Thematic Priority
1.6. Sustainable Development, Global Change and Ecosystems
1.6.2: Sustainable Surface Transport

WORK PROGRAMME
2002-2006

Table of contents

1. INTRODUCTION

Surface transport plays a key role in people's everyday lives and is a decisive factor in economic competitiveness and employment. The promotion of its sustainable development without sacrificing either economic growth or the freedom of movement has become a central objective of the European Union policy.

Surface transport has to face the challenge of supporting future economic development and subsequent traffic increase without degrading the quality of transport services and protecting the environment. Research and technology developments have an important role to play and are providing the European Transport System with innovative vehicle and vessel technology and new forms of transport organisation and infrastructure.

The sustainable surface transport work programme proposes a set of research objectives which implement the content of the Gothenburg declaration of June 2001 and the Commission White Paper on European Transport Policy 'European transport policy for 2010: time to decide'[1].

The realisation of ERA across the entire surface transport chain of stakeholders and the different research schemes proposed at national level will be essential to achieve the aims for an Integrated and Sustainable Surface Transport System in Europe. The work programme implementation will, where appropriate, strengthen and complement research carried out under non-EU initiatives such as PREDIT, Mobilitaet und verkher, (LOGCHAIN, DEUFRAKO) Foresight Vehicle, EUREKA etc in order to maximise the impact of research within ERA. Also, participation of organisations from Candidate Countries in ERA instruments will ensure a sustainable development and security of transport in an enlarged Union.

The complexity of the transport system is addressed in an integrated and comprehensive way, through two complementary approaches, that are identified in this work programme as *Research to support the European Transport Policy* and *Research, technological development and integration*.

Research to support the European Transport Policy addresses research for transport policy with emphasis on short-term implementation and exploitation of results. *Research, technological development and integration* focuses on the development of new technologies specific to surface transport and on their integration into future transport systems and products with a short, medium and long term perspective.

The technical content of the work programme is described in section 3. Research domains and activities proposed for the calls are presented in relation to the four objectives of the sub-priority as described in the specific programme. They are identified for each objective starting with *Research to support the European Transport Policy* followed by *Research, technological development and integration*.

Research domains form a comprehensive and structured set of elements which will be addressed during the entire period of the Framework Programme by means of the different new and traditional instruments which are proposed. Within section 3, the description of research domains is followed by information on the selected topics to be included in the calls with deadlines in 2003. For *Research, technological development and integration,* additional information is given on possible subjects for the call with deadline in 2004.

[1] 'European transport policy for 2010 : time to decide', COM (2001) 370.

An update of this document will be produced every year during the Framework Programme, giving information on further calls and revisions to the proposed research domains as appropriate.

Periodic Calls for *Research to support the European Transport Policy* are identified with the letter A (1A, 2A, etc.) and periodic calls for *Research, technological development and integration* with the letter B (1B, 2B, etc.).

2. OBJECTIVES, STRUCTURE AND OVERALL APPROACH

Objectives

The sustainable surface transport work programme addresses the following objectives as defined in the Specific Programme:

Objective 1: New technologies and concepts for all surface transport modes (road, rail and waterborne).

Objective 2: Advanced design and production techniques.

Objective 3: Rebalancing and integrating different transport modes.

Objective 4: Increasing road, rail and waterborne safety and avoiding traffic congestion.

Modalities for implementation

Research to support the European Transport Policy

The activities described will be implemented by means of four periodic calls with deadlines in April 2003, December 2003, 2004 and 2005. These calls will include both new and traditional instruments. Details on the periodic calls with deadlines in 2003 are given in section 6 (**Calls 1A** (April 2003) and **2A** (December 2003) in the rest of the document).

Research, technological development and integration

New instruments, specific targeted research projects, co-ordination actions and specific support actions will be implemented by means of three periodic calls with deadlines in 2003, 2004 and 2005 respectively and one continuous call from year 2003 to 2006. Periodic calls cover new instruments, specific targeted research projects and co-ordination actions. The continuous call includes only specific support actions. Details of the periodic call with deadline in 2003 (**Call 1B** (April 2003) in the rest of the text) are given in section 6. Information on the continuous call is also given in section 6.

For both activities, specific attention will have to be given, where appropriate and throughout the work programme to issues of standardisation and harmonisation, in order to achieve an integrated surface transport system.

Focussing the technical content of the research activities

An invitation to submit for Expressions of Interest[2] has been organised with the aim of assessing the readiness of the scientific community and industry to propose Integrated Projects and Networks of Excellence. The results of the invitation have been used as one of the inputs to help define the research domains of the work programme and to specify the technical scope of the first calls as well as indicative trends for future calls.

