freight Transport (UFT) measures throughout policymaking, budgeting, designing and facing the current challenges when implementing these measures

### In particular aims at:

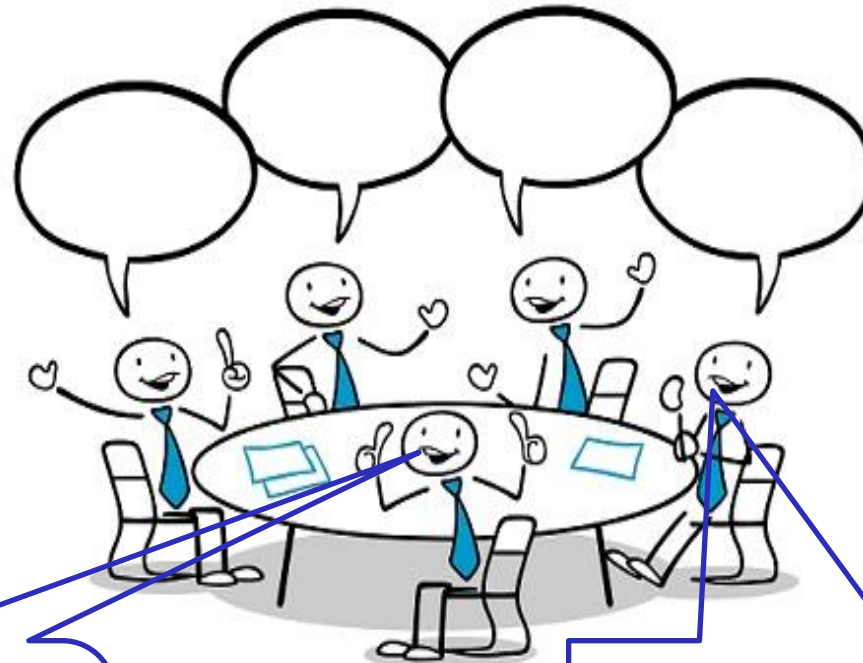
- **Increasing the understanding** about the value of UFT measures in our cities, the effects/cost of lack of urban freight transport regulations, the operators and the economy of the city and about the concept and methodology for developing UFT measures while being able to recognize or find out the needs of urban freight transport users
- **Building specific skills** regarding how success of the measures can be ensured
  - By convincing stakeholders and by overcoming financial, legal, administrative and technical barriers

### Specifically, the course is designed to:

- **Strengthen cooperation** between LA's staff
- **Advance local priorities** on UFT measures
- **Offer** concrete practical **tools** and **guidance** to better implement these measures



# Introduce yourself...



What are your expectations from this workshop?

Chose the most representative problem regarding urban freight transport in your city?

## Key aspects of the problem

UFT is a vital part of the economy of cities and essential element for cities to function successfully **but** it also affects the following factors:

- ***Environment*** (noise, air quality, visual quality)
- ***Road flows- levels of congestion***
- ***Fuel Consumption***
- ***Safety***

**Lower  
capacity  
of LAs**

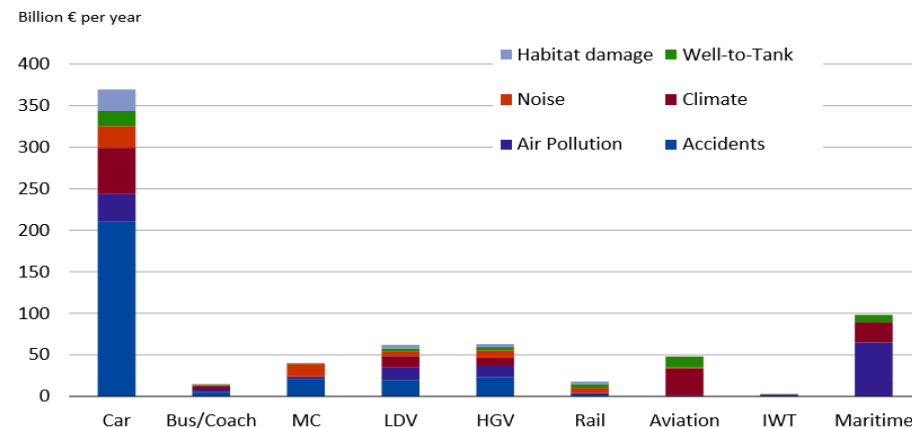
### Aspects of the problem:

- Urban freight transport constitutes approximately **40% of total emissions** accounted in transport.
- The top two issues businesses are concerned about in the urban environment are air quality and traffic congestion.
- Insufficient collaboration, lack of critical infrastructure and lack of investment in innovative solutions are the biggest barriers to more efficient and sustainable urban logistics.

## Key aspects of the problem

### External cost of transport

- **≈12%** (€ 120 billion estimated) of total external cost of transport due to the **use** of Light Duty Vehicles (**LDV**) and Heavy Goods Vehicles (**HGV**) (EU28 in 2016)
- **≈27%** of overall external cost in EU28 (2016) stands for **road congestion** (total delay costs € 270 billion estimated)



Total external costs per transport mode for EU28 in 2016 [3]

...while the extent of the **overall external costs of transport**, is estimated at around **€ 1 000 billion** (€ 981 billion) **annually** (almost 7% of the gross domestic product of the 28 EU Member States) through **air pollution, climate, habitat damage, well-to-tank, noise, congestion, accidents**.

## Key aspects of the problem

### *How to determine costs*

- For retrieving cost estimates for specific countries and traffic situations there are plenty of methodologies and approaches.
- The components (e.g. value of time, cost of fatality) needed for each country- case study, vary in time and also depends on the individual economy of each country.
- The aim is for every interested S-M city, to use some tools and methodologies in order to calculate these costs.

Approach	Description
External Transport Cost Calculator	Calculates the precise external costs of the urban freight transportation
Handbook on External Costs of Transport	Gives guidance on how to determine costs about air quality, accidents etc. (accompanied by excel calculators)
Guidelines to estimate the external marginal accident cost	Report of experts advisors that propose strategy on calculating the accidents cost in transport sector

## Key aspects of the problem

### Issues need to be addressed for freight in urban areas

- ***External congestion cost*** (*Air Pollution/Air Quality, Noise and nuisance levels*)
- ***Fatalities***
- ***Casualties and injuries***

### Key considerations:

- Framework that includes **delivery spaces, access regulations, restrictions** and **ways to enforce such actions** in order to ensure the seamless operation of logistic services
- Promotion of eco-friendly vehicles
- Coordination and cooperation between **authorities and private stakeholders**
- E-commerce and on-demand shipments increase, along with demand for immediate delivery (*more single-piece deliveries to individuals – and ultimately, more vehicles on the road*) should be taken into account



## Chapter 1: Introduction

# EXERCISE A1



## Building S-M LAs' capacity to implement Urban Freight Transport measures

Municipality Logo

### EXERCISE A pt.1:

Analyzing characteristics of urban freight transport traffic and the problems that derive from it.

### Description of material

- A. One table with 4 columns. The first column of the matrix refers to the areas of the city, where increased freight transport traffic is observed. The second column refers to the time periods when increased freight traffic is observed. The third column refers to the problems that derive from the increased freight traffic. The fourth column refers to the restrictions that can be applied.



## Building S-M LAs' capacity to implement Urban Freight Transport measures

Municipality Logo

EXERCISE A pt.1

TEAM NAME:

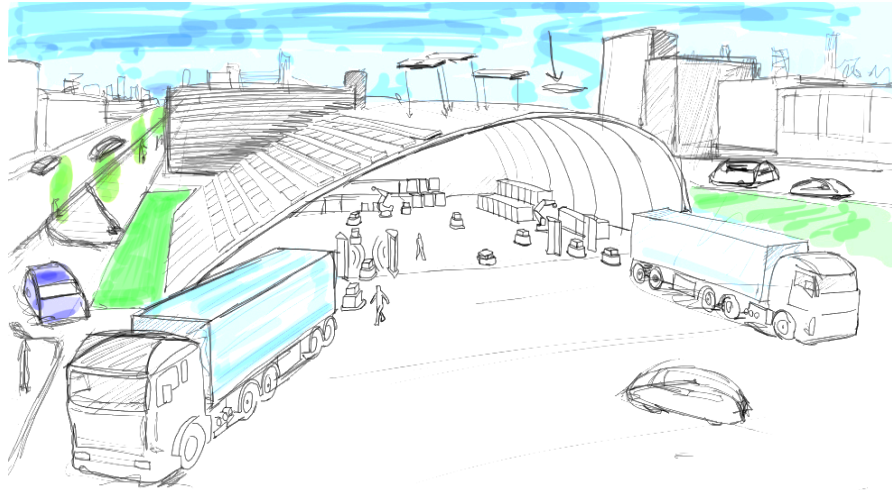
*Please fill in the following matrix with the areas of the city with increased freight transport flows, the time periods within a day, when freight traffic is increased and the problems that occur.*

AREAS	TIME-SLOTS	PROBLEMS	RESTRICTIONS



## Chapter 2: Urban freight transport (UFT) measures

### Urban consolidation centres (UCC)

- An urban consolidation centre is a new logistics platform, either private or public, which is designed to serve the urban centre or other large magnitude sites
- 
- The principle and main objective is to receive large scale freight operations, break them down and deliver them to its target area while ensuring sustainability through the usage of Light Goods Vehicles (LGVs) and other smaller vehicles.
  - The key purpose of UCCs is the reduction in total distance travelled and the avoidance of poorly-loaded goods vehicles making deliveries in urban areas.

## Chapter 2: Urban freight transport (UFT) measures

### New technologies and telematics in last mile logistics

- Include applications that provide fleet management along with route optimisation
- Drivers are receiving real time information regarding their route choice, in order to minimize accumulative costs (financial, environmental, time etc.)
- Provides the optimal management of the company's fleet



## Chapter 2: Urban freight transport (UFT) measures

### Regulations regarding night deliveries and enforcement

- Such actions aim at enforcing night time deliveries by taking advantage of lower congestion at these time slots
- Leads to avoiding increased congestion due to freight operations





## Chapter 2: Urban freight transport (UFT) measures

### Eco-friendly vehicles

- Promotion and adoption of alternative and more environmentally friendly vehicles such as electric vehicles.
- LNG vehicles, cargo bikes both traditional and electric, tricycles, scooters, drones.
- With the future deployment of autonomous vehicles even more logistics delivery solutions will arise and replace traditional modes of freight transport.



## Chapter 2: Urban freight transport (UFT) measures

### Multi-use lanes

- This measure is based on the idea that the capacity of the network (lanes in this case), can be dedicated to different specific transportation modes based on the time of the day, the traffic conditions, etc. Such a solution is very promising for both urban freight system and public transport.
- The allocation of the affected lane can be designed using different time windows among different users and restrictions can be applied by vehicle type, scope of transportation etc. In this aspect, supports busses operation in urban centres.



## Chapter 2: Urban freight transport (UFT) measures

### Real-time (dynamic) loading space booking and/or multi-use of parking space

- Through digital solutions the logistics service provider can schedule and book available parking spaces for a limited amount of time in order to load/unload cargo.
- The allocation of the parking spaces could be designed using different time windows among different users and restrictions can be applied by vehicle type, scope of transportation etc.

