

WORK PROGRAMME 2011

COOPERATION

THEME 7

TRANSPORT (INCLUDING AERONAUTICS)

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7. TRANSPORT (INCLUDING AERONAUTICS)

Objective

Based on technological and operational advances and on the European transport policy, develop integrated, safer, “greener” and “smarter” pan-European transport systems for the benefit of all citizens and society and climate policy, respecting the environment and natural resources; and securing and further developing the competitiveness attained by the European industries in the global market.

I.0. CONTEXT

I.0.1. Policy context

European transport research has a role to maintain and increase the efficiency of the different transport modes as well as their interaction and to foster progress. Technological progress, the organization of transport and understanding the supply and demand factors are key elements in European transport research and innovation.

The European transport system serves key roles in the transportation of people and goods in a local, regional, national, European and international context. At the same time, it is essential to Europe’s prosperity and closely linked to economic growth and quality of life. However, Transport has become a victim of its own success, leading to traffic congestion and excessive use of fossil fuels, which are major contributors to global warming and pollution. The grand challenge for Transport is to overcome this paradox and make growth and sustainability compatible, by decoupling environmental impacts from economic growth, while assuring the competitiveness of the European transport industry. Economic crisis, increasing scarcity of non-renewable energy sources, aging, migration and internal mobility, urbanization, and globalization of the economy are among the other grand challenges to be faced by Transport research.

The White Paper on Transport ‘European Transport Policy for 2010: Time to decide’¹ and its Mid-term review² set out clearly those objectives to be addressed at a pan-European level. The Communication ‘A sustainable future for transport: Towards an integrated, technology-led and user friendly system’³ aims at looking ahead, defining a general strategy for sustainability in Transport, consulting stakeholders and preparing the way to the new White Paper.

A broad public consultation on road safety took place in 2009 to set up objectives to be addressed in the European Road Safety Action Programme 2011-2020, which will succeed to the current one. Research is a key component of the integrated approach to road safety, which will be implemented through this Action Programme.

¹ COM (2001) 370 final.

² Keep Europe Moving – sustainable mobility for our continent - COM (2006) 314 final.

³ COM (2009) 279.

In the 2007 Spring Council the EU⁴ agreed on targets to cut greenhouse gas emissions by at least 20% until 2020, to reduce energy consumption and on binding targets for biofuels.

Following the adoption by the Commission of the ‘European Economic Recovery Plan’ on 26 November 2008⁵, a ‘European Green Cars Initiative (EGCI)’ has been launched involving research on a broad range of technologies and smart energy infrastructures essential to achieve a breakthrough in the use of renewable and non-polluting energy sources, safety and traffic fluidity. The initiative would be funded by the European Union, the European Investment Bank (EIB), industry and Member States.

In the Political guidelines of President Barroso for the next Commission⁶, 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 Commission Communication ‘Europe 2020 – A strategy for smart, sustainable and inclusive growth’⁷ emphasizes that essential elements of the transport policy should be better integration of transport networks, promoting clean technologies, and upgrading infrastructure. One of the flagship initiatives of this strategy is the ‘Innovation Union’, which aims at re-focusing R&D and innovation policy on the challenges facing our society.

Finally, the Lund Declaration says that “European research must focus on the Grand Challenges of our time”, which will be a prerequisite for continued economic growth.

Research priorities outlined in this annual work programme are based on the overall objectives and research activities defined in the Specific Programme ‘Cooperation’ of the Seventh Framework Programme, taking into account all the policy objectives mentioned above. Other European Union policies are also of relevance for Transport research, particularly the Sustainable Development Strategy, the Marine and Maritime Research Strategy, the European Agenda for Freight Logistics, the establishment of the European Maritime Transport Area without barriers, and the EU Maritime Transport Strategy 2018.

Over recent years, the transport industry has changed under the impact of the internal market and of globalization. Transport is a high-technology industry, making research and innovation crucial to its further development and conducive to European competitiveness, environmental and social agendas. The European Technology Platforms set up in the Transport sectors (ACARE for aeronautics and air transport, ERRAC for rail transport, ERTRAC for road transport, WATERBORNE for waterborne transport, and Hydrogen and Fuel Cells) have elaborated long-term visions and strategic research agendas which constitute useful inputs that complement those from the Transport Advisory Group and the EGCI Advisory Group to

⁴ Council of the European Union, Presidency Conclusions, 7224/07 of 9 March 2007 and Communication of the Commission COM (2007) 2 final of 10 January 2007 ‘Limiting Global Climate Change to 2 degrees Celsius. The way ahead for 2020 and beyond’.

⁵ COM (2008) 800

⁶ Political guidelines for the next Commission, José Manuel Barroso, 3 September 2009.

⁷ COM(2010) 2020 final

the approach and activities of the Transport theme and the needs of policy makers and expectations of society.

I.0.2. Approach

Based on the above policy context, the **strategic objectives of Transport research** 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 NO_x and particles.
- **Increasing efficiency of the whole Transport system**, including all transport modes as well as urban transport planning and mobility, and co-modality⁸, 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.
- **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.

The Transport theme takes a holistic “transport system” approach in addressing the challenges, by considering the interactions of vehicles or vessels, networks or infrastructures and the use of transport services. Such an approach will necessitate the integration of new concepts, knowledge and technologies within a socio-economic and policy context.

Given the different structure and focus of the sectors, the theme is divided into four sub-themes:

- 7.1. AERONAUTICS and AIR TRANSPORT (AAT)
- 7.2. SUSTAINABLE SURFACE TRANSPORT (SST) including the ‘European Green Cars Initiative’
- 7.3. HORIZONTAL ACTIVITIES for the implementation of the TRANSPORT PROGRAMME (TPT)
- 7.4. GALILEO

⁸ For the European Commission, co-modality refers to a use of different modes on their own and in combination in the aim to obtain an optimal and sustainable utilisation of resources [“Keep Europe moving - Sustainable mobility for our continent - Mid-term review of the European Commission’s 2001 Transport White Paper”. COM (2006) 314 final].

The synergies between the sub-themes and their contribution to the common objectives of advancing competitiveness and responding to the societal challenges of the Transport system will be exploited, as appropriate.

A common structure making reference to Levels has been adopted for the sub-themes 'Aeronautics and Air Transport' and 'Sustainable Surface Transport' in this work programme, so as to have a common categorization of topics. Due to the specificities of the sectors and the transport modes included, the definitions of Levels for these two sub-themes are different. They are provided in detail in the 'Context' sections of the sub-themes (see I.1.1 and I.2.2.).

I.0.3. Implementation of calls for 2011

The Work Programme has the following calls that will be open for 2011:

- FP7-AERONAUTICS and AIR TRANSPORT (AAT)-2011-RTD-1
- FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1 (including the 'European Green Cars Initiative')
- 'Advanced manufacturing processes for batteries and electrical components' (FP7-2011-GC-ELECTROCHEMICAL-STORAGE)
- 'The ocean of tomorrow' (FP7-OCEAN-2011)
- FP7- SUSTAINABLE SURFACE TRANSPORT (SST)-CIVITAS-2011-MOVE
- FP7-TRANSPORT (TPT)-2011-RTD-1
- FP7-GALILEO-2011-GSA-1
- FP7-GALILEO-2011-ENTR-1

I.0.4. Main differences with previous Work Programmes

The 2010 and 2011 work programmes have a different approach from the two previous ones (2007 and 2008)⁹ in the sense that these two previous ones embraced the entire scope of the Transport part of the Specific Programme. This has led to a wide number of topics with a good balance between upstream research and technology development in Aeronautics and Air Transport, as well as between bottom-up and top-down research in Sustainable Surface Transport. By switching to full annuality of budget consumption, 2010 and 2011 calls of the Transport theme are substantially smaller than all the previous calls, including those for horizontal activities. This together with the involvement of Transport theme in the '**European Green Cars Initiative**' lead to the need of being more focused on particular activities, areas and topics. The balance between bottom-up and top-down research, between upstream research and research on technology integration, as well as between various research areas and funding schemes, will be attained in a multi-annual perspective by integrating for the successive work programmes in the period 2010-2013. In particular, Work Programme 2011

⁹ There were no calls in 2009.

(WP2011) is **complementary** to WP2010, as already announced in WP2010. The results of the 2007 and 2008 calls have also been considered in selecting topics for WP2011.

Further, to overcome fragmentation and achieve critical mass WP2011 focuses on a limited number of very strategic priorities described in terms of broader objectives and an enlarged scope providing them with sizeable budgets. They respond to the strategic objectives mentioned above, with particular attention to strengthening innovation, and the potential leverage effect and EU added-value of these research priorities to boosting public and private involvement and coordination towards these objectives. They take into account the consultations with other Commission services, Advisory Groups, MS/AS and stakeholders, in order to maximize the leverage effect, EU added-value, complementarity with national programmes and synergies of the priorities and research topics proposed.

Aeronautics and Air Transport

The first two calls (2007 and 2008) were open to all six activity lines for both Level 1 topics and Level 2 topics (see chapter 7.1). Following the significant reduction of the calls budgets due to the annuality principle in budget allocation, the corresponding work programmes will be focused on a) certain activity lines, and b) on either Level 1 or Level 2 topics.

WP2011 is thus complementary to WP2010. As the latter addressed only Level 1 topics focusing mainly on Greening, Cost-efficiency and Pioneering, it is dedicated for WP2011:

- Only about 10% of the call budget to Level 1 topics in the Pioneering activity line, reinforcing the need for technology breakthroughs and step changes in aviation, to pave the way towards the air transport of the second half of the century.
- About 90% of the call budget to Level 2 topics, which will contribute in different degrees to four of the six activity lines: Greening, Time-efficiency, Passenger satisfaction and Cost-efficiency.

The **‘Clean Sky’ Joint Technology Initiative** continue its activities aiming at realising a quantum leap in the technological and innovative capability of Europe to produce aircraft that satisfy environmental needs and are economically viable. Clean Sky activities will focus on the integration of advanced technologies, validation in complex models and testing in full scale ground and flight demonstrators (Level 3). Coordination with other relevant research in the Framework Programme, national or industrial programmes will be pursued. The activities related to Clean Sky cover the period 2008-2013. They are being implemented by separate mechanisms and the details of topics are not elaborated in this work programme.

Sustainable Surface Transport including the ‘European Green Cars Initiative’

The 2010 and 2011 calls were thought to have a more specific annual focus than the previous ones on key research challenges, thus adapting also to the annuality of the budget consumption. These two calls were thought to be concentrated, complementary to each other and to include fewer topics. WP2010 has in fact followed this approach already. For 2010 and 2011 the strategic priorities are common and address:

- Optimising the global efficiency of transport system, enabling an effective use of the whole transport infrastructure and networks capacity and overcoming bottlenecks.

- Major reduction in CO₂ emissions, with the emphasis on step-change research in all Surface Transport modes.
- Strengthening European competitiveness in all Surface Transport modes, through exploitation of the potential of eco-innovation, both to protect the environment and to offer competitive advantage for those which look at the possibility to create new markets.
- Deepening ERA in Surface Transport, by means of an ERA-NET Plus on electromobility.

Ultimately the common denominator of these strategic priorities is to contribute to the decarbonization of transport and to improve the energy efficiency of the system. Research targeted on these priorities is expected to have a major leverage effect and EU added-value towards these strategic objectives, particularly in creating critical mass and setting norms and standards, tackling with interoperability problems or dealing with common maritime and inland waterborne issues.

A fifth line of horizontal nature aiming at addressing untapped research potential in Sustainable Surface Transport enables to take on board some of the as yet unanswered subjects, as well as needs not falling under the above four major lines.

The research content of 2011 focuses on the characteristics and performance of the overall transport system (incl. urban areas); in other terms, research will deal with transport as a system, addressing all his key performance indicators, with less focusing on technological research on sub systems as it was the case in 2010.

With regard to the ‘**European Green Cars Initiative**’, the work programme concentrates on energy efficient heavy duty vehicles for long distances, by improving ICE-based power trains and reducing rolling resistance and on research on logistics and co-modality, while in WP2011 the focus was on technological research on electric and hybrid vehicles sub systems. Furthermore, the 2011 includes several topics related to the electrification of vehicles with a focus on vehicle system integration.

Maritime research continues to deserve attention in line with the Marine and Maritime Research Strategy and the above common orientations. A second joint call is included in WP2011. Its content is based on the inter-disciplinary research fields identified in the Commission Communication¹⁰, with particular emphasis on the Mediterranean (inc. the Black Sea).

Socio-economic research, cross-cutting issues and horizontal activities for implementing the Transport theme

Particular attention is dedicated to these activities in the 2011 calls to increasing leverage effects and avoiding fragmentation of efforts. EU added-value cross-modal activities of policy and socio-economic character for implementing Transport programme are included in the TPT 2011 call. Other activities of this character but focused on particular transport modes, as well as cross-cutting actions involving S&T research are detailed in the AAT and SST 2011 calls including the EGCI. These activities address:

¹⁰ A European Strategy for Marine and Maritime Research: A coherent European Research Area framework in support of a sustainable use of oceans and seas. COM (2008) 534.

- **Socio-economic research and technology foresight** aimed at decarbonising the transport system, reducing the dependency on the sources of energy that Europe is missing (fossil fuels), and giving a competitive edge to European companies on the global market. Also, foresight exercises to identify research needs related to sustainable development and an ageing society, as well as activities to enhancing connectivity between research solutions and policy-making are encouraged. Socio-economic research on SST is of particular interest in WP2011, given the strategic objectives and the EGCI. Life cycle assessment, energy efficiency from well to wheel (comparative assessment with respect to electrification), expectations and needs of transport users, etc. are included.
- **Integration of transport modes** tackling the needs of end users, which is a concern of users associations and transport authorities. As long as each mode (sector) in a competitive market struggles to improve its own performance separately, an optimized integration of transport modes remains a pious hope. The focus has to be set on co-modality and on systemic approach, a challenge not only requiring technical improvements in the vehicles, but also changes in policy and for the whole transport system.
- **Cross-cutting research** areas across Transport modes and across research communities. Such actions should be based on the strategy objectives, enhancing cross-fertilization of technologies, approaches and solutions, thus maximising the impact of research funding.
- Strengthening the **European Research Area** and encouraging participation of all MS/AS via unfolding their potential, with special attention to weaker players. Further improvements of coordination and complementarity between what MS/AS do and what is done at European level should be pursued.
- **Dissemination, awareness of research results and innovation.** It is essential that the results of research be easily known and accessed by any entity that is interested in transport innovation: manufacturers, operators, transport authorities, associations of customers, etc. Easy awareness is a prerequisite to a broad use of research results, while exploitation of results is the *raison d'être* of research, in particular in such an industry-led domain as transport.

Galileo

The calls 2011 are the last ones currently foreseen with the available budget for GALILEO inside FP7. Research activity will be carried out based on the needs to accelerate the uptake of European GNSS technologies focusing on GNSS applications, end user technologies and international cooperation in parallel to the ongoing infrastructure development phase. Rather than being domain-specific, these calls will aim at nurturing applied R&D efforts, in particular those undertaken by SMEs in the broadest range of domains. These calls will support both Galileo, due to be operational in 2013 – 2014, and EGNOS-based projects.

I.0.5. Funding schemes

The same approach, structure and funding schemes are maintained in this work programme with regard to previous work programmes. The calls will be implemented by the following funding schemes:

- Collaborative Projects (CP), which can be subdivided in small or medium-scale focused research projects (CP-FP), large scale integrating projects (CP-IP), and collaborative projects for Specific International Cooperation Actions (CP-SICA) dedicated to international cooperation partner countries.
- Coordination and Support Actions (CSA), which can be aiming at coordinating (CSA-CA) or at supporting (CSA-SA).
- Research for the Benefit of Specific Groups – Civil Society Organizations (BSG-CSO) aimed at developing scientific knowledge related to CSOs activities in order to contribute to public debate.

The funding schemes applicable to each topic are indicated in the Work Programme as well as in the call fiches, along with guidance on the expected level of ambition and other relevant information. **Limits on the EU financial contribution** apply where indicated. These limits are **additional eligibility criteria**. They are indicated in the call fiches. The proposals not fulfilling these criteria will be considered as ineligible.

The forms of grant to be used in the funding schemes for this work programme are detailed in Annex 3.

The activities related to the Single European Sky Air Traffic Management Research (SESAR) and Galileo will be implemented by separate mechanisms and the details of activities under SESAR will not be elaborated in this work programme, but will be available on the respective websites¹¹. In accordance with the respective Council Regulations, SESAR activities will be implemented by the SESAR Joint Undertaking¹², and Galileo activities by either the European Commission Directorate General ENTR or the GNSS Supervisory Authority (GSA)¹³.

On the basis of Article 187¹⁴ of the Treaty on the Functioning of the European Union (TFEU), the ‘Clean Sky’ Joint Technology Initiative¹⁵ and the ‘Fuel Cells and Hydrogen’ Joint Technology Initiative¹⁶ will both be relevant to and will impact on transport research and technological developments. These activities will be implemented by separate mechanisms and the details of topics will not be elaborated in this work programme.

I.0.6. International cooperation

International cooperation activities will be encouraged in the Transport theme based around the following lines of activities:

¹¹ SESAR: http://www.sesarju.eu/public/subsite_homepage/homepage.html

GALILEO: http://ec.europa.eu/dgs/energy_transport/galileo/

¹² Council Regulation 219/2007 of 27 February 2007 as amended by Council Regulation 1361/2008 of 16.12.2008.

¹³ Council Regulation 1321/2004 as amended by Council Regulation 1942/2006.

¹⁴ Ex Article 171 TEC.

¹⁵ Council Regulation (EC) No 71/2007 of 20 December 2007 setting up the Clean Sky Joint Undertaking (OJ L 30 of 4.2.2008) as amended by Commission Decision 2009/520/EC (OJ L 175 of 4.7.2009).

¹⁶ Council Regulation (EC) No 521/2008 of 30 May 2008 setting up the Fuel Cells and Hydrogen Joint Undertaking (OJ L 153 of 12.6.2008).

- Market attraction (for example global trade development and connecting networks and services at continental and intercontinental level).
- Opportunities to access and acquire science and technology that is complementary to current European knowledge and of mutual benefit.
- Where Europe responds to global needs (for example climate change), contributes to international standards and global systems (for example applied logistics and satellite navigation infrastructure) or addresses third countries' regional issues on the basis of mutual interest and benefit.

More specifically, international cooperation will be implemented via three mechanisms:

1. All activities are open to researchers and research institutions from third countries¹⁷. In some areas of mutual interest, enhanced participation of certain third countries is emphasized where relevant expertise, opportunities and common challenges are identified.
2. In addition, collaborative projects for specific cooperation actions (CP-SICA) dedicated to international cooperation partner countries will be implemented following identification through on-going dialogue with third countries/regions on the basis of mutual interest and mutual benefit.
3. Coordination and Support Actions are included to explore and stimulate further international cooperation.

List of topics for collaborative projects for specific cooperation actions (CP-SICA) dedicated to international cooperation partner countries

Topics	Targeted Country/Region
GC.SST.2011.7-5. Integrated intermodal traveller services	Brazil, China and Russia
OCEAN.2011-3. Assessing and predicting the combined effects of natural and human-made pressures in the Mediterranean and Black Seas in view of their better governance	Mediterranean and Black Sea countries
OCEAN.2011-4. Knowledge-base and tools for regional networks of MPAs, integrated management of activities together with assessment of wind energy potential in the Mediterranean and the Black Sea	Mediterranean and Black Sea countries
TPT.2011.1-2. Transport needs for an ageing society	ICPCs and/or other countries (e.g. USA, Japan, etc)
TPT.2011.2-2. Enhanced cross-fertilization and synergies in	ICPCs and/or other

¹⁷ Both International Co-operation Partner Countries (ICPC) and non-ICPC countries can participate. Organisations from EU Member States, from Associated States to FP7 and from ICPC can be funded in all cases, while from other countries only if indispensable (Cf. FP7 Rules for Participation). The list of eligible ICPC countries is provided in Annex 1.

research actions dealing with safety aspects	countries (e.g. USA, Japan, etc)
TPT.2011.3-1. A productive international cooperation to strengthening the European Transport research area and facing global challenges	ICPCs and/or other countries (e.g. USA, Japan, etc)

Cooperation with Latin America and the Caribbean

The 2010 EU-Latin America and Caribbean (LAC) Summit¹⁸ focused on bi-regional cooperation on 'Innovation and technology for sustainable development and social inclusion'. The Summit's Action Plan calls for boosting science and technology cooperation between the EU and LAC countries. The activities targeting LAC contribute to sustainability as advocated by the Summit. This requires an integrated approach taking into account the environmental, economic and social dimensions and a balanced involvement of research teams and the relevant stakeholders from Europe and the LAC region in the consortia. Special attention will be paid to the uptake and use of the new knowledge generated and, whenever relevant, to SME participation.

Where appropriate, synergies and/or complementarities among projects selected from the LAC focused topics are encouraged within the same theme or across themes. In these cases, a dedicated budget for coordination or joint outreach activities could be foreseen. For information on LAC related topics in other themes, see the corresponding work programme chapters¹⁹. The topics considered under this specific geographical focus in the Transport theme are:

SST.2011.5.2-4. Exploring and fostering international collaboration in the waterborne transport sector (focus: Brazil and Russia)

GC.SST.2011.7-5. Integrated intermodal traveller services (focus: Brazil, China and Russia)

I.0.7. Small and Medium Size Enterprises (SMEs) relevant research

Participation of SMEs is encouraged throughout the 2011 work programme with the aim of enhancing participation level and regional clustering as well as SMEs innovation role in the supply chain. Emphasis is also being placed on facilitating the start-up and emergence of new high-tech SMEs, particularly in the advanced transport technologies and 'services-related' activities specific to Transport. Where appropriate, the areas/topics open for proposals indicate whether there is particular relevance or encouragement for the participation of SMEs.

I.0.8. ERA related activities and Technology Platforms

¹⁸ Madrid, 18-19 May 2010. See also ec.europa.eu/research/inco – Latin America and Caribbean.

¹⁹ 'Health', 'Food, Agriculture, Fisheries and Biotechnology' (FAFB), 'Information and Communication Technologies', 'Nanosciences, Nanotechnologies, Materials and New Production Technologies' (NMP), 'Environment (including climate change)', 'Transport (including aeronautics)' and 'Social Sciences and Humanities'.

The theme will continue supporting ERA-NET²⁰ activities that develop trans-national coordination in specific strategic topics. ERA-NET projects can network four types of activities: 1) information exchange; 2) definition and preparation of joint activities; 3) implementation of joint activities; and 4) funding of joint trans-national research actions.

Topic GC.SST.2011.7-8 (ERA-NET Plus 'Electromobility'), with EU contribution of up to EUR 10 million is subject to a joint call (FP7-ERANET-2011-RTD) that will be launched separately.

Coordination is also stimulated through the European Technology Platforms (ETPs). This work programme includes topics of potential interest for ETPs.

I.0.9. Science and society

Where relevant, account should be taken of possible socio-economic impacts of research, including its intended and unintended consequences and the inherent risks and opportunities. A sound understanding of this issue should be demonstrated both at the level of research design and research management. In this context, where appropriate, the projects should ensure engagement of relevant stakeholders (e.g., user groups, civil society organizations, policy-makers) as well as cultivate a multi-disciplinary approach (including, where relevant researchers from social sciences and humanities). Projects raising ethical or security concerns are also encouraged to pay attention to wider public outreach.

The pursuit of scientific knowledge and its technical application towards society requires the talent, perspectives and insight that can only be assured by increasing diversity in the research workforce. Therefore, all projects are encouraged to have a balanced participation of women and men in their research activities and to raise awareness on combating gender prejudices and stereotypes. When human beings are involved as users, gender differences may exist. These will be addressed as an integral part of the research to ensure the highest level of scientific quality. In addition, specific actions to promote gender equality in research can be financed as part of the proposal, as specified in Appendix 7 of the Negotiation Guidance Notes²¹.

Many of the activities to be funded under this programme would also make positive contributions to education and training and to raising general levels of awareness of the nature of the research undertaken and the benefits likely to accrue.

I.0.10. Dissemination actions

Building a European transport system that serves the citizen and society by means of safe, secure, greener, quality transport options for the demands of life in the 21st century requires significant RTD investment. The composition of partnerships is of paramount importance to ensuring the dissemination and exploitation of results of this investment with the aim of producing innovative products and services. From research and technology development to

²⁰ ERA-NET activities will be subject to a joint call across the Specific programme 'Cooperation' – See Annex 4.

²¹ ftp://ftp.cordis.europa.eu/pub/fp7/docs/negotiation_en.pdf

market, all actors should be present in the project partnerships accordingly with their role, particularly in downstream research.

There is also a need for a better understanding of the positive impacts of transport on modern society as well as measures that need to be taken to mitigate the negative impacts of enhanced mobility. Better public engagement, raising awareness and education are important components of the communication and dissemination strategy for the Transport theme and specific actions will be taken to ensure greater visibility and understanding of EU investments.

I.0.11. Risk Sharing Finance Facility

In addition to direct financial support to participants in RTD actions, the European Union is improving their access to private sector finance by contributing financially to the 'Risk-Sharing Finance Facility' (RSFF) established by the European Investment Bank (EIB).

The European Union contribution to RSFF is being used, by the Bank, in accordance with the eligibility criteria set out in Annex 4 of this work programme, RSFF support is not conditional on promoters securing grants resulting from calls for proposals described herein, although the combination of grants and RSFF-supported financing from EIB is possible.

The use of the European Union Contribution from the Specific Programme 'Cooperation' is on a 'first come, first served' basis and is not constrained by the proportional contribution of Themes. Further information on the RSFF is provided in Annex 4 of this work programme.

Further to the RSFF scheme, the EIB has other instruments including the 'European Clean Transport Facility', to provide cost-based loans to the transport sector (producers and suppliers) to finance innovation, with particular attention to the 'European Green Cars Initiative', where technologies improving safety and the environmental performance of vehicles and systems are targeted.

7.1. AERONAUTICS AND AIR TRANSPORT

I.1. CONTEXT

The scope of research includes the technologies, services and operations of all the components of the air transport system (i.e. aircraft, airport and air traffic management) from airport kerbside to airport kerbside, excluding the non-travel aspects of the system, ticketing and ground vehicles.

Six Activities are addressed in agreement with the Strategic Research Agenda of ACARE²²:

- 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

I.1.1. Approach

The programme for Aeronautics and Air transport in FP7 includes the full range of research and technology development from basic research to large scale technologies integration and validation activities in support of research as well as policy related activities, in particular in the area of airport capacity. In order to reflect the level of readiness of the developed technologies with respect to the final application that is commonly used in aeronautics, three Levels, detailed further below, are applicable. Within this structure, Topics are grouped in Areas.

Against this background, the work programme for the 2011 call (WP2011) is based on the following principles:

- WP2011 complements WP2010 (2010 Call). While WP2010 addressed only Level 1 topics, the WP2011 is:
 - Concentrated mainly on Level 2 topics, to which the majority of the Call budget is allocated (approximately 90%). The Level 2 topics in WP2011 highlight four axes of technologies and processes integration at system level, namely the aero-engine, the airframe, the on-board equipment and the airport.
 - Addressing, with a small part of the Call budget (approximately 10%), Level 1 topics only under the Activity 'Pioneering the Air Transport of the Future'. Therefore the other five Activities ('Greening', 'Time Efficiency', 'Customer Satisfaction and Safety', 'Cost Efficiency' and 'Protection') are closed for Level 1 topics in this Call.

It should be noted that the activities 'Greening' and 'Cost Efficiency' were fully open in the 2010 call, while the activities 'Time Efficiency' and 'Customer Satisfaction and Safety' were partially open for airports related work and for safety related work, respectively. The activity 'Protection', which was closed in the 2010 call, remains closed

²² ACARE: Advisory Council for Aeronautics Research in Europe (www.acare4europe.org).

in WP2011, as there is substantial relevant work carried out under the Security theme of FP7.

Topics and areas which are not open in WP2011 may be taken up again in subsequent calls.

- Networks of Excellence are not included in WP2011.
- Coordination Actions (CSA-CA) can address only the topics open for Level 1 (i.e. 'Pioneering the Air Transport of the Future').
- Support Actions (CSA-SA) are included in a number of relevant topics.

Level 1

It comprises the research and technology development activities that span from basic research to the validation of concepts at component or sub-system level in the appropriate environment through analytical and/or experimental means. The objective of these upstream research activities is to improve the technology base with proven concepts and technologies which could be eventually integrated and validated at a higher system level.

Broad topics of research for Level 1 are identified in the corresponding part of the work programme (i.e. under Activity 'Pioneering the Air Transport of the Future').

They can be addressed in the proposals with a high degree of flexibility, selecting only some of the topics or combining them where needed. They will be the subject of 'Collaborative Projects' of small or medium-scale (CP-FP) with a maximum requested EU contribution of EUR 4 million, which is an additional eligibility criterion.

Level 2

It comprises the research and technology development activities up to higher technology-readiness, centred on the multidisciplinary integration and validation of technologies and operations at a system level in the appropriate environment (large scale flight and/or ground test beds and/or simulators). The objective of these focused downstream research activities is to produce proven multidisciplinary solutions that work reliably in integration at the scale of a system.

Specific topics for Level 2 are identified in the corresponding part of the work programme. Proposals can address only one of the proposed topics and should address it in its entirety. They will be the subject of large scale integrating 'Collaborative Projects' (CP-IP) with a minimum requested funding of EUR 6 million, which threshold constitutes an additional eligibility criterion, and an indicative maximum EU funding of EUR 40 million.

Level 3

It comprises the research and technology development activities up to the highest technology readiness, focusing on the combination of systems and the final proof in the appropriate operational environment of the comprised technologies in fully integrated system of systems.

No topic is included in this Work Programme for 2011.

These activities of full-system technologies' demonstration will be undertaken in large scale public-private partnerships especially established for this purpose in specific areas: the 'Clean Sky' Joint Technology Initiative relevant mainly to the Work Programme Activity 'The Greening of Air Transport' and SESAR, Single European Sky Air Traffic Management Research. Clean Sky and SESAR will also cover research activities of lower technology readiness levels (i.e. Level 1 and Level 2), where appropriate.

The Work Programme includes also the following categories of activities in support of the research activities:

Structuring European Aeronautics Research

This comprises activities aiming at strengthening excellence in particular research fields through networking. These activities will be the subject of 'Coordination and Support Actions - Coordinating Action' (CSA-CA).

Topics open to 'CSA-CA' are identified in the same part of the work programme corresponding to Level 1 (i.e. under the Activity 'Pioneering the Air Transport of the Future'). Proposals can address one of the topics or a combination of them where needed.

Note that no topic for NoEs is open in 2011.

Supporting Programme Implementation

This comprises activities aimed at setting mechanisms or developing strategies for the implementation of the Programme in aspects related to its technical content, the appropriate participation of entities and countries or the focus of its activities.

Specific topics for this type of activities are identified in the corresponding part of the work programme (Cross-cutting Activities for Implementation of the Sub-theme Programme). Proposals can address one or a combination of the proposed topics. They will be the subject of 'Coordination and Support Actions - Supporting Action' (CSA-SA).

Typical maximum requested funding of CSA-SA projects will be EUR 300 000 and only in well justified cases the funding could be up to EUR 500 000.

I.1.2. 'Clean Sky' Joint Technology Initiative

The 'Clean Sky' Joint Technology Initiative²³ (www.cleansky.eu) (CS) is a unique public private partnership aiming to develop environmentally friendly technologies impacting all flying segments of commercial aviation with the aim of contributing to the ACARE targets for reduction of emissions and noise in Air Transport in Europe²⁴, thus contributing to improving the Air Transport system worldwide. It shall spearhead the contribution of aviation

²³ The 'Clean Sky' Joint Undertaking was established under Council Regulation (EC) N° 71/2008 of 20 December 2007 (OJ L 30, 04.02.2008).

²⁴ Europe in this context means Member States and countries associated to the Seventh Framework Programme, i.e. Switzerland, Israel, Norway, Iceland, Liechtenstein, Turkey, Croatia, the Former Yugoslav Republic of Macedonia, Serbia, Albania and Montenegro (April 2008).

in minimising the impact of anthropogenic activities on climate change, thus provide socio-economic benefits to European citizens and society and increase the competitiveness of the European aeronautical industry.

To implement CS, the European Union, represented by the Commission, and the major aeronautical stakeholders in Europe have agreed to set up a Joint Undertaking as a legal entity for the period up to 2017. The Council Regulation²⁵ setting up the CS JU was adopted by the Council of Ministers on 20 December 2007, and was published in the Official Journal of the European Union on 4 February 2008. The Statutes of the CS JU are an integral part (Annexed) to the Council Regulation.

The objective of the CS Joint Undertaking (CS JU) is achieved through the support of research activities that pool resources from the public and private sectors, and that are carried out by the main aeronautical stakeholders (private CS members) directly and by partners selected following the response to open and competitive calls for proposals. CS technical activities by private Clean Sky members started in summer 2008. The total budget of CS, equally divided between the EU and private members, and divided between the EU and partners according to funding rules similar to FP7, is up to EUR 1.6 billion.

Clean Sky is organized in six Integrated Technology Demonstrators, each led by two founding members and active through a matrix structure:

- Smart Fixed Wing Aircraft (SFWA) led by Airbus and Saab
- Green Regional Aircraft (5GRA) led by Alenia Aeronautica and EADS Casa
- Green Rotorcraft (GRC) led by Agusta-Westland and Eurocopter
- Sustainable and Green Engines (SAGE) led by Rolls-Royce and Safran
- Systems for Green Operations (SGO) led by Thales Avionics and Liebherr Aerospace
- Eco-design (ED) led by Dassault Aviation and Fraunhofer Gesellschaft

A Technology Evaluator (TE) led by Thales Avionics and DLR is at the core of CS with the purpose of assessing the environmental performance of the technologies developed in CS at sub-system, system and system of systems level.

