SUITS

Building S-M LAs' capacity to implement urban transport safety & security measures for all

Presentation

THE CIVITAS INITIATIVE IS CO-FINANCED BY THE EUROPEAN UNION

SUITS Capacity Building Programme
Outline of the course

Welcome session

Chapter 1: Introduction

Chapter 2: Safety & Security (SS) 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: Processes 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”.
- **SS:** “Safety and Security”
- **SIA:** “Social Impact Assessment”
- **PT:** “Public Transport”

Chapter 1: Introduction

SUITS
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:** appox. EUR 4M
- **Duration:** 4 years (From **Dec 1st 2016** to **Nov 30th 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 Universistat Ilmenau
- Lithuania: Smart Continent
- Belgium: SIGNOSIS

22 Partners

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Course Framework: SUITS Project
Main objectives of SUITS Capacity Building

Overall aim: To increase the capacity of S-M local authorities to develop and implement sustainable, inclusive, integrated and accessible transport strategies, policies, technologies, practices, procedures, tools, measures and intelligent transport systems that recognize the end-to-end travel experiences of all users and freight

Support Small Medium Local Authorites in developing SUMPs by:

- Transforming them into learning organizations;
- Make transport departments resilient and responsive to new challenges and changes;

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

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-learnings 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.

Module's purpose

Overall module's aim: To increase the capacity of S-M cities, to implement urban transport safety & security measures for all/vulnerable users throughout policymaking, budgeting, designing and facing the current challenges when implementing these measures

In particular aims at:

- **Increasing the understanding** about the value of SS measures in our cities, the effects/cost of lack of urban mobility regulations, the operators and the economy of the city and about the concept and methodology for developing SS measures while being able to recognize or find out the needs of urban 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 SS measures
- **Offer** concrete practical **tools** and **guidance** to better implement these measures

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Introduce yourself…

Chose what is the most representative picture for you when you hear the term “safety” or “security”?

What are your expectations from this workshop?

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Key aspects of the problem

- Transport safety problems: vulnerability to accidental injury (usually involving at least one vehicle as the instrument causing the injury).
- Transport security problems: vulnerability to intentional criminal or antisocial acts suffered by those engaged in trip making.

Vulnerable transport users:

a) Low-income groups, b) Children, youths and the people caring of them, c) Women, d) The elderly, e) People with disabilities, f) Lower education people, g) Non-locally born people.

Vulnerability related to transport policies, can be split into two types:

a) based on health and safety aspects of transport activities,

b) based on social aspects, which is closely related to the idea of accessibility.

Key aspects of the problem

Key statistics in European level:

- 21% of all people killed on roads were pedestrians
- 25% two-wheelers (14% were motorcyclists, 8% were cyclists and 3% mopeds riders, in 2017)
- 25.300 people lost their lives on EU roads in 2017, which is 300 fewer than in 2016 (-2%) and 200 fewer than in 2010 (-20%).
- Approximately 135.000 people were seriously injured in 2017

However in 2017 road safety statistics show a decrease in the number of fatalities of around 2%.

While European roads are among the safest of the world → more work needs to be done especially in urban areas.

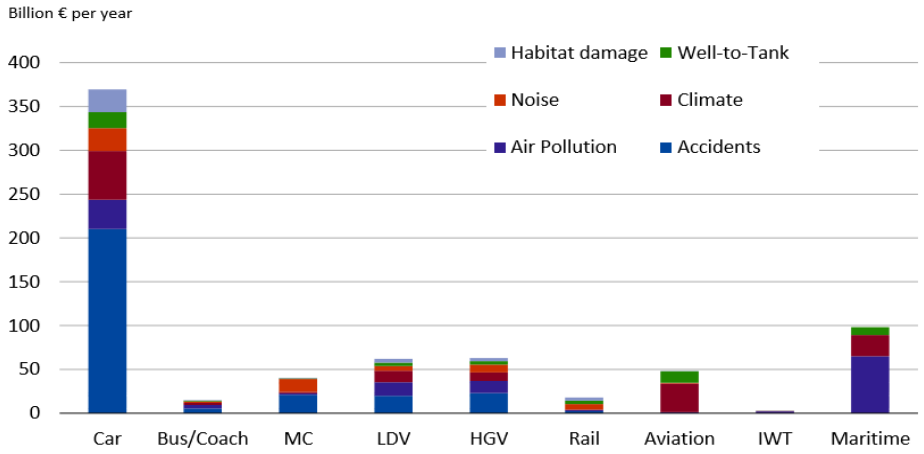
Key aspects of the problem

External cost of transport

- ***≈75%*** *(€ 545 billion estimated)* of total external cost of transport due to the **use** of **Car**, **Bus/ Coach, LDV, HGV** and **Motor Cycle,** (EU28 in 2016), of which the **≈ 54%** of it, stands for the accidents

- ***≈ 57.5%*** *of total external cost derived from* ***car****, accounts only for accidents*

- **≈ € 210 billion per year**, the **accident cost** estimated only for car while the **total** accident cost for the rest of road means of transport is about **€ 60 billion**



Total external costs per transport mode for EU28 in 2016

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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.

Approach	Description
External Transport Cost Calculator *http://ecocalc-test.ecotransit.org/tool.php*	Calculates the precise external costs of the urban freight transportation
Handbook on External Costs of Transport *https://ec.europa.eu/transport/sites/transport/files/themes/sustainable/studies/doc/2014-handbook-external-costs-transport.pdf*	Gives guidance on how to determine costs about air quality, accidents etc. (accompanied by excel calculators)
Guidelines to estimate the external marginal accident costat: *http://ec.europa.eu/transport/infrastructure/doc/crash-cost.pdf*	Report of experts advisors that propose strategy on calculating the accidents cost in transport sector

Key aspects of the problem

- **Transport security** is a sensitive issue that affects all transport users and transport providers. It is a basic right to be able to travel without fear of being a victim of some form of attack. [5]
- Improving **safety and security** can be an extremely important step in encouraging users to switch to alternative modes, especially when they are perceived as 'unsafe' (e.g. cycling in cities with little dedicated infrastructure, or taking public transport at night). [4]

The European Commission (EC) examines measures at the EU level which can improve security.

Key aspects of the problem

The EC consolidates and strengthens security by working together with major international partners, exchanging experiences and best practices while integrating new technologies in order to assist operation of such measures.

Cooperation with authorities between Member States – Build national initiatives, set targets address all factors that play a role in crashes through methods: Law adoption, Public education campaigns, Experience sharing and knowledge transfer.

Safety and Security is a general value that could be tailored to the dimension and the needs of each S-M city. [3]

Chapter 1: Introduction

EXERCISE A1

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EXERCISE A1:
Analyzing weaknesses of the urban transport system.

Description of material

One table with 2 columns. The first column of the matrix refers to the transport modes available in the city. The second column refers to the weaknesses that each mode of transport faces, as seen by the users.

Building S-M LAs' capacity to implement urban transport Safety & Security measures

Municipality Logo

EXERCISE A1

TEAM NAME: […]

Please fill in the following matrix with the weakness that the noted modes of transport face in your city.

MODE	WEAKNESS
PRIVATE CAR	
CYCLING	
WALKING	
PUBLIC TRANSPORT	

Chapter 2: Safety & Security measures

Chapter 2: Safety & Security measures

Awareness raising campaigns

Awareness Campaigns are a form of official motivation towards the public in order to encourage a certain type of behaviour.

Such campaigns can have the form of advertising material or in some cases provide training and are widely used as part of an integrated approach.

Chapter 2: Urban transport Safety & Security measures

Advanced Technologies for Public Transport

Advanced Technologies for PT consist of a form of measures that use technological equipment in order to enhance and improve the level of service provided.

Such measures can be implemented on different points of the infrastructure while accounting for both traffic safety as well as individual security.

Chapter 2: Safety & Security measures

Pedestrian and Cycling Infrastructure

Infrastructure for Pedestrians and Cyclists measures aim to improve the current safety conditions by providing additions on the main infrastructure such as the cycling network or enhancing amenities such as bicycle parking stations and pedestrian crossings.

Chapter 2: Safety & Security measures

Road Safety Speed Zones

Traffic Restriction Measures include actions such as road design elements or use of technological tools that are able to either provide or deny access to an area or control and adjust traffic conditions in order to optimise safety.

Chapter 2: Safety & Security measures

Security Enforcement

Security Enforcement contains usage of technology such as surveillance cameras or physical attendance of trained staff that aim to maintain security in vehicles and on stations.

Chapter 2: Introduction

EXERCISE A2

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EXERCISE A2:
Proposing safety and security measures to counter weaknesses identified in exercise A1.

Description of material

In the table of Exercise A1, a third column is added which refers to the safety and security measures that can contribute to the mitigation of the identified weaknesses.

Building S-M LAs' capacity to implement urban transport Safety & Security measures

Municipality Logo

EXERCISE A2

TEAM NAME: […]

Please fill in the following matrix with the weakness that the noted modes of transport face in your city and the safety and security measures that can tackle those weaknesses.

MODE	WEAKNESS	SAFETY & SECURITY MEASURE
PRIVATE CAR		
CYCLING		
WALKING		
PUBLIC TRANSPORT		

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

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

Benefits of SS measures

Direct positive effects

- Improve safety and security levels (both actual and perceived)
- SS promotes car-independent lifestyles such as cycling, walking and public transport and improves health and environmental conditions
- Lower financial costs due to lower accidents and violent acts (e.g. vandalism acts)
- Increased public transport usage

Moreover:

- Positive long term impacts which can eventually contribute to the reduction of enforcement measures and therefore reduce costs
- Improved environmental and social conditions due to accessibility enhancement through the public transport system as well as through the promotion of soft travel modes
- Financial benefits due to improved social and environmental aspects of the urban space

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

Correlation of safety and security (SS) measures with key challenges in transportation

Based on SUMP guidelines:

- New forms of public transport services increase safety and security while solving congestion problems, achieving high participation of citizens and enhancing strategic planning.
- Access elderly and disabled passengers measures can contribute to higher levels of safety and security while promoting strategic planning, participation and the public health.
- Measures about walking and cycling can solve most of urban mobility problems since they are correlated with improvements in public health, safety and security, strategic planning and global climate change.