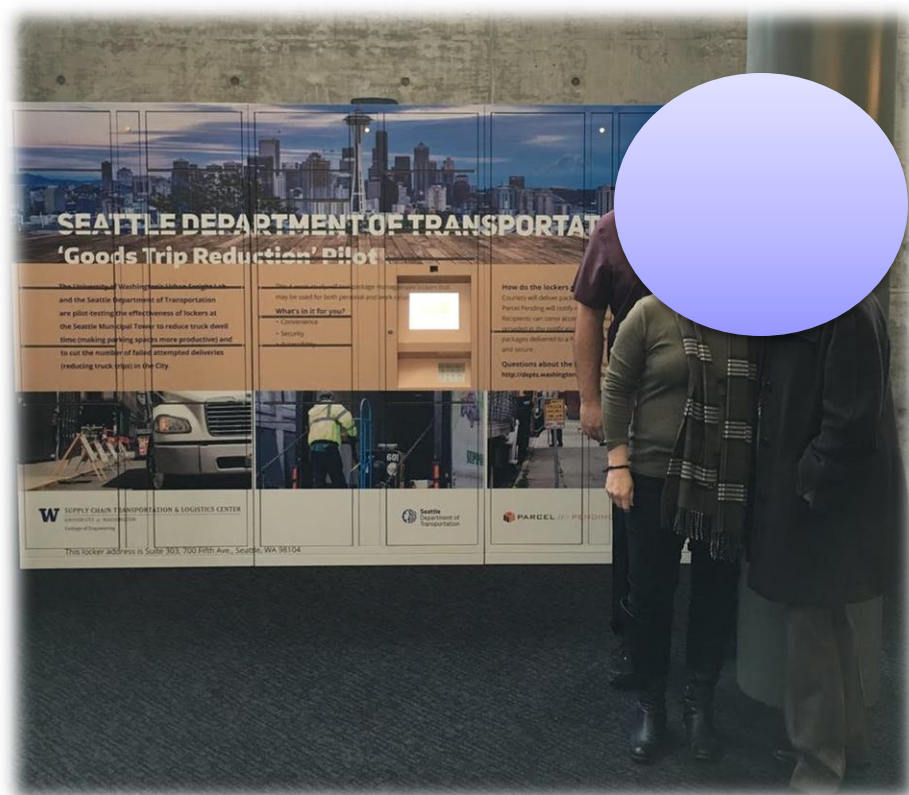




## Chapter 2: Urban freight transport (UFT) measures

### Lockers as distribution points

- A network of automated delivery points which are located in convenient sites such as transportation stations or large groceries stores.
- The system works similarly to ATM machines, where with a temporary personal password the person is granted access and receives the shipped item.



## Chapter 2: Urban freight transport (UFT) measures

### Limited traffic zones (LTZs)

- Access to urban areas is limited to freight vehicles that meet certain emissions standards.
- LTZs are becoming increasingly common in major European cities as mean for city authorities to meet European air quality standards.
- There is a positive impact by reducing emissions from freight vehicles both by renewing the fleet and reducing trips



## Chapter 2: Urban freight transport (UFT) measures

# EXERCISE A2

## Building S-M LAs' capacity to implement Urban Freight Transport measures

Municipality Logo

### EXERCISE A pt.2:

Introducing regulatory and innovative measures in response to problems in the urban freight transport system.

### Description of material

A. 3 fields (open boxes), one per innovative urban freight measure, which could reply to specific problem





## Building S-M LAs' capacity to implement Urban Freight Transport measures

Municipality Logo

### EXERCISE A pt.2

TEAM NAME:

*Please select innovative measures that could enhance the efficiency of the urban freight transport system and correspond them with a specific problem identified in Exercise A1.*

Measure 1:

Problem to solve:

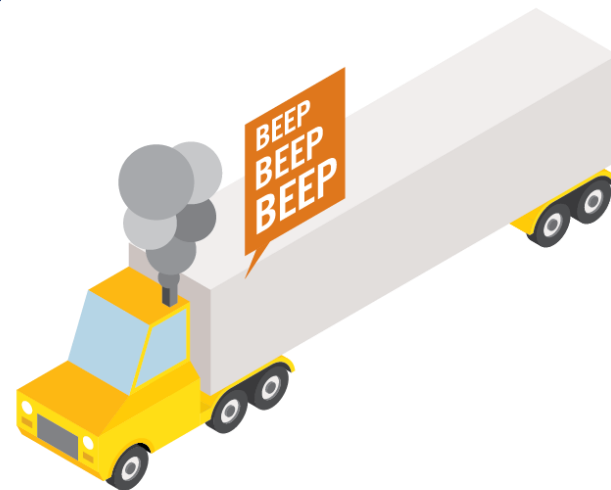
Measure 2:

Problem to solve:

Measure 3:

Problem to solve:

## Chapter 3: Value for S-M cities (Challenges, Benefits and Beneficiaries)



# Chapter 3: Value for S-M cities (Challenges, Benefits and Beneficiaries)

## Benefits of UFT

### Direct positive effects

- Less congestion due to more efficient management of cargo deliveries.
- Reduced fuel consumption & less environmental pollution by the optimisation of deliveries routes, the usage of electric vehicles and anti-idling policies, optimisation of last mile urban logistics through UCC.
  - *Route optimisation software allows to reduce the size of the fleet needed for operations and increase the delivery/collection rate*
- Reduced costs due to the reduced fuel consumption, reduced travel time, less vehicles damage (for all users – public transport, for municipalities vehicles and cargo drivers).
  - *By carrying out an adequate routes optimisation in an area may lead to total cost reduction of 10% - 20%.*
- Reduced noise (with eco friendly vehicles) and better management of public space (with multi-lanes/multi-parking spaces)

**Global approach is required in order to achieve these benefits**

# Chapter 3: Value for S-M cities (Challenges, Benefits and Beneficiaries)

Following table shows UFT measures contribution to deal with different environmental, social and other city challenges

	Congestion	Inadequate Infrastructure	Pollution	Noise	Safety	INVESTMENT NEEDS	
Urban Consolidation centres	Strong connection	Strong connection	Weak Connection	Weak Connection	Strong connection	high	Strong connection
Parking regulation	Strong connection	Weak Connection	Weak Connection	Weak Connection	Strong connection	low	Weak Connection
Time access restrictions	Strong connection	Weak Connection	Weak Connection	Strong connection	Strong connection	low	Weak Connection
Collect points	Strong connection	Strong connection	Weak Connection	Weak Connection	Weak Connection	low	Weak Connection
Real-time information systems	Strong connection	Weak Connection	Weak Connection	Weak Connection	Weak Connection	high	Weak Connection
Eco-driving	Weak Connection	Weak Connection	Strong connection	Strong connection	Weak Connection	moderate	Weak Connection
Upgrading central off street loading areas	Weak Connection	Strong connection	Weak Connection	Weak Connection	Strong connection	high	Weak Connection
LTZs	Weak Connection	Weak Connection	Strong connection	Strong connection	Strong connection	low	Weak Connection

## Chapter 3: Value for S-M cities (Challenges, Benefits and Beneficiaries)

# EXERCISE B

## EXERCISE B: Analyzing benefits and views of stakeholders on Urban Freight Transport measures

### Description of exercise

- A. Use sticky notes to fill in the two open Boxes. The first field refers to the benefits of a selected UFT. The second field refers to the actors/stakeholders/social groups that will be affected (positively or negatively) by the measure.
- B. On the left column of T-Chart transfer the actors/stakeholders which would present the most negative reactions to the proposed measure. On the right column, transfer the sticky notes (i.e. the benefits of Exercise A) so they can be used as convincing arguments to the stakeholders written on the left corner.

*(To perform the exercise focusing on specific city, a city map, mobility data and relevant information are distributed to support brainstorming).*

## Building S-M LAs' capacity to implement Urban Freight Transport measures

Municipality Logo

EXERCISE B – pt. 1

TEAM NAME:

*Please fill in the following box with the benefits that you believe the UFT measures  
that you selected can bring to your city.*

MEASURE TITLE:

BENEFITS FOR YOUR CITY:

*Please fill in the following box with the actors/stakeholders/social groups that you believe will be negatively or positively affected by the UFT measures that  
you selected.*

STAKEHOLDERS:



## Building S-M LAs' capacity to implement Urban Freight Transport measures

Municipality Logo

### EXERCISE B –pt.2

TEAM NAME:

*Please fill in the T-chart below, according to the arguments that may be expressed by actors in against the implementation of the UFT measure provided to your group.*

ACTORS

ARGUMENT

# Chapter 3: Value for S-M cities (Challenges, Benefits and Beneficiaries)

## Added value: (a) compliance with strategies/regulations (EU, national, local)

Value is added also by the fact that UFT measures is relevant to local, national and EU strategies.

- In a **local** level, UFT measures could contribute to strategies for the **economic growth of commercial city centres**, the air pollution strategies and the local tourism (visual quality, public safety, low noise levels, air quality protect monuments and attract tourism)
- In **national and EU level**, these measures contribute to meeting its environmental, health and climate policy goals (e.g. Green Paper [8], swd (2016) 244 European Strategy on Low-Emission mobility [9], Strategic plan 2016-2020 Move March 2016 [10] etc.) and avoid penalties.
- **The alignment of UFT measures, as part of Sulp, to these policies could make S-M cities eligible to receive financial support from EU funds [11].**
- Further support about alignment of this kind of measures with EU policies is provided by EPPOM “Managing mobility for a better future” tools and CIVITAS cities network [12].

## EU POLICY/STRATEGIC DOCUMENTS RELEVANT TO UFT MEASURES

Corresponding Document	Topic	Type of content	Relevance to SUITS (1-5)	Rating explanation
1. Study on Urban Freight Transport – Final Report [4]	<ul style="list-style-type: none"> <li>REGULATORY MEASURES AT LOCAL LEVEL</li> </ul>	European Commission's Study	4	The content is not relevant exclusively for small and medium sized cities but can be adopted by any city regardless of size
2. Urban Freight research roadmap [6]	<ul style="list-style-type: none"> <li>RESEARCH PRIORITIES RELATED TO URBAN FREIGHT DELIVERY</li> <li>SUSTAINABILITY AND SECURITY OF THESE ACTIVITIES</li> </ul>	European Road Transport Research Advisory Council and Alliance for Logistics Innovation	4	The content is not relevant exclusively for small and medium sized cities but can be adopted by any city regardless of size
3.COM 2017 283 An agenda for a socially fair transition towards clean, competitive and connected mobility for all [13]	<ul style="list-style-type: none"> <li>URBAN FREIGHT TRANSPORT</li> <li>SAFETY AND SECURITY</li> <li>MOBILITY MANAGEMENT</li> <li>CAR INDEPENDENT LIFESTYLES</li> <li>DATA MANAGEMENT (EVIDENCE &amp; ARGUMENT)</li> <li>NEW AND EMERGING TECHNOLOGIES</li> </ul>	Communication from the Commission	3	The content is not relevant exclusively for small and medium sized cities but can be adopted by any city regardless of size
4.Strategic plan 2016-2020 Move March 2016 [13]	<ul style="list-style-type: none"> <li>SAFETY AND SECURITY</li> <li>NEW AND EMERGING TRANSPORT SCHEMES</li> <li>MOBILITY MANAGEMENT</li> <li>CAR INDEPENDENT LIFESTYLES</li> <li>NEW AND EMERGING TECHNOLOGIES</li> </ul>	Strategic Plan	3	The content is not relevant exclusively for small and medium sized cities but can be adopted by any city regardless of size
5. Clean and energy efficient vehicles [15]	<ul style="list-style-type: none"> <li>CLEAN TRANSPORT SYSTEMS</li> <li>REDUCE ENERGY CONSUMPTION</li> <li>CO2 EMISSIONS</li> </ul>	European Commission's Policy Objectives	3	The content is not relevant exclusively for urban freight transport but there are some strategic goals for clean transport systems
6. Proposal for post-2020 CO2 targets for cars and vans [16]	<ul style="list-style-type: none"> <li>ZERO- AND -LOW EMISSION VEHICLES</li> <li>EU FLEET WIDE TARGETS FOR 2020/2021 FOR LIGHT COMMERCIAL VEHICLES</li> </ul>	European Commission's legislative proposal	2	The content has a part which is relevant for commercial vehicles (vans) but can be adopted by any city regardless of size
7. European Urban Mobility [6], [17]	<ul style="list-style-type: none"> <li>URBAN MOBILITY POLICY</li> <li>SUSTAINABLE URBAN MOBILITY PLANNING</li> <li>FUNDING INSTRUMENTS</li> <li>UNDERLYING TRENDS</li> </ul>	European Commission's Policy Context	2	The content is not relevant exclusively for urban freight transport but there are some strategic goals for a sustainable mobility
8. White paper [18]	<ul style="list-style-type: none"> <li>EMISSION REDUCTION TARGET</li> <li>MOBILITY MANAGEMENT</li> <li>COMPETITIVE AND RESOURCE EFFICIENT TRANSPORT SYSTEM</li> <li>LOW-CARBON SUSTAINABLE FUELS</li> <li>OPRIMISING THE PERFORMANCE OF MULTIMODAL LOGISTIC CHAINS</li> </ul>	European strategic document	1	The content is not relevant exclusively for urban freight transport but there are some strategic goals for a sustainable mobility

