



MOBILITY MEETS BIG DATA



www.transformingtransport.eu

The future of transport for Europe

Europe's ever-growing mobility and logistics sector currently represents 15 % of GDP and employs 11.2 million people in the EU. Fuelled by increasing cross-border trade, international freight transport and rising tourism travel, the sector is expected to grow significantly over the next two decades.

If not managed properly, this growth will bring with it significant pollution, increased traffic and slower freight transport. On the other hand, a 10 % efficiency improvement can lead to cost savings of EUR 100 billion and upgrade the pivotal mobility and logistics sector. This can be achieved by leveraging big data, i.e. the massive amounts of information that can be analysed using powerful software to reveal trends, patterns, and associations.

TransformingTransport at a glance

TransformingTransport is a colossal project, funded in part by the EU, that is bringing together Europe's major stakeholders in the sector to achieve this ambitious objective under the banner 'Big Data Value in Mobility and Logistics'. The consortium is bringing about a major paradigm shift in transport and logistics through 13 pilot projects in 7 pilot areas that will streamline both mobility and logistics.

The improvements in operational efficiency empowered by big data are expected to lead to 500 billion USD in value worldwide in the form of time and fuel savings, as well as savings of 380 megatons in CO₂. Only 19 % of EU mobility and logistics companies currently employ big data solutions, implying huge potential for improvement in the sector. TransformingTransport has set out to double the use of big data technology in the mobility and logistics sector from 19 % to at least 38 %. The transformation has already begun.

WHAT IS BIG DATA?

The concept of big data, i.e. massive data sets that can be analysed to reveal valuable patterns and trends, will have a profound economic and societal impact in the mobility and logistics sector.

Big data can be obtained from a variety of data sources in the sector: operational efficiency metrics, customer feedback, arrival and departure times, freight delivery statistics, waiting times at transport hubs, road traffic records, weather data, traveller habits and maintenance downtime records to name just a few.



7 PIVOTAL PILOT DOMAINS AND THEIR EXPECTED IMPACTS

TransformingTransport is working across seven pilot domains that cover highways, rail infrastructure, airports, urban mobility, vehicle connectivity, ports, and e-commerce logistics. Important benefits and improvements in each of the seven pilot domains established by TransformingTransport will emerge from this project.

1	Smart Highways	Improved traffic distribution, reduced accidents, better security, reduced operational costs, enhanced optimisation of resources for road operators, as well as data forecasts and applications for users and operators
2	Sustainable Connected Vehicles	Estimated savings of at least 25 % in operating expenses through better maintenance, reduction in fuel consumption based on better routing and driving patterns, enhanced safety, predictive maintenance through pattern recognition, as well as enhanced and more competitive insurance models
3	Proactive Rail Infrastructures	Up to a 12 % reduction in rail maintenance through enhanced predictive and scheduled maintenance and real-time maintenance interventions, increased network availability of up to 20 % with less unscheduled delays and more reliable journeys, better worker safety
4	Ports as Intelligent Logistics Hubs	Significantly improved operational efficiency, improved terminal operations, less delays, reduced energy consumption, better customer experience, streamlined supply chain, enhanced port traffic with less truck and vessel congestion
5	Smart Airport Turnaround	Significantly improved operational efficiency and proactive disruption management, less missed flight connections, less passenger wait times, reduced lost baggage, less passenger complaints, more stable ticket prices, better airport business and retailing
6	Integrated Urban Mobility	Reduced traffic congestion and delays in public transport, faster freight distribution in city centres with reduced delivery mileage, less congestion, better customer satisfaction, better rail asset management, improved situational awareness
7	Shared Logistics for E-commerce	Significantly improved operational efficiency, optimised capacity utilisation, increased consumer satisfaction, less waiting time for deliveries, enhanced retailing and e-commerce

MOBILITY

13 AMBITIOUS PILOTS

Within the 7 pilot domains, 13 exciting transport projects will be realised under TransformingTransport. These will bring key operational changes that can and will be replicated across Europe.

1 Load balancing in Malaga

Pilot Domain: Smart Highways

The Málaga-Estepona-Guadiaro highway is 105 km in length and plays a key part in traffic mobility along the Costa del Sol in southern Spain. It constitutes a safe, efficient alternative in a highly-congested semi-urban corridor. The pilot aims to manage traffic flows and improve user experience by minimising congestion, optimising infrastructure, and reducing accidents.