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

Safety and security measures as part of city strategic planning: *The case of Bologna*

Bologna's Urban Traffic Safety Plan set out to halve the number of fatal accidents and accidents with serious injuries.

Improve road safety and demonstrate the effectiveness of a combination of infrastructure interventions and other activities;

Integrate the road safety plan with an extensive deployment of ITS control systems.

The city of Bologna initiated public engagement and stakeholder participatory models in order to provide a set of infrastructural interventions to reach its long-term ambitious goal.

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

Results of SS measures application: *The case of Bologna*

- -46% accidents at crossings with island
- -34% accidents at crossings with traffic lights
- -22% in traffic injuries

Indicative SS impacts due to the City's Safety Plan

Additional benefits

+26% improved traffic flow which further leads to *economic, health, environmental, social benefits* and are fulfill the City Strategic Objectives

Chapter 3: Value for S-M cities

EXERCISE B

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Building S-M LAs' capacity to implement urban transport Safety & Security measures

Municipality Logo

EXERCISE B:
Analyzing benefits and views of stakeholders on safety and security measures

Description of exercise

A. First part: Use sticky notes to fill in the two open Boxes. The first field refers to the benefits of a selected SS scheme. The second field refers to the actors/stakeholders/social groups that will be affected (positively or negatively) by the measure.

B. Second part: 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 first part) 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 transport Safety & Security measures

Municipality Logo

EXERCISE B

TEAM NAME:

Please fill in the following box with the benefits that you believe the SS measure that you've 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 SS measure that you selected:

STAKEHOLDERS:

Building S-M LAs' capacity to implement urban transport Safety & Security measures

Municipality Logo

EXERCISE B

TEAM NAME:

Please fill in the T-chart below, according to the arguments that may be expressed by actors in favour/against the implementation of the SS 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)

- In **national and EU level**, SS measures contribute to meeting its social, health and financial strategical goals (avoid penalties, request financial support from EU funds as SS measures are part of SUMP etc.)

- In a **local** level, SS could contribute to strategies for the social and economic growth of urban and peri-urban areas while enhancing other aspects of transport and society as a whole, while being part of a SUMP.

List of EU Policies/ Strategies/ Regulations relevant to SS measures				
Corresponding Document	**Topic**	**Type of content**	**Relevance to SUITS (1-5)**	**Rating explanation**
1.COM 2017 283 An agenda for a socially fair transition towards clean, competitive and connected mobility for all	• URBAN FREIGHT TRANSPORT • SAFETY AND SECURITY • MOBILITY MANAGEMENT • CAR INDEPENDENT LIFESTYLES • DATA MANAGEMENT (EVIDENCE & ARGUMENT) • NEW AND EMERGING TECHNOLOGIES	Communication from the Commission	3	The content is not relevant exclusively for small and medium sized cities but can by adopted by any city regardless of size
2.Strategic plan 2016-2020 DG-Move March 2016	• SAFETY AND SECURITY • NEW AND EMERGING TRANSPORT SCHEMES • MOBILITY MANAGEMENT • CAR INDEPENDENT LIFESTYLES • NEW AND EMERGING TECHNOLOGIES	Strategic Plan	3	The content is not relevant exclusively for small and medium sized cities but can by adopted by any city regardless of size
3. COM(2018) 293 final, EU Strategic Action Plan on Road Safety : Europe on the move and the Annex 1. Strategic Action Plan on Road Safety	• SAFETY AND SECURITY • NEW AND EMERGING TECHNOLOGIES	Strategic Plan	3	The content is not relevant exclusively for small and medium sized cities but can by adopted by any city regardless of size
4. Policy orientations on road safety 2011-2020	• SAFETY AND SECURITY	Policy Recommendation	3	This document is a policy orientation in order to guide national and local governments to strategically plan and develop road safety actions
5. Valletta Declaration on Road Safety 29 March 2017 Valletta	• CAR INDEPENDENT LIFESTYLES • SAFETY AND SECURITY	Ministerial declaration on road safety	2	The Valletta declaration was signed from ministers of the Member-States and commits nations into road safety actions

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

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

The necessary collaboration between stakeholders for SS measures implementation gives LA the opportunity to:

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

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. Citizens through questionnaire and public transport operators through short interviews)

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.’’

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

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

Impact Assessment Dimensions

- **Environmental impacts** are 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).

Additionally in methodologies such as **WebTAG a 4th 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.

Impacts		Summary of key impacts	Assessment			
			Quantitative		Qualitative	Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp
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						

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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

Kalamaria and the case of pedestrian facilities - Smart pedestrian crossings

Impacts	Summary of key impacts	Assessment Quantitative/Qualitative
Economic	Economic benefits of promoting physical activity	
Social	Pedestrian safety improvement	
	Increased level of satisfaction for vulnerable road users, improved severance through installation of smart pedestrian crossings	
Health	Decrease in number of accidents, injuries	

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

Social Impact Assessment – WebTAG examples

Coventry and measures to improve safety at crossings - Nearside pedestrian indicators

Impacts	Summary of key impacts	Assessment
		Quantitative/Qualitative
Economic	Reduced incidents and accidents – and resulting costs	
Social	Improved road safety and provide safe environment for all user groups and residents	
Environment	Reduced carbon emissions by improving traffic flows by reducing congestion at key crossing points.	

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

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

- **Case Study 1:** Rome's awareness campaing, Pedestrian and Cycling Infrastructure, Road safety speed zones
- **Case Study 2:** Coventry's, United Kingdom Speed Safety zones, Awareness campaign
- **Case Study 3:** Ghent's Awareness campaign, Pedestrian and Cycling infrastructure, Advanced Technologies Application
- **Case Study 4:** Gdansk's anti-vandalism policy for safety and security in Public Transport

One of the main issues analysed is the barriers and the drivers that every city had to deal with when implementing them

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CASE STUDIES FACTSHEETS
Safety and Security in Transport

Safety and Security in Transport
Awareness campaing, Pedestrian and Cycling Infrastructure, Road safety speed zones

LOCATION
Rome, Italy

INITIAL PROBLEM AND TARGET GOAL

Rome was facing challenges regarding road safety and active travel and in an effort to reduce accidents and injuries along with the promotion of more sustainable transport modes, they produced a plan with integrated mobility actions.

SCALABILITY/REPLICABILITY

The city's approach can be designed and implemented in other geographical locations that face similar challenges and issues.

WHY THIS IS A BEST PRACTICE IN THIS FIELD?
Safety and security awareness campaigns are considered effective as a measure in order to guarantee good behaviour from future road users. Objective of the campaigns is to raise awareness of students on issues related to road safety through information and testimonials regarding the knowledge of traffic rules, consequences and dimensions of the **(continue on next page)**

MEASURE DESCRIPTION
A) Safety and security awareness campaigns
"Pilota per la Vita" is an "awareness campaign" on road safety training and dissemination of information mainly focused on high schools. Specific meetings have been held in selected schools and attended by experts in road safety, psychologists, technicians, and representatives of road victims associations. The majority of the meetings were held in school properties, given their availability and where a dynamic discussion was possible, with presences that are credible to young people and most importantly on a friendly **(continue on next page)**

IMPLEMENTATION REQUIREMENTS

The cooperation of mutiple actors for the completion of the safety and security awareness campaigns was needed. Such groups of stakeholders are the local police, psychologists and representatives of road victims associations, students, etc.

In order to successfully design and construct a complete cycling network of 85kms extent local authorities worked for three years. **(continue on next page)**

accidents phenomenon and risky behaviour related to road safety. **Pedestrian and cycling infrastructures** guarantee higher accessibility in urban areas while decreasing private transport and emissions. **Road safety-speed zones strategies** guarantee a low vehicle speed and more safety toward vulnerable users.	and relaxed environment since the scope of such a meeting was to conduct a reflection on possible errors rather than a reproach/lesson. **B) Pedestrian and cycling infrastructures** The increase in bicycle usage allows the reduction of pollution along with energy conservation, and further reduces the social costs. Moreover, it enhances a model city characterized by high density and safety while on the same time provides short distances among different activities due to its compact size. • Promotion of intermodality by combining cycling and PT (bicycle parking in exchange nodes; bike sharing; transport of bicycles on public transport) • Activities such as education campaigns and raising awareness to cycling particularly aimed to young people • Development of standards and incentives for the parking of bicycles in the common spaces • Creation of local cycling networks • Continuous mending and development of the main cycle network **C) Road safety-speed zones strategies** The “Environmental Islands” consist of portions of land bounded by the mesh of the trunk road network, chamber of commerce, freight transport associations and the trade operators located on the territory.	The implementation cost for all actions mentioned herein is unknown but the funds were sourced through National funds as well as European structural funds.