During 2009 the CS JU reached its full operational capacity to implement its own budget and became autonomous on the 16 November 2009. Until that point the Commission was responsible for the establishment and initial operation of the CS JU with the involvement of the Governing Board in accordance with Article 16 of the Council Regulation.

At least 25% of the EU funding to the CS JU will be allocated to partners selected via calls for proposals. Calls will be launched by each ITD. They serve the dual purpose of widening the participation to Clean Sky to further organizations and to identify R&D performers called in to participate to the mainstream activities of Clean Sky. Partners selected via calls for proposals will be funded in compliance with the upper funding limits set in the Rules of Participation of the Seventh Framework Programme.

²⁵ Council Regulation (EC) No 73/2008 O.J. L 30 of 4.2.2008 p.38.

Activities to be carried out by partners selected via calls will be an essential part of the core R&D activities of Clean Sky and will have to lock in with the activities carried out by CS JU members other than the European Union.

The Joint Undertaking ensures coordination of Clean Sky activities with other relevant research in the Framework Programme, national or industrial programmes.

The activities related to Clean Sky are implemented by separate mechanisms and the details of topics will not be elaborated in this work programme.

I.1.3. SESAR – Single European Sky Air Traffic Management (ATM) Research

The background of the SESAR Programme

The SESAR (Single European Sky ATM Research) Programme has been launched as an integrated part of the Single European Sky initiative (SES). This programme represents the technological pillar of the SES and aims at developing a modernized and high-performance air traffic management infrastructure which will enable the safe, cost-efficient and environmentally friendly development of air transport.

In order to rationalize and organize ATM research so that it leads to actual operational and industrial implementation, all Air Traffic Management (ATM) research in the Seventh Framework Programme will be undertaken and implemented by the SESAR Joint Undertaking (SJU), established by a Council Regulation²⁶, under Article 187²⁷ of the TFEU. This Joint Undertaking coordinates the SESAR programme with other aeronautical research activities in order to maintain a consistent system wide approach for the entire air transport system and manages all ATM research in order to avoid possible duplications between different programmes.

The SESAR Programme is composed of three phases:

- The Definition phase (2005-2008), which delivered an ATM Master Plan for 2020 and beyond, defining the content of the next generation of ATM systems, and identifying the necessary elements for its realization. The Definition Phase resulted in 6 Deliverables²⁸ of which the main one is the ATM Master plan, which constitutes the road map for the development and deployment of the future European ATM system. The ATM Master plan was endorsed by the Council of the European Union in March 2009, making it the "European ATM Master plan".
- The Development phase (2008-2013), which, managed by the SESAR Joint Undertaking, will develop through targeted and coherent research, development and validation activities the necessary elements on the basis of the Definition phase findings.
- The Deployment phase (2013-2020), through which there will be large scale production and implementation of the new air traffic management infrastructure, composed of fully

²⁶ Council Regulation (EC) N° 219/2007, amended by Council Regulation 1361/2008 of 16.12.2008.

²⁷ Ex Article 171 TEC.

²⁸ D1: Air Transport Framework – the current situation; D2: the ATM Performance Targets; D3: the ATM Target Concept; D4: the ATM Deployment Sequence; D5: the SESAR Master plan; once endorsed by the EU Council, it will become the ATM Master plan; D6: the Work Programme for 2008-2013.

harmonized and interoperable components which guarantee high performance air transport activities in Europe.

The structure of the SESAR Programme

The whole ATM Network R&D Programme activities will develop and deliver the necessary operational and technical materials (specifications, procedures, mock-ups, prototypes, validation reports, etc.) for the progressive industrialization, deployment and operation of a new ATM system.

The SESAR work programme of the SESAR Development Phase is divided into following Work Packages (WPs) and thematic areas:

1) Operational ATM research will be addressed under WPs:

- a) WP 4: En-route Operations
- b) WP 5: Terminal Management Areas (TMA) Operations
- c) WP 6: Airport Operations
- d) WP 7: Networking Operations
- e) WP E: SESAR Long term and innovative Research

2) System research considerations are addressed under WPs:

- f) WP 9: Aircraft systems
- g) WP 10: En-Route & Approach ATC Systems
- h) WP 11: Flight Operations Centre System
- i) WP 12: Airport Systems
- j) WP 13: Network Information Management System
- k) WP 15: Non Avionics Communication-Navigation-Surveillance (CNS) Systems

3) System Wide Information Management (SWIM) considerations are addressed under WPs:

- l) WP 8: Information Management
- m) WP 14: SWIM Technical Architecture

4) Transversal activities, such as validation infrastructure, development of safety, security, environment and human performance cases, maintenance and updates of the European ATM Master Plan, of the Target Concept and its Architecture, are dealt by a number of additional WPs, which are:

- n) WP B: (High-level) Target concept and architecture maintenance
- o) WP C: European ATM Master Plan maintenance
- p) WP 3: Validation infrastructure needs management
- q) WP 16: R&D Transversal areas

It is expected that the transversal WPs will contribute to maximising benefits of operational and system Work Packages.

The SESAR development phase programme is composed of over 250 research projects and transversal activities. Furthermore, in accordance with its mandate, the SJU carries out tasks which aim at ensuring the involvement of the relevant stakeholders in the ATM sector. The SJU will also ensure cooperation with third countries and international organizations in order to develop global interoperable solutions for ATM. Although most of these projects and

activities will be carried out by the members of the SJU and their associates, a number of activities shall be launched directly by the SJU through calls for tenders or calls for proposals.

The detailed description of the Work Packages and technical description of work can be obtained via the SJU webpage under the following link: <http://www.sesarju.eu>

The ATM research, development and validation activities will be managed and implemented by the SJU through separate mechanisms. The details will not be developed in this Work Programme for 2011.

The European Union will provide a maximum total contribution of EUR 700 million to the SJU for the development phase of the programme over the period 2007-2013. This amount will be provided in equal parts from the Seventh Framework Programme for research and technological development and from the Trans-European Network programme. The contribution of EUR 350 million from FP7 shall be transferred to the SJU by the Commission through annual contributions over the entire programme in accordance with a General Agreement concluded between them. This contribution shall be used to finance the costs of the activities in the relevant areas indicated in the work programme, including programme management, and the running costs of the SJU. For this purpose, an amount of EUR 60 million will have to be transferred to the SJU for the year 2011.

I.1.4. International cooperation

International co-operation is already promoted through a number of stimulation actions launched in previous Calls for Proposals in relation to some International Cooperation Partner Countries (ICPC)²⁹:

Geographical area	Stimulation action	Web site
China	AeroChina-2	http://www.cimne.com/aerochina2/
Africa (e.g. South Africa)	Aero-Africa-EU	http://www.aeroafrica-eu.org/
Ukraine	Aero-Ukraine	http://www.aero-ukraine.eu/
Latin America	CoopAIR-LA	http://www.coopair-la.eu

International cooperation will be implemented through two mechanisms:

- 1) All areas and topics open in this work programme are open to researchers and organizations from third countries, in particular countries from the ICPC, and from countries with which the EU has a relevant scientific and technological cooperation agreement. Except if specified differently, funding can be provided to ICPC participants. Funding for organizations from other third countries may be provided on a case-by-case basis if considered essential for carrying out the project.
- 2) Topics AAT.2011.7-19 and AAT.2011.7-20 to explore and stimulate the international cooperation with Canada and Japan, respectively. The participation of organizations from these countries in the proposals, with their own funding, is highly recommended.

²⁹ The list of International Partner Countries is included in Annex 1.

I.1.5. Small and Medium Size Enterprises

The participation of SME in the programme is highly encouraged, continuing the successful actions undertaken in Framework Programme 6 and previous calls in FP7 (www.aeroportal.eu), so to support the development of a strong supply chain in a competitive aeronautical sector, recognising the important role of SME in the innovation of products and services.

SME participation is expected in Collaborative Projects at Level 1 and Level 2, as well as in the research carried out in the 'Clean Sky' Joint Technology Initiative and the SESAR Joint Undertaking.

The stimulation action AAT.2011.7-11 is open for Coordination and Support Actions – Supporting to continue promoting the participation of SME in the programme.

II.1. CONTENT OF CALLS FOR 2011

ACTIVITY 7.1.1. THE GREENING OF AIR TRANSPORT

Developing technologies to reduce the environmental impact of aviation with the aim to halve the emitted carbon dioxide (CO₂), cut specific emissions of nitrogen oxides (NO_x) by 80% and halve the perceived noise. Research will focus on furthering green engine technologies including alternative fuels technology as well as improved vehicle efficiency of fixed-wing and rotary wing aircraft (including helicopters and tiltrotors), new intelligent low-weight structures, and improved aerodynamics. Issues such as improved aircraft operations at the airport (airside and landside) and air traffic management, manufacturing, maintenance and recycling processes will be included³⁰.

► **TOPICS FOR LEVEL 1**

AREA 7.1.1.1. Green aircraft

No topic is open in 2011.

AREA 7.1.1.2. Ecological production and maintenance

No topic is open in 2011.

AREA 7.1.1.3. Green air transport operations

No topic is open in 2011.

► **TOPICS FOR LEVEL 2**

AAT.2011.1.4-2. Systems approach to improved core engine thermal efficiency

Expected impact: The work should aim at providing the European aero-engine manufacturing industry with improved capability to produce more environmentally friendly turbine engines. In particular, the objective is to further reduce CO₂ emissions through increasing core engine thermal efficiency by increasing overall pressure ratio (OPR) beyond 50:1, while avoiding an increase of NO_x emissions.

Scope: The project should further develop and integrate key technologies for improving thermal efficiency, namely:

- Innovative compressor for ultra-high pressure ratio cycle up to 70:1.
- HP-IP compressor inter-cooling.
- Low NO_x combustion to compensate for higher pressure ratio cycles.

³⁰ The above text is a reproduction of the text included in the Council Decision on the Specific Programme Cooperation regarding this activity. The topics and areas open in each call for proposals do not necessarily have to cover all the issues mentioned in this text.

- Combustor-turbine interaction.
- Active heat management for further increased thermal efficiency, including aspects of turbine cooling, core engine cooling and sealing.
- Advanced structural components to enable high OPR.

These activities should be supported with validation platforms at component, subsystem and system level, where appropriate. The project should complement on-going research work, including the 'Sustainable and Green Engine' ITD of Clean Sky, and build upon the results of projects at European and national level such as NEWAC.

Funding scheme: Collaborative Projects - large scale integrating projects

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-AERONAUTICS and AIR TRANSPORT (AAT)-2011-RTD-1

► TOPICS FOR LEVEL 3

The 'Clean Sky' Joint Technology Initiative will cover Level 3 research activities.

► TOPICS FOR STRUCTURING EUROPEAN AERONAUTICS RESEARCH

No topic is open in 2011.

ACTIVITY 7.1.2. INCREASING TIME EFFICIENCY

Realising a step-change in aviation in order to accommodate the projected growth of three times more aircraft movements by improving punctuality in all weather conditions and reducing significantly the time spent in travel-related procedures at airports while maintaining safety. Research will develop and implement an innovative Air Traffic Management (ATM) system within the context of the SESAR initiative, by integrating air, ground and space components, together with traffic flow management and more aircraft autonomy. Design aspects of aircraft to improve handling of passengers and cargo, novel solutions for efficient airport use and connecting air transport to the overall transport system will also be addressed. The most efficient coordination of the development of ATM systems in Europe will be ensured through the SESAR initiative³¹.

► TOPICS FOR LEVEL 1

³¹ The above text is a reproduction of the text included in the Council Decision on the Specific Programme Cooperation regarding this activity. The topics and areas open in each call for proposals do not necessarily have to cover all the issues mentioned in this text.

AREA 7.1.2.1. Aircraft systems and equipment for improved aircraft throughput

No topic is open in 2011.

AREA 7.1.2.2. Time efficient air transport operations

No topic is open in 2011.

► TOPICS FOR LEVEL 2

AAT.2011.2.3-3. Integrated approach to total airport management for operational efficiency

Expected impact: The work should aim at improving the efficiency, capacity, punctuality, safety, security and environment sustainability of airport operations through an innovative integration of the subsystems comprising the land-side and air-side operations, so to overcome the fragmentation of airport activities. The integrated airport management will bring benefits to passengers to live through a seamless travel experience, as well as to airport stakeholders to increase the predictability and efficiency of their operations.

Scope: The project should develop and validate an innovative system of systems to better manage, control and organize airport operations enabling enhanced aircraft turnaround and passenger, baggage and cargo flows. The following principal airport activities will be included in the total airport management concept:

- Passenger flow in the terminal area, including all related processes for location detection, tracking and tracing from ticketing to boarding, and for infrastructure and staff planning..
- Baggage flow in the terminal area, including greater automation and speed in the handling and tracking and security checks.
- Apron operation, comprising the coordinated management of both aircraft and service vehicles operation.
- Fleet management, including a lean and more automated decisional process, linking on-board systems with airline centres and airport ground information systems for improved turnaround.
- A more comprehensive and fully integrated system for risk mitigation through a wide security monitoring network.
- Environment management system to real-time detection and monitoring of local air quality and noise in the airport area.
- Common information management system, as a backbone of the total airport management system to include fusion of heterogeneous information and data arriving and going to the different sub-systems of airport operation. This should be supported with an innovative IT architecture enabling the IT systems of the different airport stakeholders to work together seamlessly.

The project should make use of the most appropriate techniques, modelling tools, devices and emerging technologies and integrating existing solutions where appropriate. It should take into account the results of the SPADE-2 project as well as of other projects at European and national level, in particular research projects funded under the Security Theme of FP7 as regards *measures at the border crossing points at airports*. The

interoperability with air traffic management should be coordinated with SESAR Joint Undertaking. The project will also consider a multi-airport management concept for shared operation of proximity alternative airports. Validation will use real and representative examples with actual data and use key performance indicators such as those defined under the ATMAP and Airport Observatory initiatives. To this purpose the project will feature an airport operation centre demonstrator as a main platform for validation of the integrated concept.

Funding scheme: Collaborative Projects - large scale integrating projects

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-AERONAUTICS and AIR TRANSPORT (AAT)-2011-RTD-1

► **TOPICS FOR LEVEL 3**

The SESAR Joint Undertaking will cover Level 3 research activities.

► **TOPICS FOR STRUCTURING EUROPEAN AERONAUTICS RESEARCH**

No topic is open in 2011.

ACTIVITY 7.1.3. ENSURING CUSTOMER SATISFACTION AND SAFETY

Introducing a quantum leap in passenger choice and schedule flexibility, whilst achieving a five-fold reduction in accident rate. New technologies will enable a wider choice of aircraft/engine configurations ranging from wide body to smaller size vehicles including rotorcraft, increased levels of automation in all the elements of the system. Focus will also be on improvements for passengers comfort, well being and new services, cabin logistics systems and active and passive safety measures with special emphasis on the human element. Research will include the adaptation of airport and air traffic operations to different types of vehicles and 24-hour utilization at acceptable community noise levels³².

► **TOPICS FOR LEVEL 1**

AREA 7.1.3.1. Passenger friendly cabin

No topic is open in 2011.

AREA 7.1.3.2. Passenger friendly air transport operations

No topic is open in 2011.

³² The above text is a reproduction of the text included in the Council Decision on the Specific Programme Cooperation regarding this activity. The topics and areas open in each call for proposals do not necessarily have to cover all the issues mentioned in this text.

AREA 7.1.3.3. Aircraft safety

No topic is open in 2011.

AREA 7.1.3.4. Operational safety

No topic is open in 2011.

► TOPICS FOR LEVEL 2

AAT.2011.3.5-1. Integrated approach to a human-centred cabin physical environment

Expected impact: The work should aim at providing the European aeronautical industry with an improved ability to produce the cabin physical environment of the future for the benefit of passengers and crew. The objective is to develop an advanced cabin design approach able to provide passengers and crew with a healthy, comfortable and safe environment, and to contribute to improved crew workload conditions, placing human needs at the centre of the approach.

Scope: The project should integrate and validate technology developments and concepts most relevant to characterize the physical environment of the cabin, namely on the following fronts:

- Noise and vibration, including active and passive treatments.
- Air quality, air conditioning and cabin pressure, including advanced devices to improve air humidity and active/passive filtering for improved health conditions.
- Low-energy and environmentally friendly cabin materials and systems.
- Safety-related systems, including fire worthiness concepts and procedures.
- Cabin lighting and display devices for improving comfort, safety, health and well being in the cabin environment.
- Human factor issues regarding ergonomics, anthropometrics, as well as effects of vibration, noise, motion and cabin pressure on the passenger and crew.

The project should further develop, exploit and capitalize results from past and on-going research at European and national level, as well as standardization efforts, so leading to a quantum leap in cabin design. Validation will be performed in a step-wise approach. In a first step the comprised technologies will be singled or multiplied tested, then in a second step integration will be performed in full-scale test demonstrators representative of the needs of applying the future cabin concept to a range of different types of aircraft, from the smaller size to large airliners.

Funding scheme: Collaborative Projects - large scale integrating projects

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-AERONAUTICS and AIR TRANSPORT (AAT)-2011-RTD-1

► TOPICS FOR LEVEL 3

There are no topics open in 2011 for Level 3 research activities for 'Ensuring Customer Satisfaction and Safety'.

► **TOPICS FOR STRUCTURING EUROPEAN AERONAUTICS RESEARCH**

No topic is open in 2011.

ACTIVITY 7.1.4. IMPROVING COST EFFICIENCY

Fostering a competitive supply chain able to halve the time-to-market, and reduce product development and operational costs, resulting in more affordable transport for the citizen. Research will focus on improvements to the whole business process, from conceptual design to product development, manufacturing and in-service operations, including the integration of the supply chain. It will include improved simulation capabilities and automation, technologies and methods for the realization of innovative and zero-maintenance, including repair and overhaul, aircraft, as well as lean aircraft, airport and air traffic management operations³³.

► **TOPICS FOR LEVEL 1**

AREA 7.1.4.1. Aircraft development cost

No topic is open in 2011.

AREA 7.1.4.2. Aircraft operational cost

No topic is open in 2011.

AREA 7.1.4.3. Air Transport system operational cost

No topic is open in 2011.

► **TOPICS FOR LEVEL 2**

AAT.2011.4.4-3. Integrated approach to smart airframe structures

Expected impact: The work should aim at ensuring European technological leadership in airframe manufacture through taking a step change in the design of smart intelligent aircraft structures. The objective is to further develop and integrate radical new design concepts regarding self-sensing structures, multifunctional materials and morphing

³³ The above text is a reproduction of the text included in the Council Decision on the Specific Programme Cooperation regarding this activity. The topics and areas open in each call for proposals do not necessarily have to cover all the issues mentioned in this text.

techniques. Smart intelligent aircraft structures will bring forward substantial gains in weight reduction, aerodynamic performance and operational costs.

Scope: The project should develop, integrate and validate technologies and concepts, including supporting modelling tools, focusing on two major applications:

1. Wing morphing for improved lift and reduced drag during take-off, cruise and landing. Particular emphasis should be placed on leading edge morphing devices for lift and drag optimization during take-off and landing, and on trailing edge devices for cruise lift control. Validation activities should make use of a wing specific iron bird in a modular approach, testing the comprised elements at component level and in wind tunnels, where appropriate.
2. Integrated sensing and multifunctional materials for smart manufacturing process control and quality assurance, as well as in-service non-destructive testing and smart self-monitoring and self-healing of structures. Validation activities should take place in a fuselage scaled barrel demonstrator. Particular emphasis will be placed on active and passive sensing elements of different types.

The project should feature an increased use of nanoparticles reinforced resins to improve resin performance of carbon fibre reinforced plastic structures. The validation in both the wing and fuselage demonstrators should take a modular approach to integrate and test components in incremental steps, so to reduce risks.

Funding scheme: Collaborative Projects - large scale integrating projects

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-AERONAUTICS and AIR TRANSPORT (AAT)-2011-RTD-1

AAT.2011.4.4-4. Integrated approach to efficient propulsion and related aircraft systems for small-size aircraft

Expected impact: The work should aim at providing European small-size aircraft industry with substantial improved ability to develop and use affordable and environmentally acceptable propulsion units and reliable aircraft systems, minimizing operating costs, while increasing the level of safety.

Scope: The project should develop and integrate key technologies for a range of small gas turbine engines and propulsion related systems to provide aircraft (fixed-wing and rotorcraft) manufactures with better choice of modern propulsion units and improved readiness to integrate them into aircraft. Work should comprise performance improvements of key engine components backed by new modern engine control, health monitoring and integrated systems. The interaction of propulsion system with airframe and with regards to aircraft configuration will be part of the project work. The project should delivery affordable and reliable technological solutions for lowering of aircraft operating costs and for the reduction of environmental impacts. Benefits of technologies already used in larger aircraft or even outside aeronautics should also be exploited.

Activities will include the test rig validation of the most appropriate technologies according to value/cost benefit, as well as their integration into functional complexes and evaluation on the real engine demonstrators; and, if appropriate, on aircraft test beds as well. The project should aim at affordable technological solutions for small certified

aircraft up to 19 passengers, mainly in turboprop variants, used for transport of passengers and cargo, and operating on the scheduled and non-scheduled flights. The project should build upon results of research performed at European and national level, in particular the CESAR project.

Funding scheme: Collaborative Projects - large scale integrating projects

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-AERONAUTICS and AIR TRANSPORT (AAT)-2011-RTD-1

AAT.2011.4.4-5. Integrated modular actuation systems for the future all-electric aircraft

Expected impact: The work should aim at providing the European equipment industry with the leadership in on-board electrical actuation through a definite step towards the full electric aircraft concept. The objective is to further develop electrical actuator technologies and precede to their multidisciplinary integration and validation at a system level for all actuation systems (i.e. flight controls, landing gear, thrust reverser and doors). The introduction of full electric actuation will enable the elimination of the on-board hydraulic system, thereby contributing to a significant reduction of weight, power demand, fuel consumption and operational cost.

Scope: The project should focus on global aircraft electrical actuation featuring a scalable systems approach with modular components, so to arrive to the demonstration of full electrical actuation on all the technical applications: primary and secondary flight controls, landing systems, thrust reversers and doors, for a broad range of aircraft types, from the smaller size to large airliners. It should be able to drive the standardization process in this field of electrical actuation, addressing the corresponding certification requirements. The project should integrate all the essential component technologies, namely sensors, motor, controller and materials, as well as the mechatronics and modelling tools supporting the integration and optimization process. It should include also work on system health monitoring and wireless data flow.

Validation should take place at components and system level, in lab testing and in a common multi-application ground test bed. The project should complement and coordinate with work carried out in the 'Systems for Green Operation' ITD of Clean Sky. It should make use of results of relevant projects at European and national level such as POA and MOET.

Funding scheme: Collaborative Projects - large scale integrating projects

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-AERONAUTICS and AIR TRANSPORT (AAT)-2011-RTD-1

► **TOPICS FOR LEVEL 3**

There are no topics open in 2011 for research activities in 'Improving Cost Efficiency'.

► **TOPICS FOR STRUCTURING EUROPEAN AERONAUTICS RESEARCH**

No topic is open in 2011.

ACTIVITY 7.1.5. PROTECTION OF AIRCRAFT AND PASSENGERS

Preventing hostile action of any kind to incur injury, loss, damage or disruption to travellers or citizens due to the effects of aircraft misuse. Research will focus on the relevant elements of the air transport system including security measures in cabin and cockpit designs, automatic control and landing in the case of unauthorized use of aircraft, protection against external attacks, as well as security aspects of airspace management and airport operations³⁴.

► **TOPICS FOR LEVEL 1**

AREA 7.1.5.1. Aircraft security

No topic is open in 2011.

AREA 7.1.5.2. Operational security

No topic is open in 2011.

► **TOPICS FOR LEVEL 2**

No topic is open in 2011.

► **TOPICS FOR LEVEL 3**

There are no topics open in 2011 for Level 3 research activities for ‘Protection of Aircraft and Passengers’.

► **TOPICS FOR STRUCTURING EUROPEAN AERONAUTICS RESEARCH**

No topic is open in 2011.

ACTIVITY 7.1.6. PIONEERING THE AIR TRANSPORT OF THE FUTURE

Exploring more radical, environmentally efficient, accessible and innovative technologies that might facilitate the step change required for air transport in the second half of this century and beyond. Research will address aspects such as new propulsion and lifting concepts, new ideas for the interior space of airborne vehicles including design, new airport concepts, new

³⁴ The above text is a reproduction of the text included in the Council Decision on the Specific Programme Cooperation regarding this activity. The topics and areas open in each call for proposals do not necessarily have to cover all the issues mentioned in this text.

methods of aircraft guidance and control, alternative methods of air transport system operation and their integration with other transport modes³⁵.

► **TOPICS FOR LEVEL 1**

AREA 7.1.6.1. Breakthrough and emerging technologies

Only through technology breakthroughs air transport will be able to respond to society demands in the second half of this century. Research work will need to adopt a less evolutionary approach and take the risk of exploring more radical departures from conventional thinking which will be able to introduce revolutionary concepts in fundamental disciplines of aircraft design.

Expected impact

Proposals should demonstrate making contributions to setting the foundations of a technology base that might have the power to cause a step change in air transport in the long term.

AAT.2011.6.1-1. Lift

Investigation of new approaches to produce or to control the forces that govern flight, in particular those that lift the vehicle. It could consider topics such as other principles of physics as alternative or in complement to conventional fluid dynamics, computer controlled aircraft morphing into different aerodynamic forms for different flight phases, thrust vectoring to provide lift and control.

Funding scheme: Collaborative Projects - small or medium-scale focused research projects; or Coordination and Support Actions aiming at coordinating research activities

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-AERONAUTICS and AIR TRANSPORT (AAT)-2011-RTD-1

AAT.2011.6.1-2. Propulsion

Investigation of new approaches to create propulsion power and the energy required for powering vehicle systems. It could consider topics such as the application of renewable energy sources, including solar power, new-generation biofuels or "green" synthetic fuels, hybrid propulsion as well as other types of energy such as nuclear, plasma jets, beamed energy or ground-based energy forms, propulsion systems for supersonic, hypersonic and suborbital flight.

Note: Work on hydrogen and fuel cells have been excluded from the 2011 calls as the relevant work will be covered by the FCH JTI.

³⁵ The above text is a reproduction of the text included in the Council Decision on the Specific Programme Cooperation regarding this activity. The topics and areas open in each call for proposals do not necessarily have to cover all the issues mentioned in this text.

Funding scheme: Collaborative Projects - small or medium-scale focused research projects; or Coordination and Support Actions aiming at coordinating research activities

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-AERONAUTICS and AIR TRANSPORT (AAT)-2011-RTD-1

AAT.2011.6.1-3. Interior space

Investigation of new forms of setting the environment for the passenger inside the vehicle. It could consider topics such as the application of future techniques of virtual reality with virtually sensed environments capable of producing higher standards of comfort as well as new functionalities appropriate for all range of flight durations at all altitudes (atmospheric and beyond) and for all types of air vehicles.

Funding scheme: Collaborative Projects - small or medium-scale focused research projects; or Coordination and Support Actions aiming at coordinating research activities

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-AERONAUTICS and AIR TRANSPORT (AAT)-2011-RTD-1

AAT.2011.6.1-4. Life-cycle

Investigation of new approaches to the conception, production and maintenance of air vehicles with higher levels of automation, including the application of advanced technologies in existing aircraft. It could consider topics such as the application of new generation of robotics at all levels of the life-cycle, featuring increased use of modular approaches, self-monitoring and self-healing built in all systems, increased use of nanotechnologies and environmentally friendly novel materials.

Funding scheme: Collaborative Projects - small or medium-scale focused research projects; or Coordination and Support Actions aiming at coordinating research activities

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-AERONAUTICS and AIR TRANSPORT (AAT)-2011-RTD-1

AREA 7.1.6.2. Step changes in air transport operation

In addition to technology breakthroughs in fundamental disciplines of aircraft design, new concepts of the air transport system itself will be needed in the long term. Research work will also need to depart from conventional thinking in order to be able to introduce revolutionary concepts in the operation of the air transport of the future.

Expected impact

Proposals should demonstrate making contributions to setting the foundations of new paradigms that have the power to cause a step change in air transport in the long term.

AAT.2011.6.2-1. Novel air transport vehicles

Investigation of novel aircraft configurations which could be better adapted to provide the services that future air transportation concepts demand, including combined transport modes vehicles (hybrid vehicles). Consideration should be given to overcoming the weaknesses of current configurations, taking a mission oriented perspective where the vehicle is to be fully integrated in the total transport system. Vehicle size and mission could range from very small door to door personal transport to very large platforms of transportation, including those suitable for new forms of networking traffic flows, air-to-air and air-to-ground, at subsonic, supersonic or hypersonic (suborbital flight) speeds addressing the environmental concerns regarding energy consumption and noise and setting clearer differentiations between vehicles to transport passengers or goods.

Funding scheme: Collaborative Projects - small or medium-scale focused research projects; or Coordination and Support Actions aiming at coordinating research activities

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-AERONAUTICS and AIR TRANSPORT (AAT)-2011-RTD-1

AAT.2011.6.2-2. Guidance and control

Investigation of new approaches to guide and control the vehicle flight with very high or total automation. It could include topics such as the application of new generation computers, on-board or on-ground, to entirely manage the flight and provide for pilot-free operation with the possibility to reverse the operation to human control, robotic technologies embodied in autonomous robots to perform specific guidance and control tasks.

Funding scheme: Collaborative Projects - small or medium-scale focused research projects; or Coordination and Support Actions aiming at coordinating research activities

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-AERONAUTICS and AIR TRANSPORT (AAT)-2011-RTD-1

AAT.2011.6.2-3. Airports

Investigation of new philosophies to establishing the interface between the flight vehicle and the ground and for related passenger operations. It could include topics such as the concept of on-ground, on the sea or in-air docking in place of parking the vehicle for conducting the transfer of passengers or goods, air stations located off-shore in the proximity of land littorals, new concepts of aggregating passengers and baggage into the traffic flows and into the intermodal connexions.

Funding scheme: Collaborative Projects - small or medium-scale focused research projects; or Coordination and Support Actions aiming at coordinating research activities

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-AERONAUTICS and AIR TRANSPORT (AAT)-2011-RTD-1

AREA 7.1.6.3. Promising pioneering ideas in air transport

Under the auspices of ACARE, the European Commission funded in 2006-07 the "Out of the Box" study³⁶ to identify potential new concepts and technologies for air transport in the future, implying radical changes in the system.

The study resulted in a few ideas that are seen as most promising because they offer the prospect of substantial impact and benefit to the air transport system, they are radical rather than evolutionary, they are forward looking rather than immediate in application and had specific technology challenges. These ideas are at the level of 'systems of systems' and therefore each of them will embrace a number of technical fronts and technologies without which they will be unviable.

The following three promising ideas have been incorporated in this Work Programme. Proposals addressing them are encouraged, however it is to be noted that it is not suggested that a project proposals attempt to cover the entirety of issues and technologies embraced in a proposed idea, but to address some of them so that progress can be made in assessing their viability or paving the way towards their realization.

Expected impact

Proposals should demonstrate making contributions to the investigation of some or various of the key elements that comprise the three promising ideas listed in this Area.

AAT.2011.6.3-1. The cruiser/feeder concept

Investigation of the concept involving very large aircraft which remain airborne for very long periods on stable routes around the world, interconnecting major populated centres (cruiser). The feeders would transfer passengers and freight to/from the cruiser at interception points in flight. The environmental impact of the feeder/cruiser system could be considerably better than the present system, as fuel consumption could be substantially less.

A number of variants in the mode of operation and in the cruiser and feeder air vehicles are possible. There is the need to study the system and its components in a structured approach. The best type of propulsion for the cruiser, the cruiser-feeder docking operation, the optimal feeder and cruiser architectures and the operation of transferring passengers and goods from the feeder to the cruiser and vice-versa are essential aspects of research.

Relevant underpinning research topics could be found also in other parts of this Work Programme, in particular in AAT.2011.6.2-1 and AAT.2011.6.2-3.

Funding scheme: Collaborative Projects - small or medium-scale focused research projects; or Coordination and Support Actions aiming at coordinating research activities

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-AERONAUTICS and AIR TRANSPORT (AAT)-2011-RTD-1

AAT.2011.6.3-2. Take-off and landing with ground-based power

³⁶ 'Out of the Box. Ideas about the future of Air Transport'. Report on Phase 1 – December 2006. Report on Phase 2 – June 2007.

The objective is to replace the on-board power and systems specifically dedicated to performing the take-off and landing of the air vehicle with power and systems provided from ground. The potential benefits are a significant reduction in fuel consumption and aircraft weight, reduction of the environmental impact and improvement of noise nuisances in the vicinity of airports.

Different type of ground assistance concepts could be envisaged based for example on different type of energy sources and mechanisms for impelling the vehicle to take off the ground. Regarding the landing operation a major advantage is the possible elimination of heavy landing gears and related systems.

Relevant underpinning research topics could be found also in other parts of this work programme, in particular in AAT.2011.6.2-1 and AAT.2011.6.2-3.

Funding scheme: Collaborative Projects - small or medium-scale focused research projects; or Coordination and Support Actions aiming at coordinating research activities

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-AERONAUTICS and AIR TRANSPORT (AAT)-2011-RTD-1

AAT.2011.6.3-4. New sources of aircraft main propulsive power

Investigation and system analysis of concepts and technologies for the utilization of new sustainable primary sources of energy in the propulsion of the aircraft. All energy sources, including renewable ones, could be considered.

A new view of the aircraft propulsive system is to be taken, beyond that of the gas-turbine concept. In addition to the economics of the operation, due regard is to be given to the environmental aspects related to its supply, use and eventual disposal of possible residues. An important subject will be the integration of the propulsive system in the vehicle.

Relevant underpinning research topics could be found also in other parts of this work programme, in particular in AAT.2011.6.1-2.