2 Load Balancing for Norte Litoral

Pilot Domain: Smart Highways

The 119-km Norte Litoral Highway runs along the northwest coast of Portugal, from Oporto to Caminha, near the Spanish border, with a branch towards the interior between Viana do Castelo and Ponte da Lima. The knowhow and outcomes emerging from the Malaga pilot will be replicated for the Norte Litoral, leading to safer and more pleasant roads.

3 Sensing Passenger Cars

Pilot Domain: Sustainable Connected Vehicles

This pilot will analyse data sets in relation to car position, emissions, engine status, speed, temperature, accidents, strong decelerations and other parameters. The results will enhance management of car fleets and could provide data to external

services or stakeholders such as smart highways, urban transport and insurance companies.

4 Sensing Trucks

Pilot Domain: Sustainable Connected Vehicles

The sensing truck pilot will upgrade the reliability of transport services by analysing big data from road users, satellite images and traffic events. This enhances resilience of supply chains, cargo availability and logistics, minimising traffic disturbances and mitigating adverse weather situations.

5 Predictive Rail Asset Management

Pilot Domain: Proactive Rail Infrastructures

This pilot, to be applied to a UK national rail route, will support a predict-and-prevent rail maintenance approach, managing the complex supply chain that includes equipment manufacturers, maintainers and operators. It involves collecting maintenance and fault data, diagnostics and timely prognosis to enhance maintenance and minimise costs.

6 Predictive High Speed Network Maintenance

Pilot Domain: Proactive Rail Infrastructures

This pilot in Malaga, Spain, will improve the reliability of high speed rail networks by optimising operator performance and maintenance of the rail infrastructure. It will help rail operators predict the impact of certain events on traffic management. The work involves analysing data on rail traffic, rolling-stock flows, maintenance, planning, weather and more.

7 Valencia Sea Port

Pilot Domain: Ports as Intelligent Logistics Hubs

Valencia Port in Spain is the largest container sea port in the Mediterranean. The pilot will use big data technologies to improve performance, efficiency, productivity and competitiveness, creating a holistic, streamlined ecosystem for warehouses, road hauliers, railways, port authorities, customs, border protection agencies, port terminals and vessels.

8 Duisport Inland Port

Pilot Domain: Ports as Intelligent Logistics Hubs

Duisport in Germany is the world's largest inland port. The pilot will replicate and reuse the solutions from the Valencia pilot, overcoming challenges of port logistics in Germany's largest metropolitan area. Data sources include video streams of trucks and trains, road traffic management data, collected transport fees, vessel tracking data, container numbers, etc.

9 Smart Passenger Flows

Pilot Domain: Smart Airport Turnaround

Athens International Airport in Greece boasts one of the highest rates of growth in Europe. This pilot will use big data technologies to analyse passenger flows and passenger behaviour patterns in order to improve airport efficiency. Data on arrival, departure, passenger circulation, and signage will all be exploited.

MEETS BIG DATA

TO SHOWCASE BIG DATA IMPACT

10 Smart Passenger Flows and Turnaround

Pilot Domain: Smart Airport Turnaround

Malpensa Airport, Italy's second busiest, handles over 19 million passengers a year and close to half a million tons of freight. The pilot will synchronise the turnaround process and flight scheduling for all aircraft by analysing real-time data about resources on the ground. The results will also be replicated in Munich and Frankfurt airports.

12 Integrated Urban Mobility & Freight in Valladolid

Pilot Domain: Integrated Urban Mobility

North-western Spain's largest city, Valladolid, will replicate the results of Tampere with new traffic models relating to commercial and logistic fleets. The models will support traffic planning and traffic management tasks in the city. Outcomes will include different freight delivery scenarios and a planning tool for delivery fleets.

13 Sharped Logistics for E-Commerce

Pilot Domain: Dynamic Supply Networks

E-commerce is a rapidly growing sector that depends on logistics. This pilot will develop shared logistics scenarios that consider routing and customer preferences. Big data technologies will improve performance, efficiency, productivity and competitiveness in logistics and increase consumer satisfaction, supported by data from e-shops and inventories.