# Chapter 3: Value for S-M cities (Challenges, Benefits and Beneficiaries)

## Added value: (b) the collaboration of all actors/stakeholders

Communication, collaboration and coordination between many different stakeholders/actors is needed in many aspects of UFT measures development and implementation process.

These procedures are essential to arrive to an agreement and wide support [1], [3] but they also give LA the opportunity to:

- ✓ create a deeper interaction with them and facilitate the development of future projects action plan
- ✓ make new synergies and develop new ideas and projects
- ✓ ensure constant collaboration in future projects



Maximising synergies should be one of the priorities for S-M cities due to the limited available resources (scarcity of technical staff working with LA, limited financial resources etc.)

# Chapter 3: Value for S-M cities (Challenges, Benefits and Beneficiaries)



## How to build collaboration/ identify the stakeholders and actors needs

- Targeted interviews to representatives of stakeholders groups in order to inform them about:
  - ✓ municipality plans and objectives
  - ✓ the potential benefit for them if supporting the project implementation
  - ✓ the value of their contribution to the project
- Running survey with questionnaires to stakeholders groups, asking for their perception of problems and solutions, for expressing their needs and restrictions that may hinder their contribution
- Public consultation and open meetings to be invited all stakeholders in every implementation stage
- Frequent inspections in the most busy spots of the road network where issues may be arise
- Tailored approaches to different stakeholders/actors (i.e. customers through questionnaire, shop owners through short interviews, freight operators through short interviews- conversations)

# Chapter 3: Value for S-M cities (Challenges, Benefits and Beneficiaries)

## Social Impact Assessment tool

Transport measures impact all aspects of societies and human lives and more specifically dense urban centres.



Transport needs to be inclusive, accessible and make a make a positive contribution to quality of life.



Towards sustainable development, impacts assessment methods are needed regarding short and long-term social, health and wellbeing factors.

**“Social Impact Assessment is the process of analysing, monitoring and managing the social consequences of development.” (Vanclyay, 2003)**

Issues: Factors, Samples, Social Groups, Data Collection Bias, etc.

# Chapter 3: Value for S-M cities (Challenges, Benefits and Beneficiaries)

## Impact Assessment Dimensions

- **Environmental impact** is defined as "any changes to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's environmental aspects".
- **Economic impacts** are defined in terms of the "effects on the level of economic activity in a given area" (Weisbrod & Weisbrod, 1997).
- **Social impacts** have been defined as the effects which characterize and influence the community's social and economic wellbeing (Canter et al.1985).

Impacts		Summary of key impacts	Assessment					
			Quantitative			Qualitative	Monetary	Distributional 7-pt scale/ vulnerability grp
							£(NPV)	
Social	Commuting and Other users		Value of journey time changes(£)					
			Net journey time changes (£)					
			0 to 2min	2 to 5min	> 5min			
	Reliability impact on Commuting and Other users							
	Physical activity							
	Journey quality							
	Accidents							
	Security							
	Access to services							
	Affordability							
Severance								
Option and non-use values								

Additionally in methodologies such as **WebTAG** a 4<sup>th</sup> dimension is integrated separately and includes Health Impacts.

**WebTAG** is an online tool of the UK Department for Transport's web-based multimodal guidance on appraising transport projects and proposals.



# Overview of factors to be considered by type, source and level of human needs based on SUITS WP7

Source	Theme	Sub theme	Impact
Provider based	Presence of infrastructure	Structurally	Visual quality
			Historical /cultural resources
			Severance/social cohesion
		Temporarily (during construction)	Noise nuisance
			Barriers and diversions
			Uncertainty of construction
			Forced relocation
	Presence of parked cars		Visual quality
			Use of space
	Presence of transport facilities, services and activities (accessibility) (inc. cost and temporal dimension)	Transport facilities	Availability and physical access
			Level of service provided
			Transportation choice /option values
			Cultural diversity
		Land use/delivery/opportunity	Access to spatially distributed services and activities
User based	Traffic (movement of vehicles)	Safety	Accidents
			Averting behavior
			Safety perceptions
		Environment	Public safety (dangerous cargo)
			Noise levels, nuisance
			Soil, air and water quality
	Travel (movement of people)		Intrinsic value, journey quality
			Physical fitness (active travel)
			Security

# Chapter 3: Value for S-M cities (Challenges, Benefits and Beneficiaries)

## Social Impact Assessment – WebTAG examples

**Case study:** Extension and improvement of routing for freight transportation in **Kalamaria** (Greece)

Impacts	Qualitative Assessment/ Summary of key impacts
<b>Economic</b>	Reduced congestion and traffic in the area will improve fuel economy for motorists who regularly travel through the improved routing
<b>Social</b>	Considered better accessibility, better journey quality
<b>Environment</b>	Reduction of pollutant emissions ( CO <sub>2</sub> , NO <sub>x</sub> , lead, PM), greenhouse effect (reduction of emission of CO <sub>2</sub> )

# Chapter 3: Value for S-M cities (Challenges, Benefits and Beneficiaries)

## Social Impact Assessment – WebTAG examples

**Case study:** Clean urban logistics and goods distribution platform in **Toulouse** (France)

Impacts	Qualitative Assessment/ Summary of key impacts
<b>Economic</b>	Related to different types of costs and compared to benefits result
<b>Social</b>	Considered in-depth public acceptance of the measure among different stakeholders
<b>Environment</b>	The assessment process resulted into expected reduction of emissions and mainly CO2 emissions mainly due to usage of electric vehicles. Methods used included specialized simulation software packages

## Chapter 4: Successful Case studies or Best practices of SUITS cities



# Chapter 4: Successful Case studies of SUITS cities or Best practices



- Case Study 1: Rome's Limited Traffic Zone (LTZ) (Case study from SUITS city consortium)
- Case Study 2: Turin's Multi-Use Lanes, Parking regulation and LTZs. (Case study from SUITS city consortium)
- Case Study 3: City of Utrecht with electric freight road vehicle, LTZs, UCC and Lockers as distribution points.

# CASE STUDIES FACTSHEETS

## Limited Traffic Zone



### URBAN FREIGHT TRANSPORT

#### Limited Traffic Zone (LTZ) - Freight distribution system

<b>LOCATION</b> Rome, the capital of Lazio region has 2,872,800 residents and it's one of the Italian cities with Limited Traffic Zones (called Zona Traffico Limitato or ZTL in Italian).	<b>INITIAL PROBLEM AND TARGET GOAL</b> ZTL was put in place to reduce congestion in high traffic areas, helping to slow the inevitable structural decay of the historic city center.	<b>SCALABILITY/REPLICABILITY</b> The measure may be more effective in big and medium sized cities, without excluding smaller cities. Particularly appropriate for historic city centres.
<b>WHY THIS IS A BEST PRACTICE IN THIS FIELD?</b> By implementing these measures, traffic mobility condition improves, road safety increases and traffic related pollution decreases. Also UFT measures re-habilitate urban spaces, rationalize public space and safeguards citizens' health and life quality. Several benefits derived from the measure: a) renewal of cargo fleet, b) decrease permits issued to enter LTZ, c) CO2 emissions decrease  (continue on next page)	<b>MEASURE DESCRIPTION</b> The freight distribution is supported by rules system and incentives implemented in the previous years by Rome Municipality, regarding access rules (freight LTZ set up), restriction to enter in LTZ, permission fee and ecological vehicles incentives Since 1st November 2011, new rules are characterized by a strong reward system aimed to encourage more environmentally friendly vehicles (LPG, CNG, electric, hybrid) This is made by a huge discount on the LTZ permit's price and by allowing low emission vehicles to enter into freight LTZ also out of the time windows that diesel/petrol vehicles have to respect There is also a progressive ban of older vehicles (e.g. since October 2012 Euro 2 vehicles were denied entrance in the LTZ, while Euro 3 diesel had access only until December 2013).  (continue on next page)	<b>IMPLEMENTATION REQUIREMENTS</b> The implementation costs aren't measurable. The financing schemes consist of national and local funds. The implementation time is 19 years in total, since the beginning of this initiative.  <b>Use of IT system:</b> The Electronic Gates Access System based on automatic plate number recognition (ANPR) and New Technologies.  (continue on next page)

# CASE STUDIES FACTSHEETS

## Limited Traffic Zone



WHY THIS IS A BEST PRACTICE IN THIS FIELD? (continued)	MEASURE DESCRIPTION (continued)	IMPLEMENTATION REQUIREMENTS (continued)
<p>In fact, in 2015 euro 5 category freight vehicles represented the 56% on the total fleet vehicles (4% in the 2010); in 2015, euro 6 freight vehicles were 11% of total fleet (1% in the 2010). The number permits to enter LTZs decreased by 47%.</p>	<p>Rome Municipality approved the New Mobility Master Plan in 2015, a programming tool for the medium period to rationalize existing systems and mobility services and regulate the mobility demand. The plan outlines how to contain impacts of circulating freight vehicles for a “sustainable city”. These measures will be adopted in the Sustainable Urban Logistic Plan (SULP), including Urban Consolidation Centre (UCC), revise/update the loaded and unloaded freight time windows in the city centre, etc.</p> <p>Main rules on freight distribution (official resolution):</p> <ul style="list-style-type: none"> <li>• n.856/2000: vehicles taxation with a loaded weight until 3,5 tons, limiting the access into the LTZ from 20.00 to 10.00 and from 14.00 to 16.00; October 2001 (as per previous official resolution): starting up e-gates for LTZ access;</li> <li>• n.44/2007: freight LTZ boundary redefined;</li> <li>• n.58/2011: “free” circulation in the LTZ for all electric vehicles;</li> <li>• n.245/2011: restrictions to gradually prohibit polluting vehicles, according to emission factors of Euro categories;</li> <li>• n.215/2012: introduction new criteria for incentives with the extension of the contribution and new vehicles categories;</li> <li>• n.119/2014: new permits fee</li> </ul>	<p><b>Monitoring Access to LTZ Gates</b></p> <p>50 Access control systems monitor the restricted traffic areas (Historic Center, Trastevere, San Lorenzo, Testaccio, Imperial Forums) by detecting incoming flows and classifying them by type of vehicle. The electronic gates detect the vehicle license plate in telematic form by activating the sanction procedure. The measuring stations are connected to the system where the following information are obtained:</p> <ul style="list-style-type: none"> <li>• date</li> <li>• hour</li> <li>• entrance gate</li> <li>• number of steps</li> </ul> <p>The data is aggregated to 15 minutes and stored as a record in a temporary DataBase, to which the accredited user can connect and extract the required information in csv format.</p> <p>As sanctioning systems are available (only during time windows of the openings gates), data on violations, and whitelisted vehicles (authorized vehicles) are willing. Data on vehicles liable for fine are maintained within the system on average for approximately 40 days, after those are cancelled for privacy.</p> <p>DB characteristics: LTZ Historical centre - Oracle - 120Gb</p>



