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THE ISSUE ROADMAP TO IMPLEMENTING INNOVATIVE TRANSPORT SOLUTIONS THAT IMPROVE THE ECONOMIC, ENVIRONMENTAL & SOCIAL HEALTH OF CITIES & REGIONS

INTRODUCTION

THE ISSUE is exploiting new technologies, particularly in the fields of Information and Communication Technologies and Downstream Space Data Products and Services, to deliver major advances towards the operational implementation and market growth of innovations in intelligent traffic management and urban mobility, to address key challenges arising from the impact of transport on the ***economic***, ***environmental*** and ***social health*** of cities and regions across Europe.

THE ISSUE has established a network of European regional research-driven clusters. Each cluster comprises of a ***triple-helix*** of actors from industry (particularly SMEs), research institutions and local and regional government. This triple-helix approach is enabling regions to more closely align their economic development and transport strategies with research policies and strategies. This is strengthening their capacity for investing in and conducting research and technological development (RTD) activities that contribute significantly to economic development, business growth and the creation of more and better jobs.

To ensure the long term economic sustainability of *THE ISSUE* Network, a new legal association, ***THE ISSUE Meta-Cluster*** has been created. This gathers together 9 European regional clusters including more than 244 industry actors, 39 research centres and 15 local authorities that have competencies in the fields of traffic, health and environment. A key priority is to continue expanding this cluster concept into new European regions.

THE ISSUE ROADMAP

THE ISSUE has published a ***Roadmap*** to implementing innovative transport solutions that improve the economic, environmental and social health of cities and regions. It sets out a process to exploit emerging research and technologies to deliver new economy-driving, environmentally sensitive, traffic and transport solutions that match the vision and interest of markets and transport, urban mobility & environmental impact policy makers.

The cornerstone of *THE ISSUE's* ***Roadmap*** is its ***Programme of Priority RTD Solutions (2015-2020***). This addresses 6 sustainable transport and urban mobility challenges facing cities and regions. Through innovation and exploitation of RTD competencies in *THE ISSUE* Network, implementing this Programme will strengthen Trans-European transport networks, foster cross-transport intermodality, encourage seamless travel, reduce greenhouse gas emissions from the transport sector and exploit space based applications from Galileo and Copernicus in areas such as traffic congestion and transport-related health and environmental impacts. It will also offer Horizon 2020, Structural Fund and Urban Europe programme planners a clear evidence base for work programme priorities in future funding calls.

Many of the RTD competencies within *THE ISSUE* Network are at high levels of technical readiness, but barriers exist preventing market uptake. *THE ISSUE's* ***Programme of Priority RTD Solutions*** will address these barriers through pilot studies, demonstration programmes and pre-operational roll-out.

