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H2020 Theme Oriented Training on Transport

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Presentation Structure: Overview

First part (Before lunch):

- Transport H2020 related subjects (Mobility for Growth, Green vehicles)

Second part:

- Presentation of specific projects as examples

Third part:

- Call analysis workshop

Fourth part:

- Final discussion - Q&A

Presentation Structure: Details I

First part (Before lunch):

- Introduction to Transport related subjects (Mobility for Growth, Green vehicles)
- Knowing the audience and expectations
- Mobility for Growth
- Green Vehicles
- Q&A

Presentation Structure: Details II

Second part:

- Presentation of specific projects as examples
- Interactive exercise: Adaptation of audience's profile/ requirements into the project described

Third part:

- Call analysis workshop
- Introduction by the audience of specific ideas, concepts and/or needs
- Topic fit-in Analysis

Fourth part:

- Final discussion - Q&A

Introduction to Transport related subjects

- What is the background?
- What is the reason for funding R&D?
- What is the context?
- First breakdown

Smart Green Integrated transport: Key words

- Resilience
- Energy efficient
- Environmental friendly
- Climate friendly
- Safety
- Security
- Seamless
- Sustainability
- Economic growth & Employment
- ICT capabilities

Transport related subjects

- ***Mobility for Growth***
- ***Green Vehicles***
- Automated Road Transport

Objectives from transport related subjects

- Resource efficient transport that respects the environment
- Better mobility, less congestion, more safety and security.
- Global leadership for the European transport industry.
- Socio-economic and behavioural research and forward looking activities for policy making

Research Challenges I

- Improving **energy/resource efficiency** (innovative powertrains and propulsion systems, reducing transport's dependence on fossil fuels and scarce resources, take-up of alternative fuels, and achieving the required level of mitigation of climate change, pollution, noise and adverse health effects in the transport sector)
- Supporting the development of **automation in road transport** (road safety, reduced congestion, energy efficiency and air quality as well as ensuring the leading role of European industry in the global market to boost sustainable growth and create jobs)
- Paving the way for the deployment of **innovative mobility solutions** (ICT and satellite navigation technologies, connected and automated vehicles, personalised/smart , open interfaces, internet of things)
- **Modernising infrastructure** for Europe-wide mobility demands and for reducing social and territorial inequalities (new materials and processes, smart transport systems and new charging and refuelling options, and making infrastructure more safe, adaptable, resilient and responsive to evolving weather conditions and disruptive events)
- **Assessing the impacts and cost-effectiveness of new solutions** to address the mobility challenges in urban areas, exploring new opportunities to support take-up of innovative solutions, including through procurement.

Research Challenges II

- **Optimising the use of the infrastructure** and redistributing passenger and freight traffic between transport modes,
- **Optimising the efficiency and interoperability** of transport systems and operations through
- Making quantum **improvements in safety levels** across the transport system, reducing the associated costs for the users, the providers and the public sector
- **Anticipating technological developments** that have the potential to be transformational, both internal to transport and in other activities that are likely to impact on transport and the competitiveness of the European transport industry, while promoting the use of common standards and procedures across transport modes
- **Understanding and managing the impact of demographic trends** recognising and supporting new societal developments
- **Assessing future requirements for skills and jobs** across transport sectors and systems.

Related H2020 activities

- Blue Growth
- Energy efficiency
- SME instrument
- Fast track to innovation pilot
- Smart Cities
- Information and Communication Technologies (ICT),
- Nanotechnologies, advanced materials, biotechnology and advanced manufacturing and processing(NMBP)
- Space
- Secure, clean and efficient energy
- Climate action, environment, resource efficiency and raw materials
- Secure societies

Other activities related to H2020 attempts

- Local Sustainable Urban Mobility Plans (SUMPs) & Transport Studies
- Smart City initiatives
- ITS and Innovation actions
- National Research activities
- INTERREG Programmes (cross-border / regional / transnational)

Multi-disciplinary Expertise required

- Transport engineering
- Transport operations
- Aeronautics
- Marine engineering
- Electrical engineering
- Mechanical engineering
- ICT & Telematics
- ITS
- Legal
- Policy
- Business
- Marketing
- Project Management

Lessons learned (general)

- A series of subsequent projects may be needed to reach a concrete result and/or a research infrastructure (synthetic thinking and puzzle effect)
- A successful project should have innovation but also should be modest
- A good consortium with balanced members (types, countries) is needed.
- A good project manager is the most valuable asset
- Pilot sites are always required – Impact should be measureable and demonstrateable

Lessons (I) learned

- Cooperation
- Think out of the box
- But follow the rules
- Always be able to prove what you are claiming

Practical advice

- Read the Workprogramme text carefully.
  - All the requirements for a successful application are there.
  - Identify the key words; Especially what are the challenges and the impact sought.
  - Read between the lines; some critical information may be less evident
- Identify your role and background; Clearly define the objectives for participation
- Pick up the relevant topic based on role, background, experience and objectives. Alternative topics to the more obvious ones may well exist!
- Identify the state of the art; which are the existing relevant projects that new research could be based upon?
- Find relevant consortium; define your pilot and pilot site, define local partners.
- Evaluation, dissemination and exploitation are equally important for the success to the development itself
- But efficient Project Management is the key

Knowing the audience and expectations

- Who and what?
- Expectations (if any)?
- Objectives?

H2020

So far 4 projects (all are RIA) in Mobility fro Growth (out of 85 in total):

- CREATE: Congestion Reduction in Europe : Advancing Transport Efficiency. **MG-5.3-2014**
- EMPOWER: EMPOWERING a reduction in use of conventionally fueled vehicles using Positive Policy Measures. **MG-5.1-2014**
- NeTIRail-INFRA: Needs Tailored Interoperable Railway **MG-2.1-2014**
- SENSKIN: SENsing SKIN for Monitoring-Based Maintenance of the Transport Infrastructure. **MG-8.1a-2014**

H2020

One project (RIA) in Green Vehicles (out of 15 in total):

WEEVIL: Ultralight and ultrasafe adaptable 3-wheeler. **GV-5-2014**

Interest Matrix

Mobility for Growth		Green Vehicles	
Aviation	Noise; Aeronautics; Breakthrough innovation;	Heavy duty vehicles;	
Waterborne	Energy efficiency; Complex vessels;	Electric drivetrains;	
Safety	Road users – crashes;	Electric vehicle user centric design;	
Urban Mobility	Innovative solutions; E-mobility	Integration of hybrid and electric vehicle batteries;	Next generation battery cells;
Logistics	ICT; Physical Internet;	Modelling & testing of electric vehicles;	
Infrastructure	Resilience to events; Optimisation; Port of the future;	Urban commercial vehicles and fast charging;	Pilots of L type electric vehicles in urban environment;
Socio economic and behavioural	Big data; Public transport in prioritised areas; Shifting paradigms	Aerodynamics for trucks;	

Mobility for Growth

- What is?
- Sector Breakdown
- Open topics

Mobility for Growth (what is)

"smart mobility"

infrastructure, transport means, travellers and goods will be increasingly ***interconnected*** to achieve optimised door-to door mobility, higher safety, improved impact on climate and the environment and lower operational costs.

smart infrastructure solutions is necessary to deploy innovative traffic management and information systems, advanced traveller services, efficient logistics, construction and maintenance technologies.

Mobility for Growth Objectives

To integrate transport means and infrastructure into a user friendly European transport system of smart connected mobility and logistics:

- making equipment and systems for vehicles, aircraft and vessels smarter, more automated, cleaner and quieter, while reducing the use of fossil fuels
- finding smart infrastructure solutions to deploy innovative traffic management and information systems, advanced traveller services, efficient logistics, construction and maintenance technologies

Mobility for Growth: Breakdown

Areas addressing mode-specific challenges (technical and socio-economic)

1. Aviation
2. Waterborne

Areas addressing cross-modal and/or transport integration specific challenges (technical and socio-economic)

3. Safety
4. Urban
5. Logistics
6. Intelligent Transport Systems
7. Infrastructure

Cross-cutting issues

8. Socio-economic and behavioural research and forward looking activities for policy making

Aviation

- Leading European industry
- Aeronautics
- Improved air transport services
- Reduced environmental impact
- Increased safety and security

Aviation Open Topics

- MG 1.2: Reducing aviation noise
- MG 1.3: Maintaining industrial leadership in aeronautics
- MG 1.4: Breakthrough innovation

Topic MG 1.2-2017: Reducing aviation noise

Available budget: €20 million

Goal: Find new and more holistic approaches for aviation noise reduction with the help of innovative airframe and engine technologies, as well as solutions for airport infrastructure and spatial planning.

Scope: Develop new technologies and methodologies methods that enable airport operations around the clock based on new approaches for assessing, monitoring and minimizing the impact of aviation noise.

Type of action: Research and innovation action

Opening date: 20 September 2016

Deadline: 1 February 2017

A contribution from the EU of between EUR 5 to 9 million

Topic MG 1-2-2017: challenges and impact

….holistic approaches for aviation noise reduction, coupling **innovative airframe/engine technologies** with **operational aspects**, airport **infrastructure and connectivity**, and land-use planning solutions….

Easy to-use decision support systems

Noise impact modelling tools

Critical mass on a pan-European scale

Development of future noise related regulations, operations, and technology

Improvement of **health conditions** of the population particularly in areas near airports and air corridors, as well as to **economic activities** linked to sustainable airport development plans

Topic MG 1.3-2017: Maintaining industrial leadership in aeronautics

Available budget: €45 million

Goal: Bring innovative technologies to higher maturity levels for advanced and cost-efficient air transport services involving partners from the whole supply chain, and in particular SMEs.

Scope: Advance one or several of these priority areas: condition-based health management; composite aero-structures; internal and external electromagnetic environment technologies; and multidisciplinary design tools.

Type of action: Research and innovation action

Opening date: 20 September 2016

Deadline: 26 January 2017 for the first stage > 19 October 2017 for the second stage

A contribution from the EU of between EUR 5 and 9 million

Topic MG 1.3-2017: Challenges and impact

Reference to Clean Sky 2 Public-Private Partnership;

there are other promising technologies at low maturity levels that need to be further advanced.

…new innovative design tools, materials, manufacturing and service processes…

- condition-based health management
- novel composite aero-structures
- internal and external electromagnetic environment technologies
- development and validation of multi-disciplinary design tools

SME participation

Topic MG 1.4-2017: Breakthrough innovation

Available budget: €15 million

Goal: Maintain and extend Europe's industrial leadership, as well as protect the environment with the help of new disruptive breakthrough technologies for aviation.

Scope: Develop exploitable breakthrough technologies and concepts for the medium term that are not currently used or that have not yet been combined for civil aviation.

Type of action: Research and innovation action

Opening date: 20 September 2016

Deadline: 26 January 2017 for the first stage > 19 October 2017 for the second stage

A contribution from the EU of between EUR 2 to 4 million

Topic MG 1.4-2017: Challenges and impact

Very ambitious long-term goals are addressed by Europe's vision for aviation Flightpath 2050

→ new disruptive breakthrough technologies are needed to reach these ambitious goals.

- Aircraft configurations and airframes
- Propulsion systems
- Multifunctional systems
- Autonomous and intelligent systems

….decrease of the impact on climate and the environment of air vehicles and/or enhance the competitiveness of the European aviation industry and the safety of civil aviation….

without assuming fundamental changes at airport level

Waterborne

- Modern, resource-efficient, interconnected, safe, secure and resilient European waterborne transport system
- Deep sea shipping
- Coastal shipping
- Ferry connections
- Inland waterways
- Cities and Ports
- 'Vessels for the future' partnership initiative.
- Available budget 40 m€

Waterborne Open Topics

- MG-2.1-2017: Innovations for energy efficiency and emission control in waterborne transport
- MG-2.4-2017: Complex and value-added specialised vessels

Topic MG-2.1-2017: Innovations for energy efficiency and emission control in waterborne transport

Goal: Achieve a more energy-efficient and less polluting European waterborne transport through innovative use of alternative fuels, drastic cuts of emissions, as well as electrification and improved performance of vessels.

Scope: Advance one or several of these priority areas: use improved, alternative, low carbon and renewable fuels; improve energy storage on-board for vessel electrification; innovate in pollution reduction; and control technologies and reduce frictional resistance.

Type of action: Innovation action

Opening date: 20 September 2016

Deadline: 26 January 2017 for the first stage > 19 October 2017 for the second stage

A contribution from the EU of between EUR 5 to 9 million

Topic MG-2.1-2017: Challenges and impact

- defend the lead in world markets
- a step change in energy efficiency and emission reductions
- to explore alternative fuels
- to prepare the ground for vessel electrification where sailing distances and
- infrastructures permit it
- to optimise the basic performance of vessels

Directive 2012/33/EU, Directive 2014/94/EU and MARPOL Annex VI

Fuel efficiency (+15%) and reduction in emissions (-80% for pollutants & -50% greenhouse effects)

Topic MG-2.4-2017: Complex and value added specialised vessels

Goal: Increase the competitiveness of the European shipbuilders by bringing forward innovative vessel manufacturing solutions.

Scope: Develop and validate one or several innovative vessel concepts for ferries, cruise and passenger ships or workboats, as well as develop new waterborne transport concepts and designs.

Type of action: Innovation action

Opening date: 20 September 2016

Deadline: 26 January 2017 for the first stage > 19 October 2017 for the second stage

A contribution from the EU of between EUR 8 to 12 million

Topic MG-2.4-2017: Challenges and impact

…best design concepts and construction and production principles for complex, one off and small series vessels, and for modular standardised vessels…

Marketability and future skills requirements along the value chain

SMEs involvement in the industry….