Note: Work on hydrogen and fuel cells has been excluded from the 2011 calls as the relevant work will be covered by the FCH JTI

Funding scheme: Collaborative Projects - small or medium-scale focused research projects; or Coordination and Support Actions aiming at coordinating research activities

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-AERONAUTICS and AIR TRANSPORT (AAT)-2011-RTD-1

► TOPICS FOR LEVEL 2

No topic is open in 2011.

► TOPICS FOR LEVEL 3

There are no topics open in 2011 for Level 3 research activities for 'Pioneering the Air Transport of the Future'.

► **TOPICS FOR STRUCTURING EUROPEAN AERONAUTICS RESEARCH**

No topic is open in 2011.

7.1.7. CROSS-CUTTING ACTIVITIES FOR IMPLEMENTATION OF THE SUB-THEME PROGRAMME

Note. In the following Coordination and Support Actions, a maximum of one proposal per topic could be retained for funding, except for topic AAT.2011.7-9 where more than one proposal could be retained. Typical maximum requested funding per project will be EUR 300 000 and only in well justified cases the funding could be up to EUR 500 000.

AAT.2011.7-9. Supporting the organization of conferences and events of special relevance to aeronautics and air transport research

Expected impact: Proposals should demonstrate contributing to raise the profile of European aeronautics and air transport research as a whole.

Scope: Activities will include in particular the organization of conferences or other type of events at European level. The events should address broad scientific/technical subjects important to the sector with a significant European or world-wide dimension. Integrating policy and socio-economic issues will be an added value, as well as the dissemination of relevant European funded research.

Funding scheme: Coordination and Support Actions aiming at supporting research activities

Open in call: FP7-AERONAUTICS and AIR TRANSPORT (AAT)-2011-RTD-1

AAT.2011.7-11. Stimulating the participation of small and medium size enterprises (SME) and other small organizations for improved integration of the European Research Area

Expected impact: Proposals should demonstrate contributing to support the participation of SME and small entities in general in the programme, so to strengthen the capabilities of the European aeronautical supply chain and to enhance the competitiveness of the European aeronautical industry, recognising the important role of SME in the innovation of products and services.

Scope: Actions to disseminate information about Aeronautics and Air Transport Calls and ongoing research projects, to provide ad hoc support and training for partners and coordinators who want to set-up a proposal. The actions will target partners who have difficulties to access relevant information, such as SMEs and small entities embedded in larger organizations. Particular attention will be dedicated to Member States who have a deficit of integration to the European Research Area. The actions will also contribute to assess the participation and the innovation process of this type of organizations.

Proposals should build upon best practices of previous stimulation projects and incorporate innovative improvements. **It will be useful if the proposals** include explicit cooperation with other relevant support organizations and other EU initiatives and projects in order to avoid duplication of efforts.

Funding scheme: Coordination and Support Actions aiming at supporting research activities

Open in call: FP7-AERONAUTICS and AIR TRANSPORT (AAT)-2011-RTD-1

AAT.2011.7-18. Assessing the role and needs of air freight in air transport

Expected impact: Air freight may be less visible than passenger air transport; however, it is increasing at greater growth rates, and it enables intra-EU and world-wide so supporting the European industry at large. Knowledge of effective, efficient and sustainable solutions for air freight is a key to air transport. Proposals should demonstrate contributing to an improved understanding of the role that air freight can play as a component of air transport and of the transport system in a multimodal approach.

Scope: Study to develop a technology road map and supporting business case of air freight as a component of the air transport system. Particular attention should be placed on the specificities of the vehicle and its operation, which should be regarded distinct that those of passenger transportation. The task will identify the technologies necessary to meet the safety, environmental, operational and economic requirements, including integration into the European ATM environment, ensuring complementarity with SESAR. Intermodality and co-modality aspects with other transport modes should be given due attention.

Funding scheme: Coordination and Support Actions aiming at supporting research activities

Open in call: FP7-AERONAUTICS and AIR TRANSPORT (AAT)-2011-RTD-1

AAT.2011.7-19. Exploring opportunities and stimulating research cooperation with Canada

Expected impact: Aeronautics and air transport faces global challenges, such as the environmental impact, safety, security and the interoperability of operational systems. Europe is a world leader in commercial aviation; likewise the capabilities of Canada in this sector are widely recognized. Significant benefits could be obtained for future air transport and for the industry in both sides, if Europe and Canada could join efforts in research dealing with key issues of the challenges facing the sector at global scale on a win-win basis.

Scope: Actions aiming to set a platform of communication and forward looking between research organizations (industry, research establishments, academia) and/or institutions in Europe and Canada. They could include the organization of workshops and short term studies to identify preferred areas of common interest and win-win situations, barriers and solutions for improved cooperation in research and technology development, and recommendations for future actions, including relevant roadmaps. Proposals should demonstrate having a good knowledge of research mechanisms in the EU and Canada, and contribute to explore and stimulate opportunities of research cooperation, taking into account ongoing cooperation initiatives.

Proposals should provide indications of the sustainability of the approach after project end.

Funding scheme: Coordination and Support Actions aiming at supporting research activities

Open in call: FP7-AERONAUTICS and AIR TRANSPORT (AAT)-2011-RTD-1

AAT.2011.7-20. Exploring opportunities and stimulating research cooperation with Japan

Expected impact: Aeronautics and air transport faces global challenges, such as the environmental impact, safety, security and the interoperability of operational systems. Europe is a world leader in commercial aviation; likewise, the emerging capabilities of Japan in this sector are widely recognized. Significant benefits could be obtained for future air transport and for the industry in both sides, if Europe and Japan could join efforts in research dealing with key issues of the challenges facing the sector at global scale on a win-win basis.

Scope: Actions aiming to set a platform of communication and forward looking between research organizations (industry, research establishments, academia) and/or institutions in Europe and Japan. They could include the organization of workshops and short term studies to identify preferred areas of common interest and win-win situations, barriers and solutions for improved cooperation in research and technology development, and recommendations for future actions, including relevant roadmaps. Proposals should demonstrate having a good knowledge of research mechanisms in the EU and Japan, and contribute to explore and stimulate opportunities of research cooperation, taking into account ongoing cooperation initiatives.

Proposals should provide indications of the sustainability of the approach after project end.

Funding scheme: Coordination and Support Actions aiming at supporting research activities

Open in call: FP7-AERONAUTICS and AIR TRANSPORT (AAT)-2011-RTD-1

AAT.2011.7-22. Assessing the educational needs of engineers and researchers in aeronautics and air transport

Expected impact: The project will enhance the adequacy between the educational needs of engineers and researchers in the field of aeronautics and air transport and the educational offer from the relevant establishments in Europe.

Scope: The proposal should demonstrate contributing to review, assess and foresee the current and future qualification needs and offers for the education of engineers and researchers in industry, research centres and academia. This should include long-life learning, and take into account the recent evolutions and trends in the aeronautics and air transport sector and the educational system (e.g. Bologna process). The assessment should compare the attractiveness of educational offer with other disciplines and/or regions of the world. Results and conclusions will be communicated to the relevant stakeholders and corrective actions proposed where relevant.

Funding scheme: Coordination and Support Actions aiming at supporting research activities

Open in call: FP7-AERONAUTICS and AIR TRANSPORT (AAT)-2011-RTD-1

AAT.2011.7-23. Technology support for crisis coordination for the air transport system following major disrupting events

Expected impact: The Eyjafjallajökull eruption in Iceland and the dramatic consequences for air transport showed how important the quality of technological and data support available is to enable an appropriate risk assessment and adequate decisions to be taken in the case of incidences and events with potential effects on a large geographic scale and on complex systems with high safety requirements and a business driven approach as in air transport. On 27 April 2010 the Commission published an information note outlining the needs to accelerate research and development:

- To improve data collection and modelling methodologies such as satellite observation and imagery, atmospheric in situ measurements, dispersion models, etc.
- To establish input from geological, satellite and other observation and forecasting tools with technical risk assessments applicable to aircraft and engine systems, and the needs of safe air space and air traffic management.
- Reliability and more responsive validation of the risk assessment models supporting the decision making.
- To ensure that identified gaps of data and information are filled in order to support a robust and more detailed risk assessment for future such events.
- To adopt latest technology such as new onboard sensing technologies (e.g. Radar, Lidar, etc.).
- To analyse the use of unmanned aircraft systems (UAS) for atmospheric measurements, complementing as well as replacing the traditional in-situ measurements with balloons allowing continuous data collection.
- How different transport modes are able to react and compensate – in the event of a major shutdown of one of these modes – typically air transport.

This coordination and support action is expected to provide a significant contribution to this process, including input to the crisis coordination cell, the aviation platform and the working group of experts proposed in the information note of the Commission of 27 April 2010.

Scope: This Coordination and Support action is expected to support the stock-taking process for the above mentioned aspects through the establishment of an interdisciplinary and cross-sectoral network (comprising expertise from observation and measurement, aeronautics industry, aircraft operators and pilots, network managers, risk management specialists, scientists, etc.) and to compile an inventory of recent and ongoing R&D activities within relevant areas, and financed through different programmes at EU (FP5/6/7, environment, space/GMES, aeronautics, security, etc.) as well as at national level, and within relevant institutions, such as ESA and Eumetsat.

The objective is to compare, analyse and validate the results of relevant projects and activities in a structured peer review process, and to propose the most mature and relevant new developments for concepts and methodologies, data sources and models, etc. for take-up in risk detection, assessment and risk management in the event of future such scenarios. For this purpose, one objective is to develop a coherent approach to the validation of the

relevant input data, models, etc., targeted for the specific purpose of risk management in air transport, as developed and applied at European level and in ICAO.

In addition, the needs and scope for further R&D and validation activities should be identified in an R&D roadmap.

The areas considered should include natural hazards which have the potential to cause major disruption to air transport such as volcanic eruptions, earthquakes, unusual weather conditions, etc., as well as incidents resulting from human activities such as nuclear and other incidents/accidents, and terrorist attacks. The proposed network should involve input from manufacturers (airframe and engine manufacturers and equipment manufacturers for sensing issues) and operators (pilots) of aircraft, operations and safety related aspects. The involvement of relevant organizations from non-EU countries will be welcome.

Funding scheme: Coordination and Support action aiming at supporting research activities
Open in call: FP7-AERONAUTICS and AIR TRANSPORT (AAT)-2011-RTD-1

7.2. SUSTAINABLE SURFACE TRANSPORT (INCLUDING THE ‘EUROPEAN GREEN CARS INITIATIVE’)

I.2. CONTEXT

The scope of the research covers the entire Surface Transport System and embraces all its elements: products (vehicles, vessels and infrastructures), services, operations and users integrating organizational, legal and policy frameworks.

The **policy dimension** of the Work Programme is derived from the objectives and priorities described in the White Paper on Transport ‘*European Transport Policy for 2010*’ and its mid-term review ‘*Keep Europe moving*’ and takes into account major policy initiatives that may impact on transport, in particular energy and environment. The **industrial dimension** of the Work Programme has benefited from inputs provided by the relevant stakeholders, in particular through the contribution of the various Surface Transport Technology Platforms: ERTRAC (road transport), ERRAC (rail transport) and WATERBORNE^{TP} (waterborne transport) and the EGCI Ad-Hoc Industrial Advisory Group. Inputs from other discussion forums³⁷ have equally been taken into account.

The 2011 work programme is divided into two major action lines:

1) Six activities are addressed, reflecting the strategic and policy challenges facing Europe:

- The greening of surface transport
- Encouraging modal shift and decongesting transport corridors (co-modality)
- Ensuring sustainable urban mobility
- Improving safety and security
- Strengthening competitiveness
- These five activities are complemented with cross-cutting actions addressing several activities.

2) Actions supported under the ‘European Green Cars Initiative’

The ‘European Green Cars Initiative’ belongs to the ‘**European Economic Recovery Plan**’, an initiative to coordinate efforts and implement joint actions to contain the scale of the economic downturn and to stimulate demand and confidence. Within the Recovery Plan, the ‘**European Green Cars Initiative**’ is a series of measures boosting research and innovation aiming at facilitating the deployment of a new generation of passenger cars, trucks and buses that will spare our environment and lives and ensure jobs, economic activity and competitive advantage to car industries in the global market. A series of different measures are proposed: support to research and innovation through FP7 funding schemes, specific EIB loans to car and other transport industries and their suppliers, in particular for innovative clean road transport, and a series of legislative measures to promote the greening of road transport (circulation and registration taxes, scrapping of old cars, procurement rules, CARS21 initiative).

³⁷ Such as EIRAC (transport intermodality and logistics).

I.2.1. Approach

The Sustainable Surface Transport (SST) work programme covers a comprehensive and co-related spectrum of activities:

- **Socio-economic research** in support of the definition and implementation of transport policy taking into account its interactions with other European Union policies related to transport (e.g. society, environment, energy, economy and industrial activity).
- **Basic and applied research** contributing to technological and scientific progress, including skills development.
- Development of **innovative solutions** for surface transport products (vehicles, vessels, infrastructure and their components), processes, operations and services.
- **Breakthrough research** in support of step changes including the incorporation of breakthrough technologies and results from interdisciplinary research (such as nanotechnologies, biotechnologies, new materials and advanced production) into surface transport applications.
- **Large scale and multi-disciplinary technology** and socio-economic integration, validation and demonstration.
- **Structuring European surface transport research** and strengthening excellence through co-ordination and networking activities.
- **Supporting programme implementation** in aspects related to the dissemination and exploitation of existing research results, stimulation of SME participation and international cooperation, communication, citizen awareness and support to new policies related to transport.

I.2.2. Structure

Activities

The Sustainable Surface Transport work programme is structured according to:

- Six activities: Greening (7.2.1), Co-modality (7.2.2), Urban Mobility (7.2.3), Safety & Security (7.2.4) and Competitiveness (7.2.5), with additional Cross-Cutting (7.2.6) activities in support to the implementation of the Sustainable Surface Transport work programme across all the other activities.
- The ‘European Green Cars Initiative’ (7.2.7).

Topics

These **activities** are addressed by **topics**. Topics are classified in two levels of categories according to the degree of specification envisaged in the proposals: **Level 1** (generic) and **Level 2** (specific). There is no direct relation between budget allocation and either topic levels or the funding schemes. Funding schemes for each topic are indicated following the description of each topic as well as in the call fiche.

Topic levels

Topics in Level 1, being generic, define broad fields of activity and normally concern the three surface transport modes, unless differently specified in the text. They are technology driven and enable technology synergies and transfer between transport modes. Proposals may be approached with some degree of flexibility, by addressing only part of topic content or only one surface transport mode. Research and development activities within Level 1 will contribute to the technological foundation of the sub-theme.

Topics in Level 2, being specific, refer to well identified industrial, policy and socio-economic matters. They are mission driven, explicit in their formulation. They may for example give indications concerning the type of activity, the research approach, characteristics of the partnership and expected outcomes. Proposals addressing a Level 2 topic will cover it entirely.

Funding schemes

Each Topic has attributed one or several funding schemes: Collaborative Projects and Coordination and Support Actions. When more than one funding scheme is indicated, proposers will choose one of them.

Collaborative projects are subdivided as follows in the call FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1:

- ‘Collaborative Project’ small or medium-scale focused research projects with a maximum EU contribution of up to EUR 3 million.
- ‘Collaborative Project’ large scale integrating projects with a minimum EU contribution of EUR 3 million.

‘Coordination and Support Actions’ for Levels 1 and 2 contribute to the structuring of European Surface Transport research and support for programme implementation.

Collaborative Projects dedicated to Specific International Cooperation Actions (CP-SICA) are included in Work Programme 2011.

The funding scheme(s) and – subsequently – the expected size of the proposal(s) are indicated in the topic description.

I.2.3. Strategic objectives of the work programme

Call emphasis and groups of topics

The main strategic objectives and differences with regard to previous work programmes have been presented in section I.0.4.

In 2011, the work programme has been designed to respond to the following major issues:

- Efficient railway services (Group of topics N° 1).
- Eco-innovations in shipbuilding and waterborne transportation (Group of topics N° 2).
- Implementing research for the ‘European Green Car Initiative’ (Group of topics N° 3).

- Untapped research potential and filling gaps (Group of topics N° 4). Under this group topics have been introduced which either address untapped research potentials or were proposed in previous FP7 calls (in 2007, 2008 and 2010) but could not be supported due to lack of budget.
- For the different themes, a budget has been earmarked (see call fiche in section III.2.1).

Topics belonging to groups 1, 2 and 4 are described under the six activities of the work programme. Topics belonging to group 3 are described in a separate sub-division under the heading **‘European Green Cars Initiative’**.

For every topic, the group of topics to which it belongs is indicated at the end of its description.

International cooperation

The strategy for international cooperation for surface transport system is reinforced by a third pillar addressing ‘global challenges’. International cooperation activities may be:

- 1) Specific to a sector or technological area aiming at enhancing European industrial competitiveness.
- 2) Specific to a region aiming at supporting Developing Countries through research.
- 3) Addressing global challenges through research by mutual cooperation with ICPC patterns.

International cooperation is embedded in the Work Programme. All Topics are open to researchers and research institutions from third countries³⁸, in order to enhance worldwide competitiveness of EU industry, to tackle research needs at a global level and support to the internationalization of the European Research Area.

On-going international cooperation initiatives in Surface Transport research, recent cooperation agreements (e.g. Joint Statements and Action Plans on EU-Russia rail transport research and EU-India road transport research and EU-South Africa) along with the international cooperation activities in this Work Programme will reinforce the role of international cooperation in Sustainable Surface Transport.

International cooperation will also be supported through the inclusion of Specific International Cooperation Actions (CP-SICA) following identification through on-going dialogue with third countries/regions on the basis of mutual interest and mutual benefit. The list of all CP-SICAs in the Transport work programme for 2011 is presented in section I.0.6.

³⁸ Both International Co-operation Partner Countries (ICPC) and non-ICPC countries can participate. Organisations from EU Member States, from Associated States to FP7 and from ICPC can be funded in all cases, while from other countries only if indispensable (Cf. FP7 Rules for Participation). The list of eligible ICPC countries is provided in Annex 1.

It is important to notice that Collaborative Projects dedicated to SICA must involve at least two participants from two different Member States or Associated countries and at least two partners from two different ICPCs³⁹.

SME relevant research

The development of competitive supply chains, where SMEs play a central role will be one of the objectives of Surface Transport research. Equally, SMEs are central drivers in innovation of products, systems and components. In both respects, the participation of SMEs in topics defined under activity 7.2.5 (Competitiveness) will be important. Emphasis will also be placed on facilitating the start-up and emergence of new high-tech SMEs, particularly in the advanced transport technologies and 'service-related' activities specific to Transport.

Contribution to ERA in the foundation for an integrated R&D Surface Transport community

Work Programme 2011 reinforces the implementation of the European Research Area (ERA), in particular it stimulates the follow-up of the Green Paper on the 'European Research Area: New Perspectives'⁴⁰. In addition, activities encourage the articulation with national strategies and use FP7, such as ERA-NET schemes, as leverage to reinforce good practices and promote their uptake by all Member States and Associated States.

Topic GC.SST.2011.7-8. ERA-Net Plus 'Electromobility' with EU contribution of up to EUR 10 million is described in chapter II.2 and included in call FP7-ERANET-2011-RTD.

³⁹ With the exception of Brazil, China, India and Russia, for which the required two or more ICPC participants can be located in the same countries. However, in this case, at least two different participants must come from two different provinces, oblasts, republics or states within Brazil, China, India or Russia.

⁴⁰ COM (2007) 161 of 4 April 2007.

II.2. CONTENT OF CALLS FOR 2011

ACTIVITY 7. 2. 1. THE GREENING OF SURFACE TRANSPORT

Developing technologies and knowledge for reduced pollution (air including greenhouse gases, water and soil) and environmental impact on such areas as climate change, health, biodiversity and noise. Research will improve the cleanliness and energy-efficiency of power trains (e.g. hybrid solutions) and promote the use of alternative fuels, including hydrogen and fuel cells as mid and long-term options, taking into account cost efficiency and energy efficiency considerations. Activities will cover infrastructure, vehicles, vessels and component technologies, including overall system optimization. Research in developments specific to transport will include manufacturing, construction, operations, maintenance, diagnostics, repair, inspection, dismantling, disposal, recycling, end of life strategies and interventions at sea in case of accident⁴¹.

AREA 7.2.1.1. The greening of products and operations

The objective is to ensure environmentally friendly surface transport activities through the greening of transport products and operations. Research will concentrate on vehicles, vessels, infrastructures and their interactions with special emphasis on system optimization. Activities will explore a wide range of possible innovative solutions and technologies for pollution reduction (greenhouse gases, local emissions, noise and vibration, and wash), maximization of energy conversion and rationalization of energy use.

Expected impact

- Contribution to CO₂ reduction emissions from surface transport operations aligned with new policy targets as set out in the Climate and Renewable Energy Package of 2009⁴². In the short to medium term (before 2020) reducing greenhouse gas emissions by 10% compared to 1990 levels. Beyond 2050, reducing greenhouse gas emissions **through domestic and complementary international efforts** by 25 to 40% by 2020 and by 80 to 95% by 2050⁴³ compared to 1990 levels.
- For road transport research will aim by 2020 at a 50% CO₂ reduction for new passenger cars and light-duty vehicles and 30% for new heavy-duty vehicles (both based on 2003 figures)⁴⁴.

⁴¹ The above text is a reproduction of the text included in the Council Decision on the Specific Programme Cooperation regarding this activity. The topics and areas open in each call for proposals do not necessarily have to cover all the issues mentioned in this text.

⁴² <http://eur-lex.europa.eu/JOHtml.do?uri=OJ:L:2009:140:SOM:EN:HTML>

⁴³ To this end, and in accordance with the findings by the IPCC, developed countries as a group should reduce their GHG emissions below 1990 levels through domestic and complementary international efforts by 25 to 40% by 2020 and by 80 to 95% by 2050 while developing countries as a group should achieve a substantial deviation below the currently predicted emissions growth rate, in the order of 15-30% by 2020". *Letter by the Presidency and the Commission to the UNFCCC Executive Secretary, 28 Jan 2010.*

⁴⁴ ERTRAC Research Framework of April 2006.

- Reduction of exhaust and local emissions to reach near-zero-emission levels in view of the compliance with future legislation at European and international levels and to allow national and local authorities meet their air quality engagements.
- Increased share of renewable energy (bio-fuels, renewable electricity) as alternative to hydrocarbon fuels in transport applications, for renewable energy the aim will be to arrive at a 10% in transport by 2020⁴⁵.
- Introduction of hydrogen and fuel cell technology in surface transport applications by 2020 as an economic, safe and reliable alternative to conventional engines⁴⁶.
- Reduction of external and interior noise and vibration. For road and rail transport the target will be a 10 dB to a 20dB⁴⁷ reduction compared to present noise levels particularly in urban environments.
- Proposals must ensure at least a neutral impact on climate change.

► **TOPICS FOR LEVEL 1**

SST.2011.1.1-1. Green retrofitting through optimization of hull-propulsion interaction

The objective of the research is to reduce the emissions and optimize energy efficiency of existing ships through improved hull-propulsion interaction. Research should address the development of models and tools to assess life cycle optimum performance in order to provide ship owners and ship operators with reliable estimates regarding costs, operational energy efficiency and environmental efficiency. Cost-effective and environmental friendly processes in shipyards undertaking refitting work are also envisaged in this topic. All technologies and tools shall be developed beyond the state of the art. Compatibility of models and tools must be ensured with corresponding tools developed under topic SST.2011.1.1-2. Activities will include:

- a) Improvement of environmental and energy performance of ships:
- Development of accurate assessment tools for the determination of the environmental, energy and operational benefits, including energy saving, of retrofitting solutions (hull-propulsion interaction) taking into account the remaining life cycle. The assessment should include various service profiles, such as intercontinental and intra-continental operations.
 - Development of tools for structural and technical assessment of retrofitting possibilities including, safety, vibration and noise aspects.
 - Development of innovative systems for existing ships to improve propulsion efficiency while reducing emissions.
 - Innovative cost-effective solutions for hull retrofitting;
 - Optimization of hull-propulsion interaction of existing ships.

- b) Efficient and environmentally-friendly retrofitting:

⁴⁵ Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources.

⁴⁶ ERTRAC SRA.

⁴⁷ ERTRAC and ERRAC SRAs.

- Development of innovative concepts and tools for reducing downtime of ships undergoing retrofit modifications to optimize hull-propulsion performance.
- Development of modular and cost-effective retrofitting technologies and environmentally friendly processes for yards, including surface protection and hull modifications.
- Development and testing of optimal cooperation scenarios amongst main actors (shipyards, suppliers, owners, operators and class societies) to ensure optimization of retrofitting processes.
- Development of solutions and best-practice guidelines for efficient, safe and environmentally friendly retrofit processes, including surface protection, considering the interaction of all actors on site.

Funding scheme: Collaborative Projects - small or medium-scale focused research projects

Group of topics N° 2

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1

SST.2011.1.1-2. Retrofitting of existing ships with green technologies

The objective of the research is to create and combine technologies to improve the environmental and climate change footprint of existing ships. Research should address the development of models and tools to assess life cycle optimum performance in order to provide ship owners and ship operators with reliable estimates regarding costs, operational, energy and environmental efficiency. Compatibility of models and tools must be ensured with corresponding tools developed under SST.2011.1.1-1. The research will include:

- Identification of green technologies and components (excluding hull-propulsion optimization) which can be fitted to existing ships and of optimal retrofitting of new components. Development of accurate assessment methods for determination of the environmental and operational benefits of those technologies.
- Development of methods and tools for life cycle optimum solutions considering the condition of the ship to be refitted, the remaining component and the new components to be added during the retrofitting process. The approach should take into account existing and expected legislation regarding energy, emissions and safety.
- Development of decision support systems for emission controls and energy optimization in the operation of ships, including ship and environmental parameters as well as constraints from e.g. slot times in harbours.
- Development on innovative waste management solutions that utilize the waste (dry and wet) as a source of energy and integration with other systems.
- Development of environmentally friendly concepts, processes, supporting tools and equipment for retrofitting of ships "in operation", and/or plug-and-play technology for fast retrofitting in shipyards, both reducing lay-off time of ships for retrofitting.
- Development of methods and tools for monitoring and managing the performance of retrofitted technologies throughout the remaining life cycle.

Funding scheme: Collaborative Projects - small or medium-scale focused research projects

Group of topics N° 2

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1

► **TOPICS FOR LEVEL 2**

SST.2011.1.1-3. Towards zero emission marine engines

The objective of the research is to further develop marine engines with higher efficiency, reduced emissions and increased reliability and lifetime. Research includes advanced engine development, optimization in energy ship management, engine technologies supporting transport mission management, integration of the developed emissions technologies and maintenance of engine performance throughout the lifetime. Activities will include:

a) Advanced engine development:

- Development of new concepts for combustion, including partially premixed combustion and cool combustion;
- Fuel nozzle modelling and validation
- Development of advanced turbocharging
- Development of multi-fuel engines

b) Optimization in ship energy management:

- Computer-based optimization, including thermal process adaptation
- Ship propulsion system integration, including total energy production, usage and storage

c) Advanced adaptive engine control technologies for operation at extremes (very low load, over torque, rapid speed changes, ultra low speed).

d) Integration of sequential after-treatment for near-zero emissions.

e) Development of technologies and use of new materials for performance maintenance throughout engine lifetime:

- Investigation in frictions
- Application of new materials
- Health monitoring

Funding scheme: Collaborative Projects - large scale integrating projects

Group of topics N° 2

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1

SST.2011.1.1-4. Energy consumption reduction in urban rail systems

Urban rail systems like metro and light rail networks are large distributed systems for which energy savings are a major objective as for all rail systems. However the potential

recovery rate for urban rail systems is much higher (30%-35%) compared to main line rail systems due to the frequent stopping/acceleration operational cycle. Energy savings so far have mainly been achieved in more efficient traction energy through the acquisition of new rolling stock, but this improvement is offset increasingly demanding requirements from the customer in terms of overall travel comfort, escalators, HVAC systems, etc.

Significant efficiency gains can be achieved through a holistic strategy that considers smart energy management and recovery technologies tailored to the duty cycle of urban railways. To achieve this objective, research shall:

- Build upon existing work and develop a systematic wide ranging evaluation and benchmarking of energy consumption (AC and DC) in urban rail systems, including; rolling stock, infrastructure and operations.
- Analyse and validate existing energy technologies for traction and storage energy, and provide energy consumption KPIs and decision support tools for system selection and operation.

Research may also consider feasible systems that could be retrofitted to enable existing urban trains to benefit from regenerative braking.

Research should enable a reduction of the overall energy consumption within Europe's urban rail systems of 10% compared to current levels by 2020. Given that the flow of energy and the heat dissipation are linked and depend upon traffic density and local conditions, solutions should also target heat dissipation in tunnels, stations and rolling stock. In addition it should allow storage/reuse of energy – especially regenerative energy coming from braking - not only on board vehicles but also within stations or on the wayside. Special attention shall be given to the quantity and duration of energy stored and/or redistributed through:

- Advanced technologies (batteries, flywheels, ultra-capacitors, reversible DC substations, etc.).
- Smart management of the electricity (e.g. smart grids).

The identification of the safety risks for the customer and the staff associated with the new technologies for energy storage shall also be part of the analysis and of the recommendations of the proposal.

Funding scheme: Collaborative Projects - large scale integrating projects

Group of topics N° 1

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1

AREA 7.2.1.2. Environment-friendly and efficient industrial processes

No topic is open in 2011.

⁴⁸ ERTRAC SRA.

AREA 7.2.1.3. Socio-economic issues

No topic is open in 2011.

ACTIVITY 7.2.2. ENCOURAGING MODAL SHIFT AND DECONGESTING TRANSPORT CORRIDORS

Developing and demonstrating seamless door-to-door transport for people and goods as well as technologies and systems to ensure effective intermodality, including in the context of rail and waterborne transport competitiveness. This includes activities addressing the interoperability and operational optimization of local, regional, national and European transport networks, systems and services and their intermodal integration in an integrated approach. The activities will aim at European-wide strategies, optimized use of infrastructure including terminals and specialized networks, improved transport, traffic and information management, enhanced freight logistics, passenger intermodality and modal shift strategies to encourage energy efficient means of transport. Intelligent systems, new vehicle/vessel concepts and technologies including loading and unloading operations as well as user interfaces will be developed. Knowledge for policy making will include infrastructure pricing and charging, assessments of European Union transport policy measures and trans-European networks policy and projects⁴⁹.

AREA 7.2.2.1. Logistics and intermodal transport

The objective is to improve transport efficiency between and within different modes while recognising their complementarities within a transport system. It includes activities for the development of high quality logistics, covering all transport modes. Intermodality in passengers and freight will be addressed by activities including seamless and competitive solutions, and, integration of transport hubs (terminals, stations, ports, etc.) in all transport modes.

Expected impact

- Improve the efficiency of interfaces between modes through time and cost reductions in terminals.
- Maximize cargo capacity of vehicles and vessels within intermodal door-to-door transportation routes.
- Optimization of logistics services, transportation flows, terminal and infrastructure capacity within European and global supply chains.
- Proposals must ensure at least a neutral impact on climate change, taking into account the impact of resulting lower costs on total transport volume and modal distribution.

⁴⁹ The above text is a reproduction of the text included in the Council Decision on the Specific Programme Cooperation regarding this activity. The topics and areas open in each call for proposals do not necessarily have to cover all the issues mentioned in this text.

► **TOPICS FOR LEVEL 2**

SST.2011.2.1-1. Efficient interfaces between transport modes

Terminals and ports are major bottlenecks in a seamless and sustainable freight transport. These bottlenecks represent a substantial economic loss due to long waiting times for operators, concentration of pollution and resulting logistic inefficiencies. With the economic growth and the corresponding trade and transport volumes, these terminals and ports have been pushed to increase further their capacities and speed of handling. Increasing capacities, however, have led also to a sharp rise of energy consumption in ports and terminals. Emissions have grown proportionally.

The aim of this topic is to develop eco-efficient technologies and transshipment equipment, as well as organizational solutions for more sustainable processes affecting energy production and consumption. Issues to be addressed are:

- Developing energy profiles for ports and inland terminals.
- Reduction of carbon dioxide footprint of ports and terminals by clean energy applications and minimized consumption also covering (not exhaustive):
 - Transshipment equipment.
 - Storage and transshipment models to increase efficiency and to reduce carrier waiting times.
 - Cooperative solutions amongst all port actors in achieving optimization of energy use.
 - Technologies for regenerating energy.
 - Business models for introducing proposed innovations.

The proposed solutions must be convincingly validated in terms of technological and economical feasibility.

The expected impact is a substantial decrease of energy consumption, the use of a cleaner energy mix, leading to substantial emission reductions without affecting the capacity of the port and terminal operations.

Funding scheme: Collaborative Projects - small or medium-scale focused research projects

Group of topics N° 4

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1

AREA 7.2.2.2. Maritime and inland waterways transport

No topic is open in 2011.

AREA 7.2.2.3. Enhancement of the knowledge base of the rail sector

No topic is open in 2011.

AREA 7.2.2.4. Quality of rail services

No topic is open in 2011.

AREA 7.2.2.5. Interoperability and safety

The objective of the research will be the establishment of a longer-term interoperability and safety perspective as this may emerge from the step-wise integration of the EU-rail-networks and their potential extension to neighbouring regions (e.g. Russia, Balkans, Turkey). The research shall aim at providing interoperability and safety requirements that evolve from new business, operational and technical needs (e.g. issues such as supply-chain networks, third party logistics, real-time management of customer information across a supply chain, the emergence of new technologies, the availability of Galileo services for safety applications) as well as the evolution of current requirements that might be commanded by the evolving context of integration (notably those specific impositions under the legal regimes of the COTIF and OSJD). The work will rely on a whole-life-cycle outlook of interoperability and safety regulations from conception through to deployment, including the monitoring and the feedback-assessment of its application.