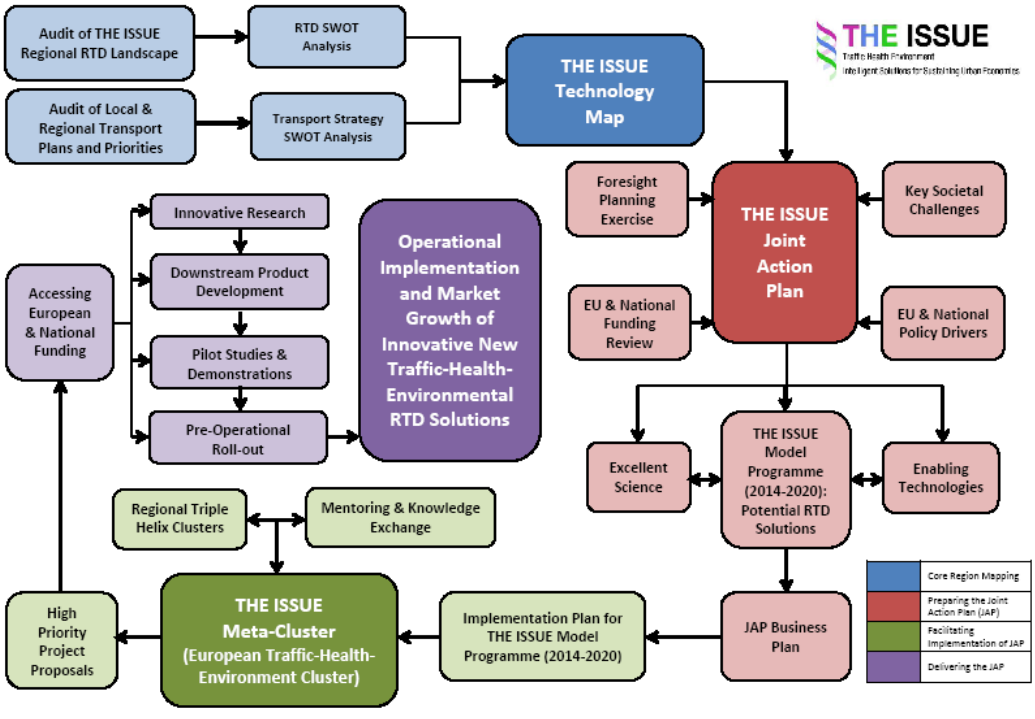

Figure 1. *THE ISSUE* Roadmap for Innovative Transport Solutions to Improve the Economic, Environmental and Social Health of Cities and Regions in Europe

THE ISSUE: Priority RTD Solutions to Address the Impact of Transport on the Economic, Environmental & Social Health of Cities and Regions in Europe

Figure 2. THE ISSUE's "Six Sustainable Transport and Urban Mobility Challenge Areas"

Challenge 1. Addressing Traffic Congestion & its Associated Impacts on the Urban Environment

PO1: Addressing congestion & traffic induced air pollution

THE ISSUE Priority RTD Solutions:

1.1 Enhancing ITMC systems and promoting active demand management measures.

1.2 Developing real-time data collection networks that provide aggregated data to central ITMC systems, including cooperative and crowd-sourced information.

1.3 Developing multi-modal routing and journey decision support systems.

PO2: Improving the efficiency of urban freight transport logistics

THE ISSUE Priority RTD Solutions:

2.1 Developing dynamic, integrated ITS route planning systems for urban freight transport, using new developments in EGNSS, cloud computing and seamless, multi-modal communications technology.

2.2 Developing enhanced monitoring and tracking models and tools for the integrated management of multi-modal freight movements within Port Cities.

PO3: Minimising impact of incidents and extreme weather events on congestion and access for emergency services

THE ISSUE Priority RTD Solutions:

3.1 Models & tools for automated detection & classification of incidents to improve security management.

3.2 Advanced solutions for automatic re-routing of traffic or changing traffic light sequences without compromising safety and other users.

PO4: Strengthening transport and urban mobility planning

THE ISSUE Priority RTD Solutions:

4.1 Enabling the collection and analysis of detailed and accurate data outputs to inform planning decisions.

4.2 Developing tools and mechanisms to enhance the capacities of local authorities to plan and implement innovative sustainable urban mobility measures.

4.3 Developing new tools, instruments and mechanisms for information exchange to strengthen the knowledge and capacity of local authorities to prepare SUMPs.

4.4 Developing the capacity to use ITS systems to evaluate priorities in future urban transport strategies.

Challenge 2. Managing Urban Air Quality & Greenhouse Gas Emissions

PO5: Improving the calibration and validation of the accuracy of air quality models and traffic simulations

THE ISSUE Priority RTD Solutions:

5.1 Developing tools and measures to promote use of earth observation data sets to improve air quality models.

5.2 Advanced systems for measuring & monitoring short-term carbon emissions, providing air quality forecasts to improve information services & historical reporting.

PO6: Improving the ability to measure Greenhouse Gas Emissions

THE ISSUE Priority RTD Solutions:

6.1 Improving modelling of atmospheric transport of GHGs using direct measurement of CO_2, CH_4 and CO from ground, aircraft and space for all distance scales.