…competitiveness of the sector

Safety

- 2011 Transport White Paper,
- Close to zero fatalities in road transport by 2050, halving road casualties by 2020
- EU remains a world leader in the safety of all modes of transport.
- Develope technologies, products, services and solutions that reconcile safety with efficiency and user-friendliness.
- Available budget 14 m€

Safety Open Topics

- MG-3.2-2017: Protection of all road users in crashes

Topic MG-3.2-2017: Protection of all road users in crashes

Goal: Contribute to the reduction of fatalities and severity of injuries on European roads by making road users, vehicles and infrastructure safer.

Scope: Develop integrated vehicle-based safety systems, personal safety equipment or efficient and robust crash simulations that take into account societal trends and new mobility modes.

Type of action: Research and innovation action

Opening date: 20 September 2016

Deadline: 26 January 2017 for the first stage > 19 October 2017 for the second stage

A contribution from the EU of between EUR 4 to 9 million

Topic MG-3.2-2017: Challenges and impact

- Road transport
- Improved crash safety
- Trends: ageing population, powered and non-powered two-wheelers and the introduction of green, light, sub-compact cars
- New vehicle types
- Cooperative Intelligent Transport Systems (C-ITS) technology
- Simulation tools (including new virtual human body models)
- Pedestrians, cyclists and two wheel users
- Gender aspects & demographic characteristics (disabled, ageing population)
- Participation of SMEs
- Links with member states initiatives
- EU international cooperation

Reduction of fatalities and severity of injuries, as well as the number of injured persons….

Triangle of: European road users, vehicles and infrastructure…

Demonstrate Impact; Standardise products and testing techniques; Credible strategy

Urban Mobility

- Resource-efficient, clean and competitive urban mobility and transport
- Available budget 22 m€

Urban Mobility Open Topics

- MG 4.1: Increasing the take up and scale up of innovative solutions to achieve sustainable mobility in urban areas
- MG 4.2: Supporting smart electric mobility in cities

Topic MG 4.1: Increasing the take up and scale up of innovative solutions to achieve sustainable mobility in urban areas

Goal: Innovative solutions exist at local level. Goal is to increase the take up of innovative solutions by transferring them to new contexts and studying and comparing the impacts. Special attention should be paid to social issues and implications.

Scope: Traffic and travel avoidance: planning and location policy; innovative demand management approaches while providing citizens, businesses and organisations with minimum levels of access; less car dependent lifestyles.

Type of action: Research and innovation action

Opening date: 20 September 2016

Deadline: 26 January 2017 for the first stage > 19 October 2017 for the second stage

A contribution from the EU of between EUR 4 to 9 million

Topic MG 4.1: Challenges and impact

—Supporting modal shift towards more efficient modes: increased walking and cycling; urban waterborne transport; mobility management and travel awareness; increased attractiveness of public transport; new coordination and service concepts.
—New governance models for freight and passenger transport: better transport; stakeholder engagement; public consultation/icoordination and cooperation; synergies between passenger and freight on and participation; education and training, policy transfer.
ITS solutions are covered in other topics of the Transport Challenge Work Programme and in other parts of Horizon 2020, but the integration of IT and ITS enablers for urban mobility measures needs to be fully considered.
The Commission considers that proposals requesting a contribution from the EU of between EUR 2 to 5 million each would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Topic MG 4.2: Supporting smart electric mobility in cities

Goal: Integrate electro-mobility in Sustainable Mobility Plans / Extensive use of a network of electric recharging stations for electric cars / Increase confidence of the market on recharging stations availablility / Seeking financial support for the establishment of recharging infrastructure for electric vehicles

Scope: Testing of Business models for local production and distribution of electricity together with electric vehicles fleet / create the conditions for market take up in urban and sub-urban areas. / Pilot Testing focusing on the integration of solutions into transport system / cross-site evaluation / Barriers and ways to overcome them

Type of action: Research and innovation action

Opening date: 20 September 2016

Deadline: 26 January 2017 for the first stage > 19 October 2017 for the second stage

A contribution from the EU of between EUR 4 to 9 million

Topic MG 4.2: Challenges and impact

Expected impact:

- Business model validation for electromobility solutions regarding: —Large scale, sustainable and energy production and distribution (also from transport infrastructure itself) in balance with local use. / Interoperability and intelligent billing systems / Bringing together technologies from the energy, infrastructure and transport domains.

- Projects should bring innovative tools and recommendations to integrate electromobility in SUMPs (for example, planning policies and use of urban space), as well as recommendations for common standards of ultra-low emissions urban areas.

—Clear commitment for further Europe-wide take-up and rollout of results during and following the project

- Calculation of CO2 emissions

Logistics

- Increase the performance and efficiency of logistics systems in terms of energy use and emissions
- Integrate ICT solutions
- Remove the communication bottlenecks among the different stakeholders
- A more sustainable European logistics sector
- Available budget 12 m€

Logistics Open Topics

- MG 5.2: Innovative ICT solutions for future Logistics operations
- MG 5.4: Potential of the Physical Internet

Topic MG 5.2: Innovative ICT solutions for future Logistics operations

Goal: Exploit ICT advances such as Internet-of Things, big data, new satellite navigation infrastructure and Intelligent Transport Systems with changes in business needs / Rethink the way we plan, book and execute freight flows / reliability of information among stakeholders / seek horizontal collaboration / use of real time/open data to plan and track shared freight with guarantees that the exploitation of this data without compromising safety and security / provide ease of access to all future ICT solutions for the SMEs.

Scope: Building on previous work in the e-Freight domain cover at least 2 of the 3 following issues:

A) Develop electronic booking and planning systems for freight to find the best (combinations of) modes and optimal route (e.g. GNSS based route analysis or opportunities for “milk runs”),

B) paperless environment and freight traceability of information

C) Identify opportunities for increased availability of freight data (such as shipments, volumes, statuses, destinations, etc.) taking into account security, privacy, data ownership and policies for data sharing

D) Develop algorithms to increase both load factors and optimise the planned delivery route, based on the specifications of Modular Load Units, the vehicle or container and all required destinations.

E) Dynamic routing and business models —Develop event management systems that create visibility and transparency and allow realtime exception management for faster traffic reconfiguration and increased resilience.

F) Exception handling

G) Type of action: Research and innovation action

Opening date: 20 September 2016

Deadline: 26 January 2017 for the first stage > 19 October 2017 for the second stage

Topic MG 5.2: Challenges and impact

-Realise horizontal collaboration

-Real time data and high interoperability

-Better, more flexible integration of ICT solutions and operational processes, linking the digital and physical flows.

-Seamless freight transport execution across Member States and modes of transport.

-Increased reliability and reduced transit times. —10% higher load factors and 10% shorter delivery routes resulting in respective reductions in fuel consumption and in lower emissions.

-Viable business models for collaborative and dynamic transport services

Topic MG 5.4: Potential of the Physical Internet

Goal: Translation of the working principles of the Digital Internet to the routing of freight, thus creating the Physical Internet (PI), has the potential to be a real game-changer. In the PI world freight travels from hub to hub in an open network rather than from origin to destination directly. Each parcel is routed automatically and at each section it is bundled for efficiency. In the PI network of networks many (if not all) transport and logistics services would be accessible on demand to all users. The Internet of Things could link every future container, load unit or parcel to the internet, can be considered a pre-requisite for the Physical Internet to work as there will be an increased need to track all goods in a freight environment lacking a fixed and known transport route.

Scope: —Set up a case study, based on real situation, to identify the position, size and number of hubs needed for efficiently linking the long distance network and providing sufficient access points to urban areas.

—Map the influence sphere of each node and its benefits across borders to fuel future shared investments.

—Develop simulation and modelling tools to assess the possible impact of the PI, including the socio-economic aspects.

—Identify criteria for potential pilot implementations of physical internet concepts.

—Define possible business models to support the development of the PI concept. .

Type of action: Research and innovation action

Opening date: 20 September 2016

Deadline: 26 January 2017 for the first stage > 19 October 2017 for the second stage

Topic MG 5.4: Challenges and impact

- Kick-Start the development of the Physical Internet through building industry-wide support.
- Improved asset utilisation.
- 30% reduction in terms of congestion, emissions and energy consumption.

Infrastructure

- Make transport infrastructure more resilient, including to climate change
- Keep pace with increasing mobility needs
- Reduce infrastructure's impact on the environment.
- All modes of transport
- Multimodal transport infrastructure.
- Available budget 38,7 m€

Infrastructure Open Topics

- MG 7.1: Resilience to extreme (natural and man made) events
- MG 7.2: Optimisation of transport infrastructure including terminals
- MG 7.3: The Port of the future

Topic MG 7.1: Resilience to extreme (natural and man made) events

Goal: Extreme weather conditions, climate change, damages to the infrastructure (caused by natural and man-made hazards) Risk analysis, adaptation measures and strategies .

Scope: - Identification of risk factors and mapping of the extreme weather conditions and climate risk 'hot spots' and their impact on the European transport network;

- identification of the appropriate risk analysis, adaptation measures, and development of cross-modal implementation strategies or operational strategies that optimise cost-performance-risk.

- Strategic application of new materials, techniques and systems for construction, operations and maintenance in order to ensure reliable network availability during unfavourable conditions.

- Integration of terrestrial and satellite systems for the structural health monitoring of key infrastructures located in a natural risk (earthquakes, landslides, floods and extreme weather) prone area and for the monitoring of extreme weather conditions.

- Innovative engineering of links and connections to allow a smooth transfer from one mode to another in case of extreme disruption in one transport mode.

Type of action: Research and innovation action

Opening date: 20 September 2016

Deadline: 26 January 2017 for the first stage > 19 October 2017 for the second stage

Topic MG 7.1: Challenges and impact

- Expected impact:

Actions will contribute to substantial improvement of smooth continuity of mobility of people and freight even in case of serious disruptions due to natural or man-made circumstances. Major progress will be made regarding individual mode components' resilience to damage due to extreme weather conditions, including reduction of maintenance and retrofitting needs.

Achieve reliable modal interchanges allowing continuous fluid traffic flow even during or after disruption.

A high level of resilience of the transport infrastructure is an essential contribution to sustainable development and of impact on and adaptation to climate change conditions.

Topic MG 7.2: Optimisation of transport infrastructure including terminals

Goal: The European transport network is highly developed, even if not fully balanced between regions and countries. Whilst some links are still missing and an effort is needed to complete trans-European connections, other corridors and nodes face increasing problems of congestions and under-capacity compared with traffic evolution. Key to improving capacity and availability of the existing transport infrastructure network are innovative systems and processes for re-engineering, retrofitting and upgrading that support a transition to zero intrusion from inspection, construction and maintenance

(less, faster and better planned interventions with maximum safety for the workers) and drastically increase the productivity of the system.

Scope:

—Re-engineering/re-design methods to adapt the network to new needs and ensure higher efficiency.

—Innovative design and construction methods that are fast, cost-efficient, using low maintenance and environment-friendly materials and flexible enough to accommodate increasing/changing demand. In particular, implementing advanced construction concepts and processes for corridors and hubs, i.e. flexible design and modular concepts, and advanced predictive models.

—Assessment of the multimodal network capacity in view of optimised use and future planning, taking due consideration of the uncertainty of demand evolution.

Type of action:

Research and innovation action

Opening date: 20 September 2016

Deadline: 26 January 2017 for the first stage > 19 October 2017 for the second stage

Topic MG 7.2: Challenges and impact

- Expected impact:

More optimal use of the multimodal transport system including avoidance of over-dimensioning of the physical network whilst reducing congestion and overload of specific network components and accommodating future demand;

Improve accessibility and operational efficiency of multimodal hubs.

Increase of the infrastructure performance will also contribute to the achievement of sustainable development in the sector and to minimise effects on climate change via the improvement of construction methods and traffic smoothness.

Topic MG 7.3: The Port of the future

Goal: Modernize ports as they constitute essential part of the economy / local / national / international / port-city interface concept / use of renewable resources

Scope:

- Multi-modal optimised cost-effective and flexible operations inside the terminal and in the wider port area.
- Re-engineering of port operational processes via process analysis and identification of interoperable ICT systems to improve the level of integration among all actors (Port Authorities, terminal operators, shipping companies, customs, security forces, city authorities, etc.) and facilitate critical decision-making.
- Sustainable maintenance, repair and reconfiguration.
- Better capacity management with reduced costs and land use.
- Identification of real-time KPIs to improve the quality of services provided.
- Low environmental impact, climate change adaptation and mitigation, and moves towards the circular economy.
- Advanced and efficient links and integration in the socio-economic industrial and urban surrounding environment (supporting the smart urban development of Port Cities)
- Efficient connections with the hinterland transport network

Type of action: Research and innovation action

Opening date: 20 September 2016

Deadline: 26 January 2017 for the first stage > 19 October 2017 for the second stage

Topic MG 7.3: Challenges and impact

- **Expected impact :**

Minimize impact on climate change and the environment due to port activities, their operational and infrastructural costs, / improvement of logistics efficiency / better integration of the port in the surrounding socio-economic area, including city-port relations and the smart urban development of Port Cities.

Socio-Economic and behavioural research and forward looking activities for policy making

- User preferences and attitudes
- Changes in the way transportation is performed (for example car sharing)
- New business models, methodologies, policies etc
- 9,5 meuros

Socio-Economic and behavioral research Open Topics

- MG 8.2: Big Data in Transport
- MG 8.4: Improving accessibility, inclusive mobility and equity
- MG 8.5: Shifting paradigms: Exploring the dynamics of individuals preferences, behaviours and lifestyles influencing travel and mobility choices

Topic MG 8.2: Big Data in Transport

Goal: The extended use of ICT in the transport sector, allow the collection of unprecedented volumes of data across all modes and transport systems.

Scope: —Identification of areas and contexts in which ICT investments and exploitation of data should be implemented.

—Identification of methodological issues and the development of necessary tools in order to allow for effective data mining and data exploitation.

—Analysis of the barriers and limitations of the transportation system to exploit big data opportunities.

—Examine the institutional and governmental issues and barriers concerning the application of big data in transport providing policy recommendations towards "data openness" and sharing.