Expected impact

- All proposals submitted to every topic would have to ensure at least a neutral impact on climate change.
- Enhance interoperability on existing infrastructure and develop new interoperable rail equipment.
- Reduce migration time for the implementation of new interoperable solutions.
- Develop and implement Technical Specifications for Interoperability (TSI).
- Create the conditions for the operational and technical integration of the different national railway systems in the European Union and accession countries.
- Contribute in capturing twice the freight and passenger market share and three times the market volume in rail transport by 2020 compared to 2000 levels⁵⁰.

► TOPICS FOR LEVEL 1

SST.2011.2.5-1. Rail system interoperability (regulatory and non-legislative interoperability based on technological innovations)

The aim of the research is to develop technologies and innovative train concepts for both passengers and freight transport characterized by interoperability and cross-operation between different rail networks. The proposed solutions will be focused on advanced mechatronics systems, on-board electronics, information and communication systems and services. Research results will contribute to standardization at two main levels:

⁵⁰ ERRAC SRA.

1. In the regulated domain, related to Technical Specifications for Interoperability (TSIs) and the need for further standardized specification may appear with the TSI geographical scope extension.
2. In the non-regulated domain, innovative solutions for interoperability and standardized interfacing between mostly proprietary solutions. These measures are a necessary tool for strengthening the competitiveness of the rail sector.

Proposals will cover one or more of the following subjects:

- Harmonization of freight and passenger Rolling Stock approval tests for electromagnetic compatibility (EMC); specifically:
 - Propose cross-acceptance test lines on electrified lines
 - Develop a harmonized handling of transients within the testing process
 - Establish harmonized test specification on non-electrified lines
- Virtual homologation for freight and passenger train acoustic performances; specifically:
 - Towards replacement of measurements by simulations leading to virtual certification
 - Demonstrate the influence of parameters included in TSI Noise by separating rolling stock and track noise
 - Develop a procedure to measure braking and curve squeal noise
- Functional Open Coupling (FOC) for passenger and freight; specifically:
 - Define a functional open protocol that allows the coupling of two or more train-sets
 - Specify a new communication system enabling FOC and service interface within train-sets
 - Prototype the functional coupling of two or more train-sets to form a train

Funding scheme: Collaborative Projects - small or medium-scale focused research projects

Group of topics N° 1

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1

AREA 7.2.2.6. Traffic and information management

No topic is open in 2011.

AREA 7.2.2.7. Policy support

No topic is open in 2011.

ACTIVITY 7.2.3. ENSURING SUSTAINABLE URBAN MOBILITY

Focusing on the mobility of people and goods by research on the 'next generation vehicle' and its market take-up, bringing together all elements of a clean, energy efficient, safe and intelligent road transport system. Research on new transport and mobility concepts, innovative organizational and mobility management schemes and high quality public transport will aim at ensuring access for all and high levels of intermodal integration. Innovative strategies for clean urban transport⁵¹ will be developed and tested. Particular attention will be paid to non-polluting modes of transport, demand management, rationalization of private transport, and information and communication strategies, services and infrastructures. Tools and models supporting policy development and implementation will cover transport and land use planning including the relationship with growth and employment⁵².

AREA 7.2.3.1. New transport and mobility concepts

No topic is open in 2011.

AREA 7.2.3.2. High quality public transport

No topic is open in 2011.

AREA 7.2.3.3. Demand management

No topic is open in 2011.

AREA 7.2.3.4. Innovative strategies for clean urban transport (CIVITAS Plus II)

Meeting the EU's medium and long term economic, energy and environmental policy goals will require radical changes to urban transport. CIVITAS Plus II aims to support cities in designing, deploying and evaluating ambitious new policies and technologies for more sustainable urban transport. CIVITAS Plus II will continue to advance knowledge of innovative, integrated urban transport systems, provide networking for cities to assimilate best practice, evaluate impacts and disseminate results. Taking account of the Commission's Action Plan on Urban Mobility⁵³, effort in this call should build on past CIVITAS experience and focus especially on deployment and validation of *innovative* mobility solutions for both urban passenger and urban freight transport.

Expected impacts

Delivering results and knowledge on designing, procuring, deploying, managing and assessing innovative urban transport solutions which integrate new technologies and supporting policy measures. Specific impacts include:

⁵¹ Building upon the experiences of the CIVITAS initiative.

⁵² The above text is a reproduction of the text included in the Council Decision on the Specific Programme Cooperation regarding this activity. The topics and areas open in each call for proposals do not necessarily have to cover all the issues mentioned in this text.

⁵³ COM (2009) 490

- Promotion of integrated approaches to sustainable urban transport planning and financing, linked with inter-urban networks for passengers and freight.
- Development, demonstration and validation of new policy approaches and innovative transport technologies and systems for improving urban mobility whilst reducing accidents, congestion, energy consumption, air and noise pollution, etc.
- Networking of cities to promote political dialogue, joint public procurement for new technologies, enhance mutual learning and disseminate results and good practice.
- Development of methodologies for assessing cost-effectiveness and long term financial viability of integrated packages of mobility measures.

Common information for CIVITAS

Applicants are requested to provide a detailed breakdown of budgets and to take into account the information given under every topic that is part of this call. It is anticipated that a Memorandum of Understanding will be signed between the support action and the cities to formalise their cooperation and coordination.

SST.2011.3.4-1. Design, implement and test innovative strategies for sustainable urban transport

Projects funded under this topic will design, implement and test integrated transport strategies that address sustainability, whilst improving city vitality, mobility and quality of life. Proposals should include both "leading" and "learning" cities with ambitious, shared objectives to plan, implement and assess similar, innovative, integrated packages of transport measures. Proposals should include opportunities for feasibility studies and joint procurement of innovative new transport technologies.

Content/scope

CIVITAS has demonstrated the added value of combining new transport technologies with a mix of mutually supportive policy measures to amplify their effectiveness. Proposals should continue to build on this experience and should demonstrate benefits of mutual learning, commitment to ongoing monitoring, and be capable of delivering transferable results of lasting EU added value. Projects should test innovative ideas under diverse socio-economic and environmental conditions, provide a balanced treatment of both urban passenger and freight transport, and propose solutions that focus on well-defined, integrated applications within the following themes:

- Innovative, clean, energy efficient vehicles and transport systems for personal, collective and freight applications, and their integration with urban and inter-urban transport systems (e.g. co-modal and inter-modal approaches).
- Deployment of ICT and ITS in support of traffic management, vehicle guidance, accident avoidance, passenger information and travel planning, road pricing and smart payment systems.
- Sustainable urban transport planning, combining land-use with innovative transport systems and human centred modes such as cycling and walking.

Proposals will include a comprehensive approach to the evaluation of the impacts of the measures, including cost-benefit analysis and also evaluation of the processes to implement the measures, so that problems encountered during deployment, such as public acceptance, adequacy of planning and funding, political commitment are fully documented.

Proposals may also research horizontal activities such as improved evaluation and monitoring techniques, developing financial planning tools. They may also study methodologies and tools for preparing and/or updating Sustainable Urban Transport Plans (SUTPs) with a view to assuring compatibility with long term forward planning. This could include feasibility studies or development of tools or urban planning modules to support continuous evolution and, where needed, modification of plans in response to changing industrial structures, new mobility concepts (e.g. Bus Rapid Transit, Personal Rapid Transit, ITS, autonomous driving).

Consortia

Proposals will comprise city-led consortia. Consortia should include both "leading" and "learning" cities with mutually complementary interests. The co-ordinator must be a "leading" city. Each city should be located in a different EU member state or Associated State.

Proposals should consist of up to two leading cities, of which at least one should be from one of Europe's countries and regions under rapid development, aiming at economic convergence in the context of Cohesion Policy. Proposals should also include up to two learning cities.

Please note that the requirements listed in the two paragraphs above will constitute eligibility criteria.

Proposals should focus on one or a small number of shared common mobility themes to assure a meaningful and close collaboration.

The leading cities should provide focus for the consortium activities and a strong "pioneering" element, including full planning and deployment of its mobility package in an innovation or (re-)development zone. The learning cities will share this interest, advance their planning, including financial planning, but full implementation will normally be outside the scope of this project. Participating cities will normally be small or medium sized, and signatories to the Covenant of Mayors.

Consortia shall include such other partners as necessary to implement, operate and evaluate the measures and disseminate the results, including academia. Consortia should also have the capacity to address the role of behavioural norms in changing mobility patterns.

Consortia should establish appropriate platforms to enable the close cooperation between the participating cities (e.g. joint working groups, staff exchange schemes, politicians' round table, etc.).

Large scale infrastructure investments will not be co-financed. EU co-financing for infrastructure and equipment will be limited to the innovative element.

The Commission may decide to cluster and/or merge successful proposals.

Leading cities

Leading cities will already be at a mature stage of implementing an ambitious local transport plan (SUTP) as well as be able to demonstrate strong political commitment and stakeholder support. These cities will test, demonstrate and evaluate innovative key

elements of the plan in an 'innovation zone', (e.g. a specific corridor, or (re-)development site within the city). Evaluation of the impact⁵⁴ of these integrated packages of mobility measures and their implementation processes shall be done both at CIVITAS measure package level and in the wider context of the cities' overall transport systems.

Learning cities

A "learning" city will be in the process of developing an SUTP that is not yet fully mature. Learning cities will work with leading cities already embarked on implementing corresponding measures. The existence of an outline SUTP together with clear political commitment and stakeholder support are essential. Learning cities, at the end of the project, should aim at having an ambitious integrated transport plan in place that is adapted to their local circumstances and ready for city-wide implementation. In line with the approach outlined for leading cities, small elements of this plan can be tested, demonstrated and evaluated in an innovation area.

Expected impact

Participating cities are required to implement a robust ex-ante impact assessment and process evaluation plan, based upon a do-nothing scenario, and an own local dissemination plan. A cross-site evaluation programme should be developed which is compatible with the methods already developed in prior CIVITAS projects to enable meaningful comparison of results in different projects. Cities will need to develop a robust plan for the exploitation of the results and continuation / up-scaling of measures. They shall also include strategies for transfer to and exploitation by third cities of the results generated within CIVITAS. These plans should fit within a common approach that will be developed and coordinated by the support action described below. Active participation of all cities in the activities organised by the CIVITAS Initiative is expected. Cities will have to demonstrate their commitment to co-operate closely with each other, with cities in other CIVITAS projects and with the ongoing CIVITAS Support Actions, in particular in the fields of evaluation, dissemination and training. Appropriate resources for these activities need to be foreseen in the work programme.

Funding scheme: Collaborative Projects - large scale integrating projects

Open in call: FP7- SUSTAINABLE SURFACE TRANSPORT (SST)-CIVITAS-2011-MOVE

SST.2011.3.4-2. Support action for coordination, dissemination and evaluation, CIVITAS Plus

As part of this CIVITAS call, one separate Support Action is envisaged to develop and implement a programme of European-level coordination, dissemination and awareness raising activities that target all relevant audiences.

Content/scope

This Support Action should cover the following tasks:

1. The development and implementation of a European programme for dissemination and awareness raising activities, in close co-operation with the cities. This includes

⁵⁴ Impacts to be evaluated shall generally contribute to EU level policy objectives in relation to: economic growth, energy security, environmental protection, mitigating climate change, social inclusion, safety and security.

providing information on content and results of the city-projects as well as promoting the CIVITAS Initiative as a whole. This shall include the development of appropriate communication and dissemination tools for the CIVITAS Initiative, in close cooperation with the demonstration projects and the other support actions.

2. The coordination and facilitation of certain activities, primarily in the areas of communication, dissemination and training that are common for all cities and demonstration projects and that will be decided after a user needs assessment. Coordination shall include all activities foreseen by the demonstration projects that are of general interest.
3. The Support Action shall also implement a network of Thematic Groups (virtual and real) as platforms for exchange of experience, discussion and cooperation in specific areas across the CIVITAS Initiative and with third cities and other stakeholders. Thematic Groups shall be established for each of the eight CIVITAS Categories and for a number of other (horizontal) topics of high relevance to sustainable urban mobility, e.g. joint procurement schemes as a stimulus for deploying innovative new technologies, urban transport modelling, evaluation, and monitoring, development of sustainable urban transport plans, etc. The Thematic Groups should also propose actions to involve third party cities with recognised expertise in these areas (e.g. workshops, training placements) and also international cooperation.
4. Providing the secretariat for the CIVITAS Initiative and for the CIVITAS Political Advisory Committee (PAC), including maintenance and further development of the website and database for the CIVITAS Initiative and the organisation of the annual CIVITAS Forum conferences and other events.
5. *Ex Post* evaluation of the impacts of the Integrated Projects supported under the FP6 CIVITAS II Call. This should review the ongoing impacts, any unexpected consequences, lessons learned, whether there has been up-scaling and technology transfer.
6. Additionally, research activities may be carried out to develop improved tools and methodologies for informed policy making in the field of urban mobility (e.g. improved cost-benefit analysis / modelling / planning toolbox, RTD on mobility indicators, etc.).
7. The consortium should assure an appropriate level of continuity of approach with that of the previous Support Actions funded under CIVITAS Plus to enable meaningful comparisons.

Expected impact

It is expected that the project will deliver the following specific results:

- A programme for European-level dissemination and awareness raising activities, in order to support acceptance and normalisation and to maximise policy impacts.
- Development and maintenance of CIVITAS Initiative website and database – in association with the CIVITAS Plus Support Action VANGUARD.
- Coordination and facilitation of certain common activities.
- Providing the secretariat of the PAC and the organization of the annual CIVITAS Forum.
- Establishment and management of Thematic Groups.
- Ex-poste evaluation of CIVITAS II projects.
- Development of methodologies and decision support tools for sustainable planning and assessment.
- Recommendations on cost-effective strategies and policies for sustainable urban mobility.

Funding scheme: Coordination and Support Action aiming at coordinating research activities

Open in call: FP7- SUSTAINABLE SURFACE TRANSPORT (SST)-CIVITAS-2011-MOVE

AREA 7.2.3.5. Policy support

No topic is open in 2011.

ACTIVITY 7.2.4. IMPROVING SAFETY AND SECURITY

Developing technologies and intelligent systems to protect vulnerable persons such as drivers, riders, passengers, crew, and pedestrians. Advanced engineering systems and risk analysis methodologies will be developed for the design and operation of vehicles, vessels and infrastructures. Emphasis will be placed on integrative approaches linking human elements, structural integrity, preventive, passive and active safety including monitoring systems, rescue and crisis management. Safety will be considered as an inherent component of the total transport system embracing infrastructures, freight (goods and containers), transport users and operators, vehicles and vessels and measures at policy and legislative levels, including decision support and validation tools; security will be addressed wherever it is an inherent requirement to the transport system⁵⁵.

AREA 7.2.4.1. Integrated safety and security for surface transport systems

The objective is to develop new technologies and innovative solutions for the improvement of safety and security in transport operations and the protection of vulnerable users. Activities will address the entire range of approaches and technologies to ensure safer operations based on design for safety, advanced protection systems, intelligent vehicles, vessels and infrastructures (including their interactions) and related socio-economic aspects. Research will also address aspects inherent to the transport system which can lead to the achievement of an adequate level of intrinsic security of transport system and operations.

Expected impact

- All proposals submitted to every topic would have to ensure at least a neutral impact on climate change.
- Increase the level of safety and security of both the whole transport system and its components, thus contributing to the overall scope of reducing the number of fatalities and the severity of injuries caused by transport accidents.
- Enhance the positive interactions between pilots-drivers/infrastructure/vehicles-vessels in order to decrease the level of human error and increase the safety performance of the infrastructure.

⁵⁵ The above text is a reproduction of the text included in the Council Decision on the Specific Programme Cooperation regarding this activity. The topics and areas open in each call for proposals do not necessarily have to cover all the issues mentioned in this text.

- Maintenance/increase of the level of safety and security of the transport system, whilst applying innovative technologies contributing to the mitigation of green house effect and the reduction of CO₂ emissions.
- 10% reduction in maintenance of transport infrastructures for all surface transport modes.

► **TOPICS FOR LEVEL 1**

SST.2011.4.1-1. Design of vehicle safety systems for a better protection of vulnerable road users and other under-protected and less safe user groups

Unprotected and un-motorized road users suffer the most severe consequences in collisions with vehicles due to the limits of the human body's tolerance to crashes at a collision speed over 30 Km/h. Of all traffic fatalities in EU countries, the proportion of pedestrian fatalities is about 21%, those of motorized two-wheelers about 18%, and the proportion of cyclist fatalities is about 7%. For many years, pedestrian safety has only been addressed through infrastructure measures such as crossings and segregation from other traffic. Directives 2003/102/EC and 2005/66/EC, the adoption of a UNECE Global Technical Regulation in 2009, and the inclusion of pedestrian protection in EuroNCAP testing procedures have made a significant change to this situation by including passenger cars in the drive to reduce the number of casualties and injuries of vulnerable road users.

The aim of research is the development of vehicle safety systems and technologies as well as their integration and evaluation leading to increased level of protection of all road users. Special attention should be given to the most vulnerable ones like children and elderly. Research shall focus on the following specific areas:

- Design of vehicles and components compatible with the needs of vulnerable users (elderly; children and other frail user groups), both as passengers or traffic opponents.
- Test procedures and standards for active, passive and combined systems for pedestrian and 2-wheeler safety for consumer (Euro NCAP) and regulatory testing.
- Safety of Public Transport Systems, in particular safety of children, persons with reduced mobility, elderly users in public transportation and public transportation drivers and crew.

Funding scheme: Collaborative Projects - small or medium-scale focused research projects

Group of topics N° 4

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1

► **TOPICS FOR LEVEL 2**

SST.2011.4.1-2. Mitigation measures and good practice to reduce human fatalities and disruption of services resulting from suicides and trespasses on railways property

Suicides and trespasses stand as major issue concerning safety and operations on European railroads leading to sustained breakdowns of traffic, severely affecting train staff, rescue services and passengers and uncounted related costs impacting on society. Currently, around 3 000 deaths/year occur in the EU, where the societal costs per year can be conservatively estimated around EUR 1.5 billion⁵⁶. Recent research and implementation of good practice indicate that mitigation measures can be taken to reduce these numbers. Given the number of casualties, these measures can be cost-effective from the railway sector point of view and beneficial from a societal perspective. The research shall:

- Establish a qualification analysis of suicides and trespasses occurrence in railway environment. This analysis should be based on the most consistent as possible existing official data sources.
- Establish the state-of-the-art concerning previous and ongoing research on suicides and trespassers prevention in Europe and world-wide.
- Analyse current practice (technological and non-technological) of mitigation measures with the aim to identify the most effective and cost-efficient practices appropriate to the need. Applying particular attention to measures to prevent suicides at level crossings and at any other critical point where accidents and suicides occur most (e.g. accessibility to vulnerable persons, etc.) A similar analysis shall be performed for trespassers.
- Demonstrate that preventive measures identified are feasible and cost effective.
- Design prevention campaigns, taking into account the research findings.
- Research activities will establish certain field pilot projects to evaluate the findings and refine measures identified in the previous phases.
- In partnership with human science and infrastructure (rail and road) experts develop a toolkit comprising "route map" and guidelines for design in the vicinity of level crossings, other high risk access points and how to communicate with users within the vicinity.

Funding scheme: Collaborative Projects - small or medium-scale focused research projects

Group of topics N° 1

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1

SST.2011.4.1-3. Reducing the occurrences and impacts of freight train derailments

In 2009 the European Railway Agency identified that substantial benefits for quality of service and safety of the railway freight transport may be achieved by a significant reduction of freight train derailments. It is also considered that small or fragmented improvements of existing safety measures might be neither significant nor sustainable in regards of the foreseeable evolution of railway freight transport, as described in 'A sustainable future for transport' [COM(2009) 279/4], and the expected increase of railway traffic.

⁵⁶ Source: European Railway Agency.

Therefore a research should define long term scenarios, integrating RAMS (Reliability, Availability, Maintainability and Safety) and LCC (Life Cycle Costs) analyses, for the development of a future railway freight system integrating a significant reduction of derailment occurrences and impacts.

Typically the expected benefit is to reach an absolute reduction of derailment impacts which would at least balance the mechanical effect of railway traffic increase on accident numbers.

To this end the research will address the following tasks:

- Analyze existing knowledge on derailments mechanisms and complement it, in particular in regards combined causal effects,
- Define and describe the foreseeable (macro) features of the railway freight system towards a freight target system in 2050, taking into account the European Transport Policy, available studies and research on freight logistic and relevant trends of sector economics as well as railway technology developments,
- Define cost effective scenarios, integrating system changes and new safety measures, in order to reach the proposed target system(s) and the expected reduction of derailment occurrences and impacts,
- Demonstrate (field tests) the feasibility of the most innovative system changes/safety measures within the proposed time scale.

This research will take into account, previous research, the EU legal framework (inc. Railway Safety and Interoperability Directives) as well as the tasks carried out by the European Railway Agency in this field in order to ensure seamless introduction of proposed changes.

Funding scheme: Collaborative Projects - small or medium-scale focused research projects

Group of topics N° 1

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1

AREA 7.2.4.2. Policy support

No topic is open in 2011.

ACTIVITY 7.2.5. STRENGTHENING COMPETITIVENESS

Improving the competitiveness of transport industries, ensuring sustainable, efficient and affordable transport services and creating new skills and job opportunities by research and developments. Technologies for advanced industrial processes will include design, manufacturing, assembly, construction and maintenance and will aim at decreasing life cycle costs and development lead times. Emphasis will be placed on innovative and improved product and system concepts and improved transport services ensuring higher customer satisfaction. New production organization including the supply chain management and distribution systems will be developed⁵⁷.

AREA 7.2.5.1. Competitive industrial processes

No topic is open in 2011.

AREA 7.2.5.2. Competitive surface transport products and services

The objective is to develop innovative products and systems concepts (for vehicles, vessels and infrastructures) meeting end-users expectations and ensuring high quality services enabling Europe to strengthen its global position or to regain competitiveness. Particular attention will be given to the role of SMEs in the innovation process and the supply of components, systems and equipments within the transport sector. Therefore, the involvement of SMEs in project partnerships is important.

Expected impact

- Maintain European share of ultra large cruise ship world production.
- Develop new generations of transport products that are highly competitive, emit less CO₂ and other pollutants and tailored to customer's expectations.
- Create new niche markets for high technology added value products⁶⁰ and services and take full advantage of eco-innovations.
- Improve the quality and competitiveness of surface transport services considering features such as price attractiveness, environmental friendliness, punctuality, frequency, real time information or leisure and work during travel time⁶¹.
- Drastically reduce maintenance and inspection costs⁶².
- Sustain economic development in Europe, create job opportunities and technology skills, with special focus on green technologies.
- Promote the start-up and emergence of new high-tech SMEs, particularly in the advanced transport technologies and 'services-related' activities specific to Transport.
- Proposals must ensure at least a neutral impact on climate change.

⁵⁷ The above text is a reproduction of the text included in the Council Decision on the Specific Programme Cooperation regarding this activity. The topics and areas open in each call for proposals do not necessarily have to cover all the issues mentioned in this text.

⁵⁸ Waterborne^{TP} and ERTRAC SRAs.

⁵⁹ Waterborne^{TP} and ERTRAC SRAs.

⁶⁰ Waterborne^{TP} SRA.

⁶¹ ERRAC SRA.

⁶² ERRAC SRA and ECTP SRA.

► **TOPICS FOR LEVEL 1**

SST.2011.5.2-1. Strengthening the European maritime transport sector competitiveness

The objective of the coordination action is to develop, implement and sustain the knowledge triangle inside the Waterborne Technology Platform. A strategic roadmap integrating education, research and knowledge should be developed in order to ensure the development of adequate skills in Europe and the adequate and timely connection between research and innovation. Based on the identified strategic priorities, the project will provide a model for the creation of collaborative partnerships in the waterborne sector on specific innovation opportunities including business, universities and research centres and making the optimal use of national and European funding instruments. The action will include:

- The development of tools/services to identify the innovation demand of the industries and enterprises and of an efficient feedback mechanism towards the relevant stakeholders.
- The development of tools and/or services to identify the results of research suitable to be taken to the innovation stage.
- The identification of key competences for the waterborne sector and of training needs.
- The elaboration of the strategic agenda and roadmap regarding innovation and education to be integrated into the Waterborne Strategic Agenda and roadmap.
- The elaboration of a model for the creation of collaborative partnerships in the waterborne sector on specific innovation opportunities, making optimal use of national and European funding instruments.

Funding scheme: Coordination and Support Actions aiming at coordinating research activities

Group of topics N° 2

Open in call: FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1

SST.2011.5.2-2. Advanced and cost effective road infrastructure construction, management and maintenance

There is increasing economic and political pressure to extend the serviceability and lifetime of road transport infrastructure in both Europe and developing countries. The purpose is not only to save on the cost of maintenance or replacement, but also to avoid the high indirect costs associated with disruption of passenger and freight transport (due to congestion, weather effects and traffic incidents), energy consumption, air pollution (including resuspension) and CO₂ emissions. As a consequence, new processes, technologies and tools for management, monitoring, construction, rehabilitation and maintenance of road infrastructure need to be developed and implemented. These processes will aim at high level of service to the road user, cost effectiveness, energy efficiency, low resource consumption and long service life taking into account life cycle performances, durability, and impact on traffic (in particular safety and mobility) with appropriate consideration of environmental performance.

Research shall focus on the following specific areas:

- New methods and technologies for planning, design, construction, repair, maintenance and replacement of road infrastructure (including civil engineering structures) which improve serviceability and reduce the impact on the environment.
- Innovative systems, models and tools for reliable risk based monitoring, assessment and control of performance of infrastructure related to safety, service level, and the service life of the road network.
- New methods, tools and technologies for multi-functional smart and safe infrastructure monitoring, generating real-time data for road user support and enabling a high-quality process over the life span of the road without data loss and errors, to enhance efficiency and road safety.
- Reduced vulnerability of transport networks to natural hazards and incidents, through development of appropriate models, materials, monitoring systems, components, and design and construction techniques.
- Optimising road infrastructure (through the development of methods and models):
 - to lower the CO₂ emissions and air pollution associated with its use (by, for example, reducing fuel consumption);
 - to lower the impact of vehicle wear and rolling resistance;
 - to increase the energy efficiency (recovery/utilisation) of the system;
 - to try to minimise indirect emissions due to road and tyre wear or pollution trapping.

Integration of all stakeholders in the implementation is strongly recommended: owners and operators, contractors, material and technology suppliers, research institutions and SMEs.

Funding scheme: Collaborative Projects - small or medium-scale focused research projects

Group of topics N° 4

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1

► TOPICS FOR LEVEL 2

SST.2011.5.2-3. Cost-effective modernization of the inland fleet for freight transport

The Integrated European Action Programme for Inland Waterway Transport NAIADES⁶³ calls for a modernization of the European inland navigation fleet in order to improve the economical and ecological performance of Inland Waterway Transport (IWT). Challenges in the future up will be the over-aging of the fleet, climate change and stronger environmental objectives (decarbonization, emission thresholds etc.). Cost-efficient retrofit concepts as well as the development of alternative propulsion systems are required to meet those challenges. Core elements are the following:

- Modernization of the inland fleet focusing on existing vessels and allowing for technology transfer from other modes of transport (e.g. automotive industry, deep sea shipping).

⁶³ COM (2006) 6 final

- Further improvement of energy efficiency as well as environmental performance as short- and mid-term goals as well as transition to the 'after fossil-fuel-area' as long-term goal.
- Adaptation to the requirements of the ADN regulations related to the transportation of dangerous goods.

The modernization of existing vessels for freight transport should be based on research knowledge gained for new-buildings as well as technology transfer from other modes of transport. Activities should include the development of:

- A holistic approach regarding the conditions for retrofitting the inland fleet of self-propelled and push/tow combinations (barges and boats) for freight transport including supporting tools for the identification of the most promising unit types. The possibility of retrofitting ships for new service requirements can also be envisaged.
- Cost-effective retrofit concepts for the inland fleet in particular for the ships carrying dangerous goods.
- Methods and tools to assess the economic impact of retrofit concepts on the remaining life cycle.
- Cost-efficient solutions to reduce energy demand, improve energy efficiency, and reduce exhaust gas emissions and noise, considering:
 - Improvements in hydrodynamics, propulsion and engine technology
 - New technologies based on alternative and renewable energies
 - Innovative energy recovery and management systems.
- Real scale demonstration platforms.

Expected results

Cost-efficient retrofit concepts and technologies to modernize existing IWT vessels on large scale for a continuous improvement of its economical and ecological performance.

Funding scheme: Collaborative Projects small or medium-scale focused research projects

Group of topics N° 2

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1

SST.2011.5.2-4. Exploring and fostering international collaboration in the waterborne transport sector

The objective of this initiative is to foster areas of international cooperation in research and innovation in the waterborne sector, in particular with Brazil and Russia with the view of improving the quality of maritime transport products and services, in particular regarding environmental and safety aspects. This initiative could also include cooperation regarding education and training aspects. The coordination action shall aim at establishing a structured dialogue with the Brazilian and/or Russian maritime stakeholders with the view to develop a common strategy and roadmap for cooperation.

Activities will include:

- Identification of actors, competences and interests in maritime research in Brazil and/or in Russia and Europe with the view to develop greener, safer and more competitive ships.

- The elaboration of roadmaps with concepts and scenarios for closer cooperation in the domain of waterborne transport research and innovation.
- The elaboration of scenarios and schemes for cross-fertilization in the domain of education and training in the maritime transport sector.
- Organization of one conference on international collaboration in the waterborne transport sector.

Funding scheme: Coordination and Support Actions aiming at supporting research activities

Group of topics N° 2

Open in call: FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1

SST.2011.5.2-5. A system approach for railway operations management to increase capacity and decrease delays for railway customers' satisfaction

The research aims to address existing railway operations management to enable increased capacity, decreased delays and improved railway customers satisfaction for both passengers and freight. The work will consider identified railway bottlenecks alongside the European railway corridors and will examine railway operations management from timetabling to management of operations, especially during operational disruptions. Tools will be developed that do not increase energy consumption and should establish a path towards improved efficiency. The effectiveness and leverage of existing railway operations tools used at international and national level will be analysed to establish the priority areas for research. This analysis will consider:

- Information systems for the management of the railway operations by provision of data basis for timetabling and disposition.
- Management of the theoretical network capacity (timetable) through order and construction of timetables.
- Position and disposition (on train and network basis).
- Real-time train control, real-time management of operations, especially during the period of disruption/disturbance of operations for the whole effected network.
- Examination of the existing system for fluidity, especially important for the bottlenecks.
- Flow of information between the infrastructure managers, railway undertakings, and the train drivers.
- Passenger and rail freight customer requirements.

Research will be carried out to propose new systems, generic tools, technical and/or organizational innovations in railway operations that are holistic and beyond single system and national borders. The proposals and results must be compatible with large complex simulations, considering covering time, area and other parameters simultaneously within a large extended rail network. The following factors should be taken into consideration:

- Efficient cross-border data supply and disposition by extended interfaces for cross border information flow.
- Disposition assistance and decision making support tools enabling early hold-back/diversion of trains if traffic is disturbed.
- Automated information flow between infrastructure managers and railway undertakings concerning disturbances and corrective actions.

- No increase in energy consumption.

For both freight and passengers the system will lead to:

- Decreased track occupancy in bottlenecks
- Reduced timetable changes/delays
- Improved, smoother and a higher traffic flow
- Improved information for passengers and freight customers
- Improved driving aid to the train driver
- Optimization of dependencies between train paths (connections, turn-round, passenger transit, shunting, etc.)
- Improved flexibility and extension of timetable construction and disposition
- Increased transport capacity

The research should apply a holistic approach to the management of railway operations.

Funding scheme: Collaborative Projects - large scale integrating projects

Group of topics N° 1

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1

SST.2011.5.2-6. Cost-effective improvement of rail transport infrastructure

A large proportion of railway civil engineering structures and track forms across Europe are old and are now expected to safely and economically carry ever increasing loads of traffic volumes, vehicle (and axle) weights and speeds. Older earthworks were not designed to modern standards and can quite quickly deteriorate in adverse weather conditions. Rail infrastructure in particular within Eastern Europe and developing economies has particular needs towards efficient improvement to enable integrated and effective European rail freight and passenger services.

Extensive renewal of track and structural assets by conventional methods on operational networks is likely to be unaffordable, cause serious congestion and interruptions to services, in addition to resources and carbon footprint issues from the projects themselves. Hence effective and efficient improvement of infrastructure must be based on whole life considerations.

The research aims will enable improved assessment and understanding of deterioration of infrastructure to extend the life and target infrastructure renewal and improvement needs. Work will investigate new rapid/cost efficient/ effective construction techniques and logistics to extend the life of existing track and infrastructures. The needs of developing rail freight and passenger networks (such as within Eastern Europe and developing economies) that require substantial infrastructure improvement may be considered in particular.

Proposed scope of work:

- Application of new technologies to extend the life of elderly infrastructure.

- Rail transport infrastructure, improve existing degradation and structural models to develop realistic life cycle cost and safety models that demonstrate safe service life and can be used to plan improvement programmes.
- Investigate new construction methods and logistics for transport that minimize the time and cost required for the replacement of obsolete infrastructure.
- Investigate the use and cost effectiveness (planning, replacement programmes etc) from application of advanced monitoring techniques to complement or replace existing examination techniques for elderly rail infrastructure.
- Develop a tool that works with existing widely utilized asset management tools to assess whole life environmental and economic impact from track and infrastructure maintenance and renewal.

Proposals shall utilize expertise from both the rail sectors and draw upon related experience and expertise from other sectors, client organizations, research institutions etc. The project shall demonstrate a clear plan for implementation, drawing upon client needs in order to maximize benefits in the relatively short term.

The active participation of partners from within Eastern Europe and developing economies is encouraged.

Funding scheme: Collaborative Projects - small or medium-scale focused research projects

Group of topics N° 1

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1

7.2.6. CROSS-CUTTING ACTIVITIES FOR IMPLEMENTATION OF THE SUB-THEME PROGRAMME

Cross-cutting activities in the Sustainable Surface Transport Work Programme 2011 support achieving an integrated surface transport system across strategic activities on Greening, Co-modality, Urban Mobility, Safety & Security and Competitiveness, common to all surface transport modes.