# CASE STUDIES FACTSHEETS

## Limited Traffic Zone



INDICATORS TO MEASURE SUCCESS AND FINAL OUTCOME / IMPACT	BARRIERS AND DRIVERS	FURTHER INFORMATION
<p>The indicators to measure the success of measures are:</p> <ul style="list-style-type: none"> <li>• Freight vehicles number per euro category</li> <li>• Permits issued number</li> <li>• CO2 emissions (kilogram)</li> </ul>	<p><b>Cooperation/coordination issues</b>  <b>Barrier:</b> Lack of coordination between the Local Authority and stakeholders involved in the freight distribution on the main topics regarding demand regulation  <b>Driver:</b> All these challenges seem to be solved when the heads of the city councils would be convinced of the relevance of the organizational change. This is the most important action for the cities in the short-run.</p> <p><b>Financial recourses issues</b>  <b>Barrier:</b> Being rules and official resolutions, the costs aren't measurable.  <b>Driver:</b></p> <p><b>Process</b>  <b>Barrier:</b> The main problem regards the acceptance degree of stakeholders involved (shop owners, logistic operators and residents): the LTZ limits the mobility of vehicles and customers during specific time slots.  <b>Driver:</b> Constantly hearing and informing the stakeholders on the goals to achieve in term of pollutants reducing in the areas involved by traffic restrictions.</p> <p><b>Technical/data resources</b>  <b>Barrier:</b> Not particular barriers detected  <b>Driver:</b></p> <p>(continue on next page)</p>	<p><a href="http://www.smartset-project.eu/downloads">http://www.smartset-project.eu/downloads</a></p>



# CASE STUDIES FACTSHEETS

## Limited Traffic Zone



	<p><b>BARRIERS AND DRIVERS (continued)</b></p> <p><b>STAFF</b>  <b>Barrier:</b> Knowledge gaps in the wider city council departments that occur distrust  <b>Driver:</b></p> <p><b>POLITICAL</b>  <b>Barrier:</b> The politics have to balance different interests among the stakeholders, causing delay in measure applying  <b>Driver:</b> Participant process implementation and awareness campaign</p> <p><b>Legal</b>  <b>Barrier:</b> Not particular barriers detected  <b>Driver:</b></p> <p><b>Societal</b>  <b>Barrier:</b> Conflict between business interests and sustainable liveability.  <b>Driver:</b> Encourage good behaviours to guarantee better health conditions for citizens themselves.</p>	
--	--	--



# CASE STUDIES FACTSHEETS

## Multi-Use Lanes



### URBAN FREIGHT TRANSPORT

#### Multi-Use Lanes, Parking regulation, LTZs

#### LOCATION

Turin, the capital of the Piedmont region with population of 886.837, is the leading city in Italy for urban logistics, having developed a set of 'push and pull' measures dealing with restrictions and incentives for logistics operators delivering their operations in accordance with the Freight Quality Partnership (FQP) Agreement.

#### INITIAL PROBLEM AND TARGET GOAL

Despite the Freight Quality Partnership (FQP) Agreement, increasing commercial traffic continues to affect traffic flow and burden the environment.

Turin municipality has been actively involved in the Novelog project (<http://novelog.eu/>). The NOVELOG project focuses on the enabling of knowledge and understanding of freight distribution and service trips by providing guidance for implementing effective and sustainable policies and measures. This guidance will support the choice of the most optimal and applicable solutions for urban freight and service transport and will facilitate stakeholder collaboration and the development, field testing and transfer of best governance and business models. The objectives are set as follows:

1. To understand, assess and capture current needs and trends in Urban Freight Transport, revealing the reasons for failures in city logistics implementations and to identify the key influencing factors and develop future Sustainable Urban logistics scenarios.

(continue on next page)

#### SCALABILITY/REPLICABILITY

S-M cities with similar challenges and characteristics can design and implement such plans to improve the city's overall quality.

# CASE STUDIES FACTSHEETS

## Multi-Use Lanes

	<p><b>INITIAL PROBLEM AND TARGET GOAL (continued)</b></p> <ol style="list-style-type: none"> <li>To enable determination of optimum policies and measures, based on city typologies and objectives, link them to tailored business models and test and validate them.</li> <li>To develop a modular integrated evaluation framework for city logistics that will portray the complexity of the life cycle of UFT systems and implement it to assess the effectiveness of the policies and measures.</li> <li>To incorporate the best fitting policies and measures in integrated urban planning and SUMPs, at local level, to facilitate and guide multi-stakeholder cooperation for improved policy making.</li> <li>To field test, implement and validate all the above, in selected EU cities, and demonstrate applicability and sustainability of the tools and ensure the continuity of the impacts by creating and establishing take-up strategies and roadmaps for the best city logistics solutions.</li> </ol> <p>The objective of the pilot of Turin is to improve the average speed of traffic flows and reduce emissions, while proving that innovative concepts and business models in urban logistics can help to build more efficient, effective and sustainable urban transport and logistics networks.</p>	
<p><b>WHY THIS IS A BEST PRACTICE IN THIS FIELD?</b></p> <p>Thanks to the project a very interesting and fruitful cooperation has been created with the stakeholders. Moreover, innovative 'Pull' measures have been implemented through the use of innovative ITS tools</p>	<p><b>MEASURE DESCRIPTION</b></p> <p>NOVELOG local activities in Turin (Italy) are focused on two core measures:</p> <p>Multi-user lanes – incorporating bus lane sharing with freight vehicles – and the management of loading/unloading parking lots, in a selected subset of city centre Limited Traffic Zones, using existing cameras to monitor the parking booking and control system.</p> <p>(continue on next page)</p>	<p><b>IMPLEMENTATION REQUIREMENTS</b></p> <p>Local and European Research funds have financed this scheme implemented in Turin. From the identification of the problem, the design of the concept and its implementation is approximately 5 years.</p> <p>(continue on next page)</p>

# CASE STUDIES FACTSHEETS

## Multi-Use Lanes



	<b>MEASURE DESCRIPTION (continued)</b> <p>Thanks to the project, specific actions and measures have been implemented at an experimental level. A specific freight quality partnership has been created in order to cooperate among the Municipality itself and the Chamber of commerce, freight transport associations and the trade operators located on the territory.</p>	<b>IMPLEMENTATION REQUIREMENTS (continued)</b> <p><b>IT systems</b> have been used to provide freight vehicles with on board units to trace their path. Moreover, a specific protocol to connect the public infrastructure with the private device has been implemented in order to have an efficient traffic prevision thanks to floating cars data.</p>
<b>INDICATORS TO MEASURE SUCCESS AND FINAL OUTCOME / IMPACT</b>  <p>Thanks to the measure, the older and more polluting vehicles have been changed with more sustainable ones. The starting point has been in 2014, when the fleet vehicles pre-Euro4 have been scrapped. In 2017, instead, the first experimentation with EV and CNG injection have been introduced.</p> <p><b>Indicators to measure success/implementation:</b></p> <ul style="list-style-type: none"> <li>• Production indicators</li> <li>• Level of pollution</li> <li>• Safety indicators</li> </ul>	<b>BARRIERS AND DRIVERS</b> <p><b>Cooperation/coordination issues</b>  <b>Barrier:</b> The main problems arise since it is usually difficult to cooperate and have contact with stakeholders, mainly the operators working in the freight distribution. A good cooperation is, instead, found in the LA department.  <b>Driver:</b> Thanks to the personal intent and work of the people involved in the activity a good and active work has been operated. In particular, they pushed for the creation of productive and challenging working tables with express courier operators to discuss and present the advantages of the measure.</p> <p><b>Financial recourses issues</b>  <b>Barrier:</b> Any specific financial resource is required at the LA, since the measure is implemented during a EU project. However, the operators are required to change their vehicles in order to access the special permission included in the measure.  <b>Driver:</b> The devices where in loan, moreover some specific permission where granted to the fleet, generating more production and possibility to deliver goods. It is, however, necessary to illustrate properly to the operators the economic advantage in their vehicles changing.</p> <p><b>(continue on next page)</b></p>	<b>FURTHER INFORMATION</b>  <p><a href="http://simone.5t.torino.it/">http://simone.5t.torino.it/</a>  <a href="http://novelog.eu/">http://novelog.eu/</a></p>



# CASE STUDIES FACTSHEETS

## Multi-Use Lanes

### BARRIERS AND DRIVERS (continued)

#### Process

**Barrier:** The main issues regards the implementation of the process connected with the drivers' tracing. In fact, the main problems are due to the workers' law, since the measure would require the collection of their movements around the city. So they would be worried about.

**Driver:** A proper solution is found analysing the process and its risks: the data will not be given directly to the operators themselves, but they will be analysed and provided in an aggregate format. Moreover, they will be used to highlight the general benefit of the measure after and during its implementation.

#### TECHNICAL/DATA RESOURCES

**Barrier:** There is a lack in the resources and expertise inside the LA since there is any department that have the proper knowledge in the data analysis.

**Driver:** Innovation in the process and in data acquisition: this kind of data was not available previously and would require new kind of analysis. This pushes the writing of a call for tender notice to lean on some external help, all financed thanks to another EU project.

#### STAFF

**Barrier:** There is a lack in the resources and expertise inside the LA since there is any department that have the proper knowledge in the data analysis

**Driver:** Thanks to a good network built previously it has been possible to lean on a consulting agency very keen on such themes: the necessary expertise and skills on how to move has been acquired during the meetings with them.

**(continue on next page)**

# CASE STUDIES FACTSHEETS

## Multi-Use Lanes

### BARRIERS AND DRIVERS (continued)

#### POLITICAL

**Barrier:** There is a lack in the resources and expertise inside the LA since there is any department that have the proper knowledge in the data analysis.

**Driver:** Innovation in the process and in data acquisition: this kind of data was not available previously and would require new kind of analysis. This pushes the writing of a call for tender notice to lean on some external help, all financed thanks to another EU project.

#### Legal

**Barrier:** There is a lack in the resources and expertise inside the LA since there is any department that have the proper knowledge in the data analysis.

**Driver:** Thanks to a good network built previously it has been possible to lean on a consulting agency very keen on such themes: the necessary expertise and skills on how to move has been acquired during the meetings with them.