INDICATORS TO MEASURE SUCCESS AND FINAL OUTCOME / IMPACT	BARRIERS AND DRIVERS	FURTHER INFORMATION
Safety and security awareness campaigns: Young people don't realize the direct and indirect consequences that can potentially be caused due to reckless driving, towards themselves and towards the others. In order for planners to mitigate such effects, the planning of a ‘’Vision Zero’’ Road Safety Special Program took place (Official Resolution No. 51 of September 14th, 2017) and aims to identify the measures that are needed in order to reduce road accidents by combining the implementation of sustainable transport measures. **Road safety-speed zones strategies**: Reduction of road accidents, improved traffic and environmental conditions. **Pedestrian and cycling infrastructures**: The new infrastructure developments permit a more sustainable mobility along with numerous health benefits as demonstrated by specific projects like PASTA and various other medical studies. The **social groups benefited** are **(continue on next page)**	**Cooperation/coordination issues** **Barriers:** The capacity of LA regarding the cooperation among different stakeholders and especially with the representatives of road victims associations, represent a critical point and due to the sensitivity of road safety as a social problem, LAs need to respond efficiently. Additionally, citizens were able to share ideas and affect decisions regarding the infrastructural interventions. **Drivers:** The "Consulta Cittadina" is the organization dedicated to tackle all road safety critical points and involves road victims associations, technicians and citizens in a framework that allows them to exchange between all institutional partners (public and private) working in the fields of road safety, soft mobility, urban transformation and sustainability. **Financial recourses issues** **Barriers:** New procurement methods were unknown and required familiarization in order to proceed towards planning. **Drivers:** LAs and other Institutions have to identify financial resources that can substantially affect positively the development of the area at no further cost. **Process** **Barriers:** The capacity of LAs to organize the necessary processes, especially regarding infrastructure interventions, which can result into delays. **Drivers:** The experience gained allows LAs to tackle future **(continue on next page)**	https://romamobilita.it/it/progetti/sicurezza-stradale/iniziative

citizens and more specifically vulnerable users (old people, children, cyclists, pedestrians) in terms of higher road safety level **Indicators to measure success/implementation:** **Safety and security awareness campaigns:** The number of students that participated and were involved in the campaigns (900 students were involved). **Pedestrian and cycling infrastructures**: The bike lanes kilometres along with bike park hubs (69 hub bike park/ 85 kms of brand new bike lanes**).** **Road safety-speed zones strategies:** The number of reduced accidents and traffic victims per year (100 less traffic accidents per year).	challenges. **Technical/Data Resources** **Barriers:** The technical barriers identified were due to the lack of data and more specifically data regarding mobility. **Drivers:** LAs identified the resources and expertise inside the RSM in order for Monitoring Road Safety Centre to collect and analyze accident data as such are produced from Local Police. **Staff** **Drivers:** Regarding the measures described above, LAs identified the expertise and skills within different technical departments. **Political** **Barriers:** The value of measures expressed by social cost savings (as such are derived from accident reduction) is not entirely understood by Institutions. **Drivers:** LAs develop and provide guidelines related to such measures. **Societal** **Barriers:** Lack of citizens' engagement and public participation regarding mobility measures. **Drivers:** LAs have set up the portal to involve citizens and disseminate information by communicate ideas and concepts regarding mobility measures.	

CASE STUDIES FACTSHEETS
Safety and Security in Transport

Safety and Security in Transport
Speed Safety zones, Awareness campaign

LOCATION
Coventry, United Kingdom

INITIAL PROBLEM AND TARGET GOAL

Due to high vehicle speeds and accidents in urban environments, the communities decided to volunteer and create secure environments in order to ensure active travel and safe paths for vulnerable groups.

SCALABILITY/REPLICABILITY

This community-led project is an initiative scalable to larger or smaller cities and can be replicated accordingly.

WHY THIS IS A BEST PRACTICE IN THIS FIELD?
The combined approach of education, training and through public engagement and participation to affect road safety while on the same time using more sophisticated technological means to allow this.

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MEASURE DESCRIPTION
Community Speedwatch (CSW) is a national initiative where active members of local communities join with the support of the Police to monitor speeds of vehicles using speed detection devices. Vehicles exceeding the speed limit are referred to the Police with the aim of educating drivers to reduce their speeds. In cases where education is blatantly ignored and evidence of repeat or excessive offences is collated (even

(continue on next page)

IMPLEMENTATION REQUIREMENTS

The funding sources for the implementation of this initiative is derived through local funds and the approximate cost for each traffic zone of speed restriction is £10.000.

Furthermore, the time period needed from traffic zone planning to equipment purchase, training and implementation is 3 months.

(continue on next page)

	across county borders), enforcement and prosecution follow. The scheme lies at both safety and security awareness campaigns as well as road-safety speed zones strategies and in Coventry the scheme is further specialized using state of the art technology which enable better accuracy. This measure includes a platform, which provides Community Speedwatch groups and either Neighbourhood Police with a wide range of management tools to make community involvement with Road Safety policing more efficient and additionally provide volunteers with appropriate training. The application provides a range of booking and activity calendars; holds group and session details, produces a variety of statistics, but also allows Police Officers access to recorded details of offending vehicles across all affiliated areas. Furthermore, the CSW Online platform instantly produces a range of feedback notifications and collates stats useful to both the Police and groups detailing case status and live offence rate/volume reports of repeat and excessive speeding, etc. Among many other functions it also keeps tracks of operator accuracy in order to interactively engage practitioners in educational online training to increase their efficiency.	Technological equipment such as traffic speed guns, speed cameras, tablet devices are needed in order to run the scheme, use the appropriate application for registering speeders and maintaining a statistics database. In CommunitySpeedwatch, the application and any other additional IT services were developed using outsourcing. Note that the outsourcing was done initially on the national level since it is a national action.
INDICATORS TO MEASURE SUCCESS AND FINAL OUTCOME / IMPACT The benefits of the SpeedWatch **(continue on next page)**	**BARRIERS AND DRIVERS** **Cooperation/coordination issues** **Barriers:** No significant barriers are identified since due to the low number of involved departments **(continue on next page)**	**FURTHER INFORMATION** https://twitter.com/cvspeedwatchwmp https://www.coventrytelegraph.net/news/coventry-news/residents-given-speed-guns-shop-

Community are: a) Reduced deaths and injuries on the roads b) Improved quality of life c) Reduced vehicle speeds d) Increased public awareness The social groups mostly benefited through it are the citizens and pedestrians through the provision of their safety and by improving environmental conditions due to lower vehicle speeds. **Indicators to measure success/implementation:** Indicators to measure the success are: 1. Number of accidents both fatal and injuries. 2. Lower percentage of speeding offences. No specific values are exported yet but overall speed and accident reduction is estimated due to the presence of volunteers and the dissemination of the scheme on a national and local level.	minimum cooperation and coordination is needed and mainly internally within police forces. **Drivers:** Local authorities contribute during design of the scheme and promotion and community members actively implement the measure, which is then being controlled and monitored by police departments. This creates a cooperational framework between LAs, the public and enforcement units which can lead to future cooperation. **Financial recourses issues** **Barriers:** Local funding is required for the project's implementation, amount needed is still considered low compared to the benefits derived from it. **Drivers:** Local authorities utilise their already available staff members at no further cost. **Process** **Barriers:** Local authorities and more specifically police forces require to identify risks and select locations while also monitor progress of the scheme as a continuous process. **Drivers:** Participants organize a program and their activities following a set of rules and by appointing different roles locally and within each group. **Technical/Data Resources** **Barriers:** Due to the fact that the scheme is designed and developed on a national level regarding the technical and data resources needed, **(continue on next page)**	11543880 https://www.communityspeedwatch.org/ https://www.trafficchoices.co.uk/traffic-schemes/community-speed-watch.shtml

	local authorities are not expected to cope with difficulties on this regard. **Drivers:** The scheme does not require data analysis before design and during its implementation the technical resources used are nationally dependent since records are integrated on a national database. **Staff** **Barriers:** Some effort is needed for dissemination and promotion of it in order to attract volunteers to participate. **Drivers:** The fact that numerous positive results result through minimum staff resources of local authorities is a major driver for the implementation of such a measure. **Political** **Barriers:** The only opposing party to this scheme is a part of drivers, which tend to speed and thus negatively affected by it. **Drivers:** Political gains due to extreme public acceptance and community engagement. **Legal** **Barriers:** No legal barriers are identified. Police forces handle the data recorded and maintain them in a national database. **Drivers:** The fact that with no extra resources local authorities are able to enhance road safety by decreasing speeding, with no legal difficulties and **(continue on next page)**	

	by community engagement is a major driver. **Societal** **Barriers:** There has been a significant voluntary participation with minimal promotion whereas public acceptance is divided between citizens and drivers and depending on ages and social groups. **Drivers:** Citizens are extremely positive into participating and there are continuous requests of extending the scheme in more area within Coventry.	

CASE STUDIES FACTSHEETS
Safety and Security in Transport

Safety and Security in Transport
Awareness campaign, Pedestrian and Cycling infrastructure, Advanced Technologies Application

LOCATION
Ghent, Belgium

INITIAL PROBLEM AND TARGET GOAL

The city of Ghent aimed to increase quality of life through the promotion of sustainable transport modes and access restriction so motorized vehicles within specific residential areas. High congestion and air pollution were the main reasons such actions were planned.

SCALABILITY/REPLICABILITY

While the actions described are tailor made for the case of Ghent, cities with similar characteristics can follow the Ghent's model to cope with their respective challenges.

WHY THIS IS A BEST PRACTICE IN THIS FIELD?

All measures described herein lead to positive impacts for the city while ensuring the provision of transportation related services on a high level along with the enhancement and improvement of both safety and security for the majority of the travellers.
(continue on next page)

MEASURE DESCRIPTION

Ghent is considered a S-M city with approximately 247.000 inhabitants on an area of 156.18km^2. The city has a history of innovative transport solutions and herein will be presented the most related ones towards Safety & Security, while on the same time the city has planned and implemented several more aiming to improve other aspects of transport such as sustainability. The following measures are not an integrated planning effort but separate actions that altogether enhance and improve safety and security by promoting active travel throughout the study area. Cycling and walking are the two modes affected by the followingly described measures. **(continue on next page)**

IMPLEMENTATION REQUIREMENTS

Resources needed were covered through local and European Structural funds.