Impacts of research projects within cross-cutting activities are defined with respect to the Work Programme activities they concern: Greening, Co-Modality, Urban Mobility, Safety and Security and Competitiveness.

► TOPICS FOR LEVEL 1

SST.2011.6-1. Supporting the organization of the TRA 2012 conference and other research relevant events

Activities will include in particular the support of the organization of the TRA Conference (Transport Research Arena) in 2012. The aim is to have a follow-up of the previous TRA conference with a larger scope that will cover all surface transport modes: road transport, rail transport, waterborne transport and their interfaces. The idea is to have a high standard scientific European conference as the first Transport event in the world covering all aspects

of R&D: from basic sciences, socio-economic research to applied sciences and demonstration activities. The intention is to assure a long-term commitment to develop and maintain a European high standard scientific conference. The conference should have a systemic approach to building sustainable transport especially aiming at greener, safer and smarter transport. It will concern European and national research activities. The link to European Technology Platforms related to transport (e.g. ERTRAC, ERRAC and Waterborne) is necessary. Finally, it should also be complemented by an early-stage research student competition with the goal of stimulating the interest among young researchers in the conference.

Expected Impact: Proposals should demonstrate contributing to the dissemination of knowledge and/or of the results of European and national research in the field of surface transport, thus to improved co-ordination of research and technology development in the sector.

Funding scheme: Coordination and Support Actions aiming at supporting research activities

Group of topics N° 4

Open in call: FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1

7.2.7. THE 'EUROPEAN GREEN CARS INITIATIVE'

The 'European Green Cars Initiative' includes three major research and development avenues within its RTD pillar:

- **Research for heavy duty vehicles based on internal combustion engines (ICE)** [Sustainable Surface Transport sub-theme (SST)]: The research will primarily concentrate on advanced ICE with emphasis on new combustion, the use of alternative fuels, intelligent control systems, 'mild' hybridization (use of recuperated electricity to power the auxiliary systems) and special tyres for low rolling resistance.
- **Research on electric and hybrid vehicles:** This component will be the most essential in this package. To have a real impact on the green economy, research in this field should no longer focus on electric vehicles technologies seen in isolation from the rest of the transport system: a massive introduction of the technology requires the availability of smart electricity grids and intelligent vehicle charging systems tailored to customers' needs.
- **Logistics and co-modality** combined with **intelligent transport system** technologies are essential to optimize the overall system efficiency and sustainability avoiding for example that empty trucks circulate on highways due to sub-optimal logistics. In this respect, smooth and co-operative interactions between the different transport modes will be essential.

The work programme 2011 will cover all three above mentioned research avenues of the 'European Green Cars Initiative'. It will concentrate on energy efficient heavy duty vehicles for long distances, by improving ICE-based power trains and reducing rolling resistance and on research on logistics and co-modality. Furthermore, WP2011 includes several topics related to the electrification of vehicles with a focus on vehicle system integration.

► **TOPICS FOR LEVEL 1**

GC.SST.2011.7-1. Specific safety issues of electric vehicles

To facilitate widespread customer acceptance and use of Fully Electric Vehicles (FEVs), a series of potentially-critical safety issues specifically need to be addressed. Therefore, an analysis of the consequences of electrification with respect to safety requirements has to be made. In particular, the presence of high voltages and potentially hazardous chemicals necessitate the definition of specific design, usage and rescue guidelines, while the absence of engine noise requires in-depth assessment regarding interior and exterior acoustic characteristics during normal operation.

Activities will focus on:

- Safe handling, rescue and maintenance including solutions to ensure safe plug-in/re-charging during normal operation, prevention of misuse/abuse, and protection against fire and electric shocks during maintenance and repair or in the event of a crash including rescue and towing operations in the post crash phase.
- Acoustic perception of the FEV, requiring solutions to warn vulnerable road users of the presence of a nearby moving vehicle while providing a means for heightening the awareness of drivers in critical situations. Including the application/adaptation of existing pedestrian protection systems (active safety) to the raised needs.

Different technologies and solutions shall be explored and assessed also from the perspective of overall effectiveness and acceptability, the objective being to develop FEVs which are optimized in terms of both energy efficiency and safety, a fundamental requirement to enable FEVs to become mass products in the future.

Innovative EV specific safety technologies and solutions should eliminate the risk that these new vehicles be perceived as less safe than their current equivalents, thus the safety and energy efficiency of EV use should contribute to more customer acceptance of EVs.

Given the specificity of these subtopics, small, focused projects are encouraged in particular.

The work should be complementary to the objective GC-ICT-2011.6.8 'ICT for fully electric vehicles'.

Expected impact:

The expected impact of the first subtopic should be technologies and procedures that avoid additional casualties to the current level due to electrocution risks. The second subtopic should produce systems and technologies capable of giving effective warning to vulnerable users at a sufficient distance while maintaining the advantages of electric technologies in terms of improving the current road noise environment.

Funding scheme: Collaborative Projects - small or medium-scale focused research projects

Group of topics N° 3

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1

GC.SST.2011.7-2. Integrated thermal management

The challenge of the implementation on a wide scale of electric vehicles needs a high reliability of the electric power train including the battery, the longest possible range of the vehicle and the satisfaction of customer's expectations for thermal comfort. Therefore, the thermal management of the power train and of the vehicle itself, which includes heating and cooling aspects, is an integrated important part of the future electrification of vehicles. The goal of these activities is to develop cost efficient and industrially viable integrated thermal systems for long range, reliable and comfortable electric vehicles when no waste heat source is available.

Activities will address:

- Improvement of the efficiency of the thermal control of the energy storage system, independently of the actual ambient temperature, in order to reduce the impact on vehicle range and battery life of extremely cold or high environments.
- Optimization of the impact of the thermal comfort of the users on the overall energy consumption of the vehicle through innovative, light, cost efficient, electronically controlled materials used in the vehicle and their integration aspects (e.g. new insulating materials, active glazing, local heating, etc.).
- Development of cost effective thermal management systems of the power train including the cooling and heating aspects for the battery and power electronics during charging, operation of the vehicle as well as during parking periods.
- Cooling aspects of the electric motor in combination with a ICE range extender or auxiliaries. This activity includes the integration of the electric motor either with the combustion engine (high temperature), or with the power electronics, battery and air conditioning (low temperature) in one thermal system, and the control and optimization of the heat flows between these elements especially during heating up.

Expected impact:

- Synergies in terms of energy efficiency, cost, weight, size and robustness due to optimized coolant temperature and heat load timing resulting from the integration of the electric motor with other vehicle functions in one thermal system.
- A substantial reduction of the energy requirement for the cooling, heating and demisting functions with respect to the current state of the art technologies (compressor driven AC and electric resistances)
- A significant weight reduction of the cooling circuits and equipment to achieve the same component level cooling requirements.

The work should be complementary to the objective GC-ICT-2011.6.8 'ICT for fully electric vehicles'.

Funding scheme: Collaborative Projects - small or medium-scale focused research projects

Group of topics N° 3

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1

GC.SST.2011.7-3. Efficient long distance transport – waste heat recovery

In a current truck engine, more than about 50% of the combustion energy is lost via the exhaust and the heat rejection system. Therefore, reducing this heat loss is a clear target for further fuel consumption reduction. The further development of waste heat recovery systems and, in particular, the associated components, such as the expander (Rankine cycle), advanced heat exchanger and cooling system is therefore needed, including the investigation of more advanced waste heat recovery systems based on thermodynamic cycles (organic/non-organic) or other advanced technologies, excluding thermoelectric devices, already researched in existing projects. The integration of waste heat recovery systems with different degrees of hybridization can also be considered in order to achieve the highest levels of efficiency.

Scope of the work:

- System design for the thermodynamic cycle (organic and non-organic).
- Development of expanders, advanced heat exchangers and working fluids.
- Cooling system and integration, arrangement at the power train and vehicle.
- Development of simulation methods for future adaptation of such a system on the various power trains for heavy duty trucks.

Expected impact: A minimum 10% fuel consumption reduction at vehicle level (thus including the effect of any weight or performance penalties) should be demonstrated with an initial cost increase recoverable in a 5 year period.

Funding scheme: Collaborative Projects - small or medium-scale focused research projects

Group of topics N° 3

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1

GC.SST.2011.7-4. Urban – interurban shipments

Today, around 80% of the population worldwide lives in urban areas. Urban areas are consequently the hubs of enormous flows of goods and people with the associated problems of congestion, accidents and pollution. To deal with the multitude of challenges, a new concept of Smart Urban Freight Systems and sustainable solution for city based logistics has to be developed. The aim of this topic is to develop a comprehensive approach to provide the overall socio-economic, managerial, technical, environmental balance of such systems. The logistics efficiency changes as well as the environmental effects shall be addressed by an impact assessment e.g. by applying planning and simulation tools.

The following aspects could be addressed and tested:

- New transportation solutions (electrical cars, public transport, etc.).
- New mechanisms for control on ordering, monitoring, supervising and executing city delivery.
- Decoupling of supply lines and distribution activities around cities.
- Optimization of terminals connecting long distance transport and urban distribution.

- Research on urban distribution of goods (delivery systems, delivery routes, last mile logistics organization and operation) to reduce the impact of freight movements on urban resident.
- New regulatory solutions.
- New instruments/technologies for urban freight data collection.
- The transport operation of delivery vehicles within zero-emission zones.
- Collaboration between authorities, transportation providers and major customers.

The proposal should consider previous work on urban freight financed through EU and/or national programmes or even city governments.

Expected impact: A more efficient urban freight distribution system and a sustainable European transport and mobility network within urban centres efficiently linked with long distance transportation. The added value of the proposed solutions must be realistically demonstrated on the basis of actual practices and measurable indicators.

Funding scheme: Collaborative Projects - small or medium-scale focused research projects

Group of topics N° 3

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1

GC.SST.2011.7-5. Integrated intermodal traveller services

The aim of the topic is to integrate available traveller information systems for all transport modes (rail, air, road and waterborne) in order to provide and establish an open platform for planning, booking and travelling multimodal journeys. Research should exploit the open platform concept further, and take into account the results of recent FP6 and FP7 projects on transport planning and travel information.

The trips can be long, i.e. from one country to another country, or short, i.e. within a city. The research aims at intermodal management based on up-to-date on-line information. The optimization of transport mode choices and interchanges will be based on real-time and forecast state of public and private transport as well as specific needs of users and service providers, journey purpose, cost and environmental impacts. Integrated travel information services should re-use as much as possible existing information services and allow for seamless integration of offerings of new and/or niche travel services and information providers.

These integrated travel information services shall ensure co-operation between transportation modes and improve the ability of the system to cope with unexpected scenarios. In particular, research should develop solutions to compensate for a sudden decrease of the traffic capacity in one transportation mode to ensure continuity of mobility services (for example, following unexpected hazards and natural phenomena, such as the recent volcanic ash clouds across Europe).

To ensure a seamless journey, seamless traveller information services are also required. The traveller information services can provide 'early warning' to travellers including

regular updates on delays and service disruptions and will thus allow any necessary change of plan according to the actual situation.

- The following aspects could be addressed:
- Creation of standardized interfaces to facilitate dynamic data exchanges among different transport modes, air, rail, water and public transport and different operators of these transport modes.
- Development of forecast mechanism to deliver a short term forecast of state of relevant transport modes. The forecast will be based on available information, e.g. weather, road traffic situation and planned large events. The forecast will be used to generate optimized intermodal exchange between different transport modes and different operators based on real-time information and forecasts to ensure a smooth journey.
- Design of standardized approach to deliver cross mode information. The information will be delivered to mobile devices with wireless communication. The information will also be integrated with e-ticket services.
- Development of recommendations on conditions on the availability of data and data exchange (metadata) between different actors.

The research activities should result in fully integrated intermodal transport services with support of traveller information services that are up-to-date, reliable, user-friendly and wide-ranging, as well as covering public transport and non-road modes.

A strong commitment from European and non-European stakeholders including research organizations, transport operators, information providers, industry associations and ITS organizations towards developing a joint platform and sharing information is essential.

Following the conclusions of the SIMBA 2 project, intermodal traveller services have been identified as a common field of research cooperation between Europe, Brazil, China and Russia, with strong commitment from non-European stakeholders, including research organizations, industry associations and ITS organizations. International cooperation is therefore encouraged, in particular with countries which are facing fast growth transport demand and/or advanced multi-modal traveller support systems (Brazil, China and Russia).

The research will support the development of specifications for compatibility, interoperability and continuity of intelligent transport systems in the area of EU-wide traveller information as foreseen by the future new Directive on the Deployment of Intelligent Transport Systems and the activities for the ITS Action Plan.

Expected impact: Research will increase the acceptance and take up of new fully integrated intermodal traveller services and therefore contribute to a more efficient and safe transport system with reduced CO₂, pollutant emissions and noise.

Funding scheme: Collaborative Projects (small or medium-scale focused research) for specific cooperation actions (CP-FP-SICA) dedicated to international cooperation partner countries.

Group of topics N° 3

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1

GC.SST.2011.7-6. Capability of improving and exploiting capacity

Expenditures in logistics at EU level amount at roughly EUR 600 billion per year. If the loading factor in transport could be significantly improved, this would lead to substantial annual savings and contribute positively to sustainable transport. To achieve this, it is essential that a balance is found between two seemingly conflicting dilemmas: on the one hand, the logistic process should have more frequent deliveries in order to deliver goods to the consumers; on the other hand, even very large companies do not carry enough volumes to exploit intermodal transport properly. To achieve a better balance, organizational changes are needed (in addition to those of e-logistic technologies). New ways of cooperation to reorganize and scale-up transport flows to fully exploit the transport capacity have to be found.

The topic aims at providing instruments to stimulate the cooperation between manufacturing and transport industries in the definition of innovative business models and measures, in view of increasing the load factor up to 80%. Models and measures could include share of transport capacity, new schemes of product sourcing, swapping, thus increasing reliability and efficiency of the logistic chain.

Through coordination and networking activities, studies or expert groups the following issues must be addressed:

- Promoting match-making and sharing sustainable logistics knowledge between manufacturing industries and the transport & distribution sector.
- Methodology to calculate revenues and benefits, including a legal framework to split costs and benefits in shared transportation.
- New business models for the entire supply-chain, fully based on the used of co-modality and focusing on the increase of loading factors through new practices, such as company collaboration, customer and product swapping, product sourcing, etc.
- Application and validation of business models on different configurations (supply chain, modes of transport, shippers, types of goods, etc.).

Expected outcomes of this action should be new business models developed by the industries in the direction of collaboration in managing and operating logistics, and to demonstrate - by means of use cases and comparison with baselines - that the practical application of these models improve both quality and performance of the logistics chain, expressed in terms of different indicators, such as load factor, overall costs, energy efficiency, etc.

Funding scheme: Coordination and Support Actions aiming at coordinating research

Group of topics N° 3

Open in call: FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1

GC.SST.2011.7-7. Advanced eco-design and manufacturing processes for batteries and electrical components

Content / scope: Further development and deployment of electrical vehicles call for large scale production of batteries and electrical components with good performances and at the lowest possible cost. Research shall address the whole value chain, including the eco-design, assembly/integration and production of batteries and electrical components

(motors, battery management systems, etc.).Eco-design should properly account for the relevant dismantling, recycling/disposal, and health and safety aspects of critical materials.

For near-to-market types of lithium-based batteries, projects should focus on manufacturing processes of cells, but also on their integration into manageable battery modules and packs. Advanced manufacturing processes of battery cells, should be flexible enough or reconfigurable to cope with new chemistries. Special attention should be devoted to thermal management systems and safety issues, which are critically dependant on battery system design.

For electric drive trains and in particular motors, the main challenge of cost reductions is to be achieved by design improvements, in order to produce lighter systems with increased power density, while at the same time taking into account the availability of critical materials and their dismantling/recycling. Projects should not include design or manufacturing of the power chips.

For a significant industrial benefit, it should be possible to integrate the advanced manufacturing tools, methodologies and processes developed within the project into conventional or already existing production lines or, in case of new architectures, include new methodologies. In both cases the projects are expected to cover small-scale production-line demonstrators. The environmental improvements achieved should be proven via ILCD-conform Life Cycle Assessment. The feasibility of the dismantling/recycling process for motors should be proven at least at bench/pilot scale for the most critical materials.

In order to ensure the industrial relevance and impact of the research efforts, active participation of industrial partners, including SMEs, component suppliers, electrical vehicles manufacturers and component recyclers, represents an added value to the activities and this will be reflected in the evaluation, under the criteria Implementation and Impact.

The work should be complementary to the objective GC-ICT-2011.6.8 'ICT for fully electric vehicles'.

Additional eligibility criterion: The EU contribution requested must be greater than EUR 4 million.

Expected impact: Establishing the basis for a world level European automotive battery and electrical components manufacturing industry. In particular production of cells, battery packs, electrical motors, and components with the required performances at competitive costs. Reduction of waste production and improvement of resource efficiency through a more efficient recycling of critical materials.

Funding scheme: Collaborative Projects - large scale integrating projects

Group of topics N° 3

Open in call: FP7-2011-GC-ELECTROCHEMICAL-STORAGE

GC.SST.2011.7-8. ERA-Net Plus 'Electromobility'

Content and scope: The main aim of this ERA-NET Plus is to pool the necessary financial resources from the participating national (or regional) research programmes and the European Union with a view to launching a single joint call for proposals for research projects in the field of Electromobility, which will be evaluated and managed jointly by the participating programmes.

An ERA-NET Plus on Electromobility research should aim at improving the coordination of national research activities and policies in the domain of transport regarding the integration of a sustainable infrastructure for Electromobility in Europe.

The joint call should focus on an interdisciplinary approach to transport research on the specific field of Electromobility.

More information about the ERA-NET PLUS actions (including eligibility criteria) can be found in Annex 4 of the work programme.

Expected impact: As a complement to the European Green Car Initiative, a significant participation of the Member States and Associated States in shaping of the European landscape of Electromobility is expected. Better use of scarce resources and the avoidance of double funding. Reduction of fragmentation of research efforts made at national and regional level. The ERA-NET Plus can provide a basis for a long-term platform on Electromobility.

Funding scheme: Coordination and Support Actions aiming at coordinating research activities

Group of topics N° 3

Open in call: FP7-ERANET-2011-RTD

► TOPICS FOR LEVEL 2

GC.SST.2011.7-9. Efficient long distance transport – future power train concepts (includes: advanced combustion and after-treatment)

The aim of this research is to contribute to the further reduction of the fuel consumption of heavy duty trucks. It is necessary to investigate the engine downsizing potentials, along with the possible integration of hybrid systems for boosting the power for acceleration and starting of heavy duty trucks on a hill. This approach also opens a potential for an emission reduction, due to reduced transient behaviour period of the truck engine. This sector is already facing the forthcoming EU VI emission legislation in 2012 and must therefore look to the further expected steps of regulation. Therefore, this aspect is also part of the objective of these research activities. To meet this challenge, it is necessary to work on the development of improved combustion systems as well as on key components, such as the turbo charging system, the thermal management for the after-treatment system and the efficiency of the Selective Catalytic Reduction (SCR) system. For the realization of this goal, advanced drive train control considering e.g. model based approaches is needed.

Scope of activities:

Engine innovation will include a suitable combination of these activities to demonstrate the expected impacts:

- Down-sizing / down-speeding with advanced turbo-charging.
- Development of a new turbo charger system with higher pressure ratio and wider area of high efficiency.
- Friction reduction: piston, crankshaft camshaft and auxiliaries (oil and water pumps).
- Faster combustion (e.g. high PCP, low EGR rate, VVA), supported by advanced injection strategies, using closed loop functionality as well as high thermal efficiency.
- Advanced air control systems for internal EGR and effective compression ratio management.

After-treatment innovation will include a suitable combination of these activities to demonstrate the expected impacts:

- Reduced thermal losses, with a possible integration of improved exhaust after treatment systems for cold start and transient conditions, considering new catalytic materials.
- Advanced NO_x after-treatment systems: SCR (Selective Catalytic Reduction) systems (e.g. new catalytic materials) and combinations with NO_x trap and particle filters/oxidat, with an additional aim of minimizing the NO₂ fraction in NO_x emissions.
- Heat management for the after-treatment system.

Expected impact: The results of the research will demonstrate a 15% efficiency improvement from the power train, based on Euro 5 power train (without considering the reduction of CO₂ through blending of bio fuels) on the WHTC and the ETC (all emissions should however be tested under the both test cycles). At the same time Euro VI emission limits should be met (including measurement according to the forthcoming particle count methodology), with no increase in the NO₂ share of the total engine-out NO_x (both of the prototype and of the baseline engine). To ensure real life benefits, improvements should be confirmed with a multiplier for in-use compliance with PEMS testing reduced to 1.25. This activity will lead to new technologies for the next generation of truck power trains.

Funding scheme: Collaborative Projects - large scale integrating projects

Group of topics N° 3

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1

GC.SST.2011.7-10. Architectures of Light Duty Vehicles for urban freight transport

Electrified vehicles, which may be radically different from conventional vehicles, offer significant new opportunities in terms of functionality and construction whilst enabling further improvement of usability, energy efficiency and manufacturing processes. Whereas the architectures of vehicles currently on the market are constrained by mechanical, thermal and safety considerations due to the presence of the internal combustion engine and its transmission system, in many respects the requirements and constraints of an electrical power train are much less stringent and are yet to be fully exploited. Aiming at turning such innovative vehicles into viable products, novel architectures are needed which explore all the different aspects and requirements emerging from this new paradigm, particularly as concerns light duty vehicles (LDVs) and their usability with respect to mobility and the transportation of goods in the urban environment, e.g. last mile delivery and other applications such as the powering of tools by making appropriate use of the available source of electrical power.

Activities will focus on novel electrified LDV concepts and solutions (conversions and adaptations of existing vehicles and platforms are therefore excluded) to enable gains in their efficiency particularly with regard to:

- Usability in the urban environment.
- Optimized structural layout aiming at improving weight and crashworthiness.
- Modularization of subsystems and standardization of components for low cost and high efficiency.

These concepts should be considered in a holistic way to achieve optimized performance also with respect to safety, EMI/EMC and radiation health impact issues (particularly important given the longer driving time and therefore exposure), maintenance and repair, while exploiting the significant opportunities offered in terms of layout and packaging, functionality, and construction.

The development of complete vehicle concepts is envisioned, projects only dealing with a limited part of the topic are excluded, and a strong industrial participation is recommended in order to maximize the impact.

The work should be complementary to the objective GC-ICT-2011.6.8 'ICT for fully electric vehicles'.

Expected impact: The proposal should quantify and demonstrate that the resulting vehicle concept would achieve higher energy efficiency (at least 40% less in terms of primary energy consumption) with respect to best of class vehicles in the same category, while achieving a range adequate to the typical daily urban mission.

Funding scheme: Collaborative Projects - small or medium-scale focused research projects

Group of topics N° 3

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1

GC.SST.2011.7-11. E-freight solutions and supply chain management

The European Commission in its Freight Logistics Action Plan introduces the e-Freight concept. The Freight Logistics Action Plan states the following aim: "To overcome the current and future transport problems Europe's transport system needs to be optimized by means of advanced logistics solutions that can increase the efficiency of individual modes and their combinations". Transport administrations and the business community must share the responsibility for developing a common ICT application or e-freight framework in ways that serve transport policy goals, society's interests and have a convincing business case. From commercial, technical and business perspectives, there is a need for an open and efficient e-freight framework open to all partners in the transport supply chain. It must enable the management of goods movements into, out-of and around the Union that will operate within and across modes. It must be affordable, accessible, reliable, accountable and secure.

The aims of this topic are to:

- Demonstrate the interoperability of a wide range of e-logistic solutions that have been developed recently through various EU funded and national projects.
- Demonstrate that these solutions, while diverse in terms of concepts, information requirements and information management, fill the gap between data availability and data needs throughout the supply chain.

Specific issues to be addressed:

- To demonstrate the SME friendliness, giving SMEs access to easy-to-use and environmentally friendly co-modal transport options.
- To create a solid European transport e-logistic framework, which in its turn is a sound basis for developments on e-customs, e-health, etc.
- To analyse possible new roles, opportunities and responsibilities of stakeholders in respect of accurate data provision and management; or alternatively to describe new transportation business models.
- To develop where needed legal structures and measures required to make the intelligent cargo and supply chain management operate in an efficient, accurate and secure way, protecting users.

Scope:

- Geographically: EU and global transport & distribution.
- Door to door consignments and TEU levels.
- All inland modes, possibly with air transport linking up with IATA business.
- Large stakeholders but also SMEs.

Expected impact:

The demonstration project needs to be of sufficient representative size that convincingly proves the attainability of an open e-freight framework, independent of specific technologies, and agreed among the stakeholders involved in supply chain management processes. The demonstration project must demonstrate the costs and benefits for the individual stakeholders when participating in such an e-freight framework.

Funding scheme: Collaborative Projects - small or medium-scale focused research projects

Group of topics N° 3

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1

7.2.8. CALL ‘THE OCEAN OF TOMORROW’ – JOINING RESEARCH FORCES TO MEET CHALLENGES IN OCEAN MANAGEMENT

Oceans offer opportunities for sustainable economic development. However, human activities are exerting increasing environmental pressure on the oceans, threatening marine ecosystems and sustainable maritime activities. In particular, the growing demand for maritime transport, offshore energy, tourism, coastal development, resource extraction, fisheries and aquaculture, may have a major impact on the marine environment.

The European Union has taken up this challenge and established a new integrated maritime policy, of which the "European Strategy for Marine and Maritime Research"⁶⁴ is a fundamental part. The strategy 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.

The aims of the call are to improve our understanding and the predictive capacity of marine ecosystems' response to a combination of natural and anthropogenic factors, while fostering innovations to make the most of sea resources. It will thus contribute to implement the Marine Strategy Framework Directive and to respond in a coherent and integrated way to the EU Grand challenges, such as global warming, tightening supply of energy, water or food security. It is also in line with the new strategy for Europe EU 2020 which recognises that the only way to deliver new sources of growth and sustainable jobs is through research and innovation.

The partly regional focus of the call on the Mediterranean Sea and the Black Sea reflects the huge sustainability challenges in these two sea basins. It is in line with the Council conclusions on the "European Strategy for Marine and Maritime Research", which invite to put a particular emphasis on the Mediterranean and Black Sea basins. It also supports the objectives of the communications "Towards an Integrated Maritime Policy for better governance in the Mediterranean"⁶⁵ and "Black Sea Synergy"⁶⁶ Research addressed in the call will be of cross-thematic nature, integrating in a coherent way marine and maritime research domains in order to reach an impact that a single theme of the Cooperation programme could not attain on its own.

The call is implemented through four different topics, out of which two of generic nature and two of particular relevance to the Mediterranean and the Black Sea: topic 1: "Multi-use offshore platforms"; topic 2: "Marine microbial diversity – new insights into marine ecosystems functioning and its biotechnological potential"; topic 3: "Assessing and predicting the combined effects of natural and human-made pressures in the Mediterranean and the Black Sea in view of their better governance" (SICA); topic 4: "Knowledge-base and tools for regional networks of MPAs, integrated management of activities together with assessment of wind energy potential in the Mediterranean and the Black Sea (SICA).

A multi-disciplinary approach and a multi-sectoral partnership are considered essential to achieving the expected impacts. All topics have been designed to secure a substantial involvement of industrial partners, SMEs and relevant end-users.

OCEAN.2011-1. Multi-use offshore⁶⁷ platforms

⁶⁴ COM (2008) 534 final of 3.9.2008 - Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions: "A European Strategy for Marine and Maritime Research : A coherent European Research Area framework in support of a sustainable use of oceans and seas".

⁶⁵ COM (2009) 466 of 11.9.2009 - Communication from the Commission to the Council and the European Parliament: "Toward an Integrated Maritime Policy for better governance in the Mediterranean".

⁶⁶ COM (2007) 160 of 11.4.2007 - Communication from the Commission to the Council and the European Parliament: "Black Sea Synergy – a new regional cooperation initiative".

⁶⁷ "Offshore" is considered to be "out of sight" from the coast.

Increasingly, energy, fisheries and transport infrastructures are being established offshore. Facilities such as offshore wind farms may occupy large areas and compete with other users of the maritime space. Offshore platforms that can combine many functions within the same infrastructure could offer significant benefits in terms of economics, optimising spatial planning and minimising the impact on the environment.

This topic aims to develop novel innovative designs for multi-use offshore platforms and assess the technical, economical and environmental feasibility of constructing, installing, operating, servicing, maintaining and decommissioning together with the related transport aspects. The platforms shall target ocean renewable energy and in particular offshore wind, aquaculture and the related transport maritime services.

The work shall determine the optimal locations for multi-use offshore platforms taking into account renewable (in particular wind) energy resources, appropriate aquaculture, transport issues, and other platform-related activities including accessibility and possible use as offshore terminals. Model validations should be employed on several sites using field measurements. In determining locations, the following should be taken into account:

- Ocean renewable energy resources and seabed characteristics;
- Hydrodynamic dispersion models;
- Hydrodynamic conditions for logistic, transport and installation purposes;
- Impact analysis on the environment, social acceptance and other users (e.g. vibrations, noise, radar interference, shipping, tourism, fishing).

Innovative designs for multi-use offshore platforms shall be developed that allow optimal coupling of the various activities and services. Research shall include safe, efficient installation, operation maintenance and monitoring (including possibly remotely) together with specialised transportation to optimize efficiency, operation and installation.

Designs of large structures shall be developed that allow coupling of ocean renewable energy with aquaculture, off shore transport facilities, environmental monitoring and other relevant activities. These should lead to optimized spatial use and improved economic viability. Physical modelling shall be employed at an appropriate scale for experimental validation of the proposed platforms.

Research into relations between the combined activities shall in particular address the interaction between wind energy and other platform users, innovative containment systems and related technology for optimal aquaculture operation, the development of transport solutions for optimized installation, maintenance, operation and services to shipping (breakwater, terminals etc). Compatibility of current aquaculture equipment and techniques (handling, husbandry, feeding, etc) with establishment on a multi use platform and possible innovations should also be considered.

An assessment of the economic viability and value to the various stakeholders shall be undertaken. This shall include consideration of costs for construction, operation, servicing and decommissioning. This assessment should include a comparison to non multi-use platforms.

The project shall include a comprehensive environmental impact methodology and assessment, including a comparison to non multi-use solutions.

When appropriate, knowledge shall be drawn from pre-existing research and data.

Additional eligibility criteria: The requested European Union contribution shall not exceed EUR 14 million.

Additional information:

Up to 3 projects may be funded under the total budget of the topic (EUR 14 million) in order to allow various designs to be tested while maintaining critical mass and ensure complete coverage of the topic.

The multi-disciplinary approach of the research undertaken is essential to address the topic. It will be considered during the evaluation of the criterion related to "S/T quality".

The multi-sectoral composition of the partnership and the participation of industrial partners and relevant end-users, in particular SMEs, are essential for the implementation of the project. It will be considered during the evaluation of the criterion related to "Implementation".

Expected impacts:

- Contribution to the target of 20% share of wind energy in the final EU electricity consumption by 2020.
- Contribution to the growth of aquaculture industry and to increasing food needs and food security.
- Contribution to the increase of employment level (new job opportunities) in the shipbuilding, energy and fisheries sector.
- New emerging green technologies and global competitiveness of the European industries.
- Contribution to the low carbon economy.
- Strengthen the role of the European maritime transport sector within offshore energy and fisheries developments. Facilitate more efficient eco-friendly transport operations.

Funding scheme: Collaborative Project.

Open in call: FP7-OCEAN-2011

OCEAN.2011-2. Marine microbial diversity – new insights into marine ecosystems functioning and its biotechnological potential

(Topic not relevant for SST – 1 large integrated project)

The sequencing of environmental samples from marine environments allows investigations on microbial diversity and their functions at molecular level, leading to a better understanding and prediction of the marine microbial influence on biogeochemical cycles and hence on climate change and to the exploitation of its potential for biotechnological applications. This is why nowadays massive output of sequencing efforts of marine environmental samples e.g. ocean sampling expeditions, are flooding databases. To interpret these data in their environmental context is a prerequisite to being able to transform the wealth of sequenced data into biological understanding. However, analysis and interpretation of these data, especially metagenomic data, requires tools that are very poorly developed so far.

The focus of research should be on the development of new bioinformatic approaches in the marine environment field that will enable microbial (e.g. viruses, bacteria, archaea and protists) data exploitation, integration and accessibility for researchers and different users worldwide. It should focus on standardization, processing, integration of heterogeneous data sources, annotation, interpretation of the metagenomics data taking into account their environmental context (biogeochemical and oceanographic data) and should link environmental studies with laboratory experiments so that hypothesis can be tested and unknown genes and/or biochemical pathways can be assigned a function. The complex problem of IPR issues related to the exploitation and protection of marine resources as well as outreach activities including training of researchers should also receive due consideration.

Additional eligibility criteria: The requested European Union contribution shall not exceed EUR 9 million.

Additional information:

A maximum of one project may be funded.

The multi-disciplinary approach of the research undertaken is essential to address the topic. It will be considered during the evaluation of the criterion related to "S/T quality".

The multi-sectoral composition of the partnership and the participation of industrial partners and relevant end-users, in particular SMEs, are essential for the implementation of the project. It will be considered during the evaluation of the criterion related to "Implementation".

Expected impacts:

- Better understanding of the complexity of microbial communities and their role on climate change, the parameters driving the functioning of marine ecosystems and reveal new exciting activities with potential industrial use.
- Contribution to the improvement of environmental bioinformatics capacity building in Europe and overcome fragmentation resulting from the very fast developments in sequencing, bioinformatics, and molecular ecology.
- Enabling integration with oceanographic research on earth observation and monitoring (e.g. GMES, GEOSS and Emodnet) and other EU funded related activities.
- Contribution to the increase of the interoperability and data quality and facilitate novel applications in the field of blue biotechnology.
- Contribution to the improvement of the protection of genetic resources and the sustainable use of marine resources by advancing new IPR approaches.