Type of action: Research and innovation action

Opening date: 20 September 2016

Deadline: 26 January 2017 for the first stage > 19 October 2017 for the second stage

Topic MG 8.2: Challenges and impact

- Appropriate exploitation of big data can help policy makers at the EU, national and regional level, as well as relevant decision makers to take informed decisions.
- Better data can help transport authorities and industries to understand the behaviour of travellers and consumers, also in disaggregated groups (e.g. age and gender), provide targeted information and identify policy interventions.
- Contribute to an early identification of critical issues linked to privacy, data security, legal and institutional aspects. - facilitate the development of an appropriate legal framework for the collection and exploitation of big data in the area of transport

Topic MG 8.4: Improving accessibility, inclusive mobility and equity

Goal: To obtain a more comprehensive view which will allow the elaboration of measures and transport systems that will improve inclusive mobility, equity, and support social innovation in this area; Examine whether organisational, technological (including extended use of ICT) and social innovations in public transport can lead to improved accessibility, inclusive mobility and equity in prioritised areas, by responding better to their specific needs and demographic/socio-economic characteristics

Scope:

—Analysis of mobility characteristics

—Exploring travel behaviour and social habits of the population in a disaggregated way

—Addressing mobility needs of vulnerable to exclusion population groups such as: elderly, children, youth, disabled, people in poverty, migrants etc., as well as possible limitations to the use of new transport business models (e.g. IT illiteracy of elderly or low educated persons, pricing, different educational and cultural backgrounds, etc.).

—Critical assessment of existing innovative organisational and operational frameworks aimed at delivering new mobility solutions

Type of action: Research and innovation action

Opening date: 20 September 2016

Deadline: 26 January 2017 for the first stage > 19 October 2017 for the second stage

Topic MG 8.4: Challenges and impact

- The identification and critical assessment of sustainable and inclusive mobility options for European citizens and residents and improve accessibility offered by public transport systems.

- Development of effective, efficient and affordable mobility solutions which respond to the specific needs of particular population groups such as vulnerable to exclusion citizens, taking into consideration the gender aspect.

- Elaboration of new business models for public transport, with the deployment of organisational, technological (such as IT and app-oriented services) and social innovations taking into account possible social and demographic barriers for their effective use.

Topic MG 8.5: Shifting paradigms: Exploring the dynamics of individuals preferences, behaviors and lifestyles influencing travel and mobility choices

Goal: Radical changes are already present, as for example, the growing trend towards vehicle sharing practices in many European cities, while others may still be at their very early stages, as for example, changing values of travel time. Car sharing has been gradually developing over the past two decades while new business models and social innovation are likely to emerge in the forthcoming years fostered also by new IT applications (app-based services).

Identify the impact on car manufacturing industries have not been sufficiently explored.

Transport research is needed to explore at an early stage the dynamics of such changes and their impacts in socio-economic and environmental terms.

Scope: —Compare the existing trends and forecasts across the EU and identify the factors (economic/social/demographic/spatial/cultural aspects), that influence the varied implementation of such mobility schemes

—Compare and benchmark existing business models, social innovations and identify possible new ones.

—Assess the implications of car sharing schemes for the European car industry (impact on foreseen sales of conventional and electric cars, other revenues, etc.).

—Assess the potential impact on emissions, noise and congestion, especially in urban environments, as well as on safety of potential users.

Type of action: Research and innovation action

Opening date: 20 September 2016

Deadline: 26 January 2017 for the first stage > 19 October 2017 for the second stage

Topic MG 8.5: Challenges and impact

Expected impact:

- provision of comprehensive analyses of the dynamics of new preferences, behaviors and lifestyles,
- Identification of the main factors that influence them and to assess their potential economic, social and environmental (including climate) impact.
- In addition, it is expected to provide concrete assessments of their impacts on the European car industry (including electric vehicles) over the mid-/long-term.

Green Vehicles

- What is?
- Open topics

Green vehicles (what is)

“Focus on Road Transport"

European Green Vehicles Initiative (Public Private Initiative)

- advanced power-train technologies
- new vehicle architecture
- interfaces between the vehicle and the recharging infrastructure

Interfaces with other H2020 subjects as well as combination with cohesion and regional funds

Total budget (2017) of €133 million

.

Green Vehicles Objectives

- Improvements in energy efficiency of road transport vehicles and the use of new types of non-conventional energies in road transport such as electricity, CNG and LNG, renewable and tailored fuels.
- Positive impact on health issues due to polluting and noise emissions, particularly in urban environments.

Green Vehicles Open Topics

- GV-01-2017: Optimisation of heavy duty vehicles for alternative fuels use
- GV-04-2017: Next generation electric drivetrains for fully electric vehicles, focusing on high efficiency and low cost
- GV-05-2017: Electric vehicle user-centric design for optimised energy efficiency
- GV-06-2017: Physical integration of hybrid and electric vehicle batteries at pack level aiming at increased energy density and efficiency
- GV-07-2017: Multi-level modelling and testing of electric vehicles and their components
- GV-08-2017: Electrified urban commercial vehicles integration with fast charging infrastructure
- GV-09-2017: Aerodynamic and flexible trucks
- GV-10-2017: Demonstration (pilots) for integration of electrified L-category vehicles in the urban transport system
- GV-13-2017: Production of next generation battery cells in Europe for transport applications

Topic GV-01-2017: Optimisation of heavy duty vehicles for alternative fuels use

Goal: Reduce the use of diesel for *heavy duty vehicles* by optimising and developing *new powertrains* running on alternative fuels in order to achieve higher efficiency and fewer emissions that comply with European standards.

Scope: Demonstrate the use of *bio-methane mixed into LNG or biofuels ED95 and B30 f*or heavy duty vehicles and validate the created prototype.

Type of action: Innovation action

Opening date: 4 October 2016

Deadline: 1 February 2017

A contribution from the EU of between EUR 5 to 10 million

Topic GV-01-2017 : Challenges and impact

…**Optimise and develop new powertrains** (engine / exhaust after treatment systems) for heavy duty vehicles running on alternative fuels with the perspective of achieving higher efficiency and lower pollutant emissions compliant with Euro VI standards and meeting CO2 emission targets under discussion.

Evaluate energy efficiency, costs, performance, environmental benefits and durability of HDV running on alternative fuels.

Prototype validation of the new vehicles. A **small demonstration** should be carried out to assess the energy efficiency and the environmental and economic benefits of the trucks running in real conditions.

Recommendations for the development of relevant **standards**

Topic GV-04-2017: Next generation electric drivetrains for fully electric vehicles, focusing on high efficiency and low cost

Goal: Develop the next generation of electric *drivetrains* with *improved design for manufacturing, less weight and lower material costs*.

Scope: Address the system integration of electric machines, optimise the design and configuration of engines, as well as work on power electronics for volume manufacturing processes.

Type of action: Research and innovation action

Opening date: 4 October 2016

Deadline: 1 February 2017

A contribution from the EU of between EUR 5 to 10 million

Topic GV-04-2017 : Challenges and impact

next generation of electric drivetrains should be conceived to also take into account design for manufacturing, low weight and material cost

→ **reduced costs** through systems integration and optimised design and configuration of motors and power electronics for volume manufacturing processes.

—An incremental reduction in total motor and power electronics system costs through optimised design for manufacture.

—A **30% increase in specific torque and specific power of electric motors** with **a 50% increase in maximum operating speed** whilst halving motor losses.

—A **50% increase in the power density of motor power electronics**, a **50% reduction in losses** and the ability to operate with the same cooling liquids and temperatures used for the combustion engine in hybrid configurations.

Topic GV-05-2017: Electric vehicle user-centric design for optimised energy efficiency

Goal: *Increase the drive range* of electric vehicles in *all weather conditions* by reducing the energy used for various systems that are ensuring the well-being of the vehicle occupants.

Scope: Develop and test innovative solutions, including novel materials, to reduce the energy needs of such systems as heating, cooling, de-icing and other.

Type of action: Research and innovation action

Opening date: 4 October 2016

Deadline: 1 February 2017

A contribution from the EU of between EUR 7 to 10 million

Topic GV-05-2017 : Challenges and impact

….enable the **range of the vehicle** to be increased significantly without compromising safety, EV users requirements, all factors that directly affect the competitiveness of EVs with respect to conventional vehicles.

→ increase **25% the electric drive range** of EVs across a wide extent of ambient conditions.

Topic GV-06-2017: Physical integration of hybrid and electric vehicle batteries at pack level aiming at increased energy density and efficiency

Goal: Improve the *energy density battery packs* and cut their integration costs in order to achieve higher driving range of hybrid and electric vehicles.

Scope: Improve thermal, electrical and mechanical design of battery systems; provide design for manufacturing, recycling and second use; come up with prototyping and mass-production technologies for battery systems; as well as demonstrate the performance, lifetime and safety behaviour in real time conditions.

Type of action: Innovation action

Opening date: 4 October 2016

Deadline: 1 February 2017

A contribution from the EU of between EUR 5 to 7 million

Topic GV-06-2017 : Challenges and impact

energy density and efficiency of battery packs need to increase so that this results in higher electric ranges.

—**Energy density improvement** of battery packs in the order of 15-20%

—**Battery integration costs** (excluding cell cost) reduced by 20 to 30%

—**Strengthening the EU value chain**, from design and manufacturing to dismantling and recycling.

—Contributing to climate action and sustainable development objectives

Topic GV-07-2017: Multi-level modelling and testing of electric vehicles and their components

Goal: Help r*educe the development and testing efforts for electric drivetrains*, as well as improve their efficiency and safety with the help of *innovative testing methods and tools*.

Scope: Advance testing methods and tools, as well as *real-time models* for use in different development environments in order to ensure safety and improve efficiency of future electric vehicles.

Type of action: Research and innovation action

Opening date: 4 October 2016

Deadline: 1 February 2017

A contribution from the EU of between EUR 4 to 10 million

Topic GV-07-2017 : Challenges and impact

Detailed **modelling and testing** at component and sub-component level…

higher performance and lower cost…

—**Reduction of development and testing efforts** for e-drivetrains by 40%

—**Improved efficiency of e-drivetrains** under real driving conditions by 20%, which will contribute to climate action and sustainable development objectives.

—**Improved powertrain safety** for all types of electrified vehicles by a factor of 10 with no additional expenses in safety studies.

—**Increased collaboration between firms and academia** and other projects with similar research activities and further leverage the EV-development ecosystem in Europe

Topic GV-08-2017: Electrified urban commercial vehicles integration with fast charging infrastructure

Goal: Design integrated, energy-efficient and low-emission vehicles with improved powertrain and energy storage that are comfortable, affordable and safe for users.

Scope: Develop vehicle *drive train and energy storage concepts*, which can operate *in pure electric mode with high energy recovery capacity*.

Type of action: Innovation action

Opening date: 4 October 2016

Deadline: 1 February 2017

A contribution from the EU of between EUR 5 to 15 million

Topic GV-08-2017 : Challenges and impact

….different options of **rapid charging** at stops and terminus need to be assessed and compared with respect to cost and their impact on the power grid.

…different **types of transportation** and delivery typically in **urban and suburban areas** (including buses, vans, medium trucks, and specialist vehicles such as trucks for refuse collection)

interaction with interested **European cities**

cooperation with entities participating in projects funded by **Japan and US**

Topic GV-09-2017: Aerodynamic and flexible trucks

Goal: Develop adaptable and configurable *truck concepts* with improved *aerodynamics and energy efficiency* that at the same time can contribute to meet *future logistics and co-modality needs* for different segments and markets.

Scope: Define potential solutions for configurable trucks, develop new concepts and technologies for trucks with reduced drag, as well as provide recommendations for revising the *standardisation and current regulatory* framework.

Type of action: Innovation action

Opening date: 4 October 2016

Deadline: 1 February 2017

A contribution from the EU of between EUR 7 to 10 million

Topic GV-09-2017 : Challenges and impact

…. The energy efficiency of **logistics and co-modal transportation** needs to be significantly improved

…improving **aerodynamics and energy efficiency**, while contributing to meet future logistics and co-modality needs for different segments and markets.

Industry, authorities and policymakers should collaborate on **standardisation** issues….

Revisions of existing regulations are needed and could benefit from results of this action, e.g. the present work with **Directive 96/53/EC**…

…overall **efficiency gains** of at least 18-33%...

Topic GV-10-2017: Demonstration (pilots) for integration of electrified L-category vehicles in the urban transport system

Goal: Encourage the *market uptake of smaller and lighter electric L-category vehicles* for individual passenger and small freight transport across European cities in order to ease the congestion and reduce pollution.

Scope: Support *pilots to demonstrate* the *potential market penetration* of electric L-category vehicles in different European cities, including deployment of *ICT tools* for driver support and for integrating the vehicles in the *urban transport*, as well as ensuring *compatibility with other vehicles' charging stations and cheaper charging devices*.

Type of action: Innovation action

Opening date: 4 October 2016

Deadline: 1 February 2017

A contribution from the EU of between EUR 7 to 10 million

Topic GV-10-2017 : Challenges and impact

The consortium should have **at least two cities** as beneficiaries.

In order to maximise the impact in this topic, the **focus of investments** planned in these proposals should be **on the demonstration of the potential market penetration of EL-Vs in different European cities**, rather than purchasing the actual vehicles and their appropriate infrastructure.

This topic is particularly relevant for **SME** participation.

….deployment of **ICT tools** for driver support and services…

…. provide **data on real driving conditions useful to design policy measures** (i.e. optimal amount and distribution of public charging points, identification and possible areas accessible only to electrical L vehicles, interaction with other means of transport and vulnerable road users).

Topic GV-13-2017: Production of next generation battery cells in Europe for transport applications

Goal: Support the future development of the *next generation lithium or post-lithium battery cells* in Europe that could compete with present world leaders of the sector.

Scope: *Evaluate the most promising next generation lithium or post-lithium battery cells* that could reach the market in the very near future and *develop new production technologies* for the different manufacturing stages.

