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SEVILLE
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Clean, resilient and connected mobility.

Challenges of cycling data and metrology of new mobility

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Cerema France

TP4 Adaptive mobility technology

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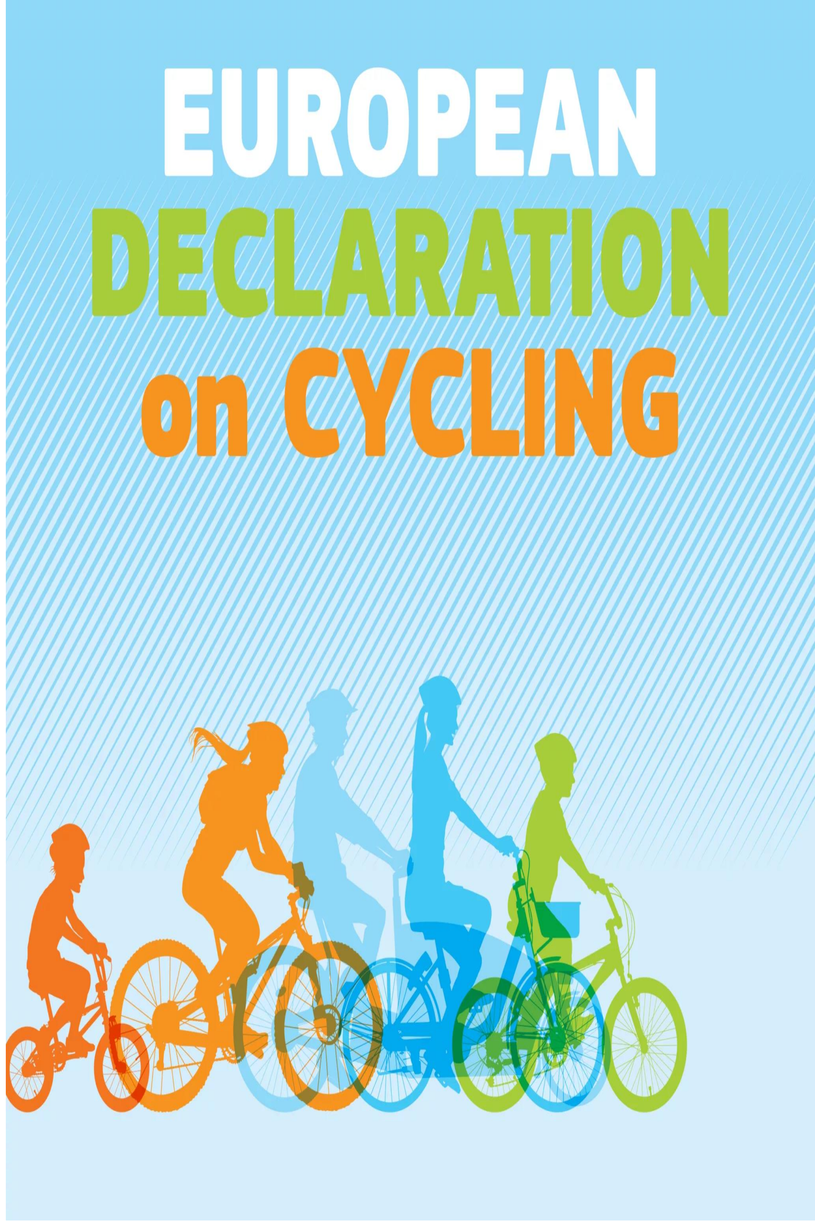
INTRODUCTION

➢**European Declaration on cycling (April 2024)**
Cycling data should be collected in a homogeneous manner
to allow monitoring of the infrastructure implementation

➢**Challenges for cycling data**
Inconsistent data, diversity of vehicles/users and uses,
no standardized methodologies for counting active modes

➢**Provide cycling data in the same way as for motorized traffic**
Offer reliable measurement tools to traffic managers
Harmonize data exchange formats for multimodal transport



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Cycling in France

➢**French-NAP** Transport.data.gouv.fr

Static and dynamic data

Cycling schema (counting, infrastructure, parking)

➢**Cycling and walking network (PNF)** réseau vélo et marche

139 contributors (local authorities)

EuroVelo the European cycle route network

+1300 counting sites (open data…)

➢**Cerema => Evaluation of sensors**

Regional expertise & engineering

Mobility

Building

Analyze user behavior

Assess cycling infrastructures

Transport infrastructure

Environment & risk

Sea & coast

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National platform (PNF)

Cycling counting

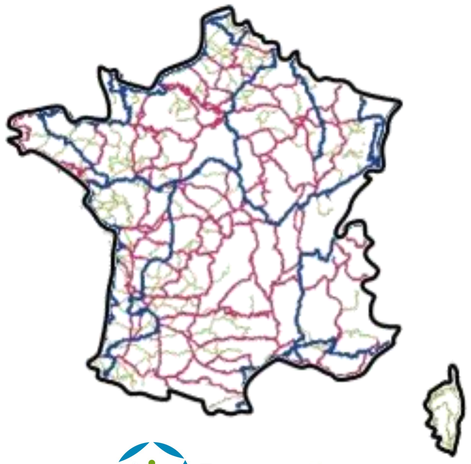
eco compteur

Geostandard
Cycle routes

OpenStreetMap France

FUB le vélo au quotidien

geovelo



France vélo TOURISME

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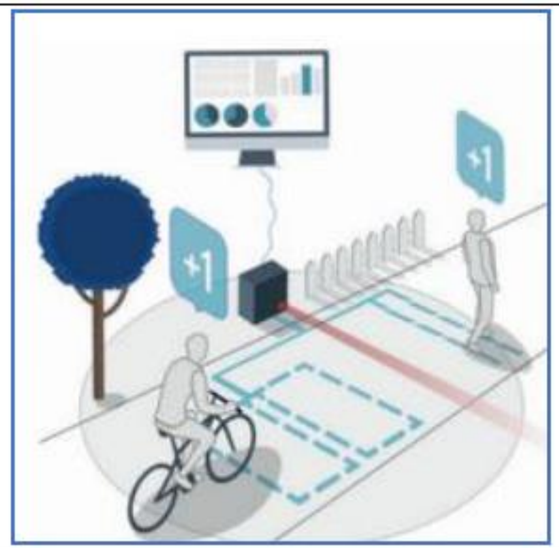
Properly identify users