PO7: Improving Sensor Monitoring and Model Forecasting of Emission Levels

THE ISSUE Priority RTD Solutions:

7.1 Providing more comprehensive, higher resolution and continuous data sets for modelling and controlling localised air pollution.

7.2 Improving ability to undertake airborne mapping of NO_2 over large urban areas for snap-shot of concentrations.

7.3 Improving the calibration and validation of air quality estimations and traffic simulations, by integrating ground based sensors and remote sensing systems.

Challenge 3. Improving the Utilization, Planning & Optimization of Urban & Regional Road Networks

PO8: Making the Existing Urban and Regional Road Network More Efficient, Reliable, Resilient and Effective

THE ISSUE Priority RTD Solutions:

8.1 Developing advanced ITMC systems to control access to specific urban areas, manage traffic flow, respond to public transport priorities and provide traffic information & fast response in emergency situations.

8.2 Developing Open Data Platforms for the collection, assessment, fusion, trend monitoring, analysis and storage of transportation data from multiple sources.

8.3 Developing real-time databases of weather conditions, air pollution, traffic, road conditions, etc.

8.4 Introducing smart signing, intelligent crossings, etc.

8.5 Introducing advanced real-time information services to provide real-time traffic situation reports and options for choosing the best means of transport.

PO9: Improving the management and maintenance of the existing road infrastructure

THE ISSUE Priority RTD Solutions:

9.1 Developing new tools to gather information about the road infrastructure and its condition.

9.2 Establishing a data, knowledge and information exchange panel (dashboard) to improve communication between road infrastructure managers, road administrators & research institutions.

PO10: Improving the planning and development of the road infrastructure network

THE ISSUE Priority RTD Solutions:

10.1 Developing new models and tools that enable data fusion from separate traffic and travel data sources (from all modes of transport) to improve the planning of public transport networks, timetables, etc.

10.2 Developing new models and tools to plan future scenarios for the movement of people and goods, using multiple sources of information.

THE ISSUE: Priority RTD Solutions to Address the Impact of Transport on the Economic, Environmental & Social Health of Cities and Regions in Europe

CHALLENGE 4. ACHIEVING SEAMLESS TRANSPORT AND PROMOTING MODAL SHIFT

PO11: Promoting modal shift & offering more sustainable travel choices

THE ISSUE Priority RTD Solutions:

11.1 Improving the competitiveness, performance, reliability and affordability of public transport options.

11.2 Introducing advanced real-time information services to provide drivers and other road users with real-time traffic situation reports and options for choosing the best means of transport.

11.3 Developing innovative approaches to understanding behavioural change, travel demand management and integration.

11.4 Developing real-time personalised traffic and travel information systems to encourage modal shift, support interactive journey planning and assistance as well as transit management.

11.5 Developing localisation-based services for mobile citizens.

PO12: Increasing efficiency & improving the effectiveness of public transport services

THE ISSUE Priority RTD Solutions:

12.1 Developing advanced data collection, trend monitoring and service planning models and tools to enable public transport operators improve the travel times, reliability, punctuality, accessibility, safety and usage of public transport services.

PO13: Improving the interoperability of transport information

THE ISSUE Priority RTD Solutions:

13.1 Developing GIS-based tools to localise, collect, validate, visualise, modify, share and manage real-time multimodal data with spatial information for different kinds of transport providers

13.2 Developing standards of collective and multimodal data to allow better integration, comparison and accessibility between different users.

13.3 Developing practical tools and guidance for the user, multimodal transportation planning and decision-making process.

PO14: Promoting multimodal integrated travel information, planning and ticketing services

THE ISSUE Priority RTD Solutions:

14.1 Supporting the development, interoperability and implementation of smart, multi-modal integrated ticketing systems.

14.2 Developing innovative forms of travel information e.g. interactive end-to-end journey planning and assistance through online tools and personalised travel planning; real-time journey advice; pay-as-you-go car clubs and sharing schemes; online and SMS messaging travel information services.

14.3 Developing a fully integrated one-stop-shop user interface for travellers, offering true door-to-door multi modal journey comparison of real-time travel information including true financial costs, timings, and health and environmental impacts, as well as ticket purchase and redemption and interactive real-time notifications of incidents and delays.