Type of action: Research and innovation action

Opening date: 4 October 2016

Deadline: 1 February 2017

A contribution from the EU of between EUR 3 to 5 million

Topic GV-13-2017 : Challenges and impact

Europe is strong in providing the raw electrochemical materials and the production equipment, however experience and knowledge on production at **mass scale** is missing.

This initiative is intended to **coordinate running national initiatives** and **prepare for stronger European research and innovation** activities to be launched in the coming years.

Second part

Second part:

- Presentation of specific projects as examples
- Interactive exercise: Adaptation of audience participants into the project described

Projects presented

MOBINET

OPTIMUM

SMART SCHOOL

SMART CM

LOGIMATIC

MOBINET
Europe-wide e-market place of mobility services for business and end users

Facts & Figures

Project type: Collaborative project (IP)

Programme: 7th EU Framework Programme for Research & Technological Development

Project coordinator: Rasmus Lindholm, ERTICO – ITS Europe

Duration: 46 months (1 November 2012 – 30 August 2016)

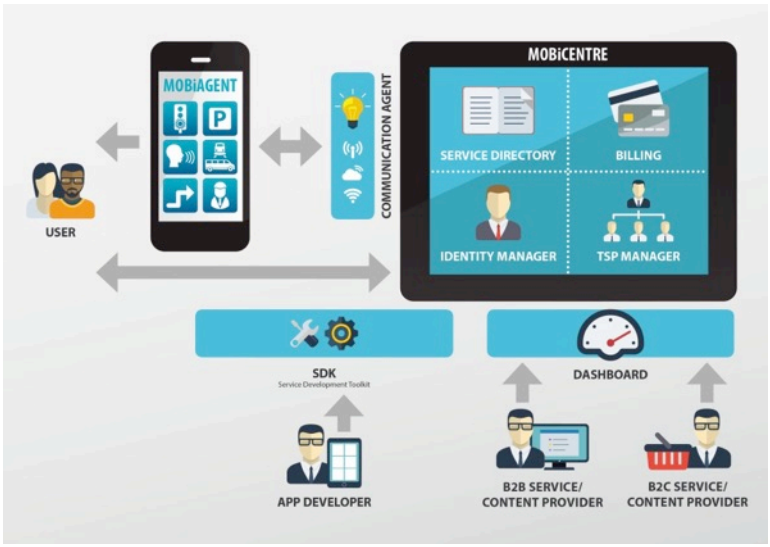
Total costs: €15.6 Million budget (€11 Million funding)

Project website: www.mobinet.eu

Consortium

Sector	Partner
Automotive industry	CRF Centro Ricerche Fiat; Volvo
Road operators & authorities	North Denmark Region; Statens vegvesen; Topos Cluster Aquitain Applications Satellitaires; Transport for London
Users	IRU Projects; RACC; Telematics Technologies Transport Traffic Turin
Research	DLR; tecnalia Corporación Tecnológica; TNO innovation for life; CTAG Centro Tecnológico de Automoción de Galicia; Aalborg University Denmark; KeyResearch; ICCS; SINTEF; VTT
IT suppliers & operators	CGI; NEC; NXP
Service providers	Imtech; GateHouse; Allianz; infoblu; PluService.net Integrated Information System for Mobility; swarco; Thales; xerox; infotrip; National Mobile Payment PLC.; Geoloc Systems Intelligent Transport
Telecom operator	Telecom Italia
ITS association	ERTICO ITS Europe; TÜBİTAK

MOBiNET: the Europe-wide e-market place of mobility services for businesses and end users



TURKEY in HORIZON 2020
COOPERATION, INNOVATION, COMPETITIVENESS

www.mobinet.eu

@MOBiNET_EU

Group MOBiNET "the internet of (Transport and) Mobility"

- A comprehensive Europe-wide directory of mobility and transport-related data and services
- An e-marketplace as an e-commerce network linking content providers, service providers and end users
- Traveller assistance tools for service roaming and virtual ticketing
- Third-party service composition to discover and add content and services to existing products
- An "App Directory" and smart Communication Manager for end-user devices
- A Service Development Kit to enable easy creation of new user services

Vision

Users want...

- one-stop shop for context-aware mobility services
- pan-European roaming & coverage
- integrated user account for transport services throughout Europe

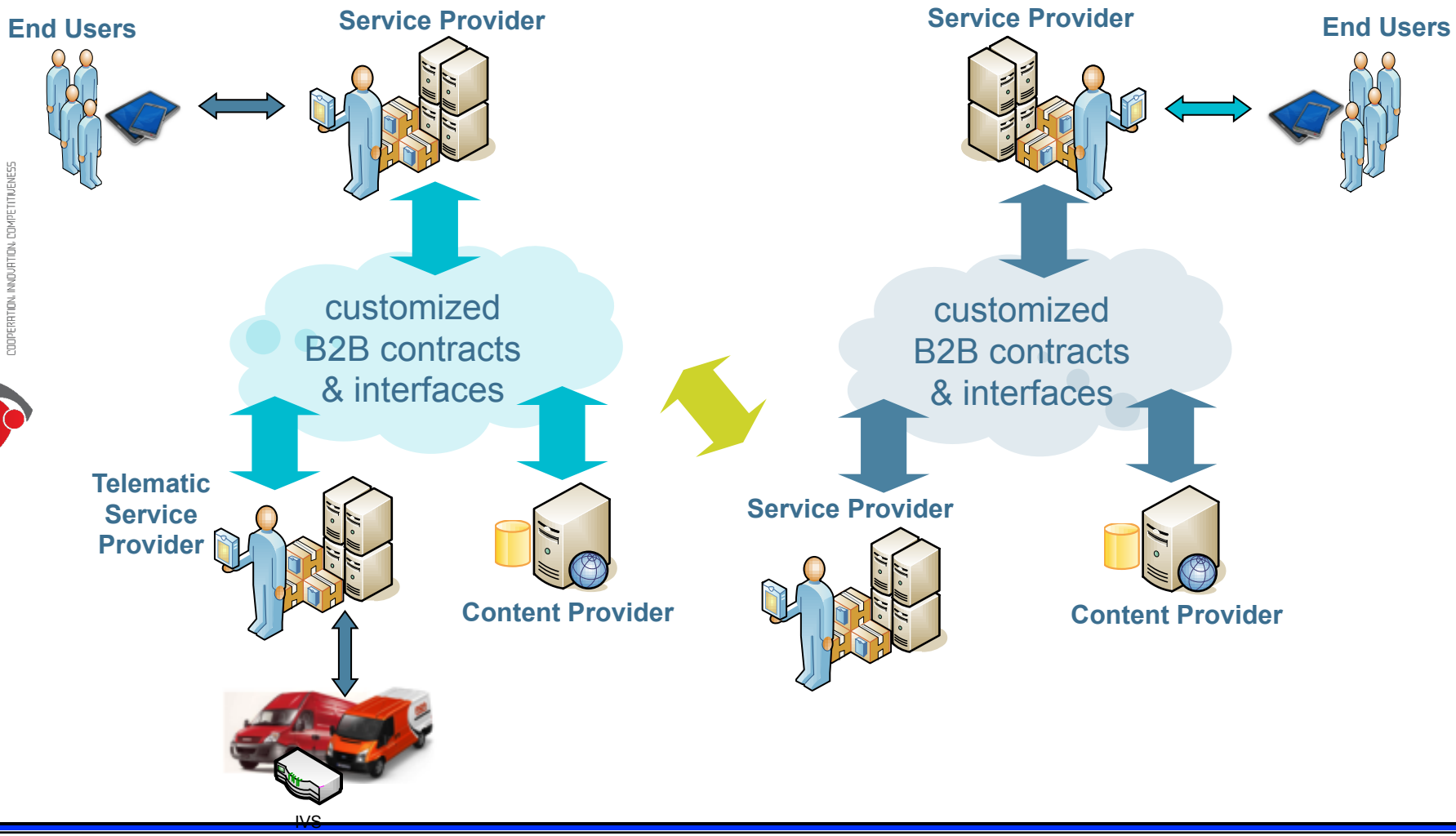
Road or transport operators want...

- publish traffic and travel information to all users
- attract new customers
- save costs

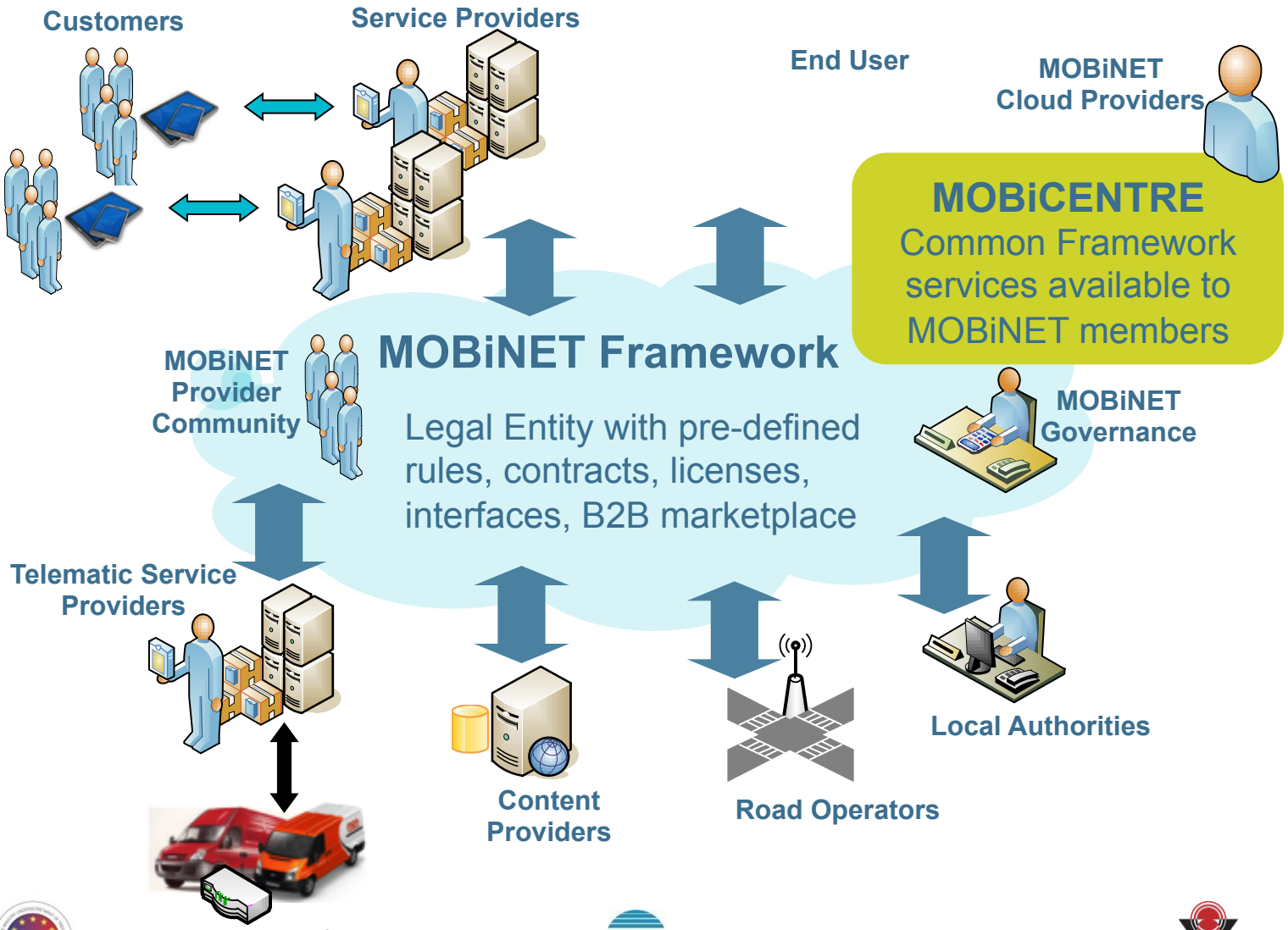
Service or data providers want...