11 Integrated Urban Mobility & Logistics in Tampere

Pilot Domain: Integrated Urban Mobility

The pilot in Tampere, Finland's second largest urban area, will provide tools to manage and diagnose traffic, as well as to enhance delivery of goods and improve traffic situation awareness. Data will be collected from social media, traffic cameras and other sources. Drivers and travellers will also be able to access the relevant information.

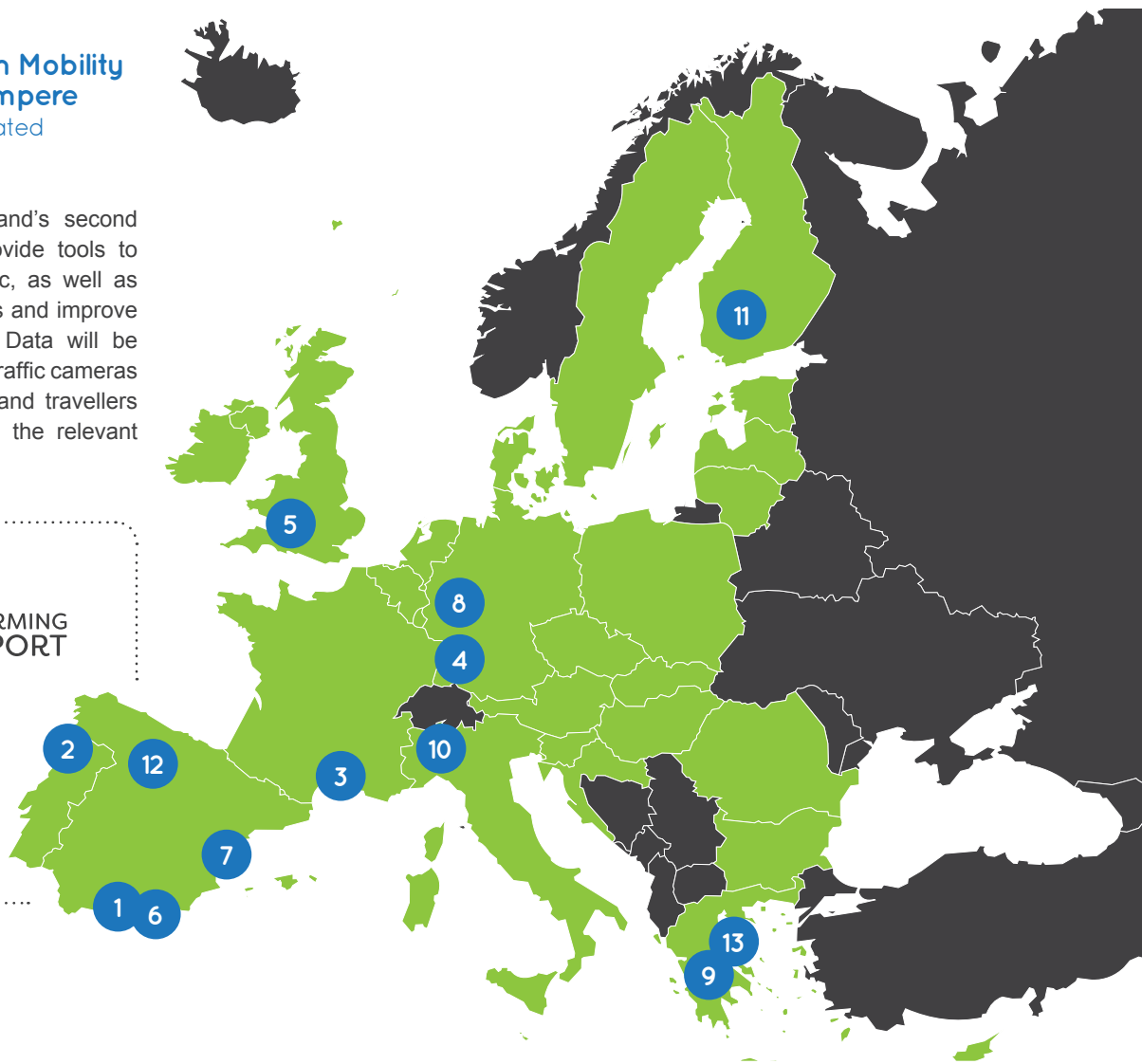


TRANSFORMING
TRANSPORT

Budget:
EUR 18.7 million

EC funding:
EUR 14.6 million

Partners:
47



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TransformingTransport - Big Data Value
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