14.4 Promoting the introduction of Smart Ticketing for larger territories and different local and regional transport authorities.

CHALLENGE 5. INCREASING SAFETY, SECURITY & HEALTH IN URBAN COMMUNITIES

PO15: Developing advanced safety & security measures to help reduce accidents, make roads safer (especially for vulnerable road users) & create a better urban environment.

THE ISSUE Priority RTD Project Areas:

15.1 Developing new automatic data collection and monitoring systems, to provide a more in-depth understanding of accident causation, possible countermeasures and their impacts.

15.2 Improving the design and quality of road networks to enhance road safety.

PO16: Improving security and information about the transporting of freight in urban areas

THE ISSUE Priority RTD Solutions:

16.1 Developing location-based service solutions for improvement of freight transport functioning.

16.2 Developing automatic tracking systems for the transport of goods.

16.3 Developing tools (software and hardware) for road safety enhancement relating to transport of goods.

PO17 Improving the health of citizens

THE ISSUE Priority RTD Solutions:

17.1 Developing models and tools to increase the level of information available, directly or indirectly, relating to transport systems regarding the presence of pollutants and noise levels at the local and regional levels.

17.2 Developing models and tools to analyse the inter-linkages between current and newly identified parameters relating to health related air pollution or the impact of vehicle noise regulations.

17.3 Developing models and tools to identify, pilot and evaluate the most efficient and cost-effective measures to reduce exposure to pollutants and noise, and to help decision makers find specific solutions.

CHALLENGE 6. DELIVERING A STEP-CHANGE IN SUSTAINABLE URBAN MOBILITY

PO18 Fostering more effective organisational collaborations through a regional triple-helix cluster approach

THE ISSUE Priority RTD Solutions:

18.1 Strengthen policy making and service delivery within Intelligent Mobility; enable key transport and urban mobility stakeholders to share ideas and develop a common vision for the future traveller experience; and engage all actors with an interest in exploiting emerging research to support industrial innovations and products that match the vision and interest of markets and transport policy-makers.

PO19: Facilitating increased uptake of Low Carbon Vehicles

THE ISSUE Priority RTD Solutions:

19.1 Implementing pilot studies to evaluate barriers to uptake of low carbon vehicles and identify new vehicles ownership and usage models.

19.2 Developing innovative techniques to substantially increase the range of low carbon vehicles.

PO20: Identifying Future Changes in Patterns of Urban Mobility and Potential RTD Challenges

THE ISSUE Priority RTD Solutions:

20.1 Implementing a foresight-driven research programme to assess how disruptive innovation can change resource allocations and distribution chains by creating new markets and replacing old ones.

THE ISSUE PROJECT

THE ISSUE received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration. *THE ISSUE* was launched in January 2012 through a Network of 'triple-helix' research clusters in the East Midlands (UK), the Midi-Pyrenees and Aquitaine Regions (France), the Molise Region (Italy) and Mazovia Region (Poland).

THE ISSUE Network was further strengthened by the inclusion of 8 associate regions in Spain, Greece, Romania, Italy, Croatia, Finland and Northern Ireland. These regions joined as part of *THE ISSUE's* knowledge exchange and mentoring programme, to encourage the development of new regional research-driven triple-helix clusters across Europe.

