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FP7-TRANSPORT 2010-35

Issues Paper: Towards Work Programmes 2012-13 for Transport (including Aeronautics)

AAT, SST and TPT calls

(Indicative total budget for 2012: € 321 million)¹

1. Grand challenges, policy framework and strategic objectives

Transport is an *essential human activity* which supports and drives economic growth. However, Transport has become one of the grand societal challenges when it has led to traffic congestion and excessive use of fossil fuels, which are major contributors to GHG emissions and thus to global warming and pollution. The *socio-economic challenge* for Transport is to *make growth and sustainability compatible*, by decoupling environmental impacts from economic growth, while adding to the competitiveness of the European transport industry and enhancing social inclusion by striving to provide mobility for all. Economic downturn, increasing scarcity of non-renewable energy sources, aging, migration, increasing demand for mobility, urbanization, and the globalization of the economy are among the other social and economic challenges to be answered by Transport research.

Additionally, at a time of tight financial resources, research efforts need to be pooled and coordinated to avoid fragmentation, costly duplication and overlaps. By better pooling our efforts and focusing on excellence, and by creating a true European Research Area, the EU can enhance the quality of research and Europe's potential for major breakthrough and increase the effectiveness of the investments needed to get ideas to market. In a global environment, Europe must also develop its own distinctive approach to innovation, which builds on its strengths and capitalises on its values. In this context, the enhanced collaboration between the different DGs involved in EU transport research (DG RTD, DG MOVE, DG ENTR and DG INFSO) becomes even more meaningful.

The key policy framework to meet these challenges and define strategic objectives is the following:

A. Policy framework already set out and being implemented:

- *The Seventh Framework Programme* and its *Specific Programme 'Cooperation'*, where the overall objectives and research activities of the *Transport theme* are defined for the period 2007-13.
- *The European Economic Recovery Plan*, where among other measures, the "*European Green Cars Initiative (EGCI)*" was launched aiming at breakthroughs in the use of renewable and non-polluting energy sources, as well as in safety and mobility, in road transport.
- *The Marine and Maritime Research Strategy*, which highlights the importance of integration between established marine and maritime research disciplines in order to reinforce excellence in science and to reconcile the growth of sea-based activities with environmental sustainability.

¹ Under the condition that the preliminary draft budget for 2012 is adopted without modifications by the budgetary authority.

- **The Lund Declaration**, where it is said that “*European research must focus on the Grand Challenges of our time*”, which will be a prerequisite for continued economic growth.
- **The Political guidelines of President Barroso for the new Commission**, where it is stated that “*the next Commission needs to maintain the momentum towards a low emission economy, and in particular towards decarbonising our electricity supply and the transport sector – all transport, including maritime transport and aviation, as well as the development of clean and electric cars. Decarbonising electricity supply and transport will also bring additional benefits in terms of security of energy supply*”.
- **The ITS Action Plan and the ITS Directive**, which set a framework for standards and innovations in ITS for road transport and its interfaces with the other transport modes.
- **The Commission Communication ‘Europe 2020 – A strategy for smart, sustainable and inclusive growth’**, which emphasizes that essential elements of the transport policy should be better integration of transport networks, promoting clean technologies, and upgrading infrastructure. Two of the seven flagship initiatives of this strategy which are particularly relevant for Transport research are:
 - a) The **‘Innovation Union’**, which aims at re-focusing R&D and innovation policy on the challenges facing our society. The Commission Communication *‘Europe 2020 Flagship Initiative: Innovation Union - Transforming Europe for a post-crisis world’* will be adopted in October 2010.
 - b) The **‘Resource efficient Europe’**, which aims at supporting the sustainable management of resources and the reduction of carbon emissions, while maintaining the competitiveness of the European economy and its energy security. A Communication on *‘Clean Transport Systems’* foreseen for November 2011 will develop a consistent long-term strategy on the substitution of oil as transport fuel by alternative fuels.
- **The Commission Communication on ‘A European strategy on clean and energy efficient vehicles’**, which sets out a strategy for encouraging the development and uptake of clean and energy efficient heavy- (buses and trucks) and light-duty vehicles (cars and vans) as well as two- and three-wheelers and quadricycles.

B. Policy framework (for Transport and for RTDI) under preparation or to be implemented:

- **The New Transport White Paper**, which constitutes the main framework for Transport policy.
- **The Strategic Transport Technology Plan**, which will respond to the need for clearer long term technology perspective, better management of innovation pathways and a stronger alignment of research, innovation and transport policies.
- **The Reflection Paper for FP8**, which sets the frame for the preparatory work regarding the adoption of FP8, and addresses the key questions as to what should be funded in the future and according to which delivery modes. A policy paper for FP8 will be issued early 2011.

Other policies of the Union which are also of relevance for Transport research, particularly the *‘Sustainable Development Strategy’* and the *‘Marine Strategy Framework Directive’* and *SET-Plan*.

Based on all the above, the strategic objectives of Transport research for 2012-13 can be summarized as follows:

- **Decarbonising and “greening” the Transport system**, by reducing or eliminating CO₂ emission or using carbon neutral fuels, enhancing energy efficiency, and drastic reduction of pollutants such as SO_x, NO_x and particles.
- **Increasing the efficiency of the whole Transport system**, including all transport modes, urban transport planning and mobility, as well as co-modality, notably by the use of ICT to set up a smart transport system.
- **Improving safety & security** of passengers, aircraft, vehicles and vessels, and infrastructures.

- **Strengthening the competitiveness of the European industry**, by improving cost efficiency and promoting eco-innovation in the manufacturing of airborne and surface vehicles as well as waterborne vessels.
- **Pioneering the Transport of the future (long term perspective)**, focusing on breakthrough technologies aimed at achieving step changes in the Transport system.
- **Enhancing and strengthening the ERA**, by the structuring effect of research projects, joint undertakings and other initiatives, and promoting coordination of MS/AS.
- **Mobility for all** – e.g. in the urban context in order to provide an inclusive and affordable transport system to all citizens.

This will be the basis to define and select topics and fund *promising ideas and technologies*, which help to meet these strategic objectives. An overarching target in 2012-13 will be to identify and prepare, by using the existing instruments for coordination and implementation, potential future **European Innovation Partnerships** and **Joint Programming Initiatives** supporting R&I in the Transport sector. Assessing and developing key enabling technologies and broadening the knowledge base underpinning Transport R&I will be in the forefront of research actions whilst making the best use of existing research infrastructure and designing new ones.

2. Operational framework, consultation, coordination and programming

2.1. Transport research in the Commission

The Transport theme of the FP7 Cooperation Specific Programme is managed by DG RTD, DG MOVE and DG ENTR. The DG RTD part of the Transport Work Programme focuses on *technological advances* with the strategic objectives mentioned above.

DG MOVE is in charge of research on *transport policies (including ITS policy) and demonstration actions*². Similarly DG MOVE works as well as on *organization, operation and management* of transport systems and infrastructures, including **SESAR**, which is fully embedded in transport policy to promote innovation through a consistent research-development-deployment strategy in a public-private partnership approach with the same above-mentioned objectives.

DG ENTR is in charge of **Galileo** in coordination with the GNSS Supervisory Authority (GSA). Research activities managed by RTD, MOVE and ENTR are integrated in the Transport theme in a coherent way and implemented via clearly identified separate calls. In addition to that, it is DG INFSO who is mostly dealing with technological research on **Intelligent Transport Systems** (as part of the ICT Theme applied to transport), and DG ENTR who is mostly responsible for the **Transport Security issues** (included in the Security Theme) and who has a broader policy role over the **European Green Cars Initiative (EGCI)** including issues related to financial engineering and regulation.

In the Commission, Vice-President Kallas has taken the lead on transport research in cooperation with Commissioner Máire Geoghegan-Quinn, in charge of research and innovation policy. This implies a complete cooperation between the two services and the development of a European Strategic Transport Technology Plan to ensure a common strategy for research and innovation in transport.

2.2. Preparation of the final calls of FP7 (2012-2013)

The first two Work Programmes (2007, 2008)³ embraced the entire scope of the Transport part of the Specific Programme. A **multi-annual strategy** was proposed for the period 2010-11 to ensure a balanced approach and complementarity among Calls while respecting the annuality of budget consumption. For the period 2012-13, a multi-annual strategy is proposed again focusing on the above policy framework. Work Programmes 2012-13 will be the last ones of FP7 and a smooth transition towards FP8 should also be ensured, in particular via Work Programme 2013.

² ITS Action Plan should be implemented as the first specifications under the ITS Directive are already adopted.

³ No calls were published for 2009.

Furthermore, to achieve critical mass, Work Programmes 2012-13 will *focus on a limited number of very strategic priorities* described in terms of broader objectives and enlarged scope providing them with sizeable budgets. They respond to the *strategic objectives* mentioned above and the potential *leverage effect* and *EU added-value* of these research priorities to boosting public and private involvement and coordination towards these objectives. A thorough approach has been taken in order to identify the strategic priorities and most promising technology areas to attain them. It takes into account the *consultations* with other EC services, the Transport Advisory Group, MS/AS and stakeholders (including the Transport Technology Platforms of the four modes; and the EGCI Advisory Group), which ensure the EU added-value at EU level, complementarity with national programmes and synergies of the priorities/topics proposed. The results of the 2007, 2008 and 2010 calls have also been considered when making the present proposal.

Collaborative research under the Transport theme is being implemented by means of the FP7 funding schemes, i.e. collaborative projects, coordination and support actions, etc. In addition to this project-based approach, the Transport theme also features a *“programming” approach* since the early stages of FP7, which reinforces the leverage effect and EU added-value, such as the *“Clean Sky” Joint Technology Initiative*, the *Single European Sky Air Traffic Management Research (SESAR)*, the *European Marine and Maritime Research Strategy (The Ocean of Tomorrow)*, and the *European Green Cars Initiative*. “Clean Sky” and SESAR are implemented by separate mechanisms, have a defined budget and are subject to specific evaluations. The FP7 Mid-term Review results and some new Joint Programming initiatives under assessment are to be kept in mind when preparing Work Programmes 2012 and 2013.

3. Specific objectives and implementation in Work Programmes 2012-13 (WP2012 and WP2013)

The Transport activities managed by DG RTD belong to two sub-themes: Aeronautics and Air Transport (AAT) and Sustainable Surface Transport (SST). Horizontal activities (TPT) for the implementation of the Transport theme, as well as socio-economic research and cross-cutting issues are also included.

Particular attention is paid in these activities to transport innovations addressing major societal challenges and European transport policy objectives, building on the EU leadership in key technologies and the potential these markets offer for innovative businesses and enhancing EU competitiveness. These activities must involve the full chain of stakeholders in the RTDI cycle: not only major companies, but also SMEs, research centres, universities, public administration, regulators, civil society organizations, etc. according to their specific role and on a case by case basis. Activities could also address the transport system as a whole, discarding the distinctions between the different modes, to develop an effectively integrated system that translates into seamless transport.

3.1. Aeronautics and Air Transport (AAT)

The structure of the FP7 Work Programmes encompasses the following six activity lines:

The Greening of Air Transport
Increasing Time Efficiency
Ensuring Customer Satisfaction and Safety
Improving Cost Efficiency
Protection of Aircraft and passengers
Pioneering the Air Transport of the Future

While the first two AAT calls (2007 and 2008) were opened to all six activity lines, Work Programme 2010 (third call) focused on upstream Level-1 projects (CP-FP) with strong emphasis on *Greening*, *Cost Efficiency*, and *Pioneering* with few or no topics opened for the other activity lines. Work Programme 2010 included for the first time coordinated calls with Russia and China. Work Programme 2011 (fourth call) focuses on downstream Level-2 (CP-IP), with Level-1 topics restricted to *Pioneering*. All Work Programmes included CSA-SA to support the programme implementation.

Overall approach for 2012-13

The last two calls (fifth and sixth) on aeronautics research will ensure *continuity* and *coherence* with the previous Work Programmes. In addition, WP2012 and WP2013 should also be coherent with the policy framework presented in section 1 of this paper and increasingly support broader European air transport policies. It should also start to reflect the new policy orientations of 'Europe 2020' and its flagships (see section 1). Meanwhile, WP2012 and WP2013 will have to answer new challenges arising from a continuously evolving global world, in particular with regard to the use of new energy sources and stronger integration with other transport modes.

Therefore, a holistic approach will be implemented, including some emerging strategic priorities. Among potential subjects for specific consideration to fostering innovation could be, for example, alternative fuels, co-modality and the integration of unmanned airborne systems. The needs of the end-users of the air transport system, of airports and airlines as well as of policy makers will be better reflected in the research actions. Depending on the outcome of the different initiatives underway, specific topics related to the volcanic ash crisis on the European air transport system may be considered.

The following implementation scheme is suggested:

Share between Level-1 (L1) and Level-2 (L2) in WP2012 and WP2013

There was an agreement to achieve a 50%-50% share of the collaborative research budget between L1 and L2 projects over the duration of FP7. In order to provide some flexibility and achieve the above mentioned target, the presence of a mix of L1 and L2 in both calls is the best solution, with WP2012 mainly focused on L1 while WP2013 will put emphasis on L2.

Introduction of Level-0 (L0)

This new type of action will apply in the activity 'Pioneering the Air Transport of the Future' to stimulate and incubate new fundamental knowledge and disruptive ideas that have a strong potential for innovation. L0 will be at the foundation of the RTD cycle with the aim of strengthening the knowledge base and knowledge capacity needs for R&I actions at higher technology readiness levels. Implementation of L0 will take place via studies (CSA-SA) or research projects (CP-FP). A simplified procedure for proposal submission and evaluation is envisaged in order to allow for quick action on promising emerging ideas. A limited maximum funding per project will be defined. These projects would represent a small financial mass. This new component will provide also new opportunities for hitherto less favoured players, including academic research in a larger number of Member States and Associated Countries.

Level 1 (CP-FP and CSA-CA)

The proposed focus for WP2012 is as follows:

- 'Greening' and 'Cost Efficiency' will stay fully open to support environmental concerns and competitiveness issues.
- 'Increasing Time Efficiency' will remain focused on a limited number of topics taking into account that the SESAR JU coordinates ATM Research. Possible topics will be on longer term ATM research and on airport related issues.
- 'Customer satisfaction and safety' will be partially reopened, taking into account the response to the L2 topic on cabin environment in WP2011 (fourth call) and the fact that it contributes not only to the competitiveness of European operators but also to the inclusion of new social groups as consumers of air transport services.
- 'Protection of Aircraft and passengers' will remain focused on very specific applications to air transport in coordination with the Security Work Programme, which covers wider applications of security technologies and processes.
- 'Pioneering the Air Transport of the Future' will be open for a limited number of topics where the required maturity for a L1 has been reached.

Level 2 (CP-IP)

Level 2 topics will be selected in the view of complementing the landscape of previous L2 research projects and ongoing demonstration work in the 'Clean Sky' Integrated Technology Demonstrators and SESAR Demonstrators. They will contribute in different degrees to the first five activity lines (see above). They will be identified in consultation with the manufacturing industry and other stakeholders of the air transport system. Topics will be placed in either call, depending on budget available for the call, priorities and

availability of the underpinning technologies from previous research at lower technology readiness levels at the time of the call. The principle guide is the fulfilment of the Strategic Research Agenda and Vision 2020 goals.

From the previous first three calls eight L2 projects are funded and six more L2 topics are included in WP2011 (fourth call). In the last two calls a continuous effort at Level 2 will be needed in propulsion related technologies, additional effort in aerodynamics and flight performance for reduced drag, in security related matters as well as on primary safety aspects. Pursuing enhanced competitiveness through actions at Level 2 will also be needed in aspects of maintenance and manufacturing. L2 projects in conjunction with L3 ('Clean Sky' and SESAR) are essential pillars paving the way to definite innovation in aeronautics and air transport.

L2 projects will continue providing an excellent opportunity for a wider involvement of the European technology base, including SMEs, as it has been the case in the eight projects funded until now.

The '**Clean Sky**' *Joint Technology Initiative* will continue realising a quantum leap in the technological capability of Europe to produce aircraft that meet environmental targets (Vision 2020 goals) and are economically viable. 'Clean Sky' focuses on the integration of advanced technologies, their validation in complex models and testing them on full scale ground and flight demonstrators (Level-3). Coordination with other relevant research in the Framework Programme, national or industrial programmes will remain a priority. Particular attention is being paid to ensuring adequate participation of SMEs. 'Clean Sky' is *par excellence* oriented towards innovation and global competitiveness of the European industry.

The '**SESAR Joint Undertaking**' is dedicated to modernising the European air traffic control infrastructure. It will continue to produce the required new generation of technological systems and components as defined in the definition phase. The deployment phase (2013-2020) will seek to build the new infrastructure at a wide scale both in Europe and in partner countries.

3.2. Sustainable Surface Transport (SST)

Overall approach for 2012-13

The *strategic research priorities* for SST in Work Programmes 2012-13 are also coherent with the policy framework presented in section 1. Two of the flagship initiatives of the 'Europe 2020' strategy are of particular relevance to RTDI in SST: the '**Innovation Union**' and the '**Resource efficient Europe**'. The Work Programmes 2012-13 will contribute to these flagship initiatives by promoting innovative and more efficient industrial and service technologies that support *decarbonisation* and reduce the use of natural resources.

Work Programmes 2012-13 will contribute to the decarbonisation of transport and improve the energy efficiency of the transport system by promoting eco-innovation in all modes of surface transport. They will concentrate on the electrification of the transport system and the use of innovative fuel-efficient technologies and designs across modes⁴. The coordination with other themes (Energy, ICT and NMP) will be pursued on these issues.

The strategic priorities for 2012-13 will help strengthen the *competitiveness* of European transport industry and services, will contribute to the *reduction of GHG* emissions and optimize the *global efficiency* of the transport system, as well as enable the efficient use of the European transport *infrastructure and network capacity*. As before, the 2012-13 Work Programmes will focus on the performance of the overall transport system (incl. in urban areas), aiming at optimizing logistics, traffic control and co-modality for passengers and goods thus promoting the competitiveness and social inclusiveness of transport services and exploiting the relative strength of each transport mode.

A particular focus of the 2012-13 Work Programmes will be on a better interconnection and integration of transport networks and services, and therefore help to deliver significant improvements of the *efficiency and sustainability of the whole transport and mobility system*.

The ITS Action Plan

⁴ The Communication on "Clean Transport Systems" foreseen for November 2011 will develop a consistent long-term strategy on the substitution of oil as transport fuel by alternative options and propose possible accompanying legislative measure. Future Transport alternative options are: electricity (including battery and hydrogen powered vehicles), biofuels and methane (natural gas and biomethane). A report will be submitted to the Commission by October 2010.

The *ITS Directive* includes the adoption of specifications to ensure compatibility, interoperability and continuity for the deployment and use of ITS, which in turn will improve the efficiency of the transport system as a whole. Examples of actions that would be welcome here are a further look at the impacts of intelligent systems on vulnerable road users, the development and testing of interoperable smart ticketing for cross-border public transport passengers as well as demonstration and validation projects (open in-vehicle platform, intelligent truck parking, continuity in traffic management, etc.)

The 'European Green Cars Initiative' (EGCI)

With regard to the *EGCI*, all three pillars will be covered in Work Programmes 2012-13: 1) electrification of road transport; 2) long distance transport; and 3) logistics and co-modality. These three pillars represent the key areas to achieve higher energy efficiency, reduction of GHG emissions, as well as reliable logistics and seamless mobility.

Several topics related to the electrification of vehicles and the integration of electric vehicles in the transport system will be included. Particular attention will be given to vehicle to grid integration (V2G) and to charging infrastructure (charging which adapts to the needs of the user and to the restrictions of the grid, charging at enhanced speed, and smart charging with bi-directional energy and information transfer capabilities). These topics could be implemented in 2012 via a joint call possibly with the following themes: Transport, ICT and NMP.

Another priority for the 2012 Work Programme will be research on advanced and lightweight materials (such as plastics, polymer composites, steels, aluminium, magnesium, hybrid materials and crashworthy structures) for Electric Vehicles.

Moreover, research actions will be needed on *intelligent roads*. They will allow the development of new road infrastructure and related communication tools, encouraging the use of electric vehicles and also the integration of electric vehicles with other modes of transport. Research could also include low-cost and low-emission maintenance and construction of roads (including life cycle analysis), the development of automated driving systems, based on active safety systems and car-to-car communication or to energy harvesting systems on roads.

Within the EGCI, it is envisaged to implement further joint calls in areas, such as advanced and lightweight materials for electric vehicles and infrastructure research, where the multi-disciplinary approach represents an important component of the research. In 2010 and 2011, two successful joint calls have been implemented on electric storage systems. The involvement of the Environment, Energy and NMP themes in further joint calls will be explored.

With respect to the second research pillar of the EGCI on long distance transport, research actions should focus on advanced vehicle concepts and technologies (including innovative solutions for improving the aerodynamic performance of vehicles, rolling resistance, the efficiency of its constituent sub-systems also in terms of the potential for energy recovery, flexible and modular truck-carrier concepts). At the same time, GHG emissions from freight transport will be further reduced through measures optimizing vehicle flows and implementing efficient logistics schemes.

The third pillar of the EGCI will focus on innovative vehicle and transshipment technologies (such as eco-liners, modular vans and lorries, and terminal equipment), new organisational and logistic concepts and new ways of doing transport business. Research actions will include: 1) the development of ICT, e-freight solutions for supply chain management and carbon footprint monitoring; 2) green hubs and corridors where specific technological, managerial and eventually regulatory innovations encapsulate the transport flows; and 3) innovative city logistics concepts.

Rail transport

The ERRAC strategic research agenda 2020 includes targets of increasing overall rail transport demand by 40% for passengers and 70% for freight compared to 2000. To achieve these targets the railways need to attract more users and ensure that there is adequate capacity to service their needs.

The objective of railway research for Work Programmes 2012-2013 will be to ensure that strategic research priorities and an enhanced attractiveness to users (*efficiency, reliability and convenience*) can be met whilst increasing railway capacity. Research should therefore be encouraged with a focus on removing bottlenecks, prioritisation corridors, improving control and information systems, interoperability, automated operations, vehicle and infrastructure availability and reliability, possibly by new infrastructure design, and higher wagon loads.

Faster freight transport may be optimised within a mixed rail network by more efficient network management together with prioritised routes when applicable. Solutions will need to take into account flows of passengers and freight across the EU, bottlenecks and possibly improved operation through increased operation

Waterborne transport

Waterborne research will concentrate on innovative materials and systems for ships (e.g. faster composites processing for larger structures, 'greener' materials for smaller vessels to reduce the carbon footprint including recycling-ability), safety aspects in particular regarding the manoeuvring in extreme circumstances taking into account loading conditions (decision tools, design optimization), and integrated passive safety aspects at design phase and human elements. A coordination action should look at the gaps in research for the development of e-guided vessels (e-navigation, preventive maintenance, new remote services for efficiency improvement, etc).

Research will also focus on the facilitation of EU e-Maritime solutions enabling the use of advanced information technologies for working and doing business in the maritime transport sector; this objective should be achieved through the promotion of harmonisation of services and procedures as well as the use of standards.

In 2013, a large scale collaborative project should integrate the first findings of the projects from the 2011 call related to the retrofitting of vessels. The large scale project should include industrial validation.

Further research should focus on inland waterway transport taking into account the priorities in the Strategic Research Agenda for Inland Waterways Transport (IWT), applicable to Rhine, Danube, Elbe, etc. Simulators specific to inland navigation should be developed. Research will entail the development of innovative efficient propulsion systems to reduce greenhouse gas emissions and particulate matters (e.g. improvement of diesel powered engines, implementation of LNG and alternative fuels); design of ships for extreme conditions (shallow and low water conditions), development of specific IWT simulators for training purposes including the development of software (based on hydrodynamics for narrow and shallow waters) and hardware. Research in new materials described above should also apply for inland vessels.

Urban transport

As regards urban transport research, the 2012-13 Work Programmes will include research actions regarding accessibility to transport systems. Accessibility is of key importance to make transport systems in urban areas more efficient. More accessible transport systems can make urban environment serve all citizens, particularly vulnerable groups, like older people, children or the disabled. Research will not only focus on new technological solutions, but aim at actually planning, implementing, monitoring and evaluating accessibility measures. Integrated approaches are needed, investigating links with land use planning and with societal challenges such as the ageing society.

CIVITAS is the EU's biggest initiative in support of innovations in sustainable urban transport. With the CIVITAS Initiative, the EC aims to generate a decisive breakthrough by supporting and evaluating the implementation of ambitious integrated sustainable urban transport strategies that should make a real difference for the welfare of the European citizen. The aim in 2013 is to continue to build on the experience of previous demonstration projects of the CIVITAS initiative, by supporting cities and key transport equipment and service providers in developing integrated transport system demonstrations, networking activities for dissemination, professional training placements, and researching key enabling issues. Demonstrations should promote deeper collaboration on specific themes with a strong emphasis on innovation and transport system integration.

Other priorities for urban transport research will be the design of urban passenger infrastructures and the development and demonstration of advanced automated city vehicles in European cities and high-speed mid-distance railway. Research on passenger infrastructures will cover approaches to help cities plan a fully integrated transport system, making more efficient use of their infrastructure and public transport networks, providing greater accessibility for citizens, and helping to promote greater levels of walking and bicycle use. More particularly the design and operation of new or upgraded efficient transport interchanges, supported by ICT and various services should be addressed, as well as strategies for integrating land use planning with urban passenger infrastructure planning. This should encourage a better complementarity and coordination between the different modes of transport and their operators, and create people focused seamless and energy efficient journeys on the urban network.

Removal of congestion

Research on automated and space efficient transport systems will concentrate on the implementation of large-scale pilot demonstration test beds in an urban environment, socio-economic research and legal and institutional requirements for automated and space-efficient transport systems.

3.3. Socio-economic aspects and cross-cutting issues

It is planned to dedicate particular attention to these activities in the AAT, SST and TPT 2012-13 calls. It is suggested to have only one TPT call for the entire period 2012-13, so to attain critical mass and favour synergy between complementary topics. Policy-driven and socio-economic research on high EU-added value cross-modal issues for implementing the Transport work programme will be included in this call (proposed for 2012). Other activities of this character, but focused on particular transport modes, as well as cross-cutting actions involving S&T research will be included in the AAT and SST 2012-13 calls, including the EGCI. These AAT, SST and TPT activities would address:

- ***Socio-economic research and technology foresight*** aimed at achieving a competitive edge to European companies on the global market by promoting innovation and the decarbonisation of the transport system, thus reducing the dependency on scarce energy sources that Europe is missing (fossil fuels). Further, selected actions will continue to support the programme implementation for aspects related to policy as well as socio-economic and technical issues. Actions may also be required to prepare FP8. Socio-economic research on SST will be a priority, given the strategic objectives of transport R&I and the EGCI PPP in particular. Life cycle assessment, energy efficiency from “well to wheel” (comparative assessment with respect to electrification), expectations and needs of transport users, etc. will be included. Further ERA-NET Plus initiatives within the EGCI, including socio-economic research, could be included in the 2012-13 Work Programmes
- ***Integration of transport modes*** focussing on co-modality and on system approach, a challenge not only requiring technical improvements in the vehicles, but also changes in policy even for the whole transport system. Depending on the outcome of the 2011 call, some issues (e.g. transport for an ageing society) could be reintroduced. Interoperability between transport modes, in particular passengers’ needs during multimodal trips and supra-regional trans-border mobility schemes are among the topics that could be considered.
- ***Cross-cutting research areas*** across Transport modes and interdisciplinary research. Such actions should be based on the strategy objectives mentioned in section 1, enhancing knowledge spillover among technologies and solutions, thus maximising the impact of research funding. The use of alternative fuels in transport and noise mitigation are examples of cross-cutting areas that will be included in the 2012 call, both aimed at the exchange of knowledge, transfer or adaptation of the latest technologies, procedures and best practices between all transport modes.
- ***Strengthening the European Research Area and encouraging participation*** of a larger number of MS/AS and stakeholders by providing opportunities to exploit their specific research potential, with special attention to hitherto less successful players without compromising on S&T excellence. Support actions could be considered for supporting the launch of transport-related Joint Programming Initiatives by a number of MS/AS. Up to now ***SMEs*** have achieved a level of participation and funding above the 15% target (19.2% in participation and 17.4% in funding)⁵, partly as a result of several stimulation measures. Further measures for 2012-13 will depend on the analysis of the results of the participation in the third and fourth calls and of the response to a support action topic placed in WP2011 (AAT fourth call).
- ***Exploitation and dissemination of research results for transport-related innovation***. Support actions for promoting innovation will be carried out in 2012-2013. They will focus on fostering that results of research projects are used by stakeholders for bringing innovative products and services to the market. Also, in case they were not used by project partners, they should easily be known and accessed by any entity that is interested in transport innovation: manufacturers, operators, transport authorities, associations of customers, etc. The composition of partnerships is of paramount importance to exploit

⁵ Before April 2010

results. From research and technology development to market, all actors should be present in the project partnerships with their role clearly outlined, particularly in downstream research.

- ***International cooperation*** on the basis of mutual benefit remains an important means to enhance the global competitiveness of the European transport industry and services sector. Research areas will be identified that are especially suited for such cooperation (e.g. pre-normative research, or targeting global challenges such as traffic congestion, energy efficiency, environmental impacts, climate change and infrastructure management), as well as referring to research governance and management, standardisation, IPR issues, infrastructures, education and training. The on-going cooperation actions with countries such as Russia, China, India and South Africa will continue, but also other regions, such as the European Neighbourhood countries, Latin America, and highly industrialized countries (USA, Japan, etc.) are being considered for possible cooperation. In AAT, eventual actions will be conditioned by the outcome of on-going collaboration actions with Russia, Ukraine, Latin America, South Africa, United States and the response to topics for support actions targeting Canada and Japan in WP2011 (fourth call). Specific activities with Japan are foreseen. In SST, cooperation is foreseen in 2013 with Russia in the field of heavy freight rail transportation. Transport infrastructure management and maintenance issues (including climate change effects) are considered for cooperation with South Africa, India and USA. Activities for European Neighbourhood Countries will focus on topics related to TEN-T developments. For electric road and urban transportation, cooperation with USA is envisaged, based on a win/win scenario, benefiting industries as much as European citizens. Regarding urban mobility and the role of ITS to adapt performance of transport systems to increased mobility demand, especially in the context of large events, cooperation is foreseen with China, Brazil, Russia and European Neighbourhood Countries.