- deliver services to any kind of compliant customer device
- directory of all mobility-related data and services
- service/data trading without one-to-one negotiation

Today's business ecosystem
One-to-one relationship



MOBiNET ecosystem



MOBiNET components

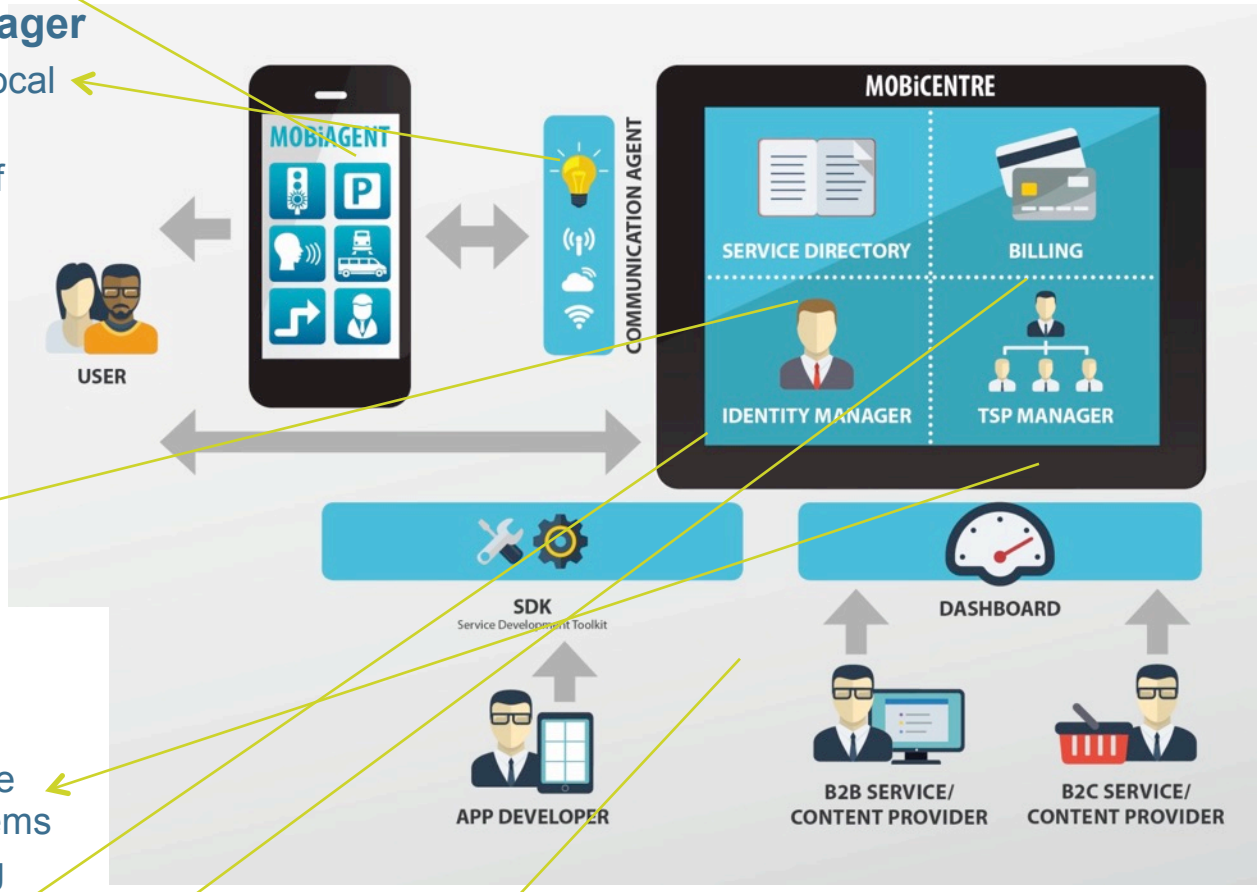
MOBiAGENT
- Interface for End Users
- Running on mobile devices
- Search MOBiNET-Apps

Communication Agent / Manager
- Connecting MOBiCENTRE to local service providers' backoffice
- Providing intelligent selection of communication interfaces

MOBiCENTRE
Service directory
- Store service descriptions
- Indexing for fast lookup and discovery of services
- Enable M2M service discovery

TSP Manager
- Collect telematics data from Telematic Service Providers
- Distribute data to e.g. insurance providers or traffic advice systems
- Enable common understanding of telematics data

Identity and Billing Manager
- Authentication
- Clearing



Dashboard
- Interface for Service Providers
- Discover Services
- Register and manage own Services

MOBiNET Potential Use Cases

Green Light Optimal Speed Advice

Use-based insurance

Multimodal travel assistant

Ad-hoc priority routeing

- Efficient traffic management – traffic light priority
- traffic priority for emergency vehicles

Demand-responsive transit

- Personal Rapid Transit
- Dial-A-ride

Non-stop truck

Floating vehicle data

Parking services

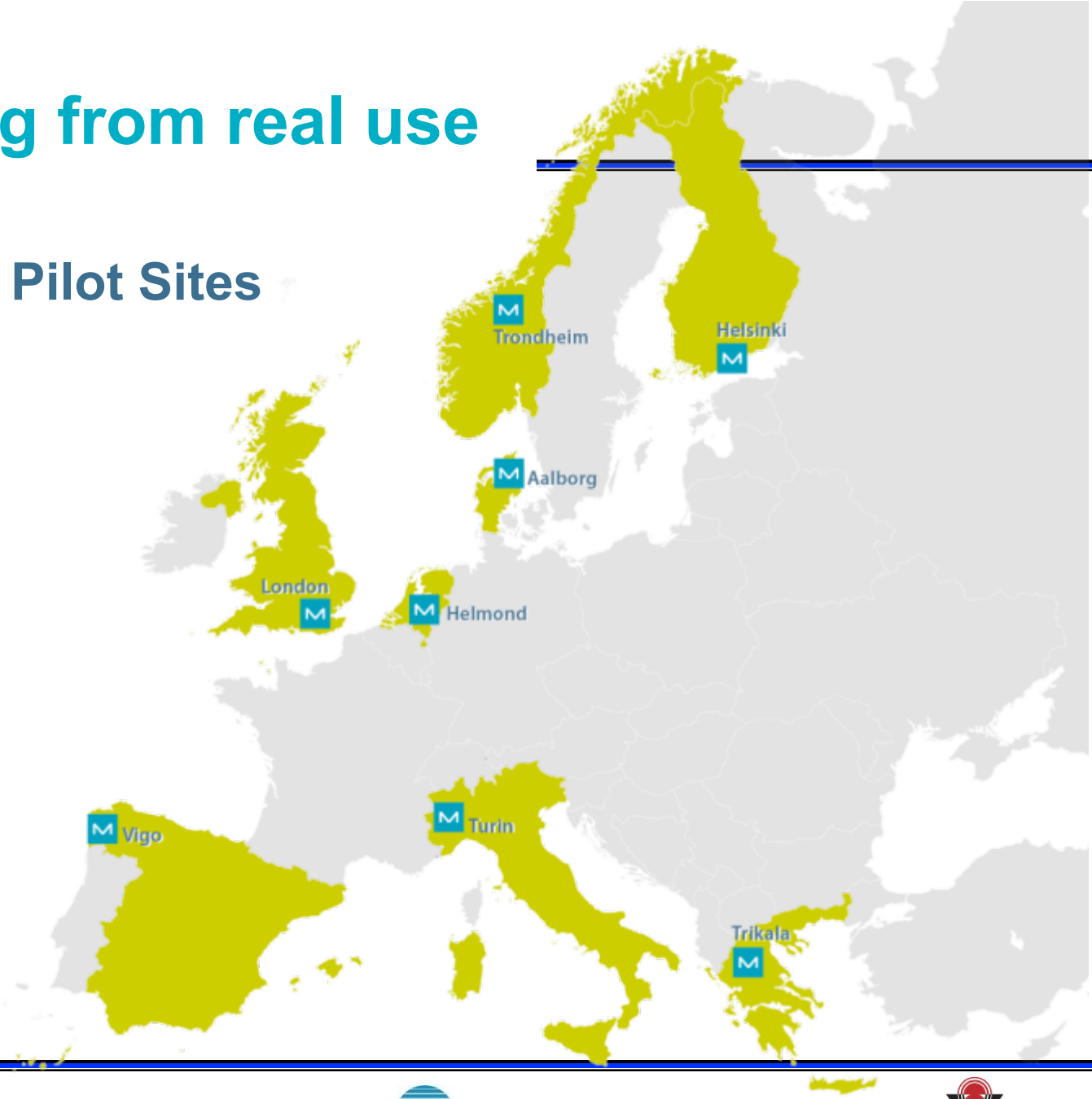
Real-time traffic information

Mobility and strategy advisor (B2B service)

Location-based social media (voice information) service

Learning from real use

MOBiNET Pilot Sites



Five key innovations

Federated **directory of all European online services** for transport and mobility;

Identity authentication and management scheme for single sign-on by any user for multiple services;

Unified accounting & billing framework, allowing roaming by users & payment clearing between providers;

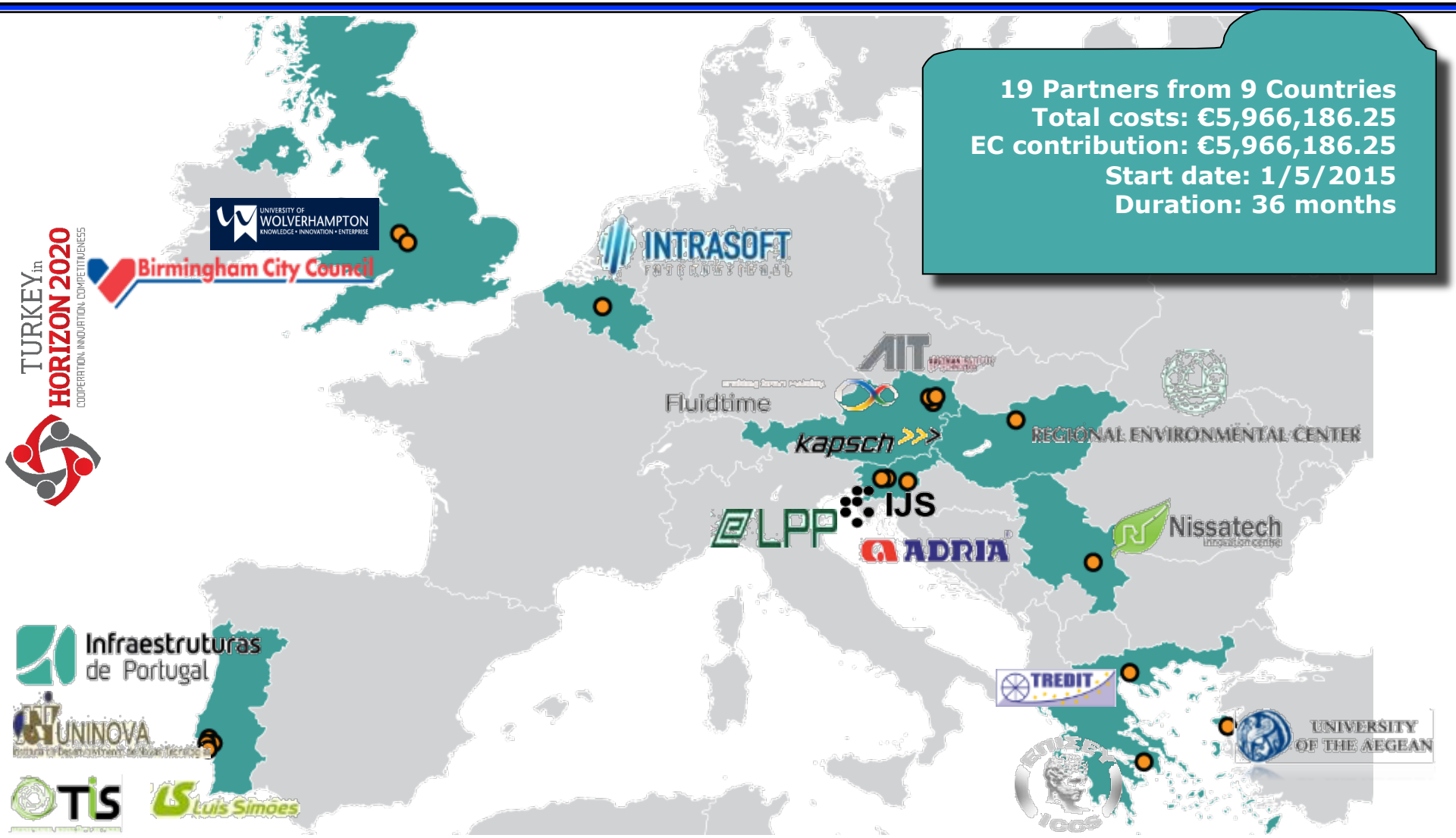
Secure **operating environment for in-vehicle and portable devices**, offering (for users) a dedicated app-directory and (for service providers) access to all subscribing users;

B2B community & marketplace for automatic negotiation of service agreements when adding extra service components and data sources to existing service offerings.

OPTIMUM Project

Multi-source Big Data Fusion Driven Proactivity for Intelligent Mobility

Project Consortium



CFCU

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TÜBİTAK

The OPTIMUM Project

… in a nutshell

OPTIMUM is working to unveil IT solutions, beyond the state-of-the-art, to improve transportation, transit, freight and traffic connectivity throughout Europe.

OPTIMUM aims to bring proactive and problem-free mobility to modern transport systems by introducing and promoting interoperability, adaptability and dynamicity through its tailor-made applications.

Project placement
Enabling Technologies

Transport and traffic **modelling and forecasting**

Travel **behaviour** analysis

Personalized traveller information for **multi-modal mobility**

System-aware **optimization**

Real-time big data processing, data management and fusion

Predictive analysis, **adaptive** charging and **incentive** schemes, **persuasive** technologies