[2] OJ C71/14 20 March 2002

Research to support the European Transport Policy

Several research domains, including topics identified from the Expressions of Interest, have been considered ready for implementation by means of new instruments and of the highest relevance for Call 1A and Call 2A. Selected topics in Calls 1A (deadline April 2003) and 2A (deadline December 2003) are given in section 3.

Other research domains of the work programme will be open for specific targeted research projects, co-ordination actions and specific support actions. Details on the research domains open for Calls 1A (deadline April 2003) and 2A (deadline December 2003) are also provided in section 3.

Research, technological development and integration

Given the number of expressions submitted, the strong presence of industry (49%) and the indicative size of potential projects it is considered appropriate to allocate up to 70% of the budget for the new instruments.

In total eleven research topics have been considered ready for implementation by means of new instruments and of the highest relevance for Call 1B.. Selected topics for Integrated Projects and Networks of Excellence in Call 1B are given in section 3 together with indicative topics for Call 2B (March 2004).

In order to fulfil the objectives of sustainable surface transport, structuring and integrating effects have to be complemented with technological developments of a more limited scope. Projects to acquire new essential knowledge on aspects such as developing new transport concepts (e.g. new types of vessels) or processes (e.g. advanced automation in manufacturing processes) are also foreseen. A limited and strategically relevant number of research domains of the work programme will be open for specific targeted research projects in the periodic calls. Details on the research domains open for Call 1B are provided (section 6).

International co-operation

The sustainable surface transport research programme welcomes the collaboration of organisations from Third Countries on a project-by-project basis, if the participants in the project find mutual benefit.

All research domains of the four objectives of the work programme are open to international co-operation.

Participation of SMEs

SMEs will have an important role to play in integrating and structuring the technological and scientific base driving innovation in surface transport. In particular, they will be essential to the creation of new and improved value added supply chains across Europe and accordingly are expected to be key players in the underpinning research programme. SMEs are therefore encouraged to participate in research activities using the New Instruments. Applicants should actively seek to build partnerships to include SMEs. Specific Targeted Research in areas such as the development of new inter-modal vessels and wagons or new construction processes for transport infrastructure which will be open in Call 1B represent concrete opportunities to stimulate SMEs' participation. Specific measures to facilitate their participation to both new and traditional instruments will be implemented throughout the programme by means of Specific Support Actions, continuing the effort initiated in Framework Programme 5.

3. TECHNICAL CONTENT

3.1: Objective 1 « New technologies and concepts for all surface transport modes (road, rail and waterborne) »

3.1.1 Research to support the European Transport Policy (Research domains from 1.1 to 1.3)

Clean Urban Transport

The development and introduction of new transport policy concepts in cities, where 80% of the EU population lives, is a major challenge for policymakers. The White Paper on the Common Transport Policy has identified congestion; pollution and energy consumption as key causes for the deteriorating performance of Europe's transport systems, especially in the industrialised urban regions.

This research priority is of direct concern to authorities, businesses, citizens and the transport industry. It addresses both urban passenger and freight transport. In an era of just-in-time delivery, competition among cities and regions and environmentally conscious development, urban transport has become an important element of the European production system and social fabric – ensuring the conditions for economic growth and social integration.

Research will focus on RTD activities for developing, testing and demonstrating innovative policy tools and technological solutions.

CIVITAS II will address implementation and transition strategies for Clean Urban Transport. Research in the field of public transport will include the development of innovative solutions for market analysis and product development, offensive marketing, service integration, improved access for people with reduced mobility, private sector investments, and low-cost network and vehicle refurbishment. To advance the knowledge on innovative measures, research is planned on urban pricing, awareness and information tools, mobility management, integrated planning approaches, and access control and regulation.

Research domains:

1.1 Testing implementation and transition strategies for Clean Urban Transport – CIVITAS II

1.2 High quality public transport

1.3 Advancing knowledge on innovative measures in urban transport Selected topics for Call 2A

- **Testing implementation and transition strategies for Clean Urban Transport CIVITAS II (Call 2A)**

Joint initiative with Thematic priority 1.6.1 (sustainable energy systems).

Objective: CIVITAS II (CIty–VITAlity–Sustainability) addresses:

(1) Ambitious cities, which should test implementation strategies for innovative and bold integrated packages of transport policy and fuel/vehicle-technology measures that are able to maintain or improve the existing modal split in favour of 'alternative modes'.

(2) In particular, cities in the Accession Countries, which should concentrate on transition-strategies for innovative and bold integrated packages of transport policy and

fuel/vehicle-technology measures that are able to maintain existing modal splits despite the rapid increases in car-ownership.