#### Societal

**Barrier:** On the whole, the measure is rather focused on a specific professional category (express courier operators and freight delivery), so the citizens are not expected to directly feel the effect of such measure.

**Driver:** Any special action, since the citizens do not feel directly the changing due to this measure.



# CASE STUDIES FACTSHEETS

## Electric Freight Vehicles



### URBAN FREIGHT TRANSPORT

#### Electric Freight Vehicles (The Cargo –Hopper and the Beer-boat)

#### LOCATION

The city of Utrecht is the Netherlands 4th largest city, densely populated, with a population of more than 320.000 and growing. Its centre is of historical and cultural importance. The city of Utrecht accommodates numerous cafes and restaurants located in and around its historic centre (consists of many narrow streets) which results in attracting tourists in a very high rate. Additionally, due to the fact that the city's economy is mainly based on the service sector, many offices and institutions are located in the centre generating major economic activity.

#### INITIAL PROBLEM AND TARGET GOAL

Due to recent freight operations, damages to its traditional form were identified and along with the additional difficulties modern logistics operations sustained because of its form, efforts were made to tackle urban freight transport related problems. A Freight Transport Action Plan was developed in 2010 to address freight transportation including air quality and climate change. This plan attempted to suggest non prohibitive and non-expensive solutions with the co-operation between public and private sector.

#### SCALABILITY/REPLICABILITY

It is considered as a city example to be imitated by others if transferable and applicable. The solar-powered electric freight road vehicle, known as the Cargohopper, could be implemented to cities with narrow streets and historic city centres with uphill, where a conventional vehicle is inappropriate. The Beer-boat applies to cities with rivers, canals and lakes which offer accessibility to numerous of businesses for deliveries. Dymph Hoffmans, Utrecht's transport program manager, says that a vessel like the Beer Boat can only be transferrable when a city has shops and cafés which are accessible over water. But the Cargohopper has proven to be very transferrable and has been adapted by other Dutch cities like Amsterdam and Amersfoort.

# CASE STUDIES FACTSHEETS

## Electric Freight Vehicles



WHY THIS IS A BEST PRACTICE IN THIS FIELD?	MEASURE DESCRIPTION	IMPLEMENTATION REQUIREMENTS
<p>Utrecht's integrated planning actions along with the implementation of tailor made measures that improve and enhance existing conditions. Due to its success, this initiative of the local authority led to the purchase of more boats by the local businesses.</p>	<p>The city introduced two new and innovative methods of transport: the waterborne electric Beer Boat, and the solar-powered electric freight road vehicle known as the Cargo hopper.</p> <p>These measures make part of the integrated approach of Local Authority to mitigate negative impacts of urban freight and they are complementary with other implemented measures such as time restrictions for vehicles entering the city and the designation of low-emission zones, the establishment of urban consolidation centres (UCC) and lockers as distribution points.</p> <p>The Beer-boat is a specially adapted barge that operates on the Oudegracht and delivers beverages and catering supplies to the numerous cafés and restaurants which line the canal. By reducing the number of LGVs making deliveries on the road, it allows deliveries to be made directly from the barge at the level of the canal. The beer boat is electrically-powered but with a diesel auxiliary engine and is owned by the city of Utrecht. Its customers are major beverage suppliers and a catering wholesaler, which each rent the barge for half-day periods to make their deliveries. The cost of the service for its customers is lower than using LGVs making multiple trips.</p> <p>Another clean vehicle introduced in Utrecht was an electric-powered delivery vehicle called the Cargohopper. This vehicle was initially launched in April 2009 and due to its small size it is easy to maneuver through small streets. The Cargohopper is an electrically powered goods vehicle that delivers retail goods and parcels into the historic centre of Utrecht from a transfer site close to the city centre and it is controlled by a (continue on next page)</p>	<p><b>Estimated implementation costs:</b> The Beer-boat costed €600.000 which were funded through the city's air quality improvement budget. The Cargohopper costed €60.000 and is owned by Hoek Transport whereas its second version which transformed it into a solar-powered vehicle added €15.000 in costs.</p> <p><b>Financing scheme</b> = Public/private partnership + Local funds</p> <p><b>Implementation time planning:</b> In Utrecht case, the conduction of the Urban Freight Action Plan and the full implementation of the measures lasted approximately two years. The Cargohopper was fully operational four months after the decision of its deployment. No specific IT systems were needed.</p>



# CASE STUDIES FACTSHEETS

## Electric Freight Vehicles



	<p><b>MEASURE DESCRIPTION (continued)</b></p> <p>single logistics operator. Moreover a second version of the vehicle was introduced two years later that included solar panels as well and can travel 250km without recharging.</p> <p>Finally, the City of Utrecht is considering implementing measures to reduce the number of vans and other goods vehicle movements in the city through two further measures:</p> <ol style="list-style-type: none"> <li>1. Merchandise Pick-up Points: Implementation of a network of collection points located at a variety of convenient locations, such as railway stations or Park and Ride car-parks.</li> <li>2. Consolidation: Development of a consolidation centre to consolidate the loads of small to medium scale suppliers of fresh produce to city centre cafes and restaurants.</li> </ol>	
<p><b>INDICATORS TO MEASURE SUCCESS AND FINAL OUTCOME / IMPACT</b></p> <p>Improved air pollution and lower noise levels, Promotion of walkability, Increased safety, Improved flexibility on deliveries, Reduced traffic congestion. Citizens of Utrecht, Tourists, Pedestrians, Residents</p>	<p><b>BARRIERS AND DRIVERS</b></p> <p><b>Cooperation/coordination issues</b>  <b>Barriers:</b> It is important to find common goals, for the city and for partner companies. Sustainability and company efficiency have to coincide and in practice this turns out often difficult.  <b>Drivers:</b> Due to the city's strategy to agree on a long-term goal and work a plan of bridging the gap between different stakeholders, they managed to further their plans and lead future co-operations on being emission-free in freight transportation.</p> <p><b>Financial recourses issues</b>  <b>Barrier:</b> The beer-boat required a substantial amount of funding on behalf of the city's budget. The Cargo- hopper was done with no direct public subsidy.</p> <p>(continue on next page)</p>	<p><b>FURTHER INFORMATION</b></p> <p><a href="http://www.eltis.org/discover/case-studies/utrechts-sustainable-freight-transport-netherlands">http://www.eltis.org/discover/case-studies/utrechts-sustainable-freight-transport-netherlands</a>  <a href="http://www.bestfact.net/wp-content/uploads/2016/01/CL1_151_QuickInfo_ZeroEmissionBoat-16Dec2015.pdf">http://www.bestfact.net/wp-content/uploads/2016/01/CL1_151_QuickInfo_ZeroEmissionBoat-16Dec2015.pdf</a>  <a href="https://halshs.archives-ouvertes.fr/halshs-01078143/document">https://halshs.archives-ouvertes.fr/halshs-01078143/document</a>  <a href="https://ec.europa.eu/transport/sites/transport/files/themes/urban/studies/doc/2012-04-urban-freight-transport.pdf">https://ec.europa.eu/transport/sites/transport/files/themes/urban/studies/doc/2012-04-urban-freight-transport.pdf</a>  <a href="http://www.bestfact.net/wp-content/uploads/2016/01/CL1_078_QuickInfo_Cargohopper-16Dec2015.pdf">http://www.bestfact.net/wp-content/uploads/2016/01/CL1_078_QuickInfo_Cargohopper-16Dec2015.pdf</a></p>



# CASE STUDIES FACTSHEETS

## Electric Freight Vehicles

### INDICATORS TO MEASURE SUCCESS AND FINAL OUTCOME / IMPACT

As indicators have been used the CO2 emissions and the travelled kilometers of conventional freight vehicles. Reduced air pollution and lower noise levels, promotion of walkability, increased safety, improved flexibility on deliveries, mitigation of damages

Between April 2009 and October 2010, Hoek Transport estimates that Cargohopper has made more than 12,000 deliveries of around 66,000 parcels/boxes. This equates to a reduction of 122,000 vehicle-km and 34 tonnes of carbon dioxide.

The Beer Boat reduced CO2 emissions by over 38 t, NOx emissions by 31kg and PM10 emissions by 6kg during the lifespan of the project. For Utrecht's city centre as a whole, this was the equivalent of a 13% decrease in CO2 emissions and 10% and 6% of PM10 and NOx emissions, respectively.

### BARRIERS AND DRIVERS (continued)

**Driver:** City ensured a small income by renting the boat to the suppliers and a catering wholesale. As a cost-neutral vehicle, the Beer Boat is expected to make a profit on rental revenues, although it did not during the 4-year length of the MIMOSA project, which ran from 2008 to 2012. However, the environmental results of its transformation from a diesel-powered vessel to an electric powered, zero-emission boat are striking. The company responsible for Cargo-hopper operation receives indirect support from not being subject to the time window and length restrictions and being able to use restricted parts of the road such as the Bus Lanes. City found a way to attract private investment.

#### Process

**Barrier:** Since it is a complex planning, the implementation process required careful consideration of organisational and monitoring parameters on LAs behalf.

**Driver:** The conduction of an urban freight plan leads to numerous multilevel benefits for the city along with ability to manage and organise better the implementation of complex measures.

#### Technical/Data Resources

**Barriers:** Technical barriers are not identified from the part of the local authorities since only partial technical responsibility is accounted to LA. Companies are mainly responsible for the technical processes of the operational framework of aforementioned measures.

**Drivers:**

(continue on next page)

# CASE STUDIES FACTSHEETS

## *Electric Freight Vehicles*

### BARRIERS AND DRIVERS (continued)

#### Staff

**Barriers:** Due to the variety of different measures and actions available to be taken and due to the specific conditions in each city, different skills are needed and in most cases close co-operation with private companies also.

#### Political

**Barriers:** Such measures directly affect companies and working personnel which means that citizens and other remaining stakeholders. Any problems that might arise tend to be addressed between LAs and participant actors.

**Drivers:** As a cost-neutral vehicle, the Beer Boat is expected to make a profit on rental revenues

#### Legal

**Barrier:** A challenge faced by manufacturers of the Beer Boat is that it is not efficient as it could be as companies refuse to share deliveries with competitors in fear of giving away sensitive business information.

**Driver:** The city changed laws and regulations to give companies, that embraced sustainable forms, advantages

#### Societal

**Barriers:** The public and private sectors have sought to address the above issues by planning and implementing two new measures in recent years.