Moreover, all four measures require at least 6 months to 1 year of planning and preparation before pilot implementation.
(continue on next page)

	a) Safe Cycling Corridor: On an effort to promote safe cycling the LAs designed a new improved cycling infrastructure with the construction of a new corridor and supplementary measures such as changes to junction priorities and timings in favor of cyclists. b) IT-based bicycle theft prevention: In order to support the bike sharing system the City of Ghent offers and due to numerous stolen and missing bikes they developed an IT-based system. With the use of a chip and by engraving the bike fleet they started an effort to reduce thefts and identify the groups of thieves. c) Promotion of Walking: The city initially identified parts of pedestrian infrastructure that needed modification and improvement and initiated a promotion campaign in order to raise awareness and encourage citizens to walk. Supplementary measures such as the promotion of a walking map and the encouragement to acquire a pedometer were also part of the campaing. d) Pedestrian areas and access restriction: In order to control vehicle access into pedestrian areas, the City of Ghent installed and used and IT system and especially ANPR (Automatic Number Plate Recognition). This system will track vehicles and based on their type of permit, they will be allowed or denied access into a specific area. An extensive information campaign also ran in order to raise awareness of the measure and supplement its successful implementation.	Additionally IT solutions were developed and implemented such as the use of ANPR in order to control access restriction in pedestrian areas as well as the use of IT solutions in order to mitigate bicycle theft. Both IT solutions were the outcome of outsourcing since technical knowledge was needed for such developments and LAs did not have the appropriate expertise.
INDICATORS TO MEASURE SUCCESS AND FINAL OUTCOME / IMPACT (continue on next page)	**BARRIERS AND DRIVERS** **Cooperation/coordination issues (continue on next page)**	**FURTHER INFORMATION** https://civitas.eu/content/ghent

a) Increased safety and security for cyclists while increasing bike modal share, improve health and well-being while reducing congestion and thus air pollution, Reduce number of collisions involving vulnerable users, b) Increase the number of relocated rental bikes by 10 percent, Increase rental bike use by 5%. Make the walking environment safer and more convenient, Encourage more citizens to take a daily walk, Make citizens aware of the health benefits of walking. Direct benefits for active travellers since their safety and security will be improved. Moreover, benefits for the whole city population and especially vulnerable road users and residents of the specific area mainly due to improved traffic conditions reduced air pollution and overall improvement of health and well-being **Indicators to measure success/implementation: (continue**	**Barriers:** Due to the high number of LAs and different departments needed for the coordination in order for such measures to be successful, it is considered a major obstacle needed to overcome. **Drivers:** The need for cooperation and coordination between different department of the LAs create a strong framework for future work. **Financial recourses issues** **Barriers:** No barriers/problems regarding the financing mechanisms used for the implementation of these measures are known. **Drivers:** LAs can utilize both public funding as well as involve private companies that will partner with the city and invest on new applications. **Process** **Barriers:** Strong agreements must be made in advance so that all measure partners stick to the time plan/schedule and keep the time needed at minimum levels. **Technical/Data Resources** **Barriers:** The barriers/problems identified are the long periods of time needed for implementation and testing of different IT solutions such as the ANPR as well as the cost both of time and financial resources in order to collect data and appropriately plan the measures to be implemented. **Drivers:** Once the involved LAs successfully design and collect all needed data, potential options arise for the city since with more data more transport actions and solutions are feasible to be implemented in the future. **(continue on next page)**	https://civitas.eu/measure/it-based-bicycle-theft-prevention https://civitas.eu/measure/pedestrian-area-access-restrictions https://civitas.eu/measure/safe-cycling-corridor https://civitas.eu/measure/walking-promotion

on next page) Some indicators to evaluate the success of these actions are: a) Bike modal share (Increased cyclists by 36% in just two years of the measure's implementation) b) Reduced thefts (Minor decrease (2%) in bike theft. Additionally the number of stolen bikes recovered increased) c) Campaign familiarity rates (In citizens that percentage was 12,5% whereas in students the same percentage was significantly less at 10,7%).	**Staff** **Barriers:** For the implementation of these measures agreements with external partners are needed since it is extremely unlikely that local authorities will have the know-how to fully implement such actions. **Drivers:** Due to the multilevel approach needed in order to successfully design transport measures each asset employed by LAs can be of value for both planning and implementation. **Political** **Barriers:** Political barriers had to be resolved for the implementation of the IT-based bike antitheft measure as well as the access restriction where privacy issues were raised from concerned citizens. **Drivers:** The success such measures have found can be of political interest since along with the wide acceptance of the public, creates a positive balance for local politicians. **Legal** **Barriers:** Several legal problems had to be resolved for the implementation of the IT-based bike antitheft solution as well as the implementation of the cycle corridor and the access restriction. **Drivers:** The successful implementation of the cycle corridor along with the wide acceptance of the public created the legal circumstances for the nationwide implementation of such measures. **Societal** **Barriers:** Promotion and awareness campaigns did not reach **(continue on next page)**	

	objectives at all occasions and require further improvement. It is noted that promotion is not a single time event but a continuous process. **Drivers:** All aforementioned measures were massively accepted by the public and especially active travellers.	

CASE STUDIES FACTSHEETS
Safety and Security in Transport

Safety and Security in Transport
Advanced Technologies for Public Transport, Awareness Campaigns

LOCATION	INITIAL PROBLEM AND TARGET GOAL	SCALABILITY/REPLICABILITY
Gdansk, Poland		
WHY THIS IS A BEST PRACTICE IN THIS FIELD? Gdansk's strategy to reduce car dependency stimulated the city to plan and design measures in order to improve safety and security in PT and achieved remarkable results while on the same time the applied strategy is transferable to other cities as well.	**MEASURE DESCRIPTION** **A) Anti-Vandalism Policy for Safety and security in Public Transport** Gdansk is a S-M city located on the northern part of Poland accommodating 458.000 citizens in an area of 262km^2. Due to vandalism acts and anti-social behaviour occurring on a regular basis in the premises of the public transport system, the local authorities took action by planning and implementing certain measures. Such measures included: • Installation of a CCTV monitoring system on a large scale • Training for the drivers on how to manage difficult passengers and extreme situations • Promotional events such as a PT stops cleaning campaign and awareness campaigns especially designed for students The aforementioned measures aimed to make public transport **(continue on next page)**	**IMPLEMENTATION REQUIREMENTS** 250.000 - 300.000 (in Euros) Local funds, European Structural funds Each measure required different time planning. The overall planning process requires 1-2 years minimum. The use of the CCTV system which besides monitoring purposes also served as input for training material of the drivers. The CCTV system was installed through outsourcing.

	safe, secure and comfort for the travellers and eventually increase the use of PT in a broader objective of reducing the city's reliance on private cars. These measures were part of an integrated planning process and not individual actions since all measures had strong correlation. For example a pilot of the CCTV system was implemented , video of which were used for the training of the drivers that took place.	
INDICATORS TO MEASURE SUCCESS AND FINAL OUTCOME / IMPACT The city's aims were to: 1. Promote public transport while improving both actual and perceived level of security, 2. Affect modal shift towards sustainable modes, 3. Reduce acts of bad behaviour and vandalism, 4. Create a framework of cooperation between different stakeholders. The beneficiary groups of these measures are the most vulnerable social groups such as women, children and the elderly can be identified as the ones benefited the most. Moreover, the majority of the PT users along with **(continue on next page)**	**BARRIERS AND DRIVERS** **Cooperation/coordination issues** **Barriers:** Cooperation and coordination of different departments within LAs is considered a barrier for the successful planning and implementation and requires proper organization. **Drivers:** Better communication involving citizens and cooperation between among LAs promotes mutual understanding and seems to be the optimal preventative approach. Moreover, once coordination is achieved it creates a framework for future cooperation among different LAs. **Financial recourses issues** **Barriers:** Due to insufficient funds, the planned safety measures were implemented in specific locations and not around the whole city premises. **Drivers:** LAs can achieve substantial improvement on both safety and security of both the PT system as well as overall for the city with minimum local financing and while absorbing European financial resources through research and construction mechanisms. **(continue on next page)**	**FURTHER INFORMATION** https://civitas.eu/measure/anti-vandalism-safe-and-secure-public-transport https://civitas.eu/sites/default/files/civitas-case-study-antivandalism-pt-gdansk.pdf https://civitas.eu/sites/default/files/mimosa_gda_5_1_mrt_pointer-f.pdf