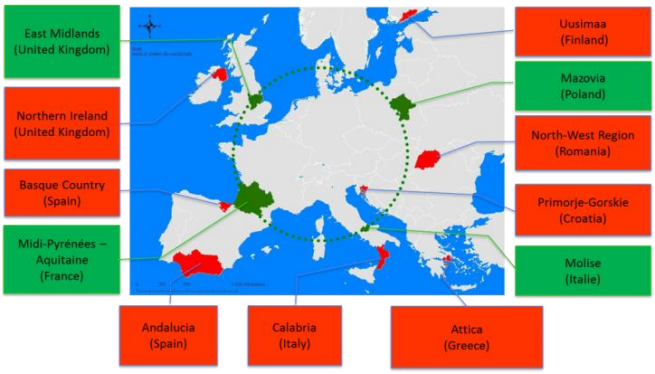

Figure 3. THE ISSUE Project Consortium of Core and Associate Regions

THE ISSUE META-CLUSTER

THE ISSUE
Traffic-Health-Environment
Meta-Cluster

THE ISSUE has established a new European Special Interest Group in traffic, health and the environment. ***THE ISSUE Meta-Cluster*** comprises a network of European regional triple-helix clusters. Each cluster involves actors from industry (particularly SMEs), research institutions and local and regional government with an interest in the economic, environmental and social health of cities and regions.

THE ISSUE Meta-Cluster is an independent legal association that will ensure the long-term economic sustainability of *THE ISSUE* Network and deliver *THE ISSUE's* ***Programme of Priority RTD Solutions (2015-2020***). The Meta-Cluster is harnessing the RTD competencies within its regional triple-helix clusters to develop viable and sustainable solutions that address six sustainable transport and urban mobility challenges identified by *THE ISSUE*. In doing so, the Meta-Cluster will make a significant contribution towards the EU Horizon 2020 "Smart, Green and Integrated Transport" agenda and stimulate supply chain development, SME growth and job creation.

THE ISSUE Meta-Cluster's goals are:

- To exploit the application of Downstream Space Data Products & Services and Information & Communication Technologies in the fields of traffic, health and the environment.
- To work in close association with NEREUS (Network of European Regions Using Space Technologies) & other European networks in traffic-health-environment fields.
- To boost the participation of regional stakeholders, in particular SMEs, in EU R&D projects.
- To facilitating the development of supply chains, business growth and job creation across Europe.
- To implement activities for business collaboration and SME internationalisation through the network.
- To provide a forum for knowledge transfer between THE ISSUE members, coordination of RTD activities regarding Horizon 2020, the sharing and dissemination of information on key issues at European and World level.
- To promote regional triple-helix cluster initiatives, lobbying in favour of regional RTD competencies and projects towards the EU institutions, as well as stimulating new policy developments.
- To promote collaboration and cooperation in research and education activities and local and regional transport and urban mobility planning.

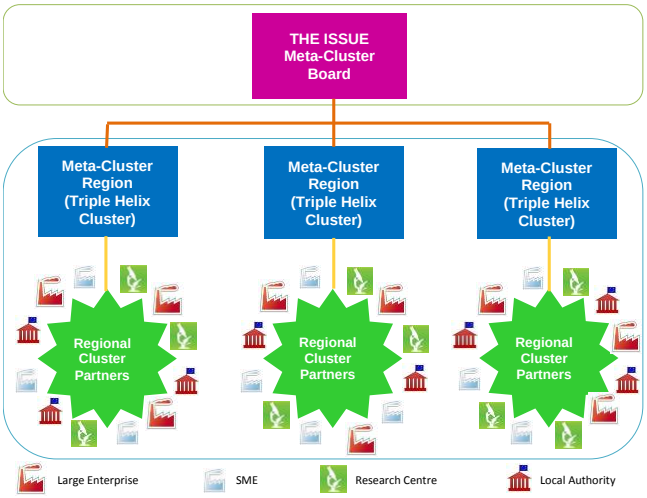

Figure 4. Organisational Structure of THE ISSUE Meta-Cluster

FURTHER INFORMATION

40 Case Studies of RTD actions by *THE ISSUE* Network has been published in THE ISSUE-NEREUS joint publication: "*Space and ICT Applications Supporting Smart, Green, Integrated Transport and Urban Mobility*". This illustrates the emerging role of new technologies in providing innovative solutions to tackle high priority challenges facing urban and regional transport authorities across Europe. Further information on the publication can be found at www.theissue.eu

For further information on THE ISSUE Project (GA No. 287088) visit www.theissue.eu or contact: Steve Dibnah, Project Coordinator for THE ISSUE Project at steve.dibnah@leicester.gov.uk or telephone: +44 116 454 2885