Funding scheme: Collaborative Project (large scale integrating project).

Open in call: FP7-OCEAN-2011

OCEAN.2011-3. Assessing and predicting the combined effects of natural and human-made pressures in the Mediterranean and the Black Sea in view of their better governance

The capacity of the Mediterranean and the Black Sea to provide goods and services to their surrounding populations may be compromised in the near future if anthropogenic and natural pressures are not considered in connection with the natural sensitivities and capacities of the marine environment in an integrated, ecosystem-based way. An integrated

approach for governance in the Mediterranean and in the Black Sea basins is therefore needed.

The overall objectives of the project are to promote sustainable well-coordinated research efforts in order to characterize patterns of pressure in environmental and socio-economic terms on the Mediterranean and the Black Sea and to develop a framework for future implementation of adaptive policies and management schemes, while fostering international cooperation with neighbouring countries.

Firstly, the project will develop expert systems in order to address the objectives of the topic, making the best use of the available observational and monitoring capability currently deployed in both basins. In particular it should take advantage of and be built on systems such as the ones currently deployed through the Global Monitoring for Environment and Security (GMES) and the Group on Earth Observations (GEO) initiatives. The project should also take into consideration the European Marine Observation and Data Network (EMODNET) and the Data Collection Framework (DCF) in fisheries. Where needed, the project should fill short term data gaps and propose options to fill gaps on a continuous basis in the long term. This will include making more compatible the role of existing and future research vessel (i.e. a new multipurpose mobile platform for environmental data collection) with the current effort to monitoring systematically the environmental status of the Mediterranean and the Black Sea conditions through an integrated observing system.

Secondly, the project shall build an integrated knowledge-base for understanding the patterns of anthropogenic and natural pressures in the Mediterranean and in the Black Sea. In particular, it should develop the science-base needed to understand how the natural land-ocean processes that are characteristic of semi-enclosed basins (peculiar role of air-sea fluxes and fresh water fluxes, specific water mass ventilation rates, hydraulic control of flows across straits) and the anthropogenic processes (effects of large cities, coastal development, pollution, recreational activities, fishing and aquaculture activities) interact in these two basins.

Thirdly, the project shall provide a scientific rationale for a basin-wide promotion of the principles and objectives put forward in the Marine Strategy Framework Directive (MSFD) in close collaboration with the neighbouring countries in order to achieve Good Environmental Status (GES). It should be built upon existing models, in particular those developed under GMES, improve prediction and management of key anthropogenic and natural processes and their impacts in the Mediterranean and the Black Sea.

The project shall cover both Mediterranean and Black Sea basins and foster international cooperation. It will aim to build scientific capacity in the countries bordering the Mediterranean Sea and the Black Sea to strengthen European efforts to address the environmental challenges faced in the two semi-enclosed seas, jointly with neighbouring countries.

Finally, the project will develop a small research and survey vessel concept to be used for coastal areas, estuaries, as well as port areas, navigation channels. The innovative research content concerns a small vessel with low draft that can operate with very precise innovative dynamic positioning, novel propulsion in shallow waters and normal sea states. As well as being suitable for a wide range of research related users, the vessels will address

the needs to survey, accurately and efficiently shallow water navigation channels, an important navigation safety issue for shipping, particularly in areas with shifting sands.

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 13 million.
- SICA - Minimum number of participants: 3 from different Member States or Associated countries and 4 from different ICPC, among which at least 2 from the Mediterranean Partner Countries and at least 2 from the ICPC countries of the EU Black Sea Synergy⁶⁸.

Additional information:

A maximum of one project may be funded. The project must equally address both the Mediterranean and the Black sea basins. It may include one sub-project for the Mediterranean and one for the Black Sea; but with a strong interlink between the two (e.g. for modelling) and a common approach for the development of the small research and survey vessel.

The project should be in line with the requirements of the Inspire directive and data sharing principles of the GEOSS initiative.

The multi-disciplinary approach of the research undertaken is essential to address the topic. It will be considered during the evaluation of the criterion related to "S/T quality".

The multi-sectoral composition of the partnership and the participation of industrial partners and relevant end-users, in particular SMEs, are essential for the implementation of the project. It will be considered during the evaluation of the criterion related to "Implementation".

Expected impacts:

- Reinforcing the scientific knowledge base, including in the regions out of the EU where this knowledge base remains poor, in order to understand and manage the impact of global changes on the Mediterranean and the Black Sea marine ecosystems and thereby contribute to their sustainable development.
- Clarifying challenges related to the definition and implementation of basin wide Good Environmental Status in accordance with the MSFD.
- Contributing to building science-based basin scale management strategies and informing policy makers at national, EU, regional and International levels. Evaluating the various options for sustaining these tools on the long term.
- The project should be in line with EU and international policies such as: MSFD, GMES, GEOSS, Common Fisheries Policy (CFP), Integrated Maritime Policy, and the regional sea conventions.
- Enable advanced marine transport technology to accurately and efficiently locate in normal seas a vessel that can research and survey in shallow waters.
- Reinforcing international cooperation and interactions between scientists throughout the two geographic areas and spreading knowledge to decision makers.

Funding scheme: Collaborative Project (large scale integrating project) for specific cooperation actions (SICA) dedicated to international cooperation partner countries.

Open in call: FP7-OCEAN-2011

⁶⁸ COM (2007) 160: Armenia, Azerbaijan, Georgia, Moldova, Russia, Ukraine.

OCEAN.2011-4. Knowledge-base and tools for regional networks of MPAs, integrated management of activities together with assessment of wind energy potential in the Mediterranean and the Black Sea

Due to the specific nature of the Mediterranean and Black Sea and the rapid expansion of sea-based activities, there is a need to create new knowledge to support the development of decision maker's tools for optimizing the management of human activities, within an integrated coastal and marine space system.

The objective of the project is to build up scientific basis firstly for establishing regional or sub-regional wide networks of marine protected areas (MPAs) for conservation and better management of marine living resources, secondly for assessing offshore wind energy potential while evaluating possible synergies and conflicts of use with other marine activities.

Research on MPAs will concern the establishment of scientific guidelines, criteria, models and tools for the design, mapping, management, monitoring and control of regional or sub-regional networks of MPAs including deep-sea habitats and areas beyond national jurisdictions. These networks of MPAs should respond to clearly established objectives, from protecting biodiversity (strict reserves) to achieving a sustainable exploitation of aquatic living resources by preserving nursery grounds and juveniles (restricted areas).

The focus will be on the identification of priority areas in both basins through a hierarchical approach based on ecological and socio-economic criteria in underrepresented or poorly studied areas and ecosystems (e.g. the high seas and the deep seas). Sizing, spacing and ecological connectivity and interdependency between sites will be studied for optimal maintenance of species populations and biodiversity (spill over effect), considering possible genetic exchange, larval behaviour patterns and larval dispersal and making the best use of molecular science and multidisciplinary approaches between marine genomics and ecosystem science. Habitat discontinuity and fragmentation, physical oceanography should also be considered. The development of management strategies for implementing the regional networks such as regulation measures to limit and ban certain practices, dynamic closures, legal issues for managing trans-boundary areas and high seas MPAs are key elements of the project. The project should also promote innovative communication strategies between scientists, managers, fishermen, shippers, NGOs, potential users and public at large.

Research on wind energy will provide a scientific basis for assessing off-shore wind potential in the Mediterranean and the Black Sea, focusing on areas already identified as promising with respect to wind regimes. The project should assess the potential for offshore wind power production based on the use of existing models. It will also evaluate potential conflicts with other uses of the space (MPAs, maritime transport, on shore large desalination plants, dredging, fishing, aquaculture, sub-sea cables, pipelines, tourism, etc). The project should deliver scientific guidelines for an enriched "wind atlas" for decision-makers and planners.

Moreover the project shall launch two pilot studies, at least one in the Mediterranean and one in the Black Sea, addressing the establishment of regional networks of MPAs, also combining if possible wind energy development, and considering all the possible conflicts from other maritime activities. The pilot studies should address selected areas within

regions or sub-regions of the Mediterranean Sea and the Black Sea as defined in the Marine Strategy Framework Directive⁶⁹. The project should reinforce capacity building in support to international cooperation by transferring and making compatible methods across the two basins and by promoting common rules and practices in particular with non EU countries from Balkans, Southern Mediterranean and Eastern Europe bordering the two seas.

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 9 million.
- SICA - Minimum number of participants: 3 from different Member States or Associated countries and 4 from different ICPC, among which at least 2 from the Mediterranean Partner Countries and at least 2 from the ICPC countries of the EU Black Sea Synergy⁷⁰.

Additional information:

A maximum of one project may be funded.

The multi-disciplinary approach of the research undertaken is essential to address the topic. It will be considered during the evaluation of the criterion related to "S/T quality".

The multi-sectoral composition of the partnership and the participation of industrial partners and relevant end-users, in particular SMEs, are essential for the implementation of the project. It will be considered during the evaluation of the criterion related to "Implementation".

Expected impacts:

- Improved methods and tools for developing holistic planning and integrated management approaches and practices for the implementation of regional or sub-regional networks of Marine Protected Areas and the assessment of offshore wind energy potential in the Mediterranean Sea and the Black Sea.
- Reinforcing international cooperation and interactions between scientists and marine space users throughout the two geographic areas and spreading knowledge to decision makers.
- Demonstrating the feasibility and possible synergy between regional networks of MPAs and offshore wind sites through the launching of two pilot studies, at least one in the Mediterranean and one in the Black Sea, with the participation of the industry.
- Supporting maritime spatial planning⁷¹ and the development of an Integrated Maritime Policy in the Mediterranean and Black Sea basins.
- Contributing to fulfil international/regional conventions and agreements e.g. Convention on Biological Diversity, UN World Summit on Sustainable Development Plan of Implementation, as well as EU regulations and policies regarding the implementation of regional or sub-regional networks of MPAs.

⁶⁹ The 4 sub-regions of the Mediterranean Sea are (i) the Western Mediterranean Sea; (ii) the Adriatic Sea; (iii) the Ionian Sea and the Central Mediterranean Sea; (iv) the Aegean-Levantine Sea.

⁷⁰ COM (2007) 160: Armenia, Azerbaijan, Georgia, Moldova, Russia, Ukraine

⁷¹ COM (2008) 791 of 25.11.2008 - Communication from the Commission "Roadmap for Maritime Spatial Planning: Achieving Common Principles in the EU".

FP 7 Cooperation Work Programme: Transport

Funding scheme: Collaborative Project (large scale integrating project) for specific cooperation actions (SICA) dedicated to international cooperation partner countries.

Open in call: FP7-OCEAN-2011

7.3. HORIZONTAL ACTIVITIES FOR THE IMPLEMENTATION OF THE TRANSPORT PROGRAMME

I.3. CONTEXT

I.3.1. Approach

The Transport (including Aeronautics) theme aims to support a number of topics that exploit the synergies between air transport and the surface transport modes and that can make a contribution to the common objectives of advancing competitiveness, anticipating and responding to the socio-economic and environmental challenges of the transport system. Potential proposers' attention is drawn on the need in this call to address intermodality, co-modality and – in general – concerns that are common or anyhow of interest to more than one transport mode. The strategic objectives for this call (FP7-TRANSPORT (TPT)-2011-RTD-1) have been presented in section I.0.4 (Main differences with previous work programmes).

I.3.2. Structure

This section of ‘Theme 7 Transport (including Aeronautics)’ is not formally structured in activities and areas according to the Specific Programme⁷². Nonetheless, for the sake of clarity the topics proposed for the fourth call of the transport horizontal activities (FP7-TPT-2011-RTD-1) are presented accordingly with the major strategic objectives of these horizontal activities. Three domains have been established:

1. Socio-economic research and technology foresight.
2. Integration of transport modes and cross-cutting research.
3. Strengthening the European Research Area, encouraging participation, and dissemination and awareness of research results.

In addition to the topics included in these domains of this TPT call, other topics on socio-economic research and cross-cutting issues have been included in the AAT and SST chapters of this 2011 Transport work programme, which can be found in the table of contents of this work programme.

I.3.3. Funding schemes

Collaborative projects in the call FP7-TPT-2011-RTD-1 are small or medium-scale focused research projects (CP-FP). Co-ordination and Support Actions (CSA) is the other main funding scheme used in this call. Some topics are equally open to Collaborative Projects (small or medium-scale focused research projects) for Specific Cooperation Actions (CP-FP-SICA) dedicated to international cooperation partner countries, and/or to Research for the Benefit of Specific Groups – Civil Society Organizations (BSG-CSO) funding scheme.

⁷² Council Decision 2006/971/EC of 19 December 2006 concerning the Specific Programme "Cooperation" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013) (OJ L 400, 30.12.2006, p.86).

The maximum requested EU contribution for CP-FP and CP-FP-SICA is up to EUR 1.5 million, which is an eligibility criterion.

II.3. CONTENT OF CALL FOR 2011

II.3.1. Socio-economic research and technology foresight

TPT.2011.1-1. Enhancing connectivity between research solutions and policy-making for the sustainable development of Transport

Content and scope

Socio-economic research, including sustainability research is needed to understand the character, the mechanisms and the requirements of the institutional transition in society, culture, economy, regulation and politics necessary to allow for sustainable development (SD). It means to further develop and combine interdisciplinary research methods (e.g. technology and social sciences, as well as qualitative and quantitative perspectives), to deepen knowledge about various groups transport needs and activities, and to map and analyse what transport mode and transport activities are preferred among various user groups within different regions in Europe. Best practise from SD-perspective certainly differ according to users' needs, functions and experiences as well as according to different regional conditions. However, the picture of SD-oriented solutions in combination with various users' needs, experiences, etc. in different regions still seems quite scattered.

Foresight exercises and SD-oriented socio-technical experimentation and shaping constitute important tools for identifying and mobilising opportunities. Of particular importance is the interaction between industry, researchers, policymakers and other stakeholders. However, SD-related research results are often underutilized in policymaking, due to a lack of links between disciplines and between research and policy⁷³. Knowledge brokerage processes as well as other mechanisms are needed to leverage knowledge for SD-related use and policymaking. Already running activities aiming to increase the connectivity between research and SD-policymaking should be continued and reinforced. As an example, one area which has shown initial promise and significant potential to address a range of policy objectives, and which could be taken forward in this way is Intelligent Transport Systems (ITS).

The proposal should cover:

- State-of-the-art of the main foresight exercises and importance of sustainable development in Transport policymaking.
- Potential opportunities of enhancing connectivity between disciplines, research, stakeholders and policymakers.
- Concepts for knowledge brokerage processes and other possible mechanisms.
- Comparison of policies based on technological solutions (e.g. ITS) against other policy interventions (e.g. pricing, regulation, investment in infrastructure, encouraging modal shift) to solving specific transport challenges.

⁷³ "Gearing European research towards sustainability. RD4SD Exercise". European Commission, Directorate-General for Research, 2009.

The work could be of cross-cutting character (concerning technologies and Transport challenges), or more focused on particular examples (either cross-modal or addressing more than one transport mode) including the evaluation of costs and benefits of a range of specific interventions.

Expected impact

This support action will contribute to a better understanding of requirements to enhance connectivity between research solutions and policy-making, helping to create effective links between research and policy. It will identify opportunities and mobilizing actions, particularly for the comparison of policy interventions to solve specific transport challenges.

Research activities funded under this topic would liaise and coordinate as appropriate with relevant activities of related European Technology Platforms (ETPs), e.g. ACARE, ERRAC, ERTRAC, WATERBORNE and HFP, as well as with the ‘European Green Cars Initiative’ and the ‘Future of Transport initiative’⁷⁴, in order to create synergy and avoid duplication.

Funding scheme: Coordination and Support Action aiming at supporting research activities

Open in call: FP7-TRANSPORT (TPT)-2011-RTD-1

TPT.2011.1-2. Transport needs for an ageing society

Content and scope

An ageing European society requires the elderly mobility issue to be addressed. While some aspects related to this group of transport users have already been addressed in research activities, an overall picture is missing. Therefore an effort should be undertaken to comprise current knowledge, identify research gaps, and develop an action plan on how to proceed ahead for innovative solutions. Special attention should be paid to the gendered nature of the issue: a majority of the elderly will be women, due to the shorter life expectancy of men, and research has shown men and women to have to some extent different mobility needs and possibilities. The development of guidelines, requirements and specifications that allow a safe and adequate usage of different transport modes for this group can be one approach. The application of these results to other related special groups (e.g. disabled, people who are not computer aware) could also be considered. Generally the activity should take into account all relevant aspects including human and gender-related factors related to the use of transport (e.g. mobility patterns, driving ability, and human-machine interface), safety and infrastructure needs. Geography and regional differences as well as welfare and cultural ones are also crucial for mobility issues of the ageing society which need to be investigated thoroughly. Also, possible goal conflicts between social sustainability and e.g. environmental sustainability, merit attention. This work would support a strategy for future transport in an ageing society and specific research topics for European and national RTD programmes could be defined.

Expected impact

⁷⁴ http://ec.europa.eu/transport/strategies/2009_future_of_transport_en.htm

This research will contribute to a better understanding of the requirements to properly address elderly mobility, including the identification of research gaps and the development of an action plan for innovative solutions.

International cooperation is particularly encouraged in this activity either with international cooperation partner countries and/or other countries (e.g. USA, Japan, etc).

Funding scheme: Collaborative Projects - small or medium-scale focused research projects; or Collaborative Project (small or medium-scale focused research) for specific cooperation actions (CP-FP-SICA) dedicated to international cooperation partner countries; or Coordination and Support Actions aiming at supporting research activities; or Coordination and Support Actions aiming at coordinating research activities; or Research for the Benefit of Specific Groups – Civil Society Organizations (BSG-CSO)

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-TRANSPORT (TPT)-2011-RTD-1

TPT.2011.1-3. Socio-economic challenges for breakthrough innovations in European freight transport

Content and scope

A number of EU-FP projects have recently analysed the relationship between research projects and innovation of the past and present, in order to examine their socio-economic dimensions. Future breakthrough innovations, which can be expected in the European freight transport sector, have also important socio-economic connotations, and it would be for authorities and industry to define supportive incentives and conditions, i.e. the conditions for acceptance, the economic and environmental costs as well as the employment and quality of skills required. To understand the sector prospects, in particular to the carbon-neutral transport objective, the upcoming global competition for the European transport industry and developments in non-European countries should be incorporated.

The objectives of this action for freight transport (including inter-modality and co-modality aspects) would be to:

- Identify expected breakthrough innovations in the next 10 years.
- Anticipate the impact of breakthrough innovations on the transport system.
- Analyse the upcoming global competition for the European transport industry.
- Outline the market penetration for breakthrough innovations in Europe and non-European freight transport, including the role of standardization and spillover effects.
- Detect socio-economic opportunities and obstacles of targeted innovation in the transport sector.
- Propose supportive incentives and actions necessary from public authorities.

Expected impact

This support action will contribute to a better understanding of the freight transport sector in Europe and its competition environment, in particular with regard to the carbon-neutral transport objective. It will identify expected/needed innovations, opportunities and possible obstacles. It will help to formulate policy interventions.

Funding scheme: Coordination and Support Action aiming at supporting research activities

Open in call: FP7-TRANSPORT (TPT)-2011-RTD-1

II.3.2. Integration of transport modes and cross-cutting research

TPT.2011.2-1. Integration of passenger transport modes and travel information services through the analysis of social behaviour, mobility patterns and business models as basis for the decarbonization of the European transport system

Content and scope

To understand and treat the increasing threat from the climate change without reducing the mobility substantially and by that the level of welfare it is important to better understand transport behaviour and how transport services are used. Current research has proved that there are marked gendered profiles in relation to different modes and uses of transport across the European Union. Yet there is a need to provide new and better understandings of rising mobility and the consequences for individuals, regions and society, as well as clarifying important dimensions related to identities, practices and structures of mobility in the 21st century. National travel surveys have been collected data in most countries but using different methodologies. The role of internet as information and marketing channel is of growing importance. Mobile, location-aware communication tools have the chance to influence mobility patterns fundamentally. Emergence and growth of socioeconomic trends will involve modifications in population mobility and transportation demands. Therefore it is suggested to promote coordination and cross European analyses, considering the diversity of transportation actors and modes, in order to exploit the untapped potential for a better understanding of transport system through the analysis of social behaviour, mobility patterns and business models, taking into account equality and social, generational and gender issues. Sustainable and active modes should also be considered, i.e. issues around walking and cycling. This analysis and modelling should result in new and improved service offerings that promote and encourage changes in mobility patterns to ensure the sustainability of the system.

The proposal should cover:

- State-of-the-art in travel behaviour surveys and their results across Europe.
- Identification of relevant factors and key drivers, including unaddressed needs as well as opportunities for solutions through co-modality.
- Harmonization needs on travel behaviour analysis.
- Analysis of ICT measures and solutions (e.g. seamless multi-modal location system) to support and influence mobility patterns (especially in the context of public transport and multimodal transport chains) and provide behavioural data.
- Rural issues, including community / tailored / demand responsive transport.
- Analysis of potential for decarbonization.

This is an area of research with potential synergies and complementarities with national activities that should be properly considered.

Expected impact

This research will help developing strategies, technologies and methodologies for integrating and optimising transport systems for passengers (both in urban and metropolitan environment), while determining the optimum balance on “trade-offs” between operating cost vs. time headway for each combined transport mode, minimizing access, waiting and transfer times for users and minimizing total costs at the same time, finally serving to model concrete door-to-door transport services according to identified population needs, potential added value for passengers and the carbon-neutral transport objective.

Funding scheme: Collaborative Projects - small or medium-scale focused research projects; or Coordination and Support Actions aiming at supporting research activities

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-TRANSPORT (TPT)-2011-RTD-1

TPT.2011.2-2. Enhanced cross-fertilization and synergies in research actions dealing with safety aspects

Content and scope

Safety of passengers and goods is ensured by increasingly sophisticated tools, techniques and complex systems addressing the vehicles, the associated transport system and the effective interconnection among them. This action would allow for:

- Reviewing ongoing research projects in all transport modes in the relevant fields, e.g. risk-based analysis and design techniques, use of advanced intelligent communication, surveillance and navigation systems, and associated models of complex systems.
- Analysing similarities and differences in order to identify synergies.
- Identifying strategic research domains where the research efforts need to be emphasized.
- Drafting a plan with recommendations to improve the coherence and effectiveness of research actions in the different transport modes.

The involvement of regulatory and safety agencies will be considered as an asset. International Cooperation is particularly encouraged in this activity either with international cooperation partner countries and/or other countries (e.g. USA, Japan, etc).

Expected impact

This research should help to reduce the fragmentation that exists in Europe and enhance synergies and cross-fertilization between the different transport modes for research actions dealing with safety.

Funding scheme: Coordination and Support Action aiming at supporting research activities; or Collaborative Projects (small or medium-scale focused research) for specific cooperation actions (CP-FP-SICA) dedicated to international cooperation partner countries

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-TRANSPORT (TPT)-2011-RTD-1

TPT.2011.2-3. Modelling of co-modality quick-wins: Roadmap towards co-modality

Content and scope

Current socio-economic trends and challenges in various fields (climate change, oil and energy, pollution and health, decongestion of transport, population ageing, etc.) call for accelerated uptake of technological advances in the transport industry. This relates to transports modes considered individually, but even more importantly, to technical achievements in the field of inter/co-modal integration, particularly between high capacity and usually long-distance modes (road, railways, air, waterborne) with local/urban modes.

In order to quickly unlock the value of technological advances, joint business drivers and synergies must be the force behind their adoption by all the stakeholders in the transport chains. The purpose of this activity is hence to analyse, identify and model, from economic, managerial, operational and technological viewpoints, specific opportunities for inter/co-modal transport, both for passengers and goods, that show evident unaddressed needs, value add opportunities, or new business models, based on R&D achievements as well as on the analysis of socio-economic trends.

The activity should identify the major thresholds for inter/co-modal transport and present roadmaps to overcome these thresholds and that are endorsed by the different ETPs active in Transport. The roadmaps should point out and describe the required integration of R&D results and activities as well as policy options, so that the different stakeholders can materialize the identified quick-wins in concrete technology development and integration roadmaps and take the necessary actions to bring inter/co-modality further.

Expected impact

This research will contribute to new or improved services to customers (either passengers or SMEs and big enterprises) and to identify ways to improve transport efficiency, sustainability and costs.

Funding scheme: Collaborative Projects - small or medium-scale focused research projects; or Coordination and Support Actions aiming at supporting research activities

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-TRANSPORT (TPT)-2011-RTD-1

II.3.3. Strengthening the European Research Area, encouraging participation, and dissemination of research results

TPT.2011.3-1. A productive international cooperation to strengthening the European Transport research area and facing global challenges

Content and scope

Enacting a truly international or globalized transportation research regime faces significant problems and difficulties today which should themselves be studied and researched, by way of priority, in order to provide the means of enacting productive international transport research cooperation in the future. The main goal of international transport research cooperation should be to establish a framework for such cooperation without the potentially limiting considerations that e.g. such research is threatening existing domestic research and “own” product development networks, etc.

Many transport-related problems in countries like the U.S., Japan or Australia are similar to those of the European countries. Congestion, aging population, energy prices or environmental problems are a challenge for the transport systems and transport research. Solutions are often found in multidisciplinary strategies, for instance the use of mobile communication and navigation applications or regional transport planning tools. Taking into account the experience of related previous projects, an expert dialogue between European experts and their international counterparts should be established. Proposals may include studies to analyse, compare, assess and link results from past and on-going research projects, comparative between the situation in the EU and those in other regions. International cooperation is encouraged in this activity including high-income countries.

Expected impact

This activity will contribute to the establishment of a framework for international transport research cooperation, which should be built upon the principles and orientations laid down in the Communication ‘A Strategic European Framework for International Science and Technology Cooperation’⁷⁵

Funding scheme: Coordination and Support Action aiming at supporting research activities; or Collaborative Projects (small or medium-scale focused research) for specific cooperation actions (CP-FP-SICA) dedicated to international cooperation partner countries

Note: Limits on the EU financial contribution apply. These are implemented strictly as formal eligibility criteria. You must refer to the call fiche for details of these limits

Open in call: FP7-TRANSPORT (TPT)-2011-RTD-1

⁷⁵ COM (2008) 588 final of 24.09.2008.

7.4. GALILEO

I.4. CONTEXT

The European Global Navigation Satellite System (GNSS), encompasses Galileo and EGNOS, and provides a worldwide positioning and timing infrastructure.

In parallel to the development phase, that is demonstrating the technical feasibility and the European capacity of implementing an independent satellite navigation infrastructure, the deployment of the full Galileo satellite constellation and the associated ground segment has started in 2009. The procurement activities include full system validation and are foreseen to lead in 2014 to an operational infrastructure owned by the European Union.

The main objective of the deployment phase is to procure and set up the various elements that constitute the Galileo infrastructure, in particular the completion of the space and ground infrastructures, system support tasks, launch and operation of services, as well as the development of external interfaces for the future service/application systems and test receivers. Beyond manufacturing of equipments, the procurement activities encompass trade-offs and analysis, simulations, testing, demonstration, in-orbit validation, and other activities that increase competencies of European companies in satellite navigation.

According to the European GNSS Regulation⁷⁶, the financial envelope foreseen to implement the above activities (EUR 3.4 billion for EGNOS and Galileo) includes the sum of EUR 400 million made available from the Seventh Research and Development Framework Programme for the period 2007-2013.

A delegation agreement between the European Commission and the European Space Agency has been concluded in the course of 2008, pursuant to Article 54(2) of the EU Financial Regulation, allowing ESA to procure the Galileo deployment in the name and on behalf of the Commission. Therefore, the implementation of the above activities will not be detailed in this work Programme. Finally, the Commission will procure performance monitoring facilities.

Support to the European Global Navigation Satellite System (Galileo) and EGNOS

In 2011 the R&D activities related to Galileo will be implemented by both the European Commission and the GNSS Supervisory Authority (GSA, on behalf of the European Commission), that has been established by Council Regulation⁷⁷. All information relating to GNSS research activities is available on the website⁷⁸.

New satellite navigation applications are being developed everyday, covering numerous sectors of the world economy. The expected global market in products and services will likely reach EUR 260 billions in 2025. The activities will give European industries the right opportunities to acquire the knowledge and expertise required in a strong international

⁷⁶ Council Regulation (EC) 683/2008 of 9 July 2008 (OJ L 196 24.07.2008).

⁷⁷ Council Regulation 1321/2004 as amended by Council Regulation 1942/2006.

⁷⁸ http://ec.europa.eu/dgs/energy_transport/galileo/ and/or www.gsa.europa.eu/

competing environment. Small and Medium Enterprises are key players for innovation in this sector and will therefore be given special care in this call.

The European infrastructure is being implemented in an incremental way. The overall GNSS performances will gradually improve, allowing the smooth development of receiver technologies and applications. The set of R&D activities will follow the incremental build up of the infrastructure, i.e. EGNOS in 2009, four satellites for in orbit validation in 2011, and the operational constellation in 2014. The activities will build on existing infrastructure elements, including ground-based test and verification facilities.

The GNSS Evolution Programme of the European Space Agency will maintain the technology at the state-of-the-art level. The activities within European GNSS Supervisory Authority and European Space Agency are coordinated.

The European GNSS, as a global navigation system, has a strong international dimension. All R&D activities will fully take into consideration the cooperation frame established with partner countries in order to promote the use of the European Navigation system worldwide.

The following research areas will be implemented by the European GNSS Supervisory Authority and the European Commission DG ENTR, through calls with specific topics. The inclusion of SME in the consortia is encouraged in all topics.

II.4. CONTENT OF CALL FOR 2011

ACTIVITY 7.4.1. EXPLOITING THE FULL POTENTIAL

Promoting growth in the use of the Galileo and EGNOS services, demonstrating the benefits of satellite navigation in general and the European GNS systems in particular.

AREA 7.4.1.1. Mass market applications

No topic is open in 2011.

AREA 7.4.1.2. Professional applications

The objective is to promote the use of the European GNSS navigation functions for all applications requiring high performances and quality of service guarantees.

For example, the activities will encompass the whole transport chain for passengers, animals, freight, hazardous materials, valuables, and in transport modes for which guaranteed positioning and navigation services are required. This will be achieved in close coordination with areas and topics in sub-themes Aeronautics and Surface Transport to avoid duplications.

Domains where high precision is a priority like agriculture, cadastre, environment protection, energy and construction are also covered in this area, as public services like justice and home affairs, border control and homeland security, crisis management, etc.

► **TOPIC OPEN IN CALL 2011**

Galileo.2011.1.2-1. Use of EGNOS and early GALILEO services for professional applications

The topic will address the use of EGNOS (via satellite and via EDAS) for the professional market requiring:

- high accuracy (e.g. precision agriculture, cadastre, or location of work teams and individuals, with application in positioning of, for instance, construction machinery or the conservation of highways and railways), and/or
- signal reception capability under difficult RF circumstances (e.g. indoor), and/or
- the PRS for applications under government control, requiring high robustness, anti-spoofing and anti-jamming capabilities.

The use of early Galileo services demonstrated through IOV satellites can also be envisaged.

Expected outcome: Development of the corresponding professional applications, their introduction in the market, or their adaptation to the constraints of the PRS access policy, and the assessment of the benefits of EGNOS and Galileo.

Funding scheme: Collaborative Project (CP)

Open in call: FP7-GALILEO-2011-GSA-1

AREA 7.4.1.3. Scientific applications

The objective is to promote the use of Galileo navigation functions in the scientific community. The activities will address the use of all the European GNSS signals for specific purposes in the scientific domains: geodesy, meteorology, oceanography, ionosphere studies, fundamental physics, etc. All opportunities offered by the European satellite navigation signals to fundamental research applications will be explored.

► **TOPIC OPEN IN CALL 2011**

Galileo.2011.1.3-1. Use of Galileo and EGNOS for scientific applications and innovative applications in new domains

The topic will address the benefits that the scientific community can derive from the use of GALILEO and/or EGNOS for the society at large, with a high degree of innovation. The synergies with other satellite based technologies (e.g. GMES) will be addressed in this topic.

Expected outcome: Development of very innovative scientific applications with a high societal benefit; exploitation of synergies with other space-based services and systems.

Funding scheme: Collaborative Project (CP)

Open in call: FP7-GALILEO-2011-GSA-1

AREA 7.4.1.4. Safety-of-life applications

The objective is to put in place all necessary elements to allow the use of satellite navigation for safety-of-life applications not only in the aviation sector but also for other transport modes like railway, maritime and road.

The activities will address the technical requirements and demonstrate the feasibility of robust, reliable and safe applications based on the integrity message. Examples concerning the aviation sector are curved approach, and preparation for the use of the Galileo SoL service.

► TOPIC OPEN IN CALL 2011

Galileo.2011.1.4-1. Use of EGNOS and GALILEO for safety-of-life applications for all transport modes

The topic will continue the effort for the introduction of EGNOS in the aviation, extending its use to both commercial and general aviation, and will prepare the adoption of GALILEO. It aims at developing an operational concept for the use of GNSS for aviation.

The topic shall also emphasize other domains of applications where the integrity concept might be of interest, for instance road, railways, maritime and inland waterway transports, or any other domain outside the scope of transports.

Expected outcome: Development and demonstration of an operational concept for the use of the Safety of Life service in transport market segments.

Funding scheme: Collaborative Project (CP)

Open in call FP7-GALILEO-2011-GSA-1

AREA 7.4.1.5. Timing and synchronization applications

No topic is open in 2011.

AREA 7.4.1.6. Governmental applications

No topic is open in 2011.

AREA 7.4.1.7. New and innovative applications and services

The objective is to promote innovation in the domain of the new applications for the European GNSS.

The activities will focus on supporting innovative ideas for new applications. The development of new services based on these applications will also be covered. A specific emphasis will be given to support research & development activities in small and medium enterprises.