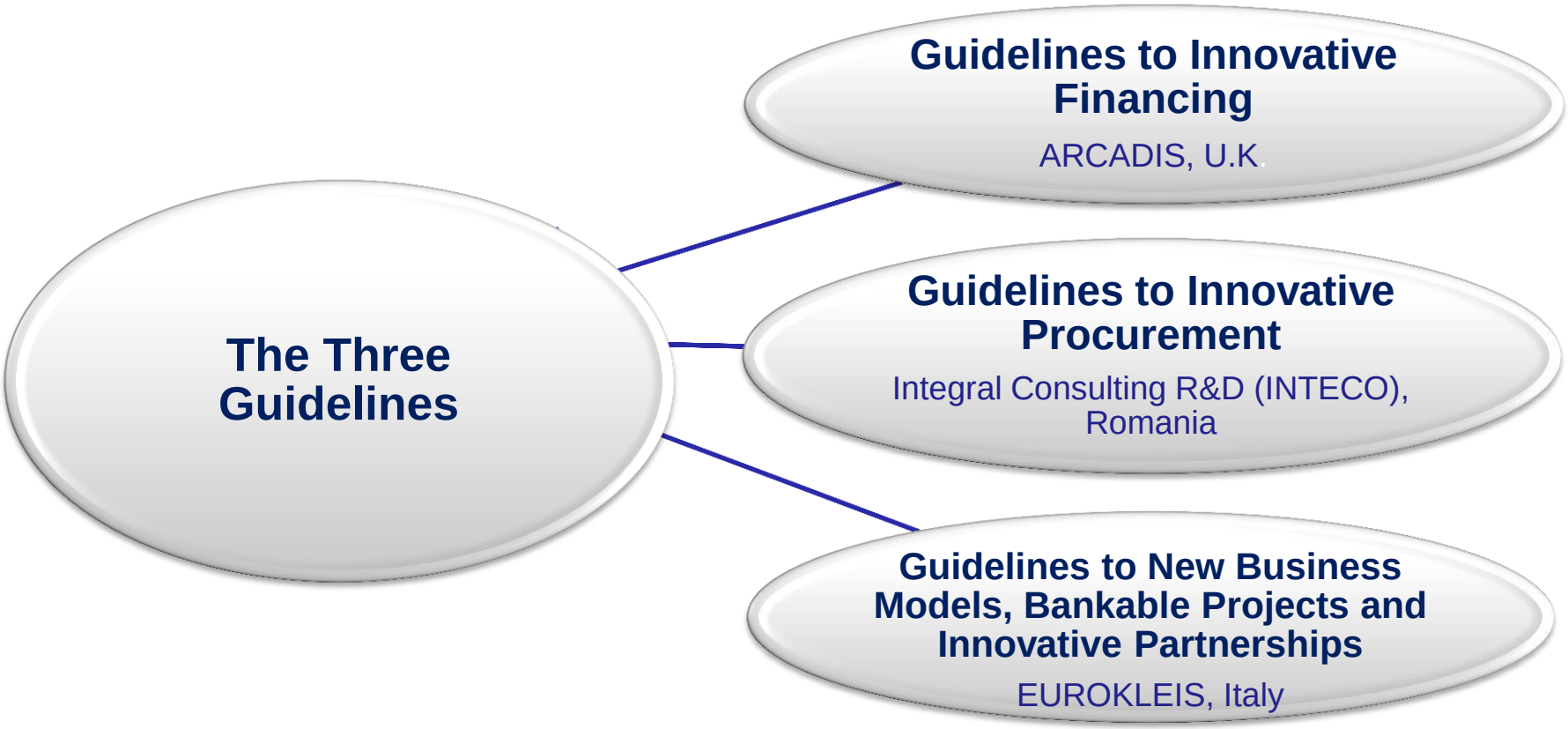
the citizens and residents located near the PT infrastructure where improvements were made. **Indicators to measure success/implementation:** Indicators to evaluate the success of these measures are: 1. Perception of safety and security both in general as well as regarding the PT stops (increased by 20% while the same indicator concerning exclusively public transport stops shows a 29% increase in a time period of 3 years). Number of vandalism acts, 2. The amount of illegally posted advertisement on PT stops, 3. The public acceptance of the measures and the public desire to engage further into the future (according to a survey conducted within the city 71% of the citizens support the campaigns whereas 51% of them would be ready to actively participate in the future). **(continue on next page)**	**Process** **Drivers:** The driver, training workshop proved to be an efficient way of spreading knowledge. The 30 trained drivers have passed on the knowledge and skills to another 450 co-workers. This success prompted public transport operators to include it in employee induction courses. **Technical/Data Resources** **Barriers:** The installation of a CCTV monitoring system which will allow both monitoring as well as data collection in order to supplement training and awareness campaigns. Furthermore, there is a major gap in data collection for statistical purposes in order LAs to appropriately plan their measures based on identification derived through data analysis. **Drivers:** The use of the CCTV system creates new opportunities for the city with further exploration of the installed system. **Staff** **Barriers:** Due to the multilevel approach required for the successful implementation of this strategy, there is strong need for cooperation and proper resource allocation among different actors and stakeholders. **Drivers:** Through proper organization and coordination LAs are capable of sufficiently achieving objectives and desired results. **Political** **Drivers:** Besides the improvement of safety and security in and around the public transport system, overall levels of SS were improved in the city leading to valuable political advantage for the LAs. **(continue on next page)**	

Additionally, overall increase of usage of the PT system by 10%-18% in less than two years. Whereas, vandalism acts were reduced by 15% which is less than the initial objective of 20% decrease.	**Legal** **Barriers:** The only potential legal barriers associated with the implemented measures are regarding the CCTV monitoring system in terms of privacy but no objection has been identified. **Drivers:** The strategy included adverts regarding legal actions citizens could take in order to improve security. The provision of one extra legal tool for the citizens is a major achievement of the project. **Societal** **Barriers:** While implementation required several stakeholders and a multilevel approach, due to the public's acceptance no societal barriers were identified. **Drivers:** The continuous effort on promotion events such as campaigns and training were regarded highly successful and impactful towards the final result.	

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.

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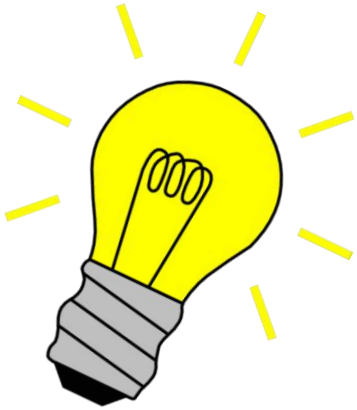
Chapter 5: Innovative financing, procurement, partnership

How to make the best use of the Guidelines

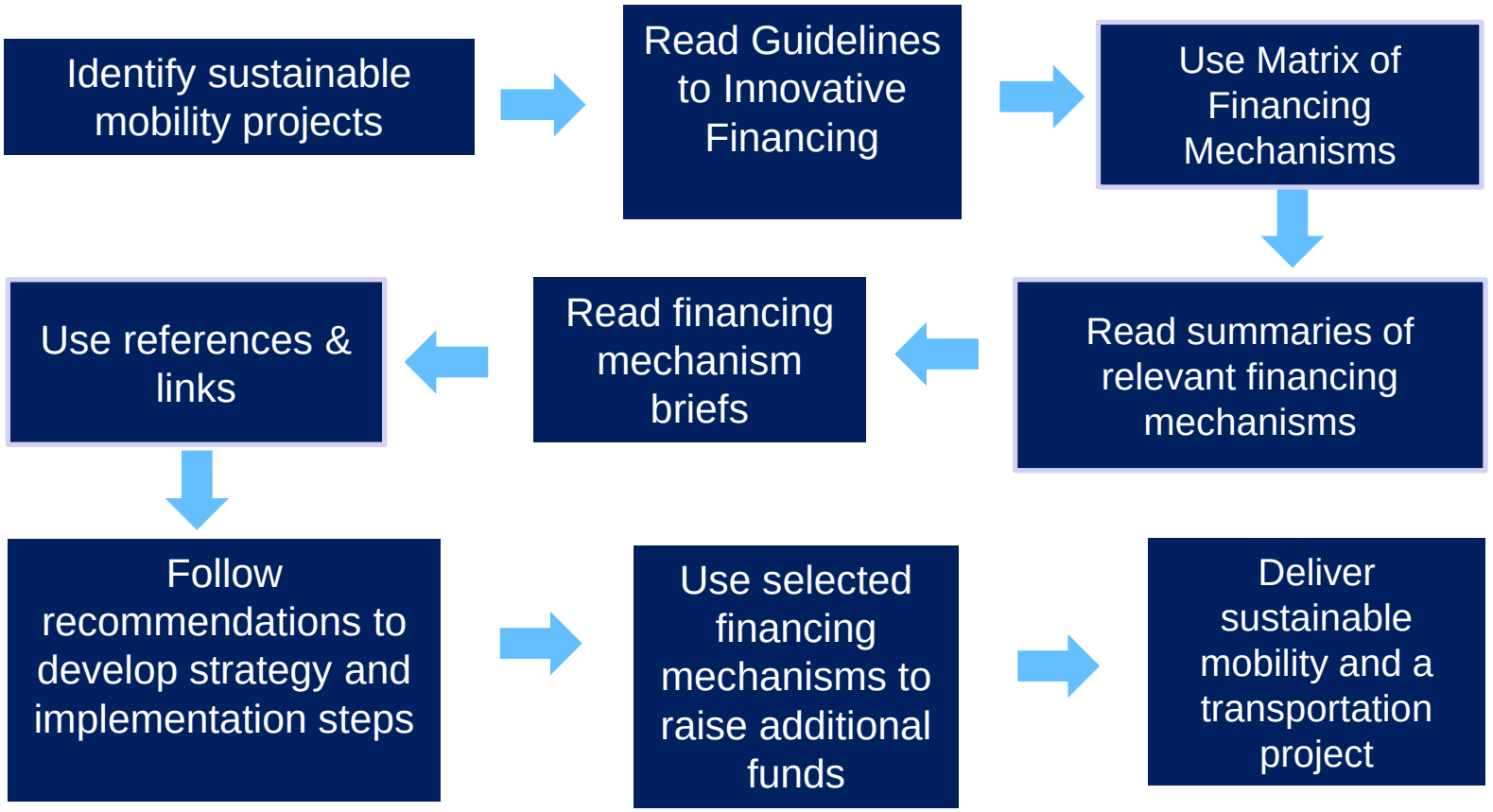


Tips for Implementation:

- 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



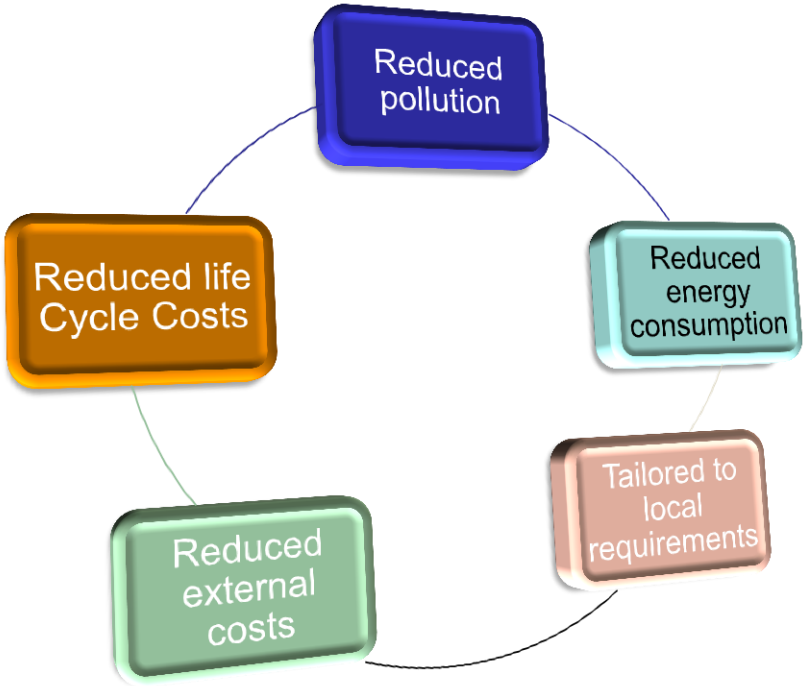
Chapter 5: Innovative financing, procurement, partnership

Guidelines to Innovative Procurement

EU Public Procurement Reform

Underlying principle: *"Public procurement must become levers through which the Contracting Authorites 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

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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 InnoTS (check **bold**). All detailed description are available in the Guidelines [1]

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Chapter 5: Innovative financing, procurement, partnership

Key points of financing mechanisms more relevant to SS measures

Innovative financing mechanism recommended especially for: Awareness campaigns, Soft travel measures, Road safety speed zones

Crowdsourcing	
Description	Alternative finance model that uses micro-financing in order to fund projects with high social impact. Nowadays LAs are making greater use of such platforms in order to support and co-fund developmental projects.
Methods	Usually initiated by locals (who develop ideas and promote them through internet-based platforms where financial transparency is ensured).
Benefits	Such a mechanism is used mainly for small-scale projects with relatively immediate positive social impacts and is considered a tool for further public engagement while on the same time promotes innovation through non debt-based projects.
Comments	Requires further research and actions such as legal adjustments in order to be designed and operated appropriately, whereas future exploitation of its capabilities is needed.