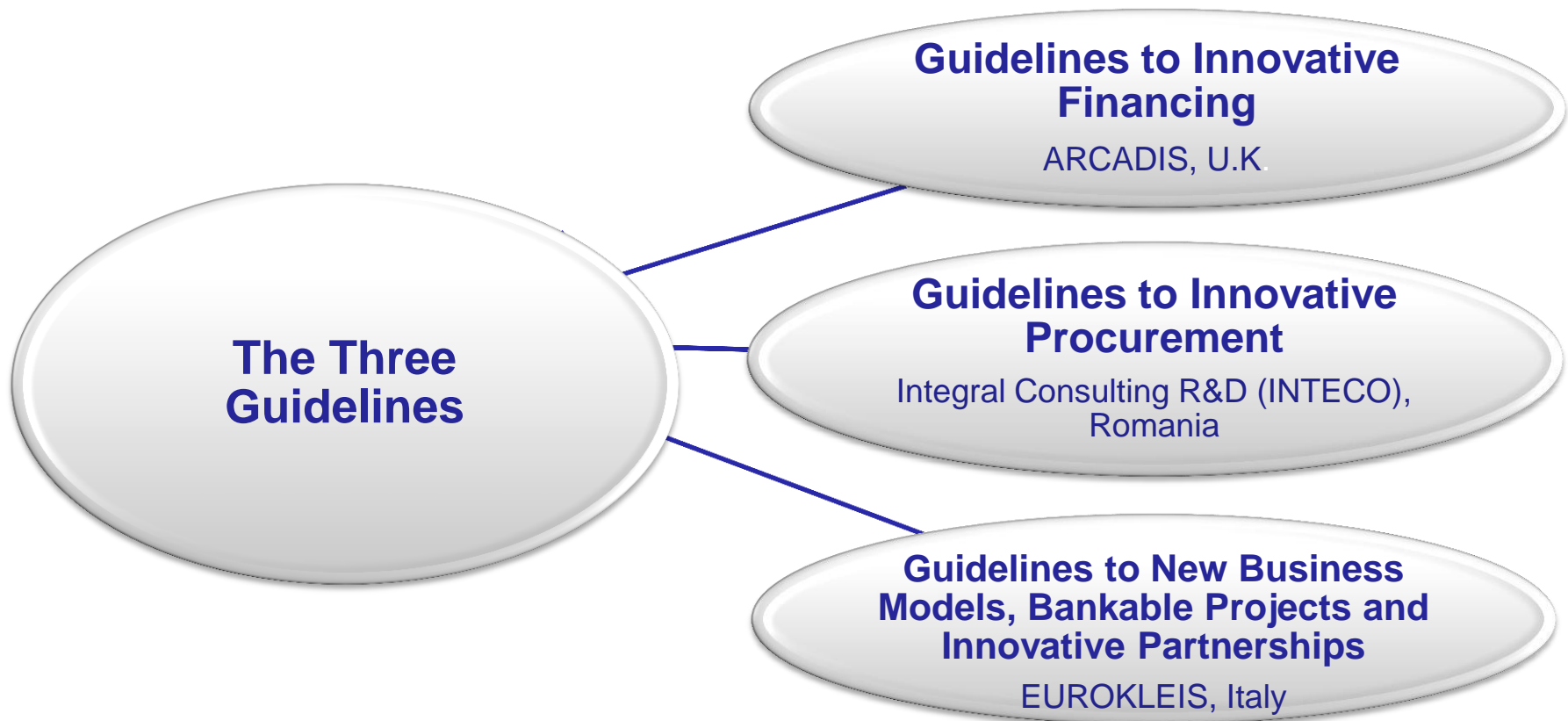
**Drivers:** The cargohopper has proved to be transferable to other similar S-M cities.

## Chapter 5: Innovative financing , procurement, partnership



# Chapter 5: Innovative financing, procurement, partnership

## SUITS TOOLS supportive to LAs for Innovative financing, procurement and partnerships : Three Guidelines





# Chapter 5: Innovative financing, procurement, partnership

## Objective of the three Guidelines

**Objective:** Enhancing the capacities of local authorities and stakeholders through innovative procurement procedures, innovative financing methods, and new business models and partnerships, in support of sustainable mobility development.



# Chapter 5: Innovative financing, procurement, partnership

## What can you expect to find in the Guidelines?

- Presentation of how different transport measures are currently procured and financed, as well as the business models and partnerships used.
- Overview of existing gaps in current knowledge and organisational capacity to implement sustainable transport measures.
- Presentation of new, innovative financing methods, procurement procedures, business models and partnerships which could be used to enhance the capacity of Local Authorities and stakeholders to implement sustainable transport measures.
- Case studies and examples of where and how these methods and procedures have been successfully applied.
- Steps to use these methods and procedures.

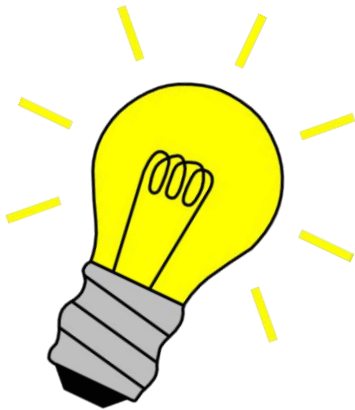


# Chapter 5: Innovative financing, procurement, partnership

## How to make the best use of the Guidelines

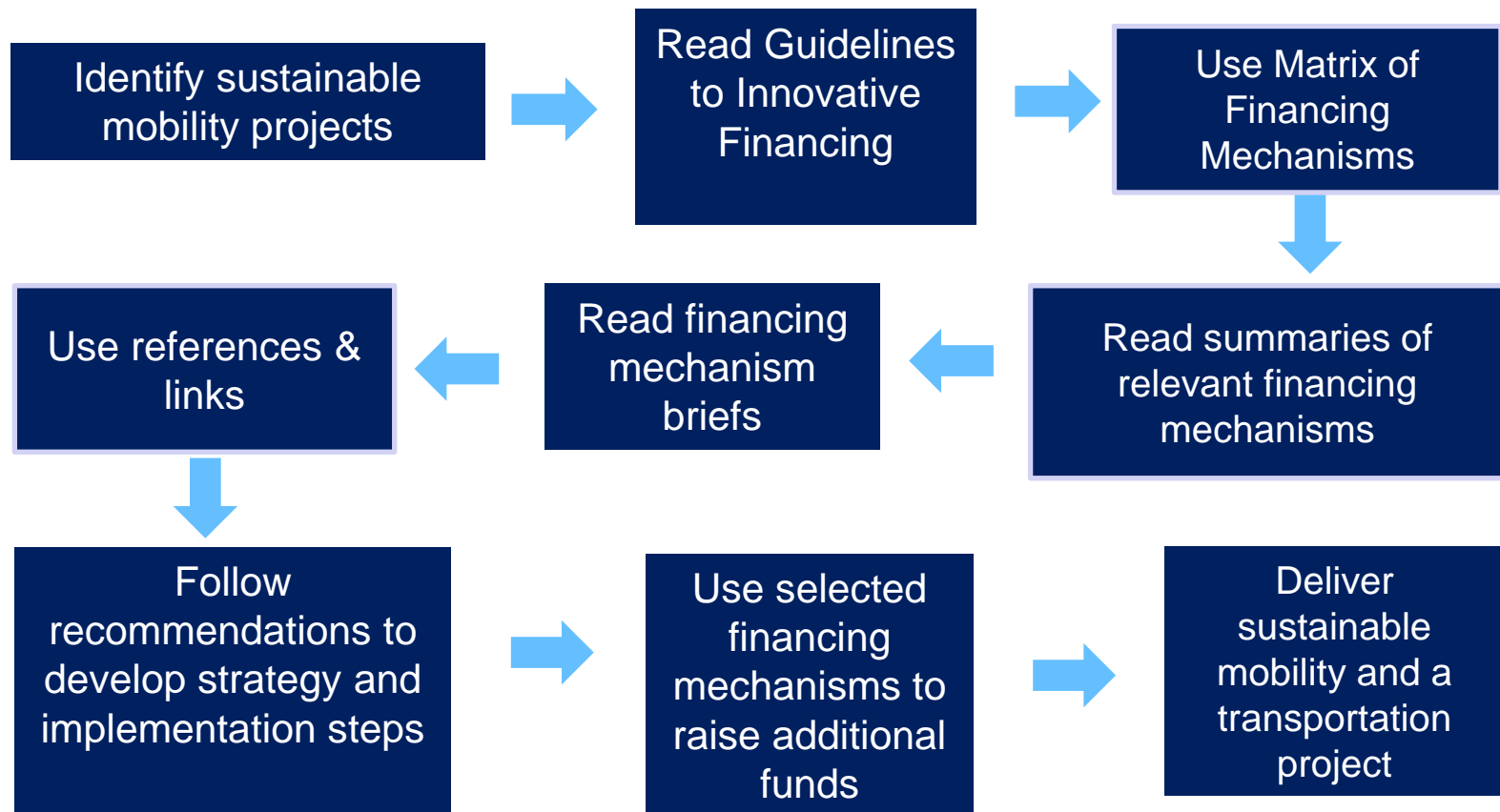
Tips for Implementation:

- The 3 Guidelines are complementary to one another and should be used together.
- Local Authorities should set up a team to take control of the implementation of the Guidelines within their organisation. The purpose of this team would be to:
  1. Read the Guidelines
  2. Decide on the types of sustainable mobility measures in which they want to implement within the local area
  3. Identify the innovative procedures and methods which are most suitable to each sustainable mobility measure identified, as well as to the local economic, political and social situation
  4. Use the selected procedures and measures
  5. Evaluate the success of the use of the innovative procedures and measures
- Communicate with the authors of the Guidelines. The authors will provide support to the Local Authorities/ other stakeholders to clarify the information in the Guidelines at their request.



# Chapter 5: Innovative financing, procurement, partnership

## Guidelines to Innovative Financing [1]



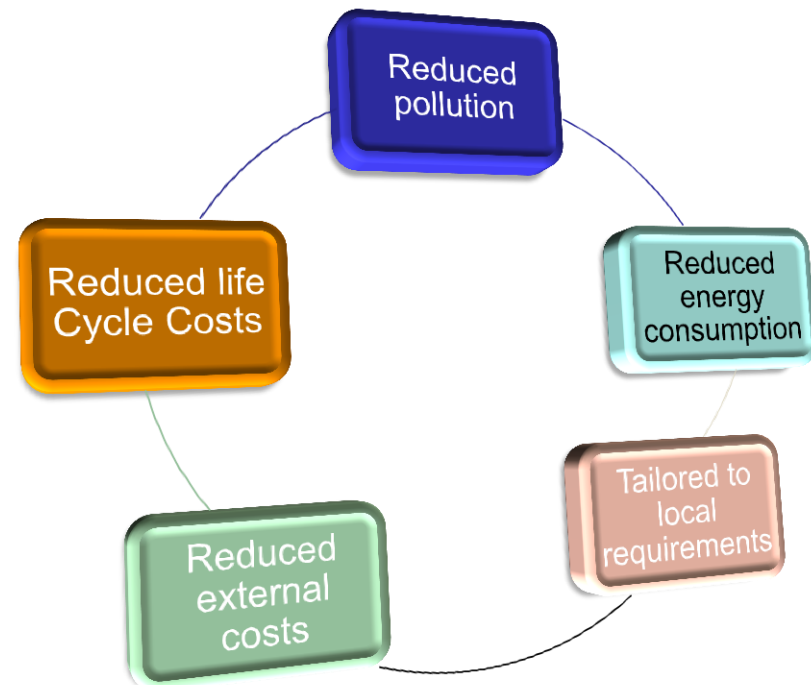
# Chapter 5: Innovative financing, procurement, partnership

## Guidelines to Innovative Procurement [2]

### EU Public Procurement Reform

**Underlying principle:** *“Public procurement must become levers through which the Contracting Authorities can obtain the biggest long-term advantages for the society, generating business opportunities, economic growth, jobs, enhanced sustainable mobility, higher life quality.”*

### Contract Award Criteria



# Chapter 5: Innovative financing, procurement, partnership

## Guidelines to New Business Models, Bankable Projects and Innovative Partnerships

### The key objectives:

- Provide the knowledge of innovative business models in urban mobility services including sharing mobility, integrated mobility and MaaS.
- Address the main partnership schemes in the field and introduce the new ones.
- Enhance the capacity of creating fundable projects providing the guidance for feasibility analysis.
- Identify:
  - evolving commercially viable business strategies,
  - new forms of partnership and
  - important aspects to prepare bankable documents
- Improve the administrative and organizational capacity of the urban mobility authorities of S-M cities.