► **TOPIC OPEN IN CALL 2011**

Galileo.2011.1.7-1. Use of Galileo and EGNOS services for mass market and in niche sectors (to be mainly provided by SMEs)

This topic is mainly open for, but not limited to SMEs, universities, and R&D institutions. Large industrial companies may participate.

On the other hand, it will continue exploring new applications and business models for Location Based Services (LBS) in any application domain.

Proposals should aim at developing highly adaptive and sophisticated applications taking specifically advantage of the Galileo and EGNOS capabilities, including EDAS.

On the other hand, it will support R&D on secured applications in any application domain that requires using the Galileo PRS, and its robust, secured, anti-spoofing and anti-jamming capabilities.

Expected outcome: Extend the scope of applications and the generation of the widest possible range of niche applications including "unexpected areas".

Funding scheme: Collaborative Project (CP)

Open in call: FP7-GALILEO-2011-GSA-1

AREA 7.4.1.8. Search and rescue applications

No topic is open in 2011.

AREA 7.4.1.9. Regulated applications

No topic is open in 2011.

AREA 7.4.1.10. Liability critical applications

No topic is open in 2011.

ACTIVITY 7.4.2. PROVIDING THE TOOLS AND CREATING THE APPROPRIATE ENVIRONMENT

Ensuring safe and secure use of services mainly through certification in key application domains; preparing and confirming the adequacy of services to new policies and legislation, including their implementation; addressing public regulated services according to the approved policy of access; developing essential digital topology, cartography, geodesy data and systems for use in navigation applications; addressing safety and security needs and requirements.

AREA 7.4.2.1. Tools

No topic is open in 2011.

AREA 7.4.2.2. Certification and standardization

No topic is open in 2011.

ACTIVITY 7.4.3. ADAPTING RECEIVERS TO REQUIREMENTS AND UPGRADING CORE TECHNOLOGIES

Improving receiver performances, integrating low-power consumption and miniaturization technologies, completing in-door navigation coverage, coupling with radio frequency identification devices, exploiting software receiver technology, combining with other functions as telecommunication, supporting key navigation ground-based infrastructure technology to ensure robustness and flexibility.

AREA 7.4.3.1. Receivers

The objective is to integrate into receivers all new technologies that can contribute to the improvement of performances and the reduction of the cost, especially for the mass markets (LBS and road applications).

The activities will address first the improvement of hardware, with technologies allowing e.g. interference mitigation, decrease of power consumption, increase of processing power capabilities, miniaturization, dynamic antenna patterns, etc. and second the use of new techniques e.g. positioning algorithms, signal processing, “software-defined receivers”, multi-GNSS constellation computation, etc.

The activities will also focus on dual mode receivers enabled to receive signals from GPS, Glonass, or QZSS, in addition to Galileo.

► TOPIC OPEN IN CALL 2011

Galileo.2011.3.1-1. Innovative receivers for the mass market or for professional use

The purpose of this topic is to support the introduction of Galileo for the mass market or for professional use through innovative receivers benefiting from more than one constellation or improving accuracy and availability of services, in particular dual mode receivers enabled to receive signals from GPS, Glonass or QZSS in addition to Galileo, as far as stabilised technical specifications upon which to develop receivers for these constellations are available (including the final Galileo OS ICD released in 2010).

Proposals to study Galileo-based pseudolite signal design with a view to ensure continuity indoor are also encouraged to apply.

Expected outcome: Promotion of the introduction of Galileo in the mass market; development of dual mode receivers allowing increasing performance for higher end applications; and development of EU competence and innovation in receivers technology.

Funding scheme: Collaborative Projects (CP)
Open in call: FP7-GALILEO-2011-ENTR-1

Galileo.2011.3.1-2. Technologies for PRS receivers

The purpose is to develop technologies useful for PRS receivers, including security modules; ASIC; tri-band RF front end; cryptographic protection technologies; MEMS for low-end receivers; and smart small-size antennas for pedestrian applications.

Expected outcome: development of enabling technologies for PRS receivers; and development of EU competence and innovation in receiver technology.

Funding scheme: Collaborative Projects (CP)
Open in call: FP7-GALILEO-2011-GSA-1

AREA 7.4.3.2. Customized user terminal

No topic is open in 2011.

AREA 7.4.3.3. Local elements

No topic is open in 2011.

ACTIVITY 7.4.4. SUPPORTING INFRASTRUCTURE EVOLUTION

Preparing second generation system, adapting to evolving user demands and market forecasts, taking advantage of infrastructure internationalization to address global markets and developing world-wide standards.

AREA 7.4.4.1. User needs and mission evolution

The objective is to collect the user's feedback and translate new needs and requirements into new mission and service concepts.

Activities will first address new user needs and new functional parameters to be translated into mission concepts. The setting up of User Groups and User Fora will be promoted in order to organize proper user feedback and to plan corresponding system evolutions. These will take into account other evolving infrastructures and services e.g. earth observation and telecommunications.

► **TOPIC OPEN IN CALL 2011**

Galileo.2011.4.1-1. Networks for universities and research institutes, and user fora

The main aim of this topic is to support building and managing networks gathering private and public institutions around the technologies for, or the applications of, and the services offered by satellite navigation, possibly together with GMES.

The expected networks should help developing pan-European cooperation between research centres and universities of different regions in the EU and associated countries. Activities of these networks shall be centred around concrete actions e.g., coordinating research programs, establishing a joint master programme, a PhD scholarship exchange programme, hands-on training of young researchers from research centres involved in national GNSS programmes, etc.

User communities should be represented by high profile representative bodies. Their aim would be to present and defend the needs of their communities in the development of applications of the European GNSS, and of the evolution of the systems, including the promotion of commercial use. These user fora should be established around a work programme, a working structure, regular meetings, and websites hosted by the EC EGNOS portal and the future EC Galileo portal. In order to maximise support to commercial user needs and market development, user fora would preferably be connected to clusters and incubation centres. The networks should be also fostering SMEs as they relate to enabling technologies and services. Innovations that are supporting to bridge the gap between space infrastructure and user industries are an important part in the GNSS value chain.

Contractors would be encouraged to liaise with a European network of cluster organizations gathering industrial and public institutions and users communities in order to coordinate strategically all operations at European level.

Expected outcome: Strengthening scientific and technological excellence on the satellite navigation domain.

Funding scheme: Coordination and Support Actions aiming at coordinating research activities

Open in call: FP7-GALILEO-2011-GSA-1

AREA 7.4.4.2. Space and ground segment evolution

No topic is open in 2011.

AREA: 7.4.4.3. International cooperation and awareness

The objective is to ensure that the European GNSS services, applications and standards are known and can be used throughout the world.

The activities will contribute to the cooperation schemes which have been established with partner countries worldwide. Activities will provide guidance and support to non-EU countries to set up regional and local facilities to adapt services to local needs and ensure that no unnecessary restriction to the use of the European GNSS is applied. Focus should be put on regions of the world which represent an attractive market for the European industry.

► **TOPIC OPEN IN CALL 2011**

Galileo.2011.4.3-1. International activities

The activities within this area are a continuation of activities launched in the 1st and 2nd calls of the FP7 and are intended to involve non European countries in applications and technology development. Proposals consisting in the extension of projects launched as a result of the 1st or 2nd calls to third-country participants are welcome, as well as new projects consisting in demonstrators of applications, adaptation of applications to local context, and awareness generation activities on third countries.

Expected outcome: Foster international cooperation and create a broad acceptance of Galileo/EGNOS in non European countries representing an attractive market for the European industry.

Funding scheme: Collaborative Project (CP) and Coordination and Support Actions aiming at coordinating research activities

Open in call: FP7-GALILEO-2011-GSA-1

III.1. IMPLEMENTATION OF CALLS: AERONAUTICS AND AIR TRANSPORT

- **Call title: FP7- AERONAUTICS and AIR TRANSPORT (AAT)-2011-RTD-1**
- **Call identifier: FP7-AAT-2011-RTD-1**
- **Date of publication⁷⁹:** 20 July 2010
- **Deadline⁸⁰:** 2 December 2010 at 17.00.00 (Brussels local time)
- **Indicative budget⁸¹:** EUR 121.30 million

The indicative distribution of the call budget is as follows:

- EUR 3 million for CSA–SA.
- EUR 11.30 million for topics funded via CP-FP (Level 1) and CSA-CA.
- EUR 107 million for topics funded via CP-IP (Level 2).

The budget for this call is indicative. The final budget awarded to actions implemented through calls for proposals may vary:

- The final budget of the call may vary by up to 10% of the total value of the indicated budget for each call; and
- Any repartition of the call budget may also vary by up to 10% of the total value of the indicated budget for the call.
- In case the budget of one or more funding schemes above could not be consumed (totally or partially), the remaining budget shall be transferred to the other funding schemes in accordance with the opinion of the evaluation review panel.

- **Topics called:**

Activity / Area	Topics called	Funding Schemes
7.1.1. THE GREENING OF AIR TRANSPORT		
	AAT.2011.1.4-2. Systems approach to improved core engine thermal efficiency	CP-IP
7.1.2. INCREASING TIME EFFICIENCY		
	AAT.2011.2.3-3. Integrated approach to total airport management for operational efficiency	CP-IP
7.1.3. ENSURING CUSTOMER SATISFACTION AND SAFETY		
	AAT.2011.3.5-1. Integrated approach to a human-centred cabin physical environment	CP-IP
7.1.4. IMPROVING COST EFFICIENCY		
	AAT.2011.4.4-3. Integrated approach to smart airframe	CP-IP

⁷⁹ The Director-General responsible for the call may publish it up to one month prior to or after the envisaged date of publication.

⁸⁰ The Director-General responsible may delay this deadline by up to two months.

⁸¹ Under the condition that the draft budget for 2011 is adopted without modifications by the budget authority.

	structures	
	AAT.2011.4.4-4. Integrated approach to efficient propulsion and related aircraft systems for small-size aircraft	CP-IP
	AAT.2011.4.4-5. Integrated modular actuation systems for the future all-electric aircraft	CP-IP
7.1.6. PIONEERING THE AIR TRANSPORT OF THE FUTURE		
7.1.6.1. Breakthrough and emerging technologies	AAT.2011.6.1-1. Lift	CP-FP CSA-CA
	AAT.2011.6.1-2. Propulsion	CP-FP CSA-CA
	AAT.2011.6.1-3. Interior space	CP-FP CSA-CA
	AAT.2011.6.1-4. Life-cycle	CP-FP CSA-CA
7.1.6.2. Step changes in air transportation operation	AAT.2011.6.2-1. Novel air transport vehicles	CP-FP CSA-CA
	AAT.2011.6.2-2. Guidance and control	CP-FP CSA-CA
	AAT.2011.6.2-3. Airports	CP-FP CSA-CA
7.1.6.3. Promising pioneering ideas in air transport	AAT.2011.6.3-1. The cruiser/feeder concept	CP-FP CSA-CA
	AAT.2011.6.3-2. Take-off and landing with ground-based power	CP-FP CSA-CA
	AAT.2011.6.3-4. New sources of aircraft main propulsive power	CP-FP CSA-CA
7.1.7. CROSS-CUTTING ACTIVITIES FOR IMPLEMENTATION OF THE SUB-THEME PROGRAMME		
	AAT.2011.7-9. Supporting the organization of conferences and events of special relevance to aeronautics and air transport research	CSA-SA
	AAT.2011.7-11. Stimulating the participation of small and medium size enterprises (SME) and other small organizations for improved integration of the European Research Area	CSA-SA
	AAT.2011.7-18. Assessing the role and needs of air freight in air transport	CSA-SA
	AAT.2011.7-19. Exploring opportunities and stimulating research cooperation with Canada	CSA-SA

	AAT.2011.7-20. Exploring opportunities and stimulating research cooperation with Japan	CSA-SA
	AAT.2011.7-22. Assessing the educational needs of engineers and researchers in aeronautics and air transport	CSA-SA
	AAT.2011.7-23. Technology support for crisis coordination for the air transport system following major disrupting events	CSA-SA

• **Eligibility conditions:**

- The general eligibility criteria are set out in Annex 2 of this work programme, and in the guide for applicants. Please note that the completeness criterion also includes that part B of the proposal shall be readable, accessible and printable.
- Table of standard minimum number of participating legal entities for all funding schemes used in the call, in line with the Rules for Participation:

Funding scheme	Minimum conditions
Collaborative Projects	At least 3 independent legal entities, each of which is established in a MS or AC, and no 2 of which are established in the same MS or AC
Coordination and Support Actions (coordinating action)	At least 3 independent legal entities, each of which is established in a MS or AC, and no 2 of which are established in the same MS or AC
Coordination and Support Actions (supporting action)	At least 1 independent legal entity.

- The following additional eligibility criterion apply in this call: Maximum requested EU contribution to **CP-FP (Level 1) projects is limited to EUR 4 million per project.** Minimum requested EU contribution to **CP-IP (Level 2) projects is EUR 6 million.**
- Only information provided in part A of the proposal will be used to determine whether the proposal is eligible with respect to budget thresholds and/or minimum number of eligible participants.

• **Evaluation procedure:**

- The evaluation criteria and scoring scheme are set out in Annex 2 of the work programme.
- Proposal page limits: Applicants must ensure that proposals conform to the page limits and layout given in the Guide for Applicants, and in the proposal part B template available through the EPSS.
- The Commission will instruct the experts to disregard any pages exceeding these limits.
- The minimum font size allowed is 11 points. The page size is A4, and all margins (top, bottom, left, right) should be at least 15 mm (not including any footers or headers).
- The evaluation shall follow a single stage procedure.
- Experts will not carry out the individual evaluation of proposals remotely.

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- The procedure for prioritising proposals with equal scores is described in Annex 2 of the work programme.
 - The evaluation will produce 3 ranked lists of proposals retained for funding with the corresponding reserve lists:
 - CP-FP (Level 1) and CSA-CA (coordinating)
 - CP-IP (Level 2)
 - CSA-SA (supporting)
 - In the case of large scale integrated projects (CP-IP) and coordination and support actions –supporting (CSA-SA), a maximum of one proposal per topic will be retained for funding, except for topic AAT.2011.7-9 where more than one proposal could be retained.
- **Indicative timetable:**
 - Intended period for on-site (Brussels) evaluation / panel meetings: February 2011
 - Intended start date for grant agreement negotiations: June 2011
 - **Consortia agreements:** participants in Collaborative Projects are required to conclude a consortium agreement; participants in Coordination and Support Actions are encouraged, but not required, to conclude a consortium agreement.
 - **The forms of grants and maximum reimbursement rates** which will be offered are specified in Annex 3 to the Cooperation work programme.
 - **Flat rates to cover subsistence costs:** In accordance with Annex 3 of this work programme, this call provides for the possibility to use flat rates to cover subsistence costs incurred by beneficiaries during travel carried out within grants for indirect actions. For further information, see the relevant Guides for Applicants for this call. The applicable flat rates are available at the following website: http://cordis.europa.eu/fp7/find-doc_en.html under 'Guidance documents/Flat rates for daily allowances'.

III.2. IMPLEMENTATION OF CALLS: SUSTAINABLE SURFACE TRANSPORT

III.2.1. Sustainable Surface Transport (including the 'European Green Cars Initiative') - RTD

- **Call title:** FP7- SUSTAINABLE SURFACE TRANSPORT (SST)-2011-RTD-1
- **Call identifier:** FP7-SST-2011-RTD-1
- **Date of publication**⁸²: 20 July 2010
- **Deadline**⁸³: 2 December 2010 at 17.00.00 (Brussels local time)
- **Indicative budget**⁸⁴: EUR 91.25 million

The indicative distribution of the call budget is as follows:

- EUR 26 million for Group of topics (GT) N° 1: Efficient railway services.
- EUR 26 million for Group of topics (GT) N° 2: Eco-innovations in shipbuilding and waterborne transportation.
- EUR 30.25 million for Group of topics (GT) N° 3: Implementing research for the 'European Green Car Initiative'.
- EUR 9 million for Group of topics (GT) N° 4: Untapped research potential and filling gaps.

The budget for this call is indicative. The final budget awarded to actions implemented through calls for proposals may vary:

- The final budget of the call may vary by up to 10% of the total value of the indicated budget for each call; and
- Any repartition of the call budget may also vary by up to 10% of the total value of the indicated budget for the call.
- In case the budget of one or more topic groups could not be consumed (totally or partially), the remaining budget shall be transferred to the other topic groups in accordance with the opinion of the evaluation review panel.

- **Topics called:**

Activity / Area	Topics called	GT N°	Funding Schemes
7.2.1. THE GREENING OF SURFACE TRANSPORT			
7.2.1.1. The greening of products and operations	SST.2011.1.1-1. Green retrofitting through optimization of hull-propulsion interaction	2	CP-FP
	SST.2011.1.1-2. Retrofitting of existing ships with green technologies	2	CP-FP
	SST.2011.1.1-3. Towards zero emission marine engines	2	CP-IP

⁸² The Director-General responsible for the call may publish it up to one month prior to or after the envisaged date of publication.

⁸³ The Director-General responsible may delay this deadline by up to two months.

⁸⁴ Under the condition that the draft budget for 2011 is adopted without modifications by the budget authority.

	SST.2011.1.1-4. Energy consumption reduction in urban rail systems	1	CP-IP
7.2.2 ENCOURAGING MODAL SHIFT AND DECONGESTING TRANSPORT CORRIDORS			
7.2.2.1. Logistics and intermodal transport	SST.2011.2.1-1. Efficient interfaces between transport modes	4	CP-FP
7.2.2.5. Interoperability and safety	SST.2011.2.5-1. Rail system interoperability (regulatory and non-legislative interoperability based on technological innovations)	1	CP-FP
7.2.4. IMPROVING SAFETY AND SECURITY			
7.2.4.1 Integrated safety and security for surface transport systems	SST.2011.4.1-1. Design of vehicle safety systems for a better protection of vulnerable road users and other under-protected and less safe user groups	4	CP-FP
	SST.2011.4.1-2. Mitigation measures and good practice to reduce human fatalities and disruption of services resulting from suicides and trespasses on railways property	1	CP-FP
	SST.2011.4.1-3. Reducing the occurrences and impacts of freight train derailments	1	CP-FP
7.2.5. STRENGTHENING COMPETITIVENESS			
7.2.5.2 Competitive surface transport products and services	SST.2011.5.2-1. Strengthening the European maritime transport sector competitiveness	2	CSA-CA
	SST.2011.5.2-2. Advanced and cost effective road infrastructure construction, management and maintenance	4	CP-FP
	SST.2011.5.2-3. Cost-effective modernization of the inland fleet for freight transport	2	CP-FP
	SST.2011.5.2-4. Exploring and fostering international collaboration in the waterborne transport sector	2	CSA-SA
	SST.2011.5.2-5. A system approach for railway operations management to increase capacity and decrease delays for railway customers' satisfaction	1	CP-IP
	SST.2011.5.2-6. Cost-effective improvement of rail	1	CP-FP

	transport infrastructure		
7.2.6. CROSS-CUTTING ACTIVITIES FOR IMPLEMENTATION OF THE SUB-THEME PROGRAMME			
	SST.2011.6-1. Supporting the organization of the TRA 2012 conference and other research relevant events	4	CSA-SA
7.2.7. THE ‘EUROPEAN GREEN CARS INITIATIVE’			
	GC.SST.2011.7-1. Specific safety issues of electric vehicles	3	CP-FP
	GC.SST.2011.7-2. Integrated thermal management	3	CP-FP
	GC.SST.2011.7-3. Efficient long distance transport – waste heat recovery	3	CP-FP
	GC.SST.2011.7-4. Urban–interurban shipments	3	CP-FP
	GC.SST.2011.7-5. Integrated intermodal traveller services	3	CP-FP-SICA
	GC.SST.2011.7-6 Capability of improving and exploiting capacity	3	CSA-CA
	GC.SST.2011.7-9. Efficient long distance transport – future power train concepts (includes: advanced combustion and after-treatment)	3	CP-IP
	GC.SST.2011.7-10. Architectures of Light Duty Vehicles for urban freight transport	3	CP-FP
	GC.SST.2011.7-11.E-freight solutions and supply chain management	3	CP-FP

• **Eligibility conditions:**

- The general eligibility criteria are set out in Annex 2 of this work programme, and in the guide for applicants. Please note that the completeness criterion also includes that part B of the proposal shall be readable, accessible and printable.
- Table of standard minimum number of participating legal entities for all funding schemes used in the call, in line with the Rules for Participation:

Funding scheme	Minimum conditions
Collaborative Projects	At least 3 independent legal entities, each of which is established in a MS or AC, and no 2 of which are established in the same MS or AC
Coordination and Support Actions	At least 3 independent legal entities, each of

(coordinating action)	which is established in a MS or AC, and no 2 of which are established in the same MS or AC
Collaborative Projects for specific cooperation actions (SICA) dedicated to international cooperation partner countries	At least 4 independent legal entities. Of these, 2 must be established in different MS or AC. The other 2 must be established in different international cooperation partner countries (ICPC).

- The following additional eligibility criterion apply in this call: Maximum requested EU contribution to CP-FP and CP-FP-SICA projects is limited to EUR 3 million per project. Minimum requested EU contribution to CP-IP projects is EUR 3 million.
 - Only information provided in part A of the proposal will be used to determine whether the proposal is eligible with respect to budget thresholds and/or minimum number of eligible participants.
- **Evaluation procedure:**
 - The evaluation criteria and scoring scheme are set out in Annex 2 of the work programme.
 - Proposal page limits: Applicants must ensure that proposals conform to the page limits and layout given in the Guide for Applicants, and in the proposal part B template available through the EPSS.
 - The Commission will instruct the experts to disregard any pages exceeding these limits.
 - The minimum font size allowed is 11 points. The page size is A4, and all margins (top, bottom, left, right) should be at least 15 mm (not including any footers or headers).
 - The evaluation shall follow a single stage procedure.
 - Proposals may be evaluated remotely
 - The procedure for prioritising proposals with equal scores is described in Annex 2 of the work programme.
 - No hearings are foreseen.
 - The evaluation will produce 4 ranked lists of proposals retained for funding with the corresponding reserve lists:
 - Group of topics N° 1
 - Group of topics N° 2
 - Group of topics N° 3
 - Group of topics N° 4
- **Indicative timetable:**
 - Intended period for evaluation and panel meetings: January to March 2011.
 - Intended start date of grant agreement negotiations: April 2011
- **Consortia agreements:** participants in Collaborative Projects are required to conclude a consortium agreement; participants in Coordination and Support Actions are encouraged, but not required, to conclude a consortium agreement.
- **The forms of grants and maximum reimbursement rates** which will be offered are specified in Annex 3 to the Cooperation work programme.
- **Flat rates to cover subsistence costs:** In accordance with Annex 3 of this work programme, this call provides for the possibility to use flat rates to cover subsistence costs

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incurred by beneficiaries during travel carried out within grants for indirect actions. For further information, see the relevant Guides for Applicants for this call. The applicable flat rates are available at the following website: http://cordis.europa.eu/fp7/find-doc_en.html under 'Guidance documents/Flat rates for daily allowances'.

III.2.2. Public-Private Partnership "Green Cars": Cross-Thematic call jointly implemented between NMP, ENVIRONMENT (including Climate Change), and TRANSPORT (including Aeronautics)

Call title: Sustainable automotive electrochemical storage

Call identifier: FP7-2011-GC-ELECTROCHEMICAL-STORAGE

Date of publication: 20 July 2010⁸⁵

Deadline: 2 December 2010⁸⁶ at 17.00.00 (Brussels local time).

Indicative budget^{87 88}: EUR 25.5 million from the 2011 budget of which:

- EUR 10 million from Theme 4 – Nanosciences, nanotechnologies, materials and new production technologies (NMP)
- EUR 5.5 million from Theme 6 – Environment (including Climate Change)
- EUR 10 million from Theme 7 – Transport (including Aeronautics).

The budget for this call is indicative. The final budget of the call may vary by up to 10% of the total value of the indicated budget for the call.

In case the budget can not be consumed (totally or partially), the remaining budget will be returned to each FP7 theme according to its respective contribution.

Topics called

The topic on **Advanced eco-design and manufacturing processes for batteries and electrical components** is identical in each theme. Hence, each proposal must be submitted only **once** either to topic GC.NMP.2011-1 or to topic GC.ENV.2011-3.1.3-1 or topic GC.SST.2011-7.7, **but not to all**.

Activity/ Area	Topics called	Funding Schemes	Budget Million EUR
GC.NMP.2011-1	Advanced eco-design and manufacturing processes for batteries and electrical components	<i>Collaborative projects (Large-scale projects)</i>	25.5
GC.ENV.2011-3.1.3-1			
GC.SST.2011-7.7			
GC.ENV.2011-3.1.3-2 ⁸⁹	-Operational guidance for Life Cycle Assessment studies of the European	<i>Coordination and support action (Supporting</i>	

⁸⁵ The Director-General responsible for the call may publish it up to one month prior to or after the envisaged date of publication.

⁸⁶ The Director-General responsible may delay this deadline by up to two months.

⁸⁷ A single reserve list will be constituted if there are a sufficient number of good quality proposals. It will be used if extra budget becomes available.

⁸⁸ Under the condition that the draft budget for 2011 is adopted without modification by the budgetary authority.

⁸⁹ Up to one project can be funded.

	Green Cars Initiative	<i>action)</i>	
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• **Eligibility conditions:**

The general eligibility criteria are set out in Annex 2 to this work programme, and in the guide for applicants. Please note that the completeness criterion also includes that part B of the proposal shall be readable, accessible and printable.

Only information provided in part A of the proposal will be used to determine whether the proposal is eligible with respect to budget thresholds and/or minimum number of eligible participants.

The minimum number of participating entities required, for all funding schemes, is set out in the Rules for Participation: For Collaborative projects, the minimum condition shall be the participation of 3 independent legal entities, each of which is established in a Member State or Associated Country and no two of which are established in the same Member State or Associated Country

For Coordination and Support Actions, the minimum conditions shall be:

- Coordination and Support Actions – **coordinating actions**: at least 3 independent legal entities, each of which is established in a Member State or Associated Country, and no 2 of which are established in the same Member State or Associated Country.
- Coordination and Support Actions – **supporting actions**: at least 1 independent legal entity.

• **Additional eligibility criterion:**

For the topic **Advanced eco-design and manufacturing processes for batteries and electrical components**, implemented via large scale collaborative projects: **the EU funding requested must be greater than EUR 4 million.**

For the topic: **Operational guidance for Life Cycle Assessment studies of the European Green Cars Initiative**, implemented via coordination and support action (supporting action): **the EU funding requested must not exceed EUR 500 000.**

• **Evaluation procedure:**

A one-stage submission procedure will be followed.

Proposals will be evaluated in a single-step procedure. Proposals could be evaluated remotely with the consensus sessions being held in Brussels.

For this call the following criteria and thresholds are applied: **1. S/T quality; 2. Implementation; 3. Impact.** For each criterion marks from 0 to 5 will be given, with the possibility of half-point scores. Successful proposals must pass the minimum thresholds as follows:

	Minimum threshold
S/T quality	3/5
Implementation	3/5
Impact	3/5
Overall threshold required	10/15

Further information on elements to be taken into account in the evaluation is given under the respective topic descriptions.

Applicants must ensure that proposals conform to the page limits and layout given in the Guide for Applicants, and in the proposal part B template available through the EPSS.

- **Indicative evaluation and contractual timetable:**

Evaluation of proposals: January 2011. It is expected that the grant agreement negotiations for the shortlisted proposals will start as of March 2011.

- **Consortia agreements**

Consortia agreements are required for Collaborative projects.

- **Particular requirements for participation, evaluation and implementation:**

As a result of the evaluation, a single ranked list of proposals retained for funding will be drawn up as well as a single reserve list of proposals that may be funded in case budget becomes available during negotiations.

The forms of grants and maximum reimbursement rates which will be offered are specified in Annex 3 to the Cooperation work programme.

- **Use of flat rates for subsistence costs:**

In accordance with Annex 3 of this work programme, this call provides for the possibility to use flat rates to cover subsistence costs incurred by beneficiaries during travel carried out within grants for indirect actions. For further information, see the relevant Guides for Applicants for this call. The applicable flat rates are available at the following website: http://cordis.europa.eu/fp7/find-doc_en.html under 'Guidance documents/Flat rates for daily allowances'.

III.2.3. 'The ocean of tomorrow'

- **Call title:** The ocean of tomorrow
- **Call identifier:** FP7-OCEAN-2011
- **Date of publication⁹⁰:** 20 July 2010
- **Deadline:** 18 January 2011 at 17.00.00, Brussels local time⁹¹
- **Indicative budget⁹²:** EUR 45 million from the 2011 budget of which:
 - EUR 14 million from Theme 2 – Food, Agriculture and Fisheries, and Biotechnology (KBBE)
 - EUR 5 million from Theme 5 – Energy
 - EUR 16 million from Theme 6 – Environment (including climate change)
 - EUR 10 million from Theme 7 – Transport (including Aeronautics)

The budget for this call is indicative. The final budget awarded to actions implemented through this call for proposals may vary:

- The final budget of the call may vary by up to 10% of the total value of the call; and
- Any repartition of the call budget may also vary by up to 10% of the total value of the indicated budget for the call.

- **Topics called:**

The four topics of 'The ocean of tomorrow' call are implemented jointly by the themes 2, 5, 6 and 7 mentioned above and have identical descriptions under each Theme.

Theme / Activity / Area implementing jointly 'The ocean of tomorrow' Location of the call and topics descriptions	Topics called	Funding Scheme
Theme 2 – Food, Agriculture and Fisheries, and Biotechnology Area 2.1.5 Call "The ocean of tomorrow" – Joining research forces to meet challenges in ocean management Theme 5 – Energy Area ENERGY.10.1 Call "The ocean of tomorrow" – Joining research forces to meet challenges in ocean management Theme 6 – Environment (including climate change) Area 6.2.2.2 Call "The ocean of tomorrow" – Joining research forces to meet challenges in ocean management	OCEAN.2011-1 Multi-use offshore platforms	Collaborative Project Max requested EU contribution per proposal: EUR 14 000 000
	OCEAN.2011-2 Marine microbial diversity – new insights into marine ecosystems functioning and its biotechnological potential	Collaborative Project (large scale integrating project) Max requested EU contribution per proposal: EUR 9 000 000

⁹⁰ The Director-General responsible for the call may publish it up to one month prior to or after the envisaged date of publication.

⁹¹ The Director-General responsible may delay this deadline by up to two months.

⁹² Under the condition that the draft budget for 2011 is adopted without modification by the budgetary authority.

Theme 7 – Transport (including Aeronautics) Activity 7.2.8 Call "The ocean of tomorrow" - Joining research forces to meet challenges in ocean management	OCEAN.2011-3 Assessing and predicting the combined effects of natural and human-made pressures in the Mediterranean and the Black Sea in view of their better governance	Collaborative Project (large scale integrating project) for specific cooperation actions (SICA) dedicated to international cooperation partner countries Max requested EC contribution per proposal: EUR 13 000 000
	OCEAN.2011-4 Knowledge-base and tools for regional networks of MPAs, integrated management of activities together with assessment of wind energy potential in the Mediterranean and the Black Sea	Collaborative Project (large scale integrating project) for specific cooperation actions (SICA) dedicated to international cooperation partner countries Max requested EU contribution per proposal: EUR 9 000 000

• **Eligibility conditions:**

- The general eligibility criteria are set out in Annex 2 of this work programme, and in the Guide for Applicants. Please note that the completeness criterion also includes that part B of the proposal shall be readable, accessible and printable.
- The following additional eligibility criterion applies in this call: The requested EU contribution shall not exceed the indicative budget for the topic chosen (see table displayed above).
- Standard minimum number of participating legal entities for all funding schemes used in the call, in line with the Rules for Participation:

Funding scheme	Minimum conditions
Collaborative Project	At least 3 independent legal entities, each of which is established in a MS or AC, and no 2 of which are established in the same MS or AC

- **For the following topics, additional eligibility criteria apply, over and above the criteria stated above:**

TOPICS	Particular requirements
OCEAN.2011-3: Assessing and	

<p>predicting the combined effects of natural and human-made pressures in the Mediterranean and the Black Sea in view of their better governance</p>	<p>SICA - Minimum number of participants: 3 from different Member States or Associated countries and 4 from different ICPC, among which at least 2 from the Mediterranean Partner Countries and at least 2 from the ICPC countries of the EU Black Sea Synergy⁹³.</p>
<p>OCEAN.2011-4: Knowledge-base and tools for regional networks of MPAs, integrated management of activities together with assessment of wind energy potential in the Mediterranean and the Black Sea</p>	

- Only information provided in part A of the proposal will be used to determine whether the proposal is eligible with respect to budget thresholds and/or minimum number of eligible participants.

• **Evaluation procedure:**

- The evaluation criteria and scoring scheme are set out in Annex 2 to the work programme.
- Proposal page limits: applicants must ensure that proposals conform to the page limits and layout given in the Guide for Applicants, and in the proposal part B template available through the EPSS.
- The minimum font size allowed is 11 points. The page size is A4, and all margins (top, bottom, left, right) should be at least 15 mm (not including any footers or headers).
- The Commission will instruct the experts to disregard any pages exceeding these limits.
- The evaluation shall follow a single stage evaluation procedure. Proposals will be evaluated remotely with the consensus session being held in Brussels.
- The result of the evaluation will be one ranked list per topic. The number of proposals that can be funded per topic is limited as follows:

Topic number	Indicative budget per topic	Maximum number of proposals
OCEAN.2011-1	EUR 14 000 000	Up to three projects may be funded.
OCEAN.2011-2	EUR 9 000 000	Up to one project may be funded.
OCEAN.2011-3	EUR 13 000 000	Up to one project may be funded.
OCEAN.2011-4	EUR 9 000 000	Up to one project may be funded.

A reserve list of projects will be established to be used in case the negotiation for entering into a grant agreement fails.