Key points of financing mechanisms more relevant to SS measures

Innovative financing mechanism recommended for all measures

Lottery Funding	
Description	A mechanism which operates on the framework of lotteries and creates revenue through the mobilisation of profits made from them
Methods	Such lotteries are a form of gambling where the person that purchases the lottery can eventually win prizes
Benefits	Lotteries can create a substantial additional revenue which can either fully or partially fund different types of projects
Comments	Lottery funding is often used for active travel schemes and other community/nature beneficial projects and is often used by local governments, charity organisations, educational institutions etc.

Chapter 5: Innovative financing, procurement, partnership

Key points of financing mechanisms more relevant to SS measures

Innovative financing recommended especially for: Awareness campaigns, Advanced technologies for public transport

Advertising, Sponsorship and Naming Rights	
Description	Local authorities can create additional revenues through receiving payments for advertising on public assets, sponsorships and selling or leasing naming rights from various businesses and organisations which must be in line with the guidelines for acceptable content and local policy and legislation.
Methods	Advertisement in local authority-controlled media and on publicly owned assets; Sponsorship as a chance for the city to share cost with a private partner while delivering benefits to their citizens.
Benefits	Successful mechanism and, eventhough the revenues are small compared to the total budget costs of each projects, still remain significant.
Comments	The amounts received through such mechanisms are dependent on the local market and the total amount of exposure in terms of time.

Chapter 5: Innovative financing, procurement, partnership

Key points of financing mechanisms more relevant to SS measures

Innovative financing mechanism recommended for all measures

Collaborating with other cities, Research Consortia and Private Companies	
Description	This requires the formulation of a partnership between local authorities, universities, companies and NGO's that makes use of each partner's expertise.
Methods	Cities provide specific data while on the same time they offer demo and pilot sites and also provide support to other partners.
Benefits	These projects offer to cities benefits from investments into its infrastructure and capacity building programs along with the benefits derived from pilot projects, while on the same time additional funding may be available.
Comments	Efforts require political will in order to eliminate constraints and willingness to participate and create a learning network which will eventually enhance innovation and applied research throughout the city.

Key points of financing mechanisms more relevant to SS measures

Innovative financing mechanism recommended for all measures

Selling Expertise and Technical know-how	
Description	Cities, local authorities or public administrations, can exploit their ability to sell their expertise and technical know-how for profit.
Methods	Includes selling a form of collaborative knowledge and sharing it for economic profit or in some cases for free.
Benefits	Increase attractiveness and name recognition or disseminate good practices in areas of interest.
Comments	Can be applied across all sectors of interest.

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

EXERCISE C

THE CIVITAS INITIATIVE IS CO-FINANCED BY THE EUROPEAN UNION

Building S-M LAs' capacity to implement urban transport Safety & Security measures

Municipality Logo

EXERCISE C:

Identification of financing mechanisms and business models suitable for safety and security measures

Description of material

General discussion about innovative financing mechanisms and business model options and opportunities for SS measures implementation.

Building S-M LAs' capacity to implement urban transport Safety & Security measures

Municipality Logo

EXERCISE C

TEAM NAME: […]

Brainstorming session among cities

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

In which concept ?

Was is successful or not?

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

Chapter 5: Innovative financing, procurement, partnership

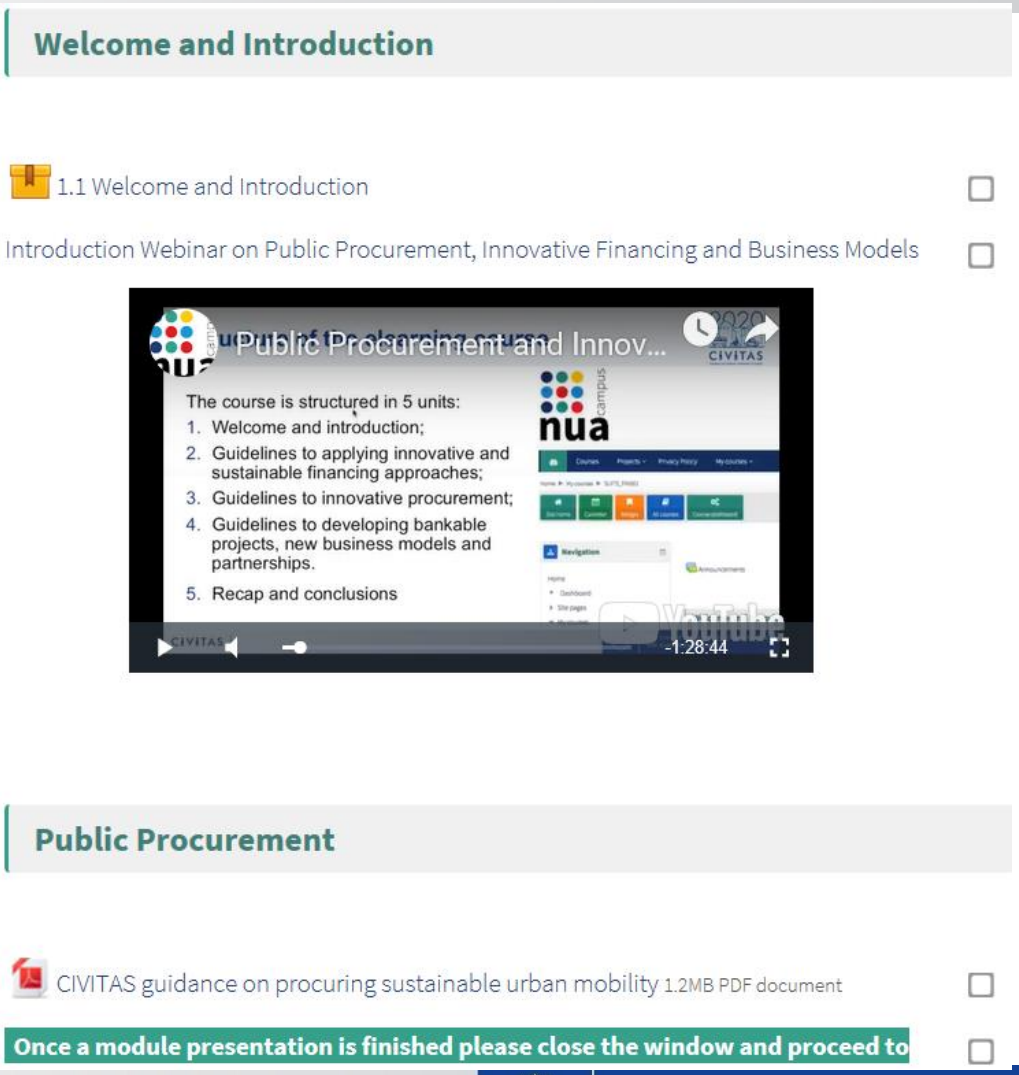
Past webinar / e-learning course

Title: SUITS Webinar on financing, procurement and business models for sustainable urban transport

Date of implementation: webinar completed on June 18, 2018 but

E-learning course still available here: www.nuacampus.org/elearning/

Content and moderation provided by: WP4 partners (INTECO, ARCADIS, EUROKLEIS)



Chapter 6: Process and implementation aspects

Chapter 6: Processes and Implementation aspects

EXERCISE D

THE CIVITAS INITIATIVE IS CO-FINANCED BY THE EUROPEAN UNION

Building S-M LAs' capacity to implement urban transport Safety & Security measures

Municipality Logo

EXERCISE D:

Final selection of safety and security measures and identification of key actions to be implemented by LAs.