➢Sensors adapted for detect users and vehicles in the correct class related to the analyzed travels

- Coordination: road safety, accessibility, traffic management, metrology, maintenance

Panorama of sensor technologies

Permanent devices

		
Electromagnetic loops	*Piezoelectric cables*	*Multi-technologies (loops, IR)*

Sensors installed in the roadway for permanent counting at fixed sites with high cycle traffic

Panorama of sensor technologies

Non-intrusive devices

		
Pneumatic tubes	*Doppler radars*	*IR sensor (passive / active)*

Non-intrusive sensors for temporary counting on sites with mixed traffic (soft/motorized modes)

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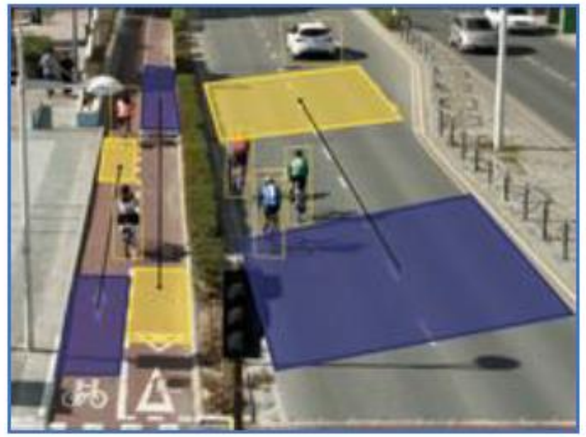
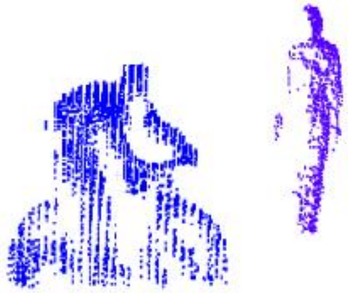
Panorama of sensor technologies

Non-intrusive devices

		
		
Lidar	*Video AI*	*Low-tech Cooperative*

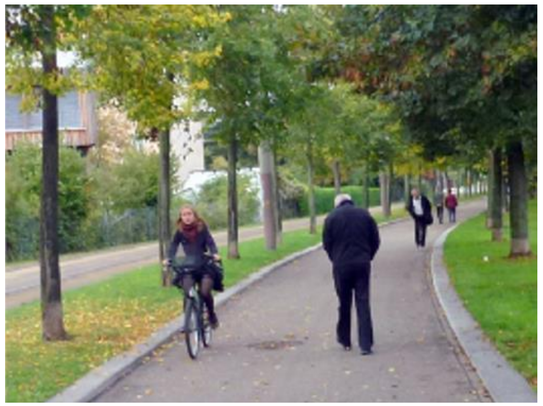
Sensors based on signal/video processing and AI for counting on sites open to different types of users

Technologies choice by cycling infrastructure

Dedicated sites

- Bike path
- Greenway

➢ permanent sensors which count bicycles as a priority



Shared sites

on-road / on-path

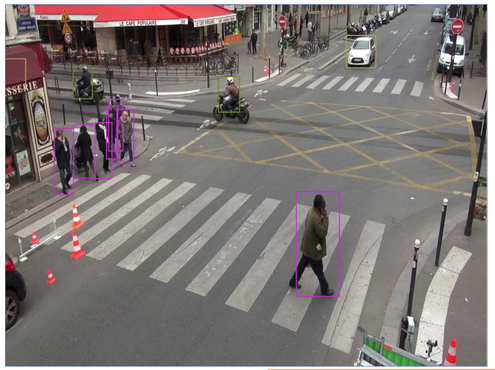
- Bike lane
- Combined bus/bike lane
- Central marked roadway
- Cycle street (V < 30 km/h)

➢ technologies adapted to detect different types of users (soft / motorized modes)
➢ also to provide road safety indicators (speeds…)

Open sites

- Meeting zone (V < 20 km/h)
- Pedestrian area
- Complex intersections

➢ high-value technologies (AI) to analyze the behavior of a wide range of users



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Evaluation of the counting systems for cycling

➢**Sensors need to be evaluated** objectively:

Metrologically to quantify the devices performance

Functionally to qualify identified use-cases in real-sites

Cerema evaluation methodology to count active modes on various infrastructure

			
cycle path	*greenway*	*cycle lane*	*cycle street*

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CONCLUSION AND PERSPECTIVES

Promote quality data

- Technical and methodological support **at the local level**: evaluation bodies
- Harmonization **in Europe** to provide reliable cycling data: standards experts

Realize experiments on real sites

- Integrate **dynamic sensors** for cycling into in the C-ITS ecosystem: traffic managers
- Develop active mode **monitoring** for better transport services to users: solution providers

=> Common work on cycling **metrology**: *Only what counts matters*

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THANK YOU!

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