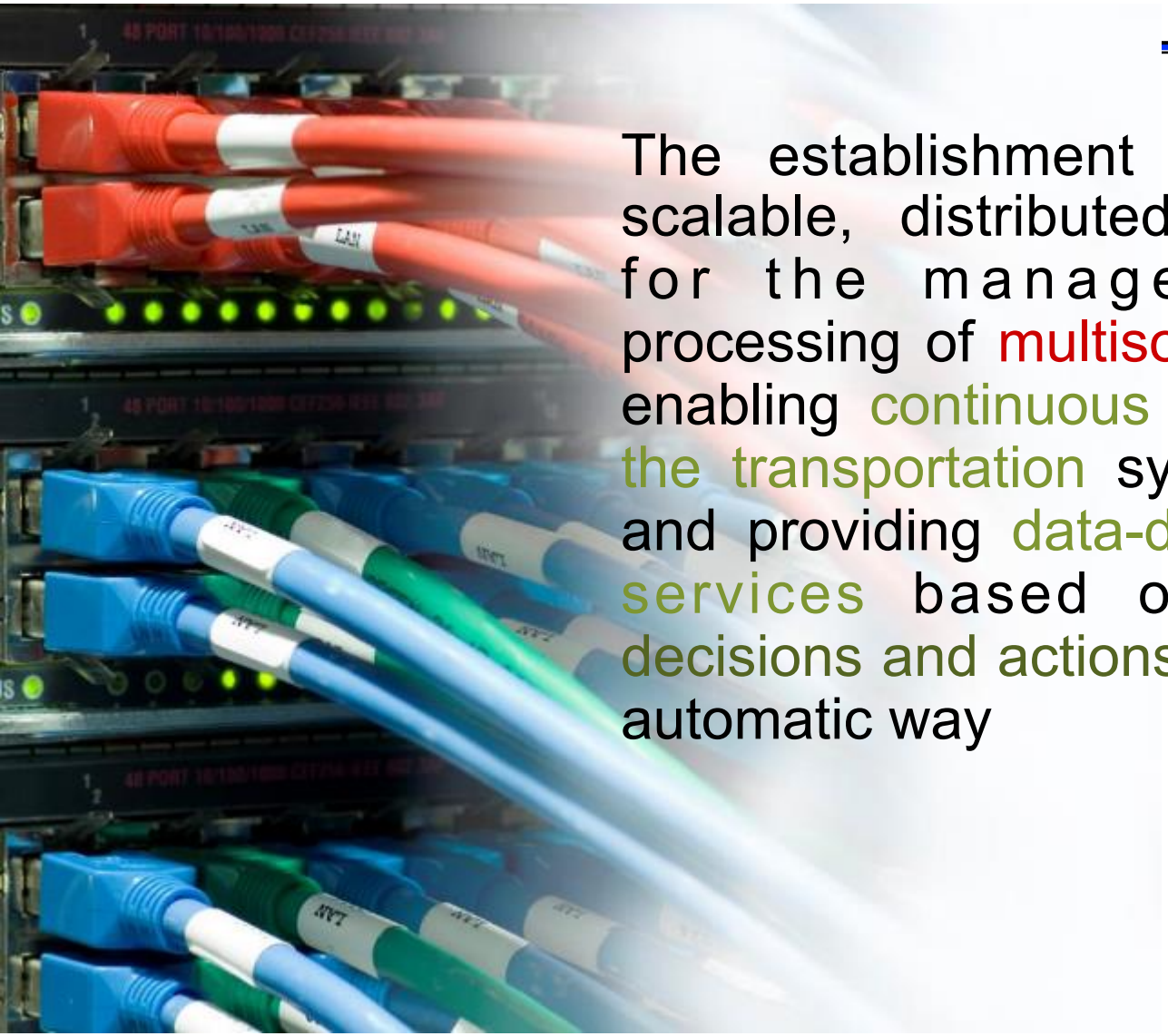
OPTIMUM Objectives

Deploy proposed solutions in real-life pilots of how to improve transport system quality and efficiency – such as Dynamic Toll Charging, Proactive Multi-Modality in complex urban transportation networks and Cross-border travels with smart Motor Homes; and.

OPTIMUM Objectives

Generate business models to commercialise results beyond selected end-user pilots, thus ensuring long-term project impact.

OPTIMUM Objectives



The establishment of a largely scalable, distributed architecture for the management and processing of multisource big-data enabling continuous monitoring of the transportation systems' needs and providing data-driven mobility services based on proactive decisions and actions in an (semi-) automatic way

OPTIMUM Approach: OODA

OPTIMUM Objectives (per OODA Layer)

(Observe): Comprehensive **observations** of the transport ecosystem, by designing and developing a **smart sensing system** (to manage huge amounts of heterogeneous data in real-time)

(Orient): **Enable** **semantic understanding** of acquired data and **predict** the status of transport networks (via a framework for dynamic, context-aware forecasting and detection (complex and predictive data analysis algorithms and event-detection)

(Decide): To realize **sustainable transportation behaviours** through system-aware optimisation mechanisms (adaptive charging and crediting models, multimodal routing and navigation algorithms)

(Act): Support **proactive decisions and sustainable transportation behaviours** (proactive information provisioning, personalization, persuasive mechanisms)

Dynamic Charging Services

Portugal

Pilot 1 – Proactive Charging Schemes for freight transport

Aim: OPTIMUM will develop dynamic charging models for road use by **freight vehicles** based on real-time conditions of the transport network and test the solution on a fleet of **10 Luís Simões freight trucks** in **Portugal**.

Rationale: OPTIMUM's **dynamic charging model** will combine **historical** and **real-time data** collected and produce a model that will incorporate a multitude of variables.

The model will be integrated in the OPTIMUM platform and provide, in due time, actionable information to the end user (highway authority and logistics operator) in order to enable a **suitable operational planning**.

Pilot 2 – Proactive improvement of transport systems quality and efficiency

Multimodal trip advisor for urban mobility

Vienna, West Midlands, Ljubljana

Aim: OPTIMUM will implement a smart multi-modal transit concept, involving up to 500 users in the greater regions of **Vienna (AUT), Birmingham (UK) and Ljubljana (SI).**

Rationale: The integration of various real-time traffic data sources will provide the required information to realize traffic-state aware routing and guiding the travelers towards their destination.

Members of the traffic receive proactive recommendations for personalized trip and re-routing based on their personal plans, traffic information and historical data, while city authorities will be able to dynamically plan and response to the predicted traffic.

Pilot 3 – Integrated Car2X communica

Long distance and cross border trips assistant

Slovenia

Aim: OPTIMUM will develop and test intelligent assistance for dealing with complexities of multi-sensor environments and CAR2X communication for long distance trips on a fleet of at least 18 motorhomes with full sensor setups.

Rationale: Users of cognitive campers will be offered personalized services affecting their travel, gather data about traffic which allows deep analytics that will enable the operator to develop new strategies and incentive models.

Smart Motorhomes can autonomously react to problems, adapt to the users' preferences and provide resource efficiency, safety, comfort and navigation to innovate the concept of travelling with freedom and satisfaction.

TÜBİTAK




Impact

Improvement of the travel efficiency for public transport (e.g. reduction of waiting times, avoidance of congested areas, etc.)

Increase of economic benefits for travellers when they offer information that can be utilised by other service providers through the platform

Shift from urban/national roads to highways

Improvement in the efficiency of operations (travel time, capacity utilisation, etc.)

Cross-border trips to be performed with minimum delays

Reduction of disruptions on traffic due to vehicle breakdowns

Increase in effectiveness and safely of tourist travelling affecting more pleasant travelling, secure and safety

Reduction of the time to market for the new strategies that will result from the operation of the OPTIMUM platform

Increase in testing new traffic strategies based on the information and models that will be developed using deep analytics.

Better utilisation of public transport services by the use of persuasive strategies that will favour collective modes of transport

Impact on sustainability

- OPTIMUM promotes shift towards sustainable modes of transport, walking, cycling, rideshare, public transit and telework
- OPTIMUM promotes improvement of the well-being of travellers with high environmental awareness

OPTIMUM will tackle the unsustainability of the current transportation system by the introduction of adaptive charging schemes and multi-modal routing algorithms that favour sustainable transport and collective mobility.

OPTIMUM will develop novel applications that will support both dynamic charging and crediting of individuals using and freight vehicles having as a goal to promote the use of public transport modes and the sustainability of the overall transportation system

Follow the CIVITAS Initiative developments that helps cities to achieve a more sustainable, clean and energy efficient urban transport system by implementing and evaluating an ambitious, integrated set of technology and policy based measures.

Addressing Political Requests

General Facts about Mobility	What OPTIMUM offers
1. The existing transport system is not sustainable.	1. Promotion of sustainable and collective mobility.
2. New transport patterns must emerge.	2. Capitalise on the intelligence that can be derived from the abundance of transport and social media data.
3. Better modal choices will result from greater integration of the modal networks	3. Proactive decision support for optimisation of urban transport.
4. There is a need to move towards full application of 'user pays' and 'polluter pays' principles.	4. Minimise the imbalance in the existing cost vs. use paradigm.
5. Urban transport is responsible for about a quarter of CO2 emissions from transport, and 69% of road accidents occur in cities.	5. Quantification of the benefits of the developed platform.
6. Freight shipments over short and medium distances (below some 300 km) will to a considerable extent remain on trucks.	6. Ensure the adoption of the proposed platform.

optimum

Contribution to Standards

OPTIMUM foresees to observe **CEN/TC 278** developments and collaborate with its Working Groups (WGs) as follows:

- Dynamic charging for freight transport and dynamic charging and crediting for commuters will contribute to CEN/TC 278 "**WG 1** Electronic Fee Collection, **WG 2** Freight and Fleet Management Systems"
- Traveller behaviour prediction, Multi-modal trip planning, Personalised travel advisor will contribute to "**WG 3** Public Transport";
- Traffic forecasting, Multimodal routing and navigation will contribute to "**WG 8** Road Traffic Data";
- Proactive context aware recommendations, Persuasive strategies will contribute to **WG 10** Human-Machine Interfacing.

Further contribution to standardization efforts in the ITS area include:

- The **GML Schema** (http://www.opengeospatial.org/standards/gml)
- the **DATEX-II** (http://www.datex2.eu/) for real-time traffic information
- Standards related to **public transport information systems** (Transmodel, NaPTAN, NPTDR, Google Transit Feed Specification)
- Standards related to **Multi-Modal Journey Planners** (JourneyWeb, http://www.dft.gov.uk/journeyweb/)
- **Multimodal framework architectures** for the transport sector (http://www.arktrans.no/)

SMART Container Chain **M**anagement

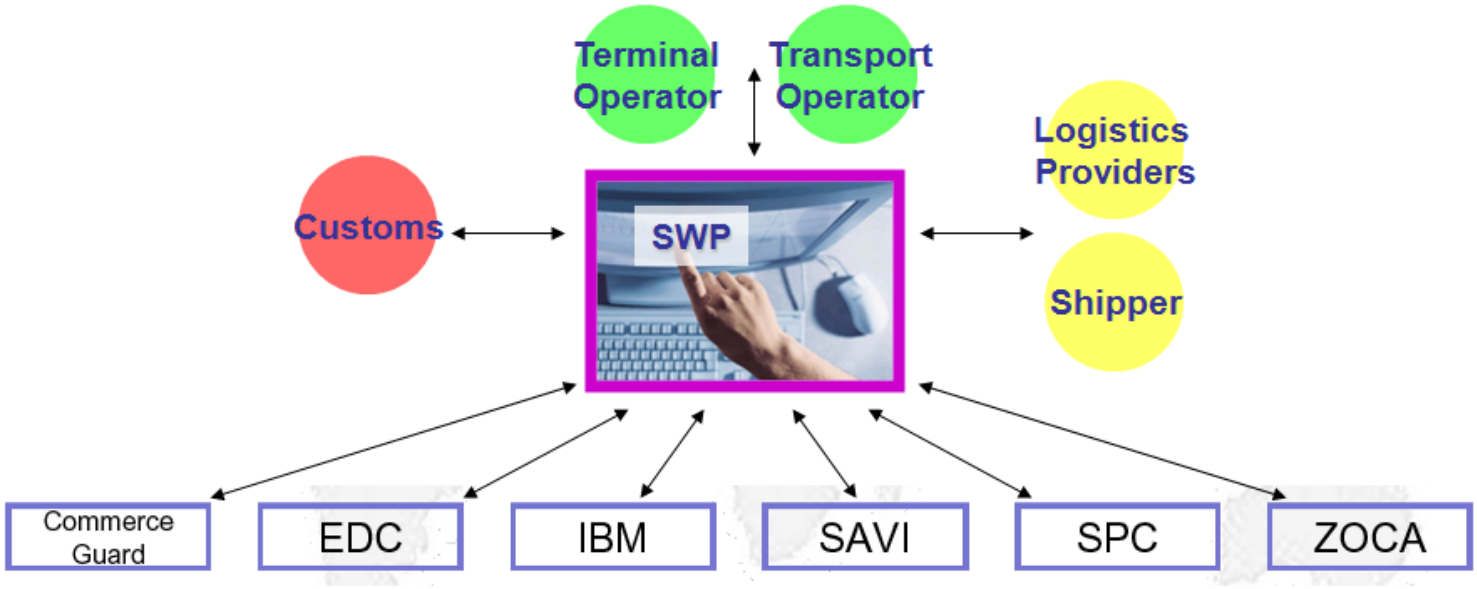
The SMART-CM Project

Advance technology implementation for making global container door-to-door transport chains more efficient, secure and competitive – SMART-CM Single Access Point approach.

Development of the “SMART-CM platform” able to support secured and non biased critical information exchange among logistics actors (B2B) and between logistics actors and the Customs (B2C) for achieving quick containers clearance and better chain visibility and control.