Description of material

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 transport Safety & Security measures

Municipality Logo

EXERCISE D

TEAM NAME:

MEASURE TITLE:

Main activities (administrative and designing/application)	**Required data, surveys for implementation**	**Evaluation indicators**	**Need for Outsourcing** yes(what kind)/no	**Potential legal barriers**

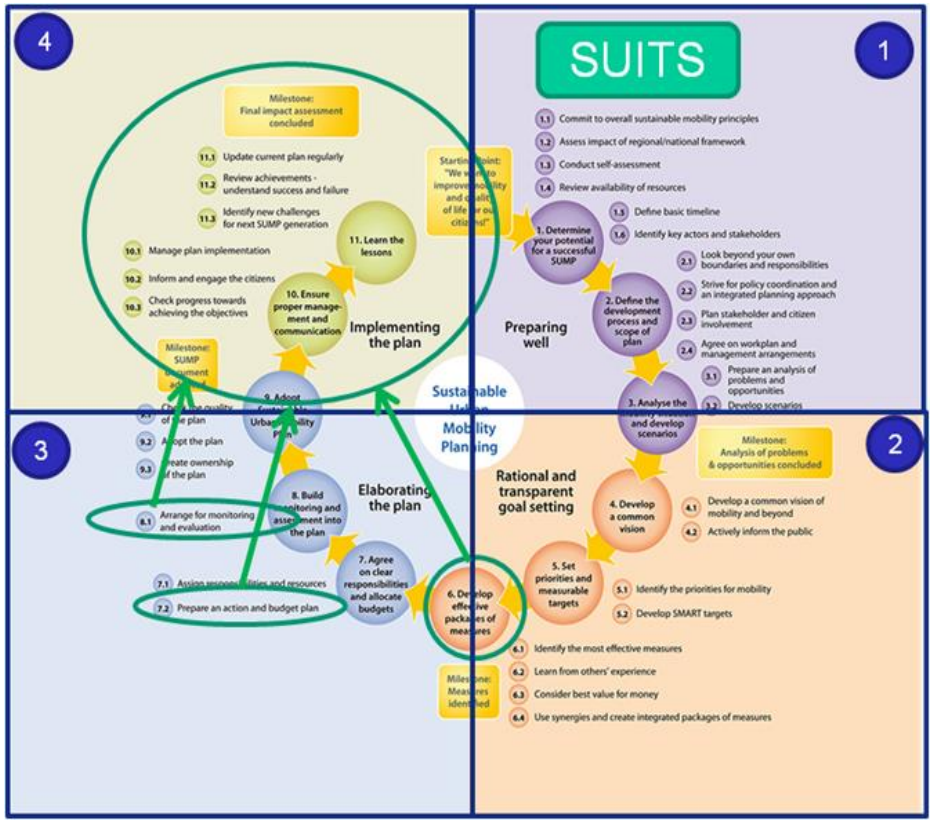
Chapter 6: Processes and implementation aspects

1. Integrate measures in a wider strategic plan: Sustainable Urban Mobility Plan (SUMP) [1]:

- A Sustainable Urban Mobility Plan is a useful tool supporting Local Public decision-makers and stakeholders in "governing" urban mobility technologies.

- The plan integrates strategies, measures and rules that can be adopted with a cooperative approach among different actors.

- SS measures could be identified as essential for measures packages (Stage 2, Step 6 of SUMP cycle). Provided material aims to support S-M cities at 7.2 SUMP step in preparing an action and budget plan and at 8.1 SUMP step in arranging for monitoring and evaluation



2. Define implementation & evaluation required data sets and data collection methods

- SUMPs are as good as their data
- Combine Qualitative + Quantitative methods
- Use and optimize existing data sets
- Define indicators. Indicators are one of most important parameter of implementation and evaluation process.

Surveys such as HH surveys, Travelling patterns identifications, crowdsourcing platforms, Land use maps, NMT identification, Public Transport data, Transport models, etc.

Chapter 6: Processes and implementation aspects

Measure	Required data and data collection methods for measures implementation [2], [3]
Awareness Campaigns	Direct costs of prevention campaigns and implemented measures: marketing materials, workshop / training sessions, etc; perception of safety and PT quality, based on field / online surveys.
Advanced Technologies for Public Transport	Number of vandalism acts; cost of repairing damages; perception of safety and PT quality, based on field / online surveys.
Pedestrian and Cycling Infrastructure	Traffic flow (vehicles / hour), aiming at identifying potential inducted modal shift number of traffic related injuries in target areas (nº injuries) number of soft users (pedestrians + cyclists) in target areas (nº users) perception of safety (5 point scale indicator based on surveys) number of cycle thefts.
Security Enforcement	Surveys regarding public awareness, acceptance and perception of road safety need be held. Additionally the number of accidents and vehicle speeds can be counted and measured. Surveys and counts need to be conducted in areas of influence and on streets where radars and cameras have been already set up and operated.
Road Safety Speed Zones	Traffic flow (vehicles / hour), aiming at identifying potential inducted modal shift, number of traffic related injuries in target areas (nº injuries), number of car accidents

Key Performance Indicators for SS measures [4], [5], [6], [7]			
	Key Performance Indicator	**Description**	**Source**
Safety	**How safe is the journey in terms of road safety**	(1)Share of population with appropriate access to mobility services. 2) Percentage of population living within walking distance of public transport (stop or station) or shared mobility (car or bike) system.	The World Business Council for Sustainable Development
	Accident level due to urban passenger transport	Per capita crash rates, Crash rates per vehicle-mile	http://www.vtpi.org/tdm/tdm131.htm & https://repository.up.ac.za/bitstream/handle/2263/7446/Krynauw_National(2003).pdf?sequence=1
		Motorist, pedestrian, and cyclist crashes and injuries	
Security	**How secure are the facilities including terminals and public transport mode**	Penetration of city video surveillance	ITU-T SERIES L
		Security personnel deployed in PT	hzttp://www.teriin.org/projects/nfa/2008-2013/pdf/working-paper-12-Sustainable-urban-transport-indicators.pdf
		% of PT fleet with GPS installation and CCTVs	
SS	**How comfortable is the transport mode to the users?**	Feeling of comfort/relaxation: Subjective rating of comfort per user per a certain amount of time	http://myway-project.eu/www.myway-project.eu/images/pdf/MYWAY_D14_ScenariosKPIsAndGuidelinesForValidationFinalVersion_V01_6/index.pdf
	ICT applications	Infrastructure-based applications with direct and/or indirect safety and security impact	https://pdfs.semanticscholar.org/5453/8f8cf18c169d139390d09309adf4fdf8b4f7.pdf

3. Identify potential difficulties/barriers for each measure

Measure	Difficulties
Awareness Campaigns	Legal barriers are unlikely to be an issue for implementation but for the impact assessment stage certain data are needed. In Gdansk's case study, financial data regarding the cost of vandalism acts was needed to compare before and after scenarios, but companies providing cleaning and maintenance services at PT stops were reluctant to disclose their business information.
Advanced Technologies for Public Transport	Personal privacy issues may cause restrictions to the installation of video surveillance systems and legal entities are needed to clarify the operational framework.
Pedestrian and Cycling Infrastructure	Due to the layout of cycling parking and its locations cities can face resistance and legal difficulties since it results in revenue reduction from car parking. Moreover, although it is not a legal barrier, the limited attractiveness of walking for higher distances can limit the extent to which its competitive to promote compared to other modes of transport.
Security Enforcement	Personal privacy issues may cause restrictions to the installation of video surveillance systems and legal entities are needed to clarify the operational framework.
Road Safety Speed Zones	Different stakeholders must be involved such as in Utrecht's case study where schools, municipal departments, Education support agencies, as well as regional authorities and road safety organisations cooperated.

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Chapter 7: Available tools and guidelines

Tool name	Format	Source /Link	Usefulness for S-M cities and Importance in SUITS project	Rating of relevance [1 - 5]	Rating explanation
MIMOSA	PDF documents presentation	CIVITAS network project http://civitas.eu/content/mimosa	The project comprises a comprehensive collection of lessons learned from the implementation of various approaches in very distinct urban settings. In terms of safety and security two main challenges were addressed: i) Road safety for pedestrians and cyclists and ii) Safe and friendly transport infrastructure. The sharing of knowledge in general terms is well documented and can be useful.	5	Communication with citizens and involvement of the community are key in the development and implementation of SUMPs.
NODES	PDF documents tool	EU Project FP7 https://nodes-toolbox.eu/	Interchanges are places where high flows of people occur and where safety and security aspects are critical. The NODES toolbox covers a variety of topics and measures in order to increase safey and security conditions, with examples of good practice. This toolbox can assist SUITS.	4	The toolbox offers 36 tools relating to SS that provide guidance to LAs for improving overall SS levels.
CARAVEL	Pdf document, presentation	CIVITAS network project http://civitas.eu/content/caravel	Rather great number of measures, some of them could be repeated in S-M cities. For example, Burgos' measures could be seen as a good example: Safe city access for pedestrians from suburban areas, safety and accident-prevention plan. Wide range of measures and shared experiences.	3	Topics considered here are developed in pilot cities, useful for S-M cities.
MOBILITY ACADEMY	PDF documents presentation e-learning courses	EU project FP7 https://www.mobilityacademy.eu/course/view.php?id=68	This tool provides a general background on the cycling infrastructure. It is profusely illustrated and can be useful as a starting point to S-M cities where the bicycle culture is not present yet. The materials are well organized and the navigation through the contents is straightforward. It can be understood as a Capacity Building Toolbox on its own, relating closely to SUITS' aims.	3	Information on cycling safety, related to S-M cities. Contains questionnaire that enables LAs to survey their cycling infrastructure quality and further needs.
Road safety planning	PDF Document	ec.europa.eu/transport/road_safety/sites/roadsafety/files/pdf/national-road-safety-strategies_en.pdf	This document provides good practice examples from national road safety strategies in the EU. It is a Non-paper, mostly to activate discussions and provide food for thought and aims to be updated regularly.	4	Provides case studies from European cities and aims to share the results among Member-States.
Road Safety Decision Support System (DSS)	Decision Support Tool	EU project https://www.roadsafety-dss.eu/#/	SafetyCube project has developed an innovative road safety Decision Support System (DSS) that will enable policy-makers and stakeholders to select and implement the most appropriate strategies, measures and cost-effective approaches to reduce casualties of all road user types and all severities in Europe and worldwide.	5	Access to studies and knowledge regarding the effects of risks and measures, the causes and impacts of injuries, common accident scenarios, CBA calculator and measure evaluation.

SafetyCube - Road Safety Decision Support System

- https://www.roadsafety-dss.eu/#/ EU FP7 Transport Project (DSS & e-learning – webinar)

- SafetyCube project has developed an innovative road safety Decision Support System (DSS) that will enable policy-makers and stakeholders to select and implement the most appropriate strategies, measures and cost-effective approaches to reduce casualties of all road user types and severities.

- This tool enables users to have access to studies specific to their criteria (“search” field), to synthesized knowledge regarding the effects of risks and measures, the causes and impacts of serious injuries, and the most common accident scenarios (“knowledge” field”), to cost–benefit analysis calculator to evaluate specific measures.