Scope: Each proposal should combine:

(1) Energy-efficient, cost-effective and clean public and/or private vehicle fleets for passenger or freight transport (*minimum Euro-IV standard*) using alternative fuels and the necessary energy infrastructure *(see Work Programme 1.6.1 – sustainable energy systems for more details),*

with a wider package of

(2) Policy measures and tools in order to cover both the transport demand and supply side. The package of policy measures should be city/area wide and well focussed. It should address as many as possible of the following categories of measures and tools:

- *Demand management strategies based upon* ***access restrictions*** to the inner city areas and other sensitive zones by means of introducing access control permitting access only to clean and energy efficient vehicles (including collective transport vehicles), and to cycling and walking; parking management;
- *Demand management and revenue raising strategies based upon* ***integrated pricing strategies*** by means of introducing full scale area-wide or city-wide pricing schemes, that can incorporate integrated strategies for road and cordon pricing, possibly in combination with innovative use of pricing of parking and of public transport
- *Stimulation of* ***collective passenger transport*** *and its quality of service* by means of introducing clean and energy-efficient vehicle fleets; non-conventional public transport systems; innovative organisational, financing and management schemes; improved security and safety; integration with walking, cycling and other modes; particular attention should be paid to accessibility for people with reduced mobility.
- ***New forms of vehicle use and/or ownership*** *and lifestyle* by means of introducing new mobility services based upon clean and energy efficient vehicle fleets; car free housing; sustainable leisure and recreation transport; shared use/ownership of cars, motorised two-wheelers and bicycles;
- *New concepts for the* ***distribution of goods*** by means of introducing innovative freight logistics services using clean and energy efficient vehicle fleets, dedicated infrastructure and information services;
- *Innovative* ***'soft' measures*** *for managing mobility demand* by means of introducing new approaches to integrated planning; promoting green transport plans, walking and cycling, mobility marketing and awareness; particular attention should be paid to road safety aspects ;
- ***Transport management systems and traveller services*** (including systems and services based upon satellite applications/GALILEO)**,** such as those for intermodal travel information, transport pricing and payment, road conditions, vehicle location and guidance and traffic management.

Emphasis on medium sized cities; lead and follower cities

Particular emphasis will be put on medium-sized cities (less than 500.000 inhabitants in the city-region). Proposals should be prepared by clearly committed pairs of city-led consortia, with each city being located in a different country. Each pair should be made up of a lead site addressing a maximum number of categories of measures and a follower site focussing on one or two categories. Participation by cities from Accession

Countries, especially in the role of lead cities, is particularly encouraged. The Commission may decide to cluster and/or merge successful proposals.

Clear evidence of political consensus and support should be provided, as well as of the necessary collaborative frameworks and partnerships. The research should build upon the large-scale application of innovative technological and non-technological solutions.

Expected outcome: Coherent recommendations on the impacts of radical change in urban transport policy, as well as on the indirect effects on other sectorial policies. Special attention should be paid to analysing the process of preparing and implementing policy change.

This requires a robust impact assessment and evaluation plan, based upon a do-nothing scenario, covering a set of a clearly defined 'technical' indicators and targets as well as other relevant issues such as citizen's response and acceptance, enforcement, spatial impacts, economic and financial feasibility, institutional setting, etc. The demonstrators should run their own evaluation and dissemination programmes at local and national levels. Active participation in the CIVITAS Forum as well as in other activities organised by the CIVITAS Initiative (see www.civitas-initiative.org) is expected.

Accompanying activity: A separate accompanying action will be responsible for the development and implementation of an independent pan-European cross-site evaluation programme, with full independence of but in close co-operation with the demonstrators, on the basis of before and after data that will be provided by the demonstration sites.

The action will also take care of independent monitoring, and providing specialist and independent advice to the Commission, of the progress in the implementation of the demonstrations. It will be supported by an advisory committee that includes representatives from Member States and Associated States. The action will also develop and implement a pan-European programme for the valorisation of results, dissemination and awareness raising activities, in close co-operation with the demonstration sites.

Preferred Instruments: Integrated Project and Specific Support Action

3.1.2 Research, technological development and integration *(Research domains from 1.4 to 1.10).*

The main focus will be on the development and promotion of future generations of clean, quiet and efficient vehicle concepts for all surface transport modes and to reach a target of 30% fuel substitution of fossil fuels by 2020. The next generation of alternative and renewable fuel propulsion systems, designed to achieve greenhouse emissions targets as expressed in the Kyoto agreement and Euro V for regulated emissions, has to be conceived and tested.

To maximise its impact, research on new propulsion concepts needs to be interfaced with work on compatible fuel infrastructure as well as investigations on new forms of mobility and organisation of transport in cities. The objective will be to reduce the use of polluting transport means in populated areas while maintaining the same level of accessibility and to put on course the transition towards an environmentally harmless transport system based on renewable fuels and reduced environmental noise emissions.

Research domains:

1.4 Technologies for propulsion increasingly based on alternative and renewable fuels in vehicles and vessels, in particular the optimisation of engines, the development of new components and