Project goals (1/6)

- **Interoperable single access point solution development**



Container Security Technology (CST): active RFID / satellite comms / multi-sensoric units

Project goals (2/6)

- **Advancing Neutral Information administrating Organization concept**

Neutral interoperability	• No bias towards specific CSD technology providers • No bias towards customs or businesses
Neutral implementation	• testing data integrity along the whole process of security related container info gathering
Neutral information administering organization	• Managing the platform and provisioning information from the neutral layer to the stakeholders

Project goals (3/6)

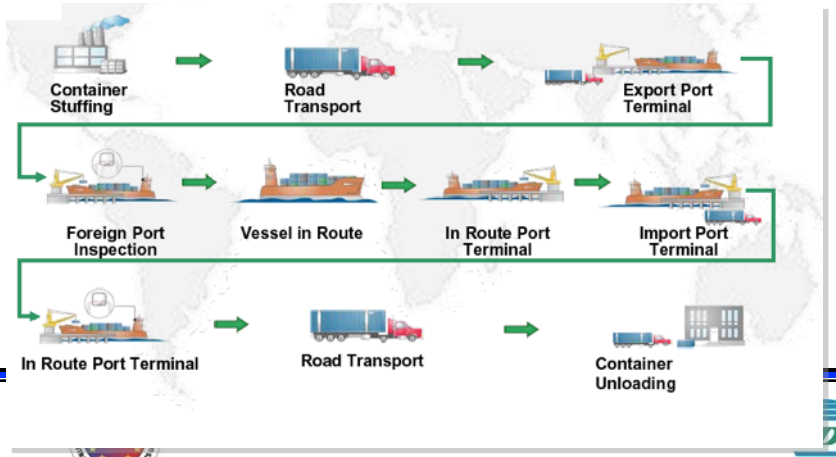
- **Develop services & support agreements for Green Lane concept implementation**

WHY

For logistics regions: Differentiation by logistics and technological innovation

For industry: Lead time reduction, visibility, efficiency, reliability

For government: Security, implementation of control measures



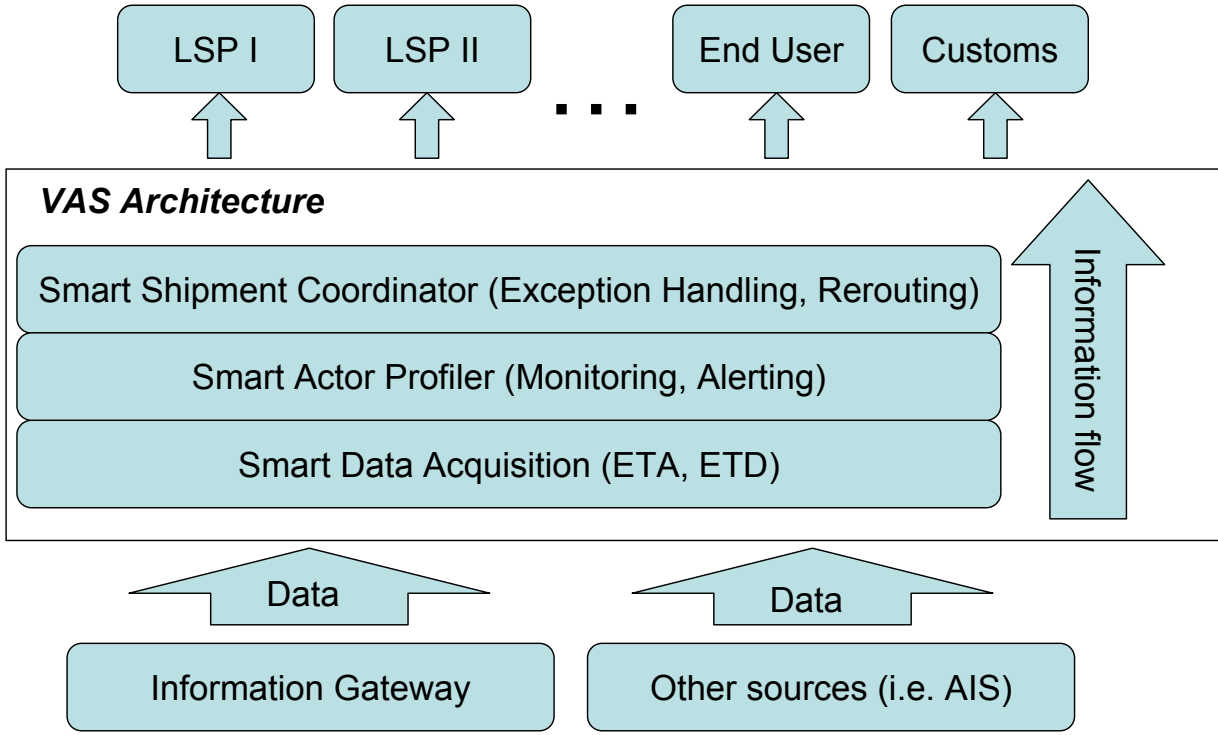
HOW

- Authorized Economic Operators
- Container stuffed, closed and secured with CSD's (container security devices) against unauthorized access en route
- Data transfer of cargo information for advance risk based assessment of inbound containers
- Accelerated customs clearance (green lane) of 'safe' containers on arrival
- Door-to-door monitoring and exception reporting on cargo flow and logistics activities

Project goals (4/6)

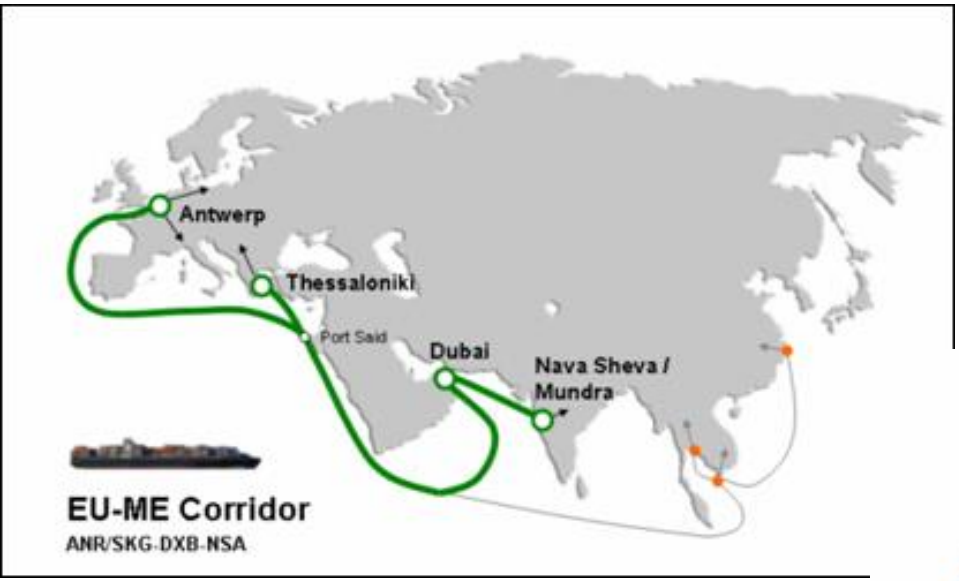
- **Develop Services that create added value for the logistics industry**

- Combine different sources of information regarding container position and status (e.g. CSD information, AIS, logistics stakeholders' input regarding loading/unloading etc.)
- Provides updates on transport chain progress (e.g. ETA updates)
- Exception handling mechanism to also notify on deviations (e.g. time/ location/status thresholds deviations)



Project goals (5/6)

- **Real world demonstration of project solutions**

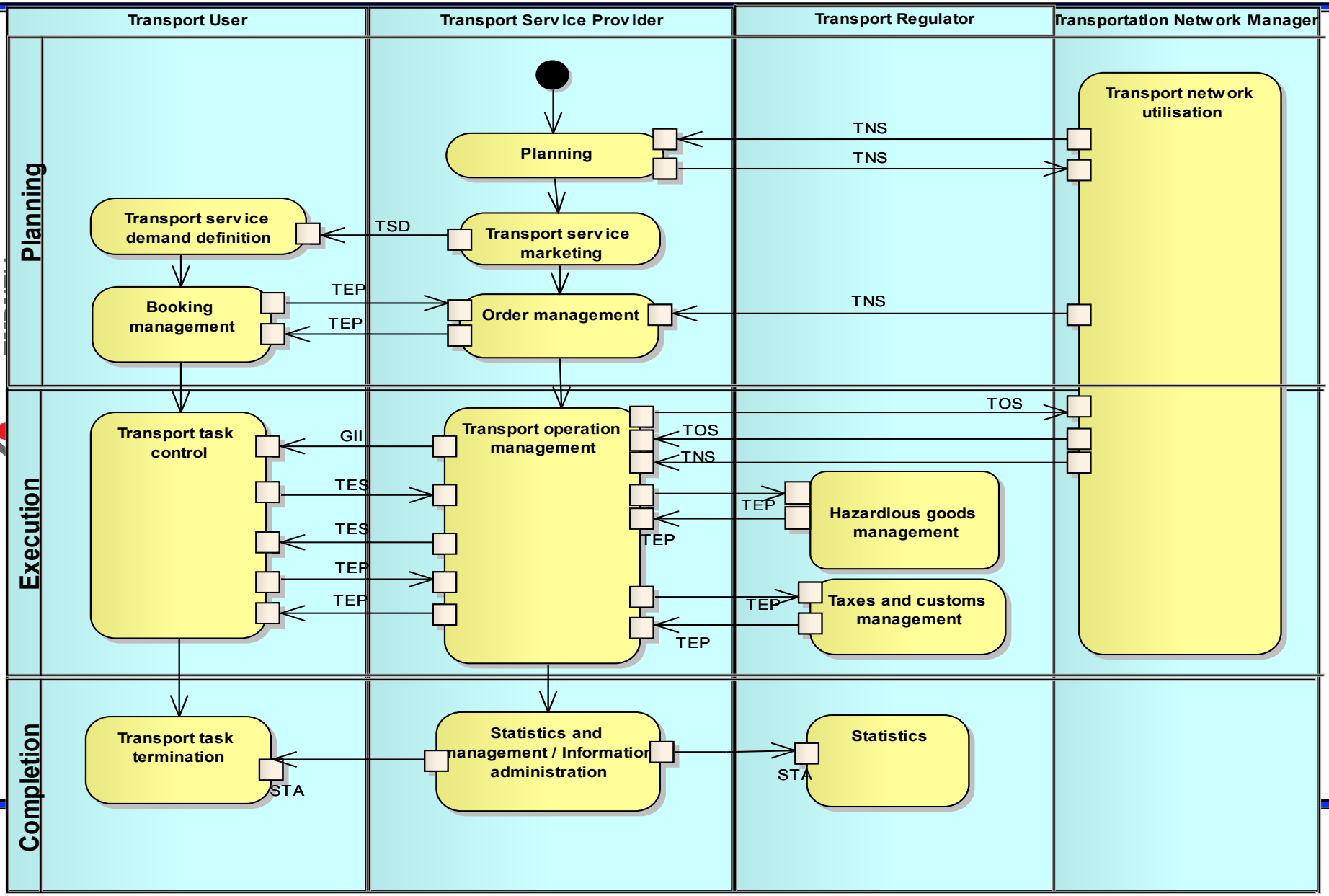


- 2 Large scale demonstrators
- 150 Equipped Containers
- 30 Months of Demonstration

- 6 Terminal/Port operators
- 4 Logistics/Transport Service Providers
- 6 Customs Authorities

TÜBİTAK

Project goals (6/6)



Project major achievements

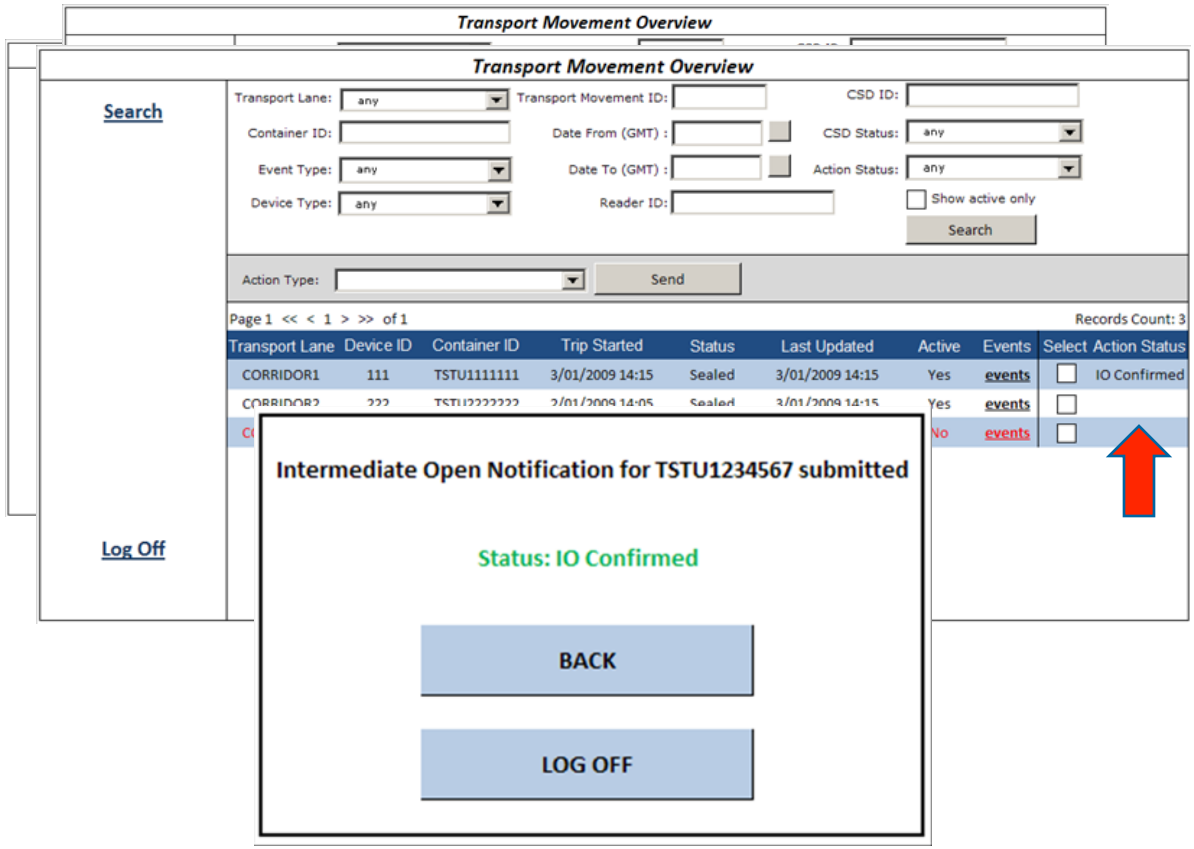
1.Common understanding & trusted environment build among actors

- **Agreement on common and sector specific requirements** for the platform core functionality & information administration process.
- Big actors achieved **minimum consensus on information sharing** and cooperation during project solutions implementation.
- The CSD technology providers and the platform solution providers **agreed on platform design specifications & CSD technology enhancement** for efficiently addressing the business and the customs requirements.