# Chapter 5: Innovative financing, procurement, partnership

## Guidelines to New Business Models, Bankable Projects and Innovative Partnerships: Recommendations

### New forms of partnership

- Creation of solid institutional mechanism addressing specific sector policies.
- Integrated approach of financial, technical and business planning.
- Development of efficient project management regarding the business idea and contractual forms.
- Successful implementation depends on recognition of partner's objectives.
- iPPPs require careful consideration of control and management systems through project agreements.

### Innovative business models

- The business model innovation foresees the top-down approach. The top management should support and provide the resources for new business opportunity
- Constant monitoring of market tendencies
- Constant monitoring technological innovation
- Consulting the business model analogies and learning from best practices
- Searching for new investment opportunities for project development

### Bankable project

- Provide the research on different investment programs and financial opportunities
- Allocate the human resources to develop the bankable documents
- Ensure that all the necessary feasibility studies are included in the document



# Chapter 5: Innovative financing, procurement, partnership

## Innovative financing mechanisms

- **Congestion Charge**
- **Municipal Green Bonds**
  - Crowdsourcing
  - Stamp Duty Land Tax (SDLT)
  - Lottery Funding
  - Voluntary Capture
- **HGV Charging Schemes**
  - Work Place Parking Levy (WPL)
  - Community Infrastructure Levy (CIL)
  - Advertising, Sponsorship and Naming Rights
- Collaborating with other cities, research consortia and private companies
- Citizen Cooperatives
- **Emission Trading**
  - Planning Obligations / Developer Contributions
  - Tax Increment Financing
  - Sales Tax
- **Toll Roads**
  - Selling Expertise and Technical Know-how

Several innovative financing mechanisms can be applied directly to urban freight transport measures (check **bold**). All detailed description are available in the Guidelines

# Chapter 5: Innovative financing, procurement, partnership

## Key points of financing mechanisms more relevant to UFT measures

Congestion Charge	
<b>Description</b>	Applied in numerous larger metropolitan areas and megacities
<b>Methods</b>	Works by charging people who travel with private vehicles entering or passing through predefined geographical areas that have been identified as congested locations usually during peak hours
<b>Benefits</b>	This aims to encourage shift towards alternative transport modes, more sustainable than private vehicles, such as public transport, active travel, etc. and eventually through revenues derived from the congestion charging to finance new mobility projects while improving environmental conditions

# Chapter 5: Innovative financing, procurement, partnership

## Key points of financing mechanisms more relevant to UFT measures

Municipal Green Bonds	
<b>Description</b>	It is a financing mechanism that allows institutional investments for projects mainly with environmental benefits such climate change mitigation and resilience but it also attractive to other types of projects that promote sustainability, meaning that social and governance related beneficial projects are also eligible for funding through it
<b>Methods</b>	Aims into attracting investors to invest in sustainable mobility projects and even the residents and members of communities to participate in such processes
<b>Benefits</b>	Can lead to additional benefits for the local communities but Municipal Green Bonds as a mechanism, require standardization and more information from the part of local authorities and national governments in order to achieve promotion and fully exploit its capabilities

# Chapter 5: Innovative financing, procurement, partnership

## Key points of financing mechanisms more relevant to UFT measures

HGV Charging Schemes	
<b>Description</b>	This system imposes a fee on Heavy Good Vehicles or other types of trucks to compensate for the external cost that results from their operation
<b>Methods</b>	It is usually operated at national level but there are cases that large cities have established such schemes and they aim to collect revenues to reinvest and finance more sustainable transport infrastructure projects. This measure can be off different types such as that of electronic tolls, tolls with physical barriers and/or time-base charges.
<b>Benefits</b>	On a city level it is challenging to develop independent charging policies for HGVs and resistance is often met from stakeholders such as the road freight industry

# Chapter 5: Innovative financing, procurement, partnership

## Key points of financing mechanisms more relevant to UFT measures

Emission Trading	
<b>Description</b>	Emissions trading is a market-based approach that is used to control pollution by providing financial incentives for achieving reductions in the emissions of pollutants and it is operational at national and regional levels across Europe, the USA, Japan, New Zealand and more.
<b>Methods</b>	This market system works based on carbon credit which acts as a financial instrument that gives the right to the holder to emit carbon dioxide and a carbon credit is equivalent to one tone of carbon dioxide or other greenhouse gases
<b>Benefits</b>	The particularity of this financing mechanism is that it allows countries, cities or industries to sell unused carbon credits to others in order to raise revenue to finance other sustainable transport and mobility projects.

# Chapter 5: Innovative financing, procurement, partnership

## Key points of financing mechanisms more relevant to UFT measures

Toll Roads	
<b>Description</b>	This mechanism includes the payment of a fee in order to access or pass a specific area or part of a network. This measure aims to improve environmental conditions and promoting sustainability by lowering traffic volumes due to payment fees and by promoting the public shift towards public transport. Urban toll roads usually are a matter of conflict between the public and local political authorities and it requires strong political support for its implementation
<b>Methods</b>	Revenues generated through tolls are used for maintenance of existing or funding of new parts of the infrastructure, usually large and thus expensive projects.
<b>Benefits</b>	This measure aims to improve environmental conditions and promoting sustainability by lowering traffic volumes due to payment fees and by promoting the public shift towards public transport. Urban toll roads usually are a matter of conflict between the public and local political authorities and it requires strong political support for its implementation

# Chapter 5: Innovative financing, procurement, partnership



## Innovative procurement steps

1. Select, employ, train, educate procurement management team
2. Learn about legal framework, of the legislative changes, and specific regulations for various situations and procedures;
3. Develop an annual and multi-annual procurement plan;
4. Develop an evaluation plan and performance indicators;
5. Enhance the exchange of knowledge between public authority and suppliers;
6. Organise centralised public procurement procedures across local / regional / cross-border public authorities having the same requirements;
7. Promote public – private partnerships and the collaboration with the industry;



# Chapter 5: Innovative financing, procurement, partnership

## Innovative procurement steps

8. Promote public – private partnerships and the collaboration with the industry;
9. Use public financing for research and innovation in a strategic way in order to improve challenge impacts of public procurement;
10. Use the new ‘Innovation Action’ and ‘Pre-Commercial Procurement’ instruments to encourage cities and the innovation community to collaborate.
11. Understand and raise awareness to the importance of innovative procurement and prepare their application;
12. Develop a long-term procurement strategy.

Detailed description available  
in the Guidelines [2]

# Chapter 5: Innovative financing, procurement, partnership

## Innovative Public Private Partnerships (IPPP)

IPPP is a new form of partnership where the main actors are:

- public and private organisations
- civil society organisations (CSOs),
- non-governmental organisation (NGO)
- communities

These new forms of collaboration enable to identify the opportunities for the design and implementation of the long-term strategies for partnership.

**Each actor of the iPPPs has its important role in the alliance**

Detailed description available  
in the Guidelines [3]

# Chapter 5: Innovative financing, procurement, partnership



## Innovative Public Private Partnerships – Probable roles allocation

- **State organisations** for the drawing up, financing and implementation of policies and programmes
- **Public organisations** for supervising, creating incentives and regulatory frameworks, developing new opportunities and governance mechanisms to enable the sustainable long-lasting collaboration with the private sector and other forms of organization,
- **Private sector** for bringing the investment and expertise in the alliance having its business for-profit orientation.
- **NGOs, CSOs or communities** for bringing their expertise and vision of transport and mobility sector.
- **R&D** for developing new product or service (or improve an old one), and other actors who are economically interested in the development of such innovations

***Establishing an iPPP requires strengthening the capacities of all the actors involved.***

# Chapter 5: Innovative financing, procurement, partnership

## Innovative Public Private Partnerships - Benefits of iPPP for mobility local authorities

Detailed description available in the Guidelines [3]

- Addressing market needs and tendencies.
- Transferring localized institutional knowledge to the public and private organisations.
- Creation a collective awareness of the innovative solutions created by the alliance.
- Elaboration of the social standards and clarification schemes.
- Enhancement of the possibility of the project to obtain the investments by involving the mobility communities in the consortium.
- If the project addresses green or climate finance, mobility communities' participation may bring innovation and an ethical approach to investments.
- The CSOs or NGOs may gain the social relevance and influence and builds capacity for policy monitoring.

# Chapter 5: Innovative financing, procurement, partnership



## Innovative Public Private Partnerships

### Example of CSO involvement in the transport projects:

*The CSO was involved in the improvement of the public transport in Germany in Rhine-Main-Area. The Rhein-Main-Verkehrsverbund (RMV) transport association established a passenger advisory board that were represented by individuals and CSO. The advisory board organise meetings four times a year, and has already initiated concrete improvements [5]*

### Example of the R&D institutions involvement in the transport projects

*Frankfurt RheinMain, major transport authorities and operators, including partners from industry and consultancy, and supported by the Hessen State Government. Namely, ZIV institute was founded at the Darmstadt University of Technology. [6]*

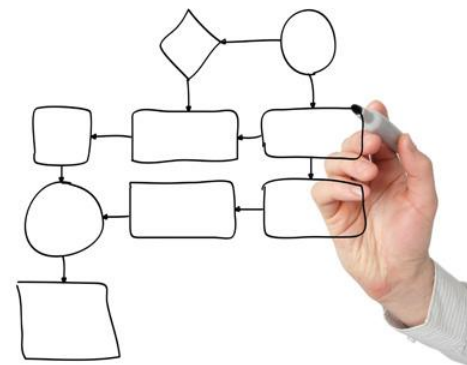
## Chapter 5: Innovative financing, procurement, partnership

Have you ever used any innovative financing mechanism of the ones listed before?

Was it successful or not?

In which concept ?

What type of business model did you use or could you use (partnerships, ownership etc.)



## Chapter 6: Process and implementation aspects



## Chapter 6: Process and implementation aspects

# EXERCISE C

## EXERCISE C: Final selection of urban freight transport measures and identification of key actions to be implemented by LAs.

### Description of exercise

A. A table with 6 fields: (a) required data and surveys for implementation and evaluation of success – identification of relevant indicators, (b) main activities (both administrative and designing/application ones), (c) time plan, (d) milestones, (e) needs for outsourcing, (f) potential legal barriers



## Building S-M LAs' capacity to implement Urban Freight Transport measures

Municipality Logo

## EXERCISE C

TEAM NAME:

MEASURE TITLE:

[illegible]

Key Performance Indicators [3]			
	Key Performance Indicator	Description	Data /Units
ECONOMY	The amount of operating revenues and costs	(1)Revenues per pkm or vkm (2) Capital costs (3) Operating costs	(1) Euros/pkm or Euros/vkm, quantitative, derived or measured (2) Euros, quantitative (3) Euros/pkm or Euros/vkm, quantitative, derived or measured
ENERGY	The amount of Fuel Consumption in Urban Freight Transport	Fuel used per vkm, per vehicle type	MJ/vkm, quantitative, derived or measured
ENVIRONMENT	Level of Air Quality	(1) CO levels (2) Nox levels (3) Particulate levels	(1) (2) (3) Ppm or g/m3, quantitative, measured
	Level of Noise	Perception of noise	Index (%), qualitative, collected, survey
	Level of Emissions	(1)CO2 emissions (2) CO emissions (3) NOx emissions (4) Particulate emissions	(1) (2) (3) G/vkm, quantitative, derived
SOCIETY	Acceptance	(1) Awareness of the policies/measures (2) Attitude survey of current acceptance of the measure	(1) (2) Index (%), qualitative, collected, survey
	Accessibility	(1) Perception of accessibility (2) Relative cost of service	(1) Index(%), qualitative, collected, survey (2) Index(%), quantitative, measured
	Security	Perception of security when using service	Index, qualitative, collected, survey
TRANSPORT	Traffic Levels	Average vehicles per hour by vehicle type - peak	Veh per hour, quantitative, measured
	Congestion Levels	Average vehicle speed over total network (peak or off peak)	Km/hr, quantitative, derived
	Freight Movements	Daily number of goods vehicles moving in area	No, quantitative, derived or measured
	Modal split	Percentage of trips for each mode	%, quantitative, derived

## Chapter 7: Available tools and guidelines



## LIST OF AVAILABLE TOOLS AND GUIDELINES FOR UFT MEASURES

Tool name	Format	Source /Link	Usefulness for S-M cities and Importance in SUITS project	Rating of relevance [1 - 5]	Rating explanation
<b>NOVELOG</b>	PDF document, interactive self assessment	EU project [1]	Interesting for both, S-M and big cities	5	Interesting self-assessment tool. Visual and useful
<b>STRAIGHTSOL</b>	PDF document, Youtube video	EU project [2]	Mainly solutions for big cities, but some of them can also be implemented in S-M cities	4	Interesting results from applied measures, but results presentation could be improved
<b>Freight TAILS</b>	PDF document	EU project [3]	Relevant to both small, medium and larger cities. Partners – regions of every size are involved in the project	4	Development of urban freight management policies tailored to the different sized cities
<b>BESTUFS</b>	PDF document/ presentation	EU project [4]	Yes. Some of the examples and BPs provided come from S-M cities (ex. Liège) and they can also be applied to S-M cities.	3	Many information and examples are included, the only issue is that measures included can be quite outdated (2008)
<b>CITYLAB</b>	PDF document/ presentation	EU project [5]	More focused in the transferability to big cities (London, Oslo, Paris, Brussels, Rome):	3	Interesting implementations, but maybe quite far from S-M cities level. It also needs a more detailed explanation (implementation steps, etc.)
<b>FREVUE</b>	PDF document/ presentation, webinars	EU project [6]	Focused on big cities	3	Interesting material and resources, but focused on Big cities
<b>SMARTSET</b>	PDF document	EU project [7]	Yes. Cities participating are mainly S-M sized cities	3	Measures focused in mobility and some of them related to freight transport

## Chapter 7: Available tools and guidelines

### Novelog – Evaluation Tool

<http://evalog.civ.uth.gr/>

- A multi-criteria multi-stakeholder decision making process, which facilitates the establishment and combination of objectives, performance criteria and indicators, and relevant weights to reveal stakeholders' preferences
- The Tool is composed of 140 indicators that are grouped into seven impact areas of a life cycle-based sustainability framework.
- Each stakeholder selects the indicators that fit to each city case and perform a holistic assessment of the proposed measure/policy.
- Pre-defined weights stimulate the stakeholders' engagement in the decision-making process and result in consensus building within each city.



# Chapter 7: Available tools and guidelines

## Novelog – Evaluation Tool

The output:

- the integration of all indicators addressed in all impact areas, and
- the formulation of a Logistics Sustainability Index (LSI) for each measure/policy tested,
- the accurate estimation of the solution's sustainability.

More specific results:

- 1) *Social Cost Benefit Analysis*
- 2) *Transferability and Adaptability*
- 3) *Risk Analysis*

## Chapter 7: Available tools and guidelines

### SUITS suggestions for Data collection tools

- **Crowdsourcing**

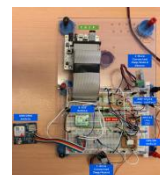
Crowdsourcing using conventional GPS trackers & IoT telecom services



SUITS Pilot Demo  
In Kalamaria

- **Multi-GNSS + INS tracker**

Advanced, multi-GNSS + INS tracker prototype for urban vehicle tracking



- **Vehicle navigation**

Collaborative, crowdsourced navigation system adapted for in-vehicle multimedia consoles



## Chapter 7: Available tools and guidelines

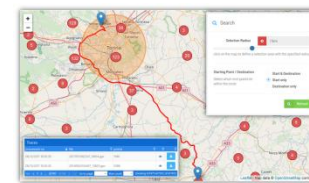
### SUITS data selection tools

#### • S-DaRe Selection Tools

- ✓ GPX format (converter)
- ✓ GPX file anonymisation / pseudonymisation
- ✓ Insertion of GPX file metadata into a Geospatial DB
- ✓ Geo-selection of GPX trace datasets



DaRe.SUITS-  
project.eu/tools



S-DaRe Tools (by )

#### • PP4TM system

Scalable, data homogenisation funnel and fast query processing engine over big transport data



SUITS Tool:  
The PP4TM  
System



**GPX file** is a GPS data saved in the GPS Exchange format, an open standard that can be freely used by GPS programs. It contains longitude and latitude location data, which includes waypoints, routes, and tracks. GPX files are saved in XML format that allows GPS data to be more easily imported and read by multiple programs and web services

## Chapter 7: Available tools and guidelines

### S-DaRe: SUITS' Data Repository

[DaRe.SUITS-project.eu/tools](http://DaRe.SUITS-project.eu/tools)

- The data, including associated metadata, needed to validate the results presented in scientific publications;
- Collected data during the project, after anonymization and including associated metadata, as specified in the DMP;
- Generated data during the project, including associated metadata, as specified in the Consortium Agreement and in the DMP;
- Public project reports and public deliverables;
- All dissemination-related material (all that is public).



### SBOING's Repository:

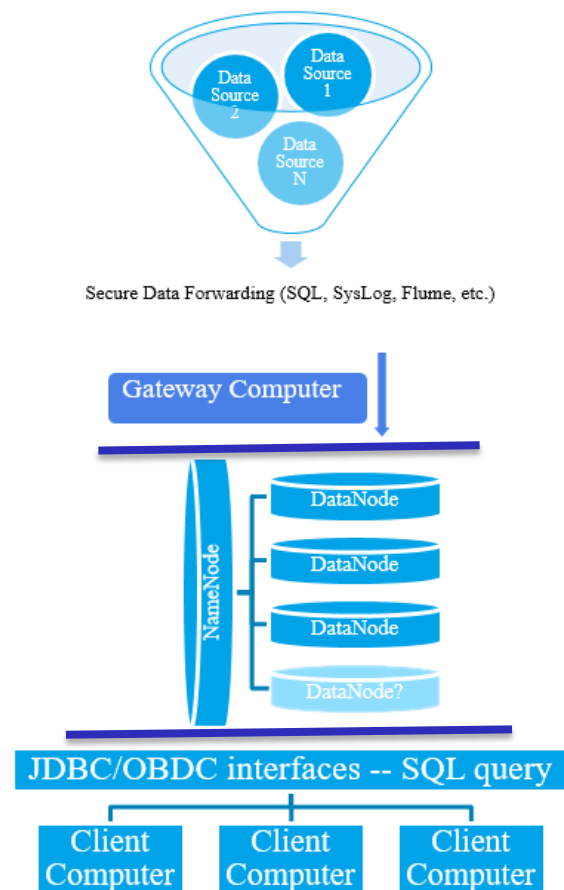
- Hosted in Germany (@Hetzner.de), 3TB+, SFTP accessible (+more)
- (Mirrored in LOGDRILL's (local) Data centre)

## Chapter 7: Available tools and guidelines

### PP4TM:SUITs database for big data

Fast and robust analytic database solution for civil traffic research and development purposes

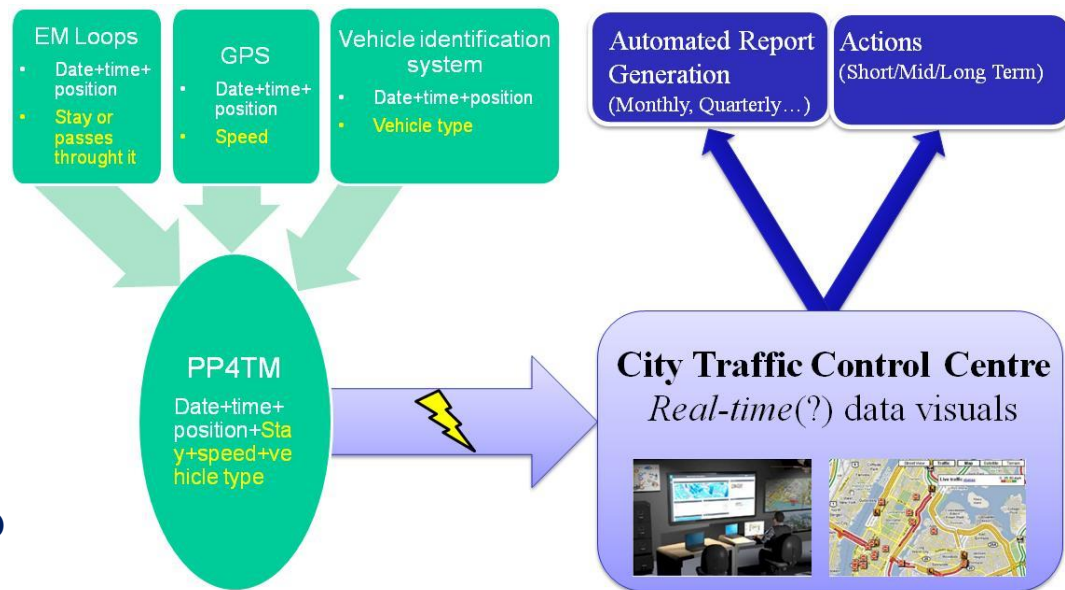
- Convert any data sources and formats (including historical) to common data format at once
- Store lots of data (Big Data) and access them very quickly
- Very easy and cheap to expand the storage capacity in runtime
- Easy to connect to any visualization tools
- Quickly serve your visualization needs



## Chapter 7: Available tools and guidelines

### How to use PP4TM

1. Create a table in PP4TM, will contain all of your data (common data format)
2. Use PP4TM to convert different data sources to „common data format”
3. Store all of your data in PP4TM
4. Connect your favorite visualization tools to PP4TM (example MS Power BI free)
5. Analyze your data instantly (find a correlations in different type and source of data)
6. Expand your data to real-time (use step 2 continuously)
7. Use the live visualization (step 5 with refreshing)





## Chapter 7: Available tools and guidelines

### Data visualisation tools

- **MyPolisLive.net**

A platform for real-time vehicle tracking and traffic monitoring for urban traffic management



<https://www.mypolislive.net/>

LEVER Development  
Consultants S.A.  
Thessaloniki, Greece  
[www.suits-project.eu](http://www.suits-project.eu)  
[www.civitas.eu](http://www.civitas.eu)



**Olympia Papadopoulou**  
Olympia.papadopoulou@lever.gr

**Iason Tamiakis**  
Iason.tamiakis@lever.gr

**Anastasia Founta**  
Anastasia.Founta@lever.gr

**Konstantia Karagkouni**  
Konstantia.karagkouni@lever.gr



THE CIVITAS INITIATIVE  
IS CO-FINANCED BY THE  
EUROPEAN UNION