SafetyCube - Road Safety Decision Support System

DSS Home GUI

SafetyCube - Road Safety Decision Support System

Road User Groups Included in the DSS

Road User Groups
Cyclists
LGV / Van
Bus
Pedestrians
HGV / Truck
PTW
Passenger Car

SafetyCube - Road Safety Decision Support System

Accident Scenarios Included in the DSS

Accident Scenarios
PEDESTRIAN ACCIDENT
BICYCLIST ACCIDENT
SINGLE VEHICLE ACCIDENT
HEAD-ON COLLISION / ON-COMING TRAFFIC
REAR-END COLLLISION / SAME DIRECTION TRAFFIC
JUNCTION ACCIDENT (NO TURNING)
JUNCTION ACCIDENT (TURNING)
RAILWAY CROSSING

Chapter 7: Available tools and guidelines

SafetyCube - Road Safety Decision Support System

Risk Factors Included in the DSS

Behavior	Infrastructure	Vehicle
Speed choice	Traffic flow	Crashworthiness
Driving under the influence of alcohol	Road type	Injury mechanism
Driving under the influence of drugs	Road surface deficiencies (risk of ran-off road)	Protective equipment design
Risk taking	Poor visibility and lighting	Relevant factors in crash data
Fatigue	Adverse weather	Technical defects / Maintenance
Distraction and inattention	Workzones	Vehicle design
Functional impairment	Horizontal/vertical alignment deficiencies	Visibility / Conspicuity
Insufficient skills	Superelevation / cross-slopes	
Insufficient knowledge	Lanes deficiencies	
Emotions and stress	Median / barrier deficiencies	
Misjudgement and observation errors	Shoulder and roadside deficiencies	
Traffic rule violations	Poor road readability	
Personal factors	Interchange deficiencies	
Age	At-grade junctions deficiencies	
Diseases and disorders	Rail-road crossings (risk of collision with train)	
	Poor junction readability	

Chapter 7: Available tools and guidelines

SafetyCube - Road Safety Decision Support System

Measures and Categories Included in the DSS

Behavior	Infrastructure	Vehicle	Post Impact Care
Law and enforcement	Traffic flow	Frontal impact	Ambulances/helicopters
Education and voluntary training or programmes	Traffic composition	Side impact	Extraction from vehicle
Driver training and licensing	Formal tools to address road nettwork deficiencies	Rear impact	Pre-hospital medical care
Fitness to drive assessment and rehabilitation	Speed management & enforcement	Rollover	Triage and allocation to trauma facilities
Awareness raising and campaigns	Road type	Pedestrian	First aid training drivers
	Road surface treatments	Child	
	Visibility / Lighting treatments	PTW	
	Workzones	Cyclist	
	Horizontal & vertical alignment treatments	HGV	
	Superelevation / cross-slopes treatment	Longitudinal	
	Lanes / ramps treatments	Lateral control	
	Median / barrier treatments	Driver assistance	
	Shoulder & roadside treatments	Visibility enhanced	
	Delineation and road markings at road segments	Technical defects	
	Sidewalks treatments	Connected	
	Cycle lanes	Post-Crash	

CIVITAS MIMOSA

- CIVITAS network project
- http://civitas.eu/content/mimosa

- The project includes a comprehensive collection of lessons learned from the implementation of different approaches in very distinct urban settings. It covers many aspects of sustainable mobility and in terms of safety and security two main challenges were addressed:
  - i) Road safety for pedestrians and cyclists and
  - ii) Safe and friendly transport infrastructure.

- Communication with citizens and community involvement are key elements in the development and implementation of SUMPs. Safety and security are particularly sensitive issues for the public.

Chapter 7: Available tools and guidelines

NODES

- https://nodes-toolbox.eu/
- EU FP7 Transport Project

- Interchanges are places where high flows of people occur and where safety and security aspects are critical. The NODES toolbox covers a variety of topics and measures in order to increase safety and security conditions, with examples of good practice.

- 36 SS related tools and measures are provided as guidance to LAs.

Chapter 7: Available tools and guidelines

CARAVEL

- CIVITAS network project
- civitas.eu/content/caravel

- Rather great number of measures, some of them could be repeated in S-M cities. Burgos could be classified as S-M city, so its measures could be seen as a good example: Safe city access for pedestrians from suburban areas, safety and accident-prevention plan. The wide range of measures and shared experiences fit in the scope of SUITS.
- Topics considered in this module are mainly developed in the cities of the project that can not be classified as S-M, but useful hints coming from Burgos (S-M city)

Chapter 7: Available tools and guidelines

Mobility Academy

- https://www.mobilityacademy.eu/
- EU FP7 Transport Project (PDF documents, presentation, e-learning courses)

- This tool provides a general background on the cycling infrastructure. It is profusely illustrated and can be useful as a starting point for S-M cities where the bicycle culture is not present yet.

- The course provides very general information on the safety of the cycling infrastructure that may be only relevant for S-M cities who are interested in creating their cycling infrastructure. The tasks at the end of each module present a short questionnaire that enables LAs to survey their cycling infrastructure quality and needs.

- The materials are well organized and the navigation through the contents is straightforward.

VRUITS - Improving the Safety and Mobility for Vulnerable Road Users

- http://www.vruits.eu/
- EU FP7 Transport Project

- Contains information regarding selection, promotion and implementation of ITS in urban environments in order to enhance safety, mobility and comfort for vulnerable users.

- Material in PDF, Presentations, Documents and Visual aid of the pilots implementation.

Chapter 7: Available tools and guidelines

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 sbg)

- **PP4TM system**

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

SUITS Tool: The PP4TM System

logdrill
MAKE YOUR DATA WORK
PetaPylon

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

- 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:

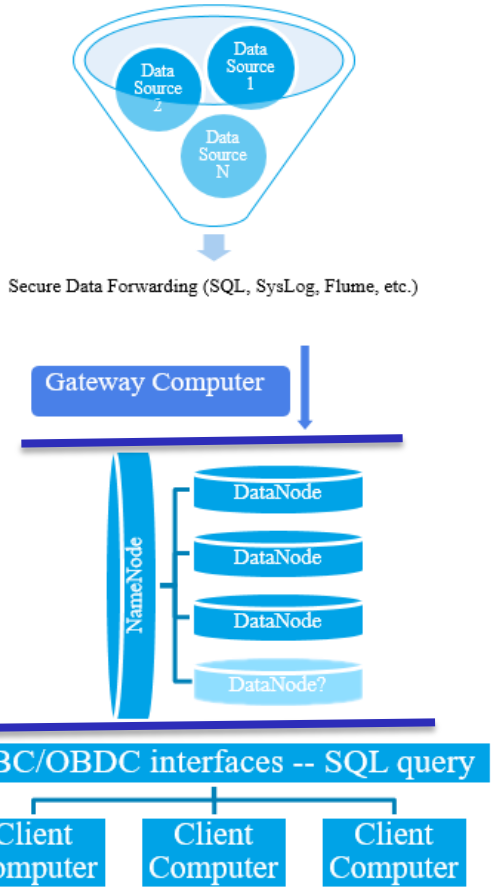
- Hosted in Germany (@Hetzner.de), 3TB+, SFTP accessible (+more)
- (Mirrored in LOGDRILL's (local) Data centre)

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

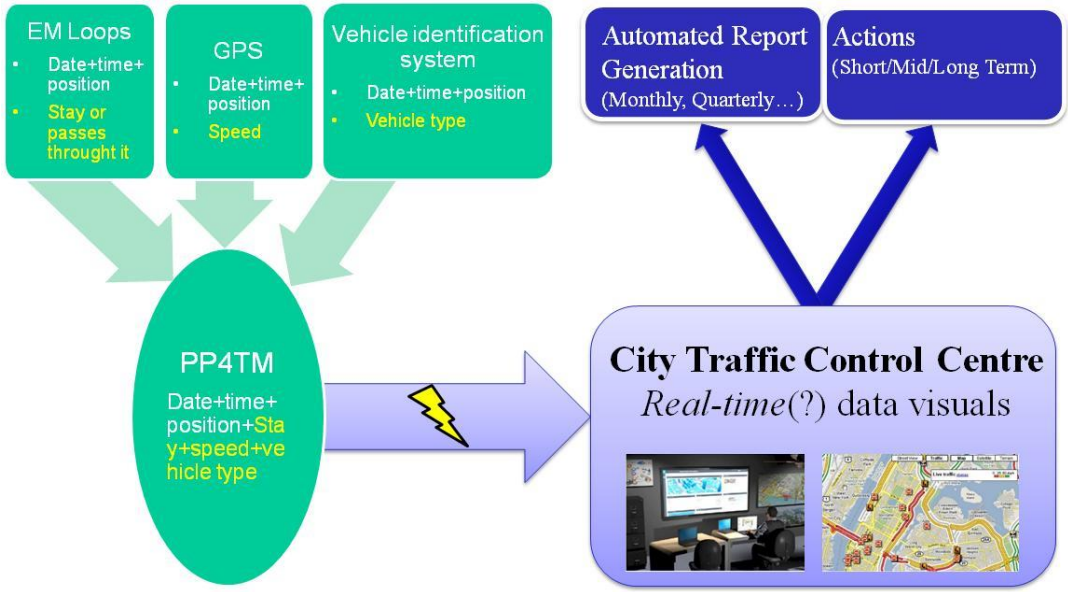
- Convert any data sources and formats (including historical) to common data format at once
- Store lots of data (Big Data) and access them very quickly
- Very easy and cheap to expand the storage capacity in runtime
- Easy to connect to any visualization tools
- Quickly serve your visualization needs



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)



Further Reading

CIVITAS Urban Mobility Tool Inventory

- http://civitas.eu/tool-inventory
- online database of over 100 tools and methods that helps local authorities make better informed decisions about which planning tools to apply in their given local context.
- List of webinars and e-learning courses…

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