2.Neutral platform operation

- **Service provided to customs :**

- Container security status provisioning
- Container “breach” alerts generation (messages pushed by the platform and available also for industry)
- Authorised opening of container
- STL, Container & Consignment IDs relation



3.Chain visibility & Value Added Services developed & validated (1/3)

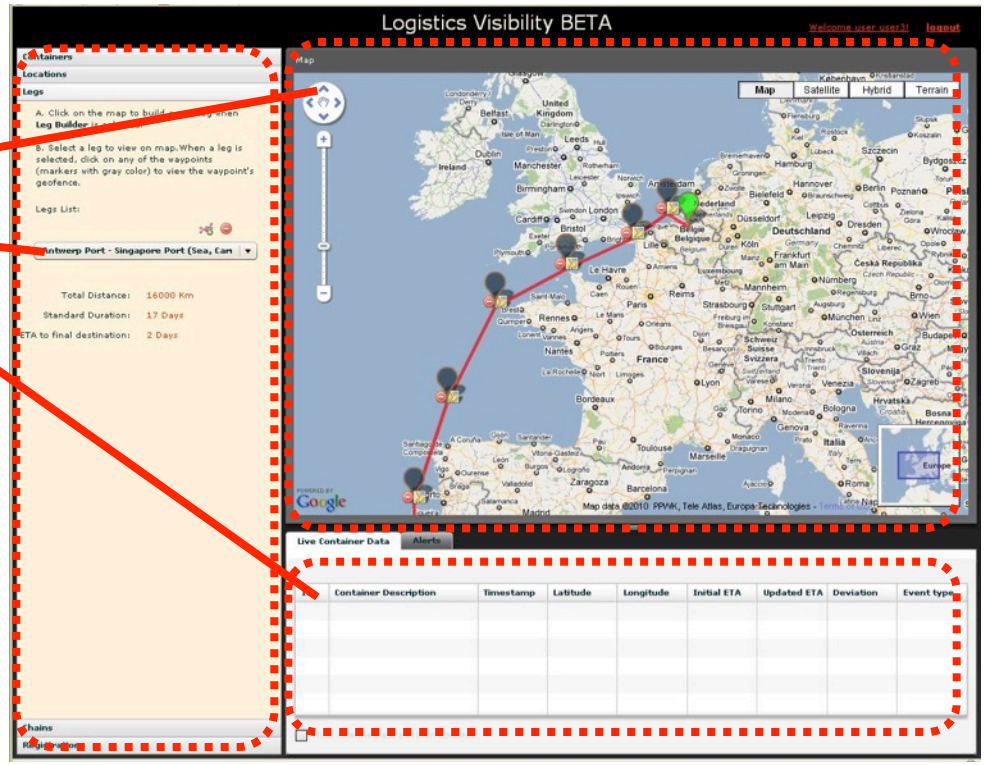
VAS service platform technically consolidated

- VAS layer gets input from the Information Gateway (Neutral Platform) and processes the data to derive extended information.
- Visibility of the VAS is accomplished through a web-based Logistics Visibility Component.
- VAS Layer can exploit data from various sources and in various formats (Container Security Devices, AIS, port authorities & terminals container handling data).

GIS data display

Controls

Container history



3.Chain visibility & Value Added Services developed & validated (2/3)

- **Services provided to industry**
  - **Container ETA update** taking into account history of previous containers of the same consignor and real time CSD data
  - **Container prior-to-arrival notification** at intermediate and final destinations in line with actor customized thresholds
  - **Container delay alert generation** along the whole route taking into account initial plan & updated ETA
  - **Container idle time alert at terminals** taking into account thresholds that can be specified by the actors
  - **Container geo-fencing alerts** on regions specified by the user either at terminals or at intermediate way points
  - E-mail notification alert handling for all VAS taking into account user profiling.

3.Chain visibility & Value Added Services developed & validated (3/3)

- **Services validated**

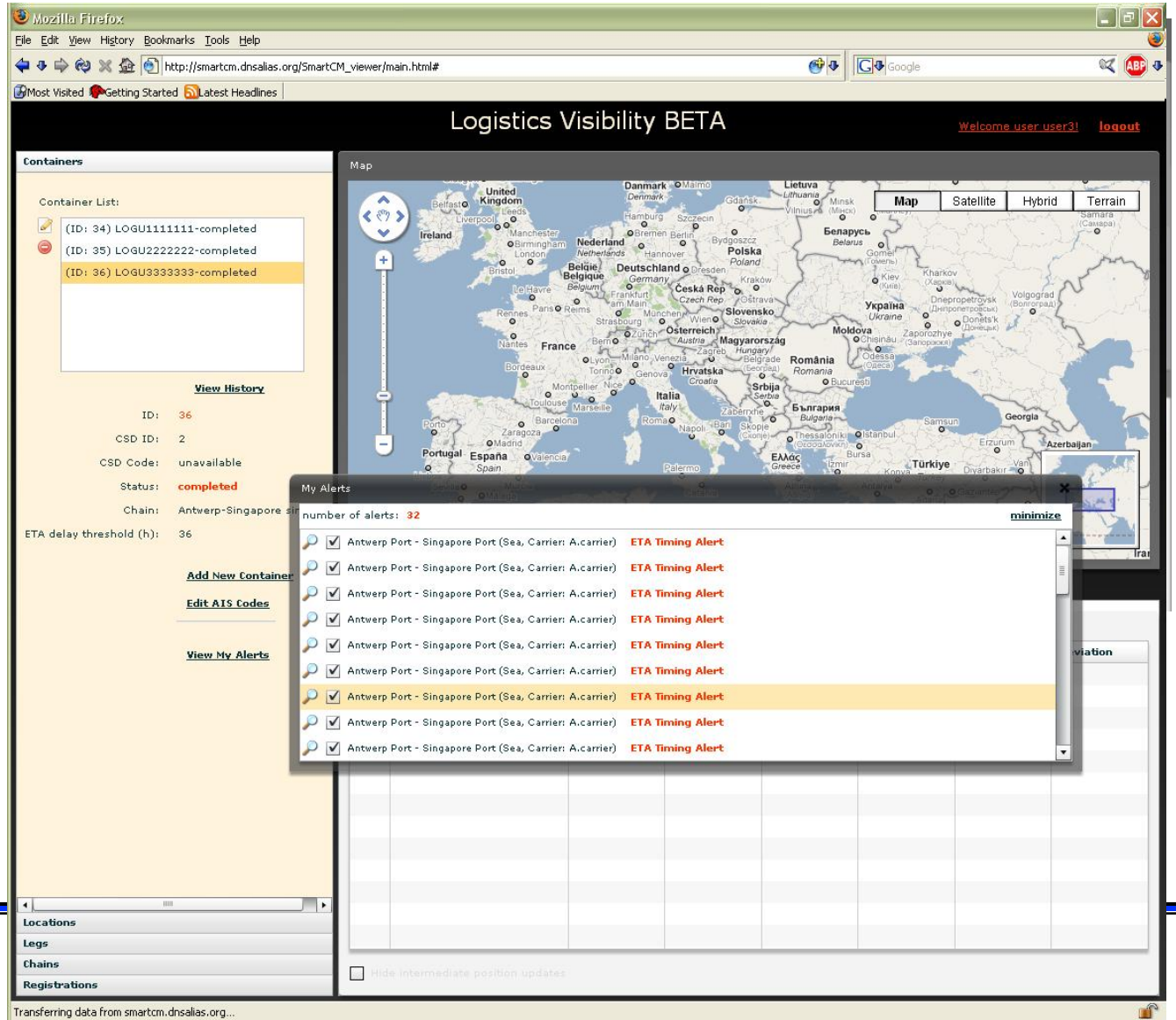
Add new Container

Add new Chain

Waypoint

Port Geofence

Alert Management



4.CSD Technology enhancement

- CSD technology & platforms functionality, sensors, and communication infrastructure was enhanced
- New generation devices are expected to be tested during the last phase of the project.
- **"List of Key performance indicators of CSDs for security"** ie minimum requirements the CSD technology providers should fulfil in order to meet the customs and industry actors expectations for container security, was concluded

Nr.	Evaluation Level Category	SMART-CM Component	Evaluation Parameter Category	Short description	Reference ID	KPI	Description
1	Technical	Device	Reliability	Platform Operating Time	DR1	% of time CSD is working	Time of CSD device working (hours)/time of demonstrator period (hours)
2	Technical	Device	Reliability	Platform Operating Time	DR2	number of broken/damaged CSD	Total number of provided CSDs for demonstrator damaged during any phase of the demonstrator (mounting, on-vessel, etc)
3	Technical	Device	Reliability	Platform Operating Time	DR3	% of empty battery CSD	Total number of provided CSDs for demonstrator (number)/Total number of CSDs battery failed during any phase of the demonstrator (number)

5.Support of Green Lane concept implementation for STL

- The **in depth analysis of the processes** involved to the project technology implementation, highlighted the **need for process standardisation** among customs (i.e. authorized opening of containers).
- **SMART-CM proposal for standardised process and technological supporting solution** is now available with testing results for being further discussed among customs during the next phase of the project.
- The demonstration activities created the basis for **direct interface between EU & non EU customs** (China, Thailand, India, Dubai) involved in the corridors & enabled the detailed discussions on the concept implementation.
- A **minimum list of points for agreement among customs** was developed that will constitute the basis for the involvement of the non EU customs in the project demonstration & evaluation activities in the next project phase.

6.Platform neutrality & interoperability concepts was advanced

- The **Neutral Organization mission and business model** was defined
  - Not influencing competition
  - No exclusion of members
  - No commercial interests or objectives
  - Independent of technology
  - Not infringing on ownership of data
- Joint INTEGRITY & SMART_CM **Platforms Interoperability Schema for common demonstrator**
- **SDMF XML specification format** proposed by the project as **potential standardized data format for message exchange** for fulfilling basic requirement for communicating CSD derived information.

Considerations (1/2)

- Benefits are identified but difficult to quantify.

- Limits are recognised for the implementation of a quantitative cost/benefit analysis for assessing the impact of the project results in the context of the project life cycle .

Considerations (2/2)

- Acceptance of project solutions depends on :
  - The efficient fulfilment of actors' requirements and
  - The fair sharing of the cost generated by the solutions implementation and operation.
  - The fair sharing of the cost is difficult to be identified and not reached yet. The currently available answers refer to "the cargo owners" & "the actors who benefit from bottleneck's alleviation".
    - **Ideas/approaches for answering the main question "who should pay for technology implementation for increased security and chain efficiency?"**
    - **Key business models parameters, which could facilitate projects solutions acceptance and implementation?**

LOGIMATIC

Tight integration of EGNSS and on-board sensors for port vehicle automation

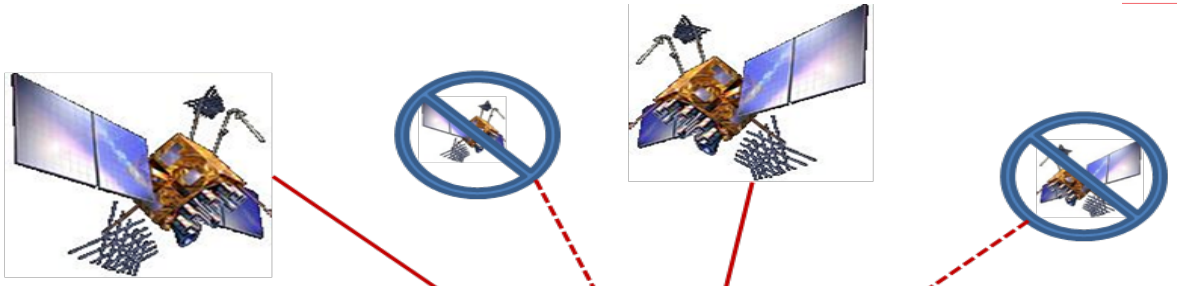
R&D Relevant topis

- **Positioning and Navigation**: the vehicles should be able to provide precise relative positioning and navigate from A to B.
- **Perception**: the vehicles should be able to detect objects (vehicles and staff) and react accordingly (reduce speed, stop, avoid, etc.)
- **Routing and Traffic management**: the fleet management system should be able to provide an task-efficient individual routing and an optimized overall traffic management
- **Modelling and simulation**: appropriate models and simulation tools should be used to validate the proposed solutions before pilot tests.
- **Regulation, Standardization and Certification**: applicable standards and certifications should be taking into account with special emphasis on the safety of the harbour workforce.

TURKEY in HORIZON 2020
COOPERATION, INNOVATION, COMPETITIVENESS

TURKEY IN HORIZON 2020
ALTUN/HORIZ/TR2012/0740.14-2/SER/005

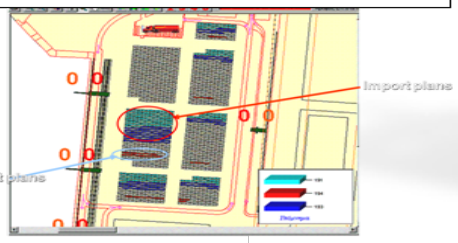
This project is co-financed by the European Union and the Republic of Turkey

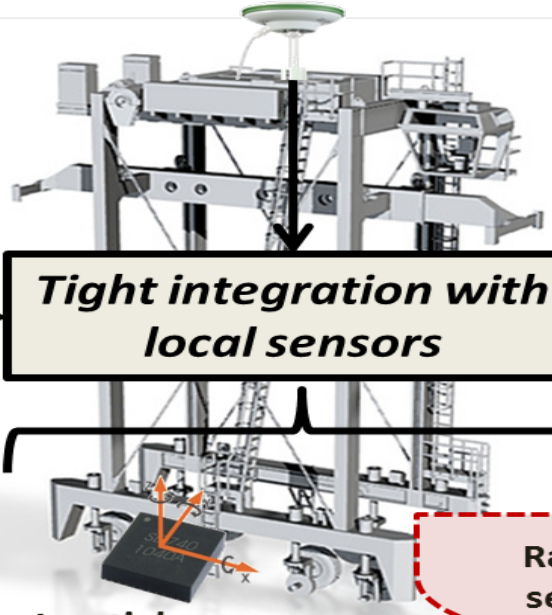


Use of available satellite ranges

Resource allocation through existing TOS

Monitoring and global path planning





Tight integration with local sensors

Inertial sensors

Ranging sensors

Autonomous operations

Third part

Third part:

- Call analysis workshop
- Introduction by the audience of specific ideas, concepts and/or needs
- Topic fit-in Analysis

Fourth part

Fourth part:

- Final discussion - Q&A