• **Evaluation criteria and threshold:**

- Proposals are evaluated on the basis of the following three criteria: 1. S/T quality; 2. Implementation; 3. Impact. For each criterion marks will be given, with the possibility of 0.5 point scores. Successful proposals must pass the minimum thresholds as follows:

	Minimum threshold
S/T quality	3/5
Implementation	3/5

⁹³ COM (2007) 160: Armenia, Azerbaijan, Georgia, Moldova, Russia, Ukraine

Impact	3/5
Overall threshold required	10/15

- Proposals with equal overall scores will be prioritized according to their scores for the S/T quality criterion. If they are still tied, they will be prioritized according to their scores for the Impact criterion.
- ***The following points will be reflected in the evaluation:***
 - The multi-disciplinary approach of the research undertaken is essential to address the topic. It will be considered during the evaluation of the criterion related to "S/T quality".
 - The multi-sectoral composition of the partnership and the participation of industrial partners and relevant end-users, in particular SMEs, are essential for the implementation of the project. It will be considered during the evaluation of the criterion related to "Implementation".
- **Indicative evaluation and contractual timetable:**
 - Evaluation results: four months after the relevant deadline mentioned above.
 - Grant agreements signature: it is estimated that the first grant agreements related to this call will come into force at the end of 2011.
- **Consortia agreements:** Participants are required to conclude a consortium agreement prior to grant agreement.
- **The forms of grant and maximum reimbursement rates** which will be offered are specified in Annex 3 to the Cooperation work programme.
- **Flat rates to cover subsistence costs:** In accordance with Annex 3 to this work programme, this call provides for the possibility to use flat rates to cover subsistence costs incurred by beneficiaries during travel carried out within grants for indirect actions. For further information, see the relevant Guides for Applicants for this call. The applicable flat rates are available at the following website: http://cordis.europa.eu/fp7/find-doc_en.html under 'Guidance documents/Flat rates for daily allowances'.

III.2.4. Sustainable Surface Transport – MOVE

- **Call title:** FP7- SUSTAINABLE SURFACE TRANSPORT (SST)-CIVITAS-2011-MOVE
- **Call identifier:** FP7-SST-CIVITAS-2011-MOVE
- **Date of publication⁹⁴:** 21 September 2010
- **Deadline⁹⁵:** 12 April 2011 at 17.00.00 (Brussels local time)
- **Indicative budget⁹⁶:** EUR 18.00 million

The budget for this call is indicative. It is expected that EUR 3 to 4 million will be allocated to the Coordination and Support Action; the remainder will be allocated to up to two Collaborative Projects.

The final budget awarded to actions implemented through this call for proposals may vary:

- The final budget of the call may vary by up to 10% of the total value of the call; and
- Any repartition of the call budget may also vary by up to 10% of the total value of the indicated budget for the call.

- **Topics called:**

Activity / Area	Topics called	Funding Schemes
7.2.3. ENSURING SUSTAINABLE URBAN MOBILITY		
7.2.3.4. Innovative strategies for clean urban transport (CIVITAS Plus II)	SST.2011.3.4-1. Design, implement and test innovative strategies for sustainable urban transport	CP-IP
	SST.2011.3.4-2. Support action for coordination, dissemination and evaluation, CIVITAS Plus	CSA-CA

- **Eligibility conditions:**
 - The general eligibility criteria are set out in Annex 2 of this work programme, and in the guide for applicants. Please note that the completeness criterion also includes that part B of the proposal shall be readable, accessible and printable.
 - Table of standard minimum number of participating legal entities for all funding schemes used in the call, in line with the Rules for Participation:

Funding scheme	Minimum conditions
Collaborative Projects	At least 3 independent legal entities, each of which is established in a MS or AC, and no 2 of which are established in the same MS or AC
Coordination and Support Actions (coordinating action)	At least 3 independent legal entities, each of which is established in a MS or AC, and no 2

⁹⁴ The Director-General responsible for the call may publish it up to one month prior to or after the envisaged date of publication.

⁹⁵ The Director-General responsible may delay this deadline by up to two months.

⁹⁶ Under the condition that the draft budget for 2011 is adopted without modifications by the budget authority.

	of which are established in the same MS or AC
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- Only information provided in part A of the proposal will be used to determine whether the proposal is eligible with respect to budget thresholds and/or minimum number of eligible participants.
- The following additional eligibility criteria will apply to topic SST.2011.3.4-1. :
 - . Proposals will comprise city-led consortia. Consortia should include both "leading" and "learning" cities with mutually complementary interests. The co-ordinator must be a "leading" city. Each city should be located in a different EU member state or Associated State.
 - . Proposals should consist of up to two leading cities, of which at least one should be from one of Europe's countries and regions under rapid development, aiming at economic convergence in the context of Cohesion Policy. Proposals should also include up to two learning cities.
- **Evaluation procedure:**
 - The evaluation criteria and scoring scheme are set out in Annex 2 of the work programme.
 - Proposals should conform to the layout given in the Guide for Applicants, and in the proposal part B template, available through the EPSS.
 - The minimum font size allowed in part B is 11 points. The page size is A4, and all margins (top, bottom, left, right) should be at least 15 mm (not including any footers or headers).
 - The evaluation shall follow a single stage procedure. No hearings are foreseen.
 - Proposals will not be evaluated anonymously and may be evaluated remotely.
 - The procedure for prioritising proposals with equal scores is described in Annex 2 of the work programme.
- **Indicative timetable:**
 - Intended period for evaluation and panel meetings: May-June 2011.
 - Intended start date of grant agreement negotiations: September 2011
- **Consortia agreements:** participants in Collaborative Projects are required to conclude a consortium agreement; participants in Coordination and Support Actions are encouraged, but not required, to conclude a consortium agreement.
- **The forms of grants and maximum reimbursement rates** which will be offered are specified in Annex 3 to the Cooperation work programme.
- **Flat rates to cover subsistence costs:** In accordance with Annex 3 of this work programme, this call provides for the possibility to use flat rates to cover subsistence costs incurred by beneficiaries during travel carried out within grants for indirect actions. For further information, see the relevant Guides for Applicants for this call. The applicable flat rates are available at the following website: http://cordis.europa.eu/fp7/find-doc_en.html under 'Guidance documents/Flat rates for daily allowances'.

III.3. IMPLEMENTATION OF CALLS: TRANSPORT – HORIZONTAL ACTIVITIES

- **Call title: FP7-TRANSPORT (TPT)-2011-RTD-1**
- **Call identifier: FP7-TPT-2011-RTD-1**
- **Date of publication⁹⁷:** 20 July 2010
- **Deadline⁹⁸:** 2 December 2010 at 17.00.00 (Brussels local time)
- **Indicative budget⁹⁹:** EUR 6.00 million

The budget for this call is indicative. The final budget of the call may vary by up to 10% of the total value of the indicated budget for the call.

- **Topics called:**

Activity / Area	Topics called	Funding Schemes
HORIZONTAL ACTIVITIES FOR THE IMPLEMENTATION OF THE TRANSPORT PROGRAMME		
Socio-economic research and technology foresight	TPT.2011.1-1. Enhancing connectivity between research solutions and policy-making for the sustainable development of Transport	CSA-SA
	TPT.2011.1-2. Transport needs for an ageing society	CP-FP CP-FP-SICA CSA-CA CSA-SA BSG-CSO
	TPT.2011.1-3. Socio-economic challenges for breakthrough innovations in European freight transport	CSA-SA
Integration of transport modes and cross-cutting research	TPT.2011.2-1. Integration of passenger transport modes and travel information services through the analysis of social behaviour, mobility patterns and business models as basis for the decarbonization of the European transport system	CP-FP CSA-SA
	TPT.2011.2-2. Enhanced cross-fertilization and synergies in research actions dealing with safety aspects	CP-FP-SICA CSA-SA
	TPT.2011.2-3. Modelling of co-modality quick-wins: Roadmap towards co-modality	CP-FP CSA-SA
Strengthening the	TPT.2011.3-1. A productive international	CP-FP-SICA

⁹⁷ The Director-General responsible for the call may publish it up to one month prior to or after the envisaged date of publication.

⁹⁸ The Director-General responsible may delay this deadline by up to two months.

⁹⁹ Under the condition that the draft budget for 2011 is adopted without modifications by the budget authority.

European Research Area, encouraging participation, and dissemination of research results	cooperation to strengthening the European Transport research area and facing global challenges	CSA-SA
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• **Eligibility conditions:**

- The general eligibility criteria are set out in Annex 2 of this work programme, and in the guide for applicants. Please note that the completeness criterion also includes that part B of the proposal shall be readable, accessible and printable.
- Table of standard minimum number of participating legal entities for all funding schemes used in the call, in line with the Rules for Participation:

Funding scheme	Minimum conditions
Collaborative Projects	At least 3 independent legal entities, each of which is established in a MS or AC, and no 2 of which are established in the same MS or AC
Collaborative Projects for specific cooperation actions (SICA) dedicated to international cooperation partner countries	At least 4 independent legal entities. Of these, 2 must be established in different MS or AC. The other 2 must be established in different international cooperation partner countries (ICPC).
Coordination and Support Actions (coordinating action)	At least 3 independent legal entities, each of which is established in a MS or AC, and no 2 of which are established in the same MS or AC
Coordination and Support Actions (supporting action)	At least 1 independent legal entity.
Research for the benefit of specific groups	At least 3 independent legal entities, each of which is established in a MS or AC, and no 2 of which are established in the same MS or AC. At least 1 of the legal entities has to be a civil society organization (CSO).

- The following additional eligibility criteria apply in this call:
 - Maximum requested European Union contribution to CP-FP and CP-FP-SICA projects is limited to EUR 1.5 million per project.
 - Proposals have to address at least two transport modes.
- Only information provided in part A of the proposal will be used to determine whether the proposal is eligible with respect to budget thresholds and/or minimum number of eligible participants.

• **Evaluation procedure:**

- The evaluation criteria and scoring scheme are set out in Annex 2 of the work programme.
- Proposal page limits: Applicants must ensure that proposals conform to the page limits and layout given in the Guide for Applicants, and in the proposal part B template available through the EPSS.

- The Commission will instruct the experts to disregard any pages exceeding these limits.
 - The minimum font size allowed is 11 points. The page size is A4, and all margins (top, bottom, left, right) should be at least 15 mm (not including any footers or headers).
 - The evaluation shall follow a single stage procedure.
 - The procedure for prioritising proposals with equal scores is described in Annex 2 of the work programme.
 - Maximum two proposals per topic will be retained for funding.
 - No hearings are foreseen.
- **Indicative timetable:**
 - Intended period for evaluation / panel meetings: From 31 January to 4 February 2011.
 - Intended start date of grant agreement negotiations: April 2011.
 - **Consortia agreements:** participants in Collaborative Projects are required to conclude a consortium agreement; participants in Coordination and Support Actions are encouraged, but not required, to conclude a consortium agreement.
 - **The forms of grants and maximum reimbursement rates** which will be offered are specified in Annex 3 to the Cooperation work programme.
 - **Flat rates to cover subsistence costs:** In accordance with Annex 3 of this work programme, this call provides for the possibility to use flat rates to cover subsistence costs incurred by beneficiaries during travel carried out within grants for indirect actions. For further information, see the relevant Guides for Applicants for this call. The applicable flat rates are available at the following website: http://cordis.europa.eu/fp7/find-doc_en.html under 'Guidance documents/Flat rates for daily allowances'.

III.4. IMPLEMENTATION OF CALLS: GALILEO – GNSS SUPERVISORY AUTHORITY (GSA) AND DG ENTR

III.4.1. Galileo – GNSS Supervisory Authority (GSA)

- **Call title: FP7-GALILEO-2011-GSA-1**
- **Call identifier: FP7-GALILEO-2011-GSA-1**
- **Date of publication¹⁰⁰:** 20 July 2010
- **Deadlines¹⁰¹:** 16 December 2010 at 17.00.00 (Brussels local time), with the exception of the dual stage submission for area 7.4.1.7.
For area 7.4.1.7, the deadline for the first stage will be 5 October 2010 at 17.00.00 (Brussels local time), and the deadline for the second stage will be 13 January 2011 at 17.00.00 (Brussels local time)
- **Indicative budget¹⁰²:** EUR 27.50 million
The final budget awarded to actions implemented through this call for proposals may vary:
 - The final budget of the call may vary by up to 10% of the total value of the call; and
 - Any repartition of the call budget may also vary by up to 10% of the total value of the indicated budget for the call.
- **Topics called:**

Activity / Area	Topics called	Funding Schemes
7.4.1. EXPLOITING THE FULL POTENTIAL		
7.4.1.2. Professional applications	Galileo.2011.1.2-1. Use of EGNOS and early Galileo services for professional applications	CP
7.4.1.3. Scientific Applications	Galileo.2011.1.3-1. Use of Galileo and EGNOS for scientific applications and innovative applications in new domains	CP
7.4.1.4. Safety-of-life applications	Galileo.2011.1.4-1. Use of EGNOS and Galileo for safety-of-life applications for all transport modes	CP
7.4.1.7. New and innovative applications and services	Galileo.2011.1.7-1. Use of Galileo and EGNOS services for mass market and in niche sectors (to be mainly provided by SMEs)	CP
7.4.3. ADAPTING RECEIVERS TO REQUIREMENTS AND UPGRADING CORE TECHNOLOGIES		

¹⁰⁰ The Director-General responsible for the call may publish it up to one month prior to or after the envisaged date of publication.

¹⁰¹ The Director-General responsible may delay these deadlines by up to two months.

¹⁰² Under the condition that the draft budget for 2011 is adopted without modifications by the budget authority.

7.4.3.1. Receivers	Galileo.2011.3.1-2. Technologies for PRS receivers	CP
7.4.4. SUPPORTING INFRASTRUCTURE EVOLUTION		
7.4.4.1. User needs and mission evolution	Galileo 2011.4.1-1. Networks for universities and research institutes, and user fora	CSA-CA
7.4.4.3. International cooperation and awareness	Galileo.2011.4.3-1. International activities	CP CSA-CA

• **Eligibility conditions:**

- The general eligibility criteria are set out in Annex 2 of this work programme, and in the guide for applicants. Please note that the completeness criterion also includes that part B of the proposal shall be readable, accessible and printable.
- Table of standard minimum number of participating legal entities for all funding schemes used in the call, in line with the Rules for Participation:

Funding scheme	Minimum conditions
Collaborative Projects	At least 3 independent legal entities, each of which is established in a MS or AC, and no 2 of which are established in the same MS or AC
Coordination and Support Actions (coordinating action)	At least 3 independent legal entities, each of which is established in a MS or AC, and no 2 of which are established in the same MS or AC
Coordination and Support Actions (supporting action)	At least 1 independent legal entity.

- Only information provided in part A of the proposal will be used to determine whether the proposal is eligible with respect to budget thresholds and/or minimum number of eligible participants.

• **Evaluation procedure:**

- The evaluation criteria and scoring scheme are set out in Annex 2 of the work programme.
- Proposal page limits: Applicants must ensure that proposals conform to the page limits and layout given in the Guide for Applicants, and in the proposal part B template available through the EPSS.
- The Commission will instruct the experts to disregard any pages exceeding these limits.
- The minimum font size allowed is 11 points. The page size is A4, and all margins (top, bottom, left, right) should be at least 15 mm (not including any footers or headers).
- The evaluation will follow a single stage procedure except for the area 7.4.1.7 where a two-stage submission procedure will apply.
- Proposals may not be evaluated remotely.
- The procedure for prioritising proposals with equal scores is described in Annex 2 of the work programme.

- Hearings could be foreseen.
- **Indicative timetable:**
 - Intended period for evaluation / panel meetings: January 2011.
 - Intended start date of grant agreement negotiations: April 2011
- **Consortia agreements:** participants in Collaborative Projects are required to conclude a consortium agreement; participants in Coordination and Support Actions are encouraged, but not required, to conclude a consortium agreement.
- **Forms of grant and maximum reimbursement rates:** the FP7 'Rules for Participation' propose three potential forms of grant for the European Union financial contribution: reimbursement of eligible costs, flat rate financing including scale of unit costs, and lump sum financing.

In this work programme, for all funding schemes, the reimbursement of eligible costs (including the different options for flat rates on indirect costs as established in Article 32 of the Rules for Participation) will be the only form of grant used. Pursuant to Article 30 of the Rules for Participation, participants from International Cooperation Partner Countries may choose to opt for lump sum financing.

Giving the limited amount of budget available, and the downstream character of the research, requiring a high financial commitment by proposers, the upper limits foreseen in the call FP7- GALILEO – 2011 – GSA–1 are lower than the upper limits foreseen in the Rules for Participation (Article 33) for the European Union financial contribution, and are summarized in the following table.

Collaborative projects	Non-profit public bodies, secondary and higher education establishments, research organizations and SMEs	All other organizations
Research and technological development activities	60%	40%
Demonstration activities	50%	40%
Management, audit certificates and other activities	100%	80%

- **Flat rates to cover subsistence costs:** In accordance with Annex 3 of this work programme, this call provides for the possibility to use flat rates to cover subsistence costs incurred by beneficiaries during travel carried out within grants for indirect actions. For further information, see the relevant Guides for Applicants for this call. The applicable flat rates are available at the following website: http://cordis.europa.eu/fp7/find-doc_en.html under 'Guidance documents/Flat rates for daily allowances'.

III.4.2. Galileo – European Commission DG ENTR

- **Call title:** FP7-GALILEO-2011-ENTR-1
- **Call identifier:** FP7-GALILEO-2011-ENTR-1
- **Date of publication**¹⁰³: 20 July 2010
- **Deadlines**¹⁰⁴: 16 December 2010 at 17.00.00 (Brussels local time)
- **Indicative budget**¹⁰⁵: EUR 3.00 million

The final budget awarded to actions implemented through this call for proposals may vary:

- The final budget of the call may vary by up to 10% of the total value of the call; and
- Any repartition of the call budget may also vary by up to 10% of the total value of the indicated budget for the call.

- **Topics called:**

Activity / Area	Topics called	Funding Schemes
7.4.3. ADAPTING RECEIVERS TO REQUIREMENTS AND UPGRADING CORE TECHNOLOGIES		
7.4.3.1. Receivers	Galileo.2011.3.1-1. Innovative receivers for the mass market or for professional uses	CP

- **Eligibility conditions:**
 - The general eligibility criteria are set out in Annex 2 to his work programme, and in the guide for applicants. Please note that the completeness criterion also includes that part B of the proposal shall be readable, accessible and printable.
 - Table of standard minimum number of participating legal entities for all funding schemes used in the call, in line with the Rules for Participation:

Funding scheme	Minimum conditions
Collaborative Projects	At least 3 independent legal entities, each of which is established in a MS or AC, and no 2 of which are established in the same MS or AC

- Only information provided in part A of the proposal will be used to determine whether the proposal is eligible with respect to budget thresholds and/or minimum number of eligible participants.

- **Evaluation procedure:**
 - The evaluation criteria and scoring scheme are set out in Annex 2 to the work programme.

¹⁰³ The Director-General responsible for the call may publish it up to one month prior to or after the envisaged date of publication.

¹⁰⁴ The Director-General responsible may delay these deadlines by up to two months.

¹⁰⁵ Under the condition that the draft budget for 2011 is adopted without modifications by the budget authority.

- Proposal page limits: Applicants must ensure that proposals conform to the page limits and layout given in the Guide for Applicants, and in the proposal part B template available through the EPSS.
 - The Commission will instruct the experts to disregard any pages exceeding these limits.
 - The minimum font size allowed is 11 points. The page size is A4, and all margins (top, bottom, left, right) should be at least 15 mm (not including any footers or headers).
 - The evaluation will follow a single stage procedure.
 - Proposals may not be evaluated remotely.
 - The procedure for prioritising proposals with equal scores is described in Annex 2 to the work programme.
 - Hearings could be foreseen.
- **Indicative timetable:**
 - Intended period for evaluation / panel meetings: January 2011.
 - Intended start date of grant agreement negotiations: April 2011
 - **Consortium agreements:** participants in Collaborative Projects are required to conclude a consortium agreement; participants in Coordination and Support Actions are encouraged, but not required, to conclude a consortium agreement.
 - **Forms of grant and maximum reimbursement rates:** the FP7 'Rules for Participation' propose three potential forms of grant for the European Union financial contribution: reimbursement of eligible costs, flat rate financing including scale of unit costs, and lump sum financing.

In this work programme, for all funding schemes, the reimbursement of eligible costs (including the different options for flat rates on indirect costs as established in Article 32 of the Rules for Participation) will be the only form of grant used. Pursuant to Article 30 of the Rules for Participation, participants from International Cooperation Partner Countries may choose to opt for lump sum financing.

Giving the limited amount of budget available, and the downstream character of the research, requiring a high financial commitment by proposers, the upper limits foreseen in the call FP7- GALILEO – 2011 – ENTR–1 are lower than the upper limits foreseen in the Rules for Participation (Article 33) for the European Union financial contribution, and are summarized in the following table.

Collaborative projects	Non-profit public bodies, secondary and higher education establishments, research organizations and SMEs	All other organizations
Research and technological development activities	60%	40%
Demonstration activities	50%	40%
Management, audit certificates and other activities	100%	80%

- **Flat rates to cover subsistence costs:** In accordance with Annex 3 to this work programme, this call provides for the possibility to use flat rates to cover subsistence costs incurred by beneficiaries during travel carried out within grants for indirect actions. For further information, see the relevant Guides for Applicants for this call. The applicable flat rates are available at the following website: http://cordis.europa.eu/fp7/find-doc_en.html under 'Guidance documents/Flat rates for daily allowances'.

IV. OTHER ACTIONS¹⁰⁶**Sustainable Surface Transport – DG RTD**

The activities described in this section fall outside of the mainstream ‘calls for proposals’ means of implementation of the work programme. Funds will be made available to support the contributions to the International Energy Agency (IEA).

International Energy Agency

The Commission represents the European Union in the Implementing Agreements (hereinafter 'IAs') to be concluded under the framework of the International Energy Agency, where it participates in activities in certain areas of Transport research.

The Commission will make annual financial contributions required by its participation, up to a total amount of EUR 50 000. The annual financial contributions will be paid to the entities responsible for managing the respective agreements. The table below shows only those IAs for which the financial contribution will be paid from the budget of this part of the Cooperation work programme.

It is not an exhaustive list of all of the IAs and their annexes to which the Commission participates, since Commission participation is just starting this year. The Commission may participate in additional activities agreed under the IAs mentioned below or in any other existing or future IA and in any other activities of the IEA where such participation is in the interest of the European Union, in line with the objectives and priorities of the present work programme, and within the limits of the budgetary provisions. The table below will be updated in any future modifications of the work programme.

IEA Implementing Agreements financed under the Transport work programme ^{107 108}

Implementing Agreement	Date IA signed by the European Commission	Estimated annual EU contribution in nominal currency	Estimated annual EU contribution in Euro
Hybrid and Electric Vehicle (IA-HEV)	Within 2010		50 000

¹⁰⁶ In accordance with Articles 14, 17 and 27 of Regulation (EC) No 1906/2006 of 18 December 2006 laying down the rules for the participation of undertakings, research centres and universities in actions under the Seventh Framework Programme and for the dissemination of research results (2007-2013).

¹⁰⁷ As a contribution from the European Union in accordance with Article 108 (2) (d) of the Financial Regulation applicable to the general budget of the European Communities.

¹⁰⁸ Under the condition that the draft budget for 2011 budget is adopted without modification by the budgetary authority.

Galileo – GNSS Supervisory Authority (GSA) – Calls for tenders

Integrated PMR (Professional Mobile Radio) and Galileo PRS receiver architecture

A large part of Governmental users of the Galileo PRS would be interested to have it embedded into their Professional Mobile Radio (PMR) set, as it is the case for the GPS SPS. The potential targeted market is currently several million units across Europe, including PMR terminals currently in-operation and used for example in all peace-keeping operations.

Such integration requires developing synergies between the PMR system and the Galileo PRS. An innovative PRS system architecture can thus be conceived by exporting most of the terminal function from the PRS receiver terminal to the PMR Base station. This would consequently: decrease the cost of the PRS function at terminal level; lower the number of sensitive information it contains; open new architecture for enforcing geo-denials; and allow to automate the management of security, e.g. accounting of terminals, by making use of the radio links between the terminal and the Base station, and between the Base station and the PMR control and monitoring facilities.

A Phase A study is ongoing to define the specifications of the communication channel between the PMR/PRS terminal and the Base station. This study develops a general architecture to propose an *Assisted-PRS* concept similar to A-GPS. It will be made available to the applicants.

Expected Outcomes

A laboratory demonstration will validate the proposed innovative architecture and performances of the Assisted-PRS concept using existing test equipment and facilities. A standard specification supporting Phase-B definition will be written.

Funding scheme: Public procurement by an open call for tenders

Indicative budget: EUR 0.9 million

Indicative timetable:

- Launch of tender: early 2011
- Contract will start end 2011 and last until 2013

Galileo – DG ENTR – Calls for tenders

Integrity receivers

This activity will focus on user integrity for road, rail, maritime and aviation user communities. The tasks will include: definition and quantification of the user PVT integrity/guarantee of service required for each user domain; environment characterization for surface and maritime environments; research on autonomous integrity monitoring (RAIM) and its combination with system integrity (Galileo SoL) to provide the target service previously defined; and study the provision of an PVT + integrity service using several positioning sources (e.g. GNSS+INS).

Expected outcome: Develop user integrity technologies to provide air, sea and terrestrial users with an integrity service or improve the existing one using GNSS.

Funding scheme: Public procurement by an open call for tenders

Indicative budget: EUR 1.5 million

Indicative timetable:

- Launch of tender: second semester 2010
- Contract performed in 2011

SBAS L1/L5 multi-constellation receiver

The purpose of this activity is to launch a first design and prototyping phase to support the development of SBAS L1-E1/L5-E5 multi-constellation receiver standards.

Expected outcome: Support the development of SBAS L1-E1/L5-E5 multi-constellation standards.

Funding scheme: public procurement by an open call for tenders

Indicative budget: EUR 1.0 million

Indicative timetable:

- Launch of tender: second semester 2010
- Contract performed in 2011

Multi-frequency antennas (E1, E6, E5)

The purpose of this activity is to design dual/triple frequency antennas for Galileo bands (E1, E6, E5) for high-end and aviation receivers. The main challenges to address are related to form factors, gain at low elevation, axial ratio and G/T performance.

Expected outcome: To develop Galileo antenna technologies for high-end and aviation users.

Funding scheme: public procurement by an open call for tenders

Indicative budget: EUR 500 000

Indicative timetable:

- Launch of tender: second semester of 2010
- Contract performed in 2011

Mission evolution studies

The main aim of this activity is to make sure that the European GNSS (EGNOS and Galileo) will have competitive advantages compared to other existing or upcoming navigation systems. For this reason, the associated studies will address the evolution of

user needs and translate them into mission requirements while taking the global changing GNSS environment into account. This topic will be strongly liaised with the European GNSS Evolution Programme (EGEP).

The studies will further address the identification of new services, aspects of Galileo signals, optimization of operations concept as well as topics identified by the EGNSS Mission Evolution Advisory Board (MEAB).

Funding scheme: public procurement by an open call for tenders

Indicative budget: EUR 2.0 million

Indicative timetable:

- Launch of tender: end 2010 - early 2011
- Contract will start by 2011 until 2012

Provision of the EDAS service to the research community

The main aim of this activity is to continue providing EDAS (EGNOS data transmitted by ground telecommunication systems) a service offering the best of EGNOS, despite the difficulties of the urban environment (urban canyons, multi path effects) to ongoing and future FP7 research projects.

Funding scheme: public procurement by an open call for tenders

Indicative budget: EUR 0.6 million

Indicative timetable:

- Launch of tender: second semester 2010
- Contract will start by 2011 until 2013

**V. INDICATIVE BUDGET FOR TRANSPORT (INCLUDING AERONAUTICS)
THEME FOR THE 2011 WORK PROGRAMME**

A. DG RTD indicative budget for the 2011 Work Programme¹⁰⁹

European Commission - DG Research	2011
	(million EUR)
FP7-AERONAUTICS and AIR TRANSPORT (AAT)-2011-RTD-1	121.30
FP7-SUSTAINABLE SURFACE TRANSPORT (SST)- 2011-RTD-1 (including the 'European Green Cars Initiative')	91.25
FP7-ERANET-2011-RTD ¹¹⁰	10.00*
Advanced manufacturing processes for batteries and electrical components (FP7-2011-GC-ELECTROCHEMICAL-STORAGE)	10.00
'The ocean of tomorrow' (FP7-OCEAN-2011)	10.00
FP7-TRANSPORT (TPT)-2011-RTD-1	6.00
Total for calls for proposals	248.55
General activities (cf. Annex 4) (details below)	4.84
Other activities:	
Evaluations	1.00
Monitoring and reviews	0.50
Actions implemented through public procurements, expert groups and grants to identified beneficiaries	0.05
Estimated total budget allocation	254.94

* Indicative amount for ERA-NET Plus. An ERA-NET Plus is included in Work Programme 2011 for Transport (including Aeronautics): GC.SST.2011.7-8. ERA-Net Plus 'Electromobility', which is part of the FP7-ERANET-2011-RTD joint call.

All budgetary figures given in this work programme are indicative. The final budgets may vary following the evaluation of proposals.

¹⁰⁹ Under the condition that the draft budget for 2011 is adopted without modifications by the budgetary authority.

¹¹⁰ See Annex 4 to the Cooperation work programme.

FP 7 Cooperation Work Programme: Transport

The final budget awarded to actions implemented through calls for proposals may vary:

- The total budget of the call may vary by up to 10% of the total value of the indicated budget for each call; and
- Any repartition of the call budget may also vary by up to 10% of the total value of the indicated budget for the call.

For actions not implemented through calls for proposals:

- The final budgets for evaluation, monitoring and review may vary by up to 20% of the indicated budgets for these actions;
- The final budget awarded for all other actions not implemented through calls for proposals may vary by up to 10% of the indicated budget for these actions.

B. DG ENTR indicative budget for the 2011 Work Programme¹¹¹

European Commission - DG Enterprise and Industry	2011
	(EUR million)
FP7-GALILEO-2011-GSA-1	27.50
FP7-GALILEO-2011-ENTR-1	3.00
Total for calls for proposals	30.50
General activities (cf. Annex 4) (details below)	2.33
Other activities:	
Evaluations	
Monitoring, audit and reviews	1.00
Actions implemented through public procurements, expert groups and grants to identified beneficiaries managed by DG ENTR	5.60
Actions implemented through public procurements, expert groups and grants to identified beneficiaries managed by GSA	0.90
Galileo delegation agreement ESA to cover the deployment phase of the GNSS programme, as stated in the introduction of chapter 7.4	32.00
Estimated total budget allocation	72.33

All budgetary figures given in this work programme are indicative. The final budgets may vary following the evaluation of proposals.

The final budget awarded to actions implemented through calls for proposals may vary:

- The total budget of the call may vary by up to 10% of the total value of the indicated budget for each call; and
- Any repartition of the call budget may also vary by up to 10% of the total value of the indicated budget for the call.

For actions not implemented through calls for proposals:

- The final budgets for evaluation, monitoring and review may vary by up to 20% of the indicated budgets for these actions;
- The final budget awarded for all other actions not implemented through calls for proposals may vary by up to 10% of the indicated budget for these actions.

¹¹¹ Under the condition that the draft budget for 2011 is adopted without modifications by the budgetary authority.

C. DG MOVE indicative budget for the 2011 Work Programme¹¹²

European Commission - DG Mobility and Transport	2011
	(EUR million)
FP7- SUSTAINABLE SURFACE TRANSPORT (SST)-CIVITAS-2011-MOVE	18.00
Total for calls for proposals	18.00
General activities (cf. Annex 4) (details below)	0.00
Other activities:	
Sesar	60.00
Monitoring	0.50
Audits	1.50
Estimated total budget allocation	80.00

All budgetary figures given in this work programme are indicative. The final budgets may vary following the evaluation of proposals.

The final budget awarded to actions implemented through calls for proposals may vary:

- The total budget of the call may vary by up to 10% of the total value of the indicated budget for each call; and
- Any repartition of the call budget may also vary by up to 10% of the total value of the indicated budget for the call.

For actions not implemented through calls for proposals:

- The final budgets for evaluation, monitoring and review may vary by up to 20% of the indicated budgets for these actions;
- The final budget awarded for all other actions not implemented through calls for proposals may vary by up to 10% of the indicated budget for these actions.

¹¹² Under the condition that the preliminary draft budget for 2011 is adopted without modifications by the budgetary authority.

D. Summary of RTD budget allocation to general activities for 2011 (cf. Annex 4)

European Commission - DG Research	2011
	(EUR million)
Cordis	0.75 ¹¹³
Eureka/Research organizations	0.03
COST	3.96
Strategy oriented support actions	0.06
Cooperation with non-University Research performing Organizations	0.03
Experts (evaluators & reviewers)	0.01
Total	4.84

E. Summary of ENTR budget allocation to general activities for 2011 (cf. Annex 4)

European Commission - DG Enterprise and Industry	2011
	(EUR million)
Cordis	0.26 ¹¹⁴
Eureka/Research organizations	0.01
COST	2.03
Strategy oriented support actions	0.02
Cooperation with non-University Research performing Organizations	0.01
Total	2.33

¹¹³ This amount is reserved to support the CORDIS activities in 2011. The exact content of the CORDIS activities in 2011 will be specified through an update of Annex 4 to the Cooperation work programme at a later stage.

¹¹⁴ This amount is reserved to support the CORDIS activities in 2011. The exact content of the CORDIS activities in 2011 will be specified through an update of Annex 4 to the Cooperation work programme at a later stage.

F. Summary of MOVE budget allocation to general activities for 2011 (cf. Annex 4)

European Commission - DG Mobility and Transport	2011
	(EUR million)
Cordis	0.00
Eureka/Research organisations	0.00
COST	-
Strategy oriented support actions	0.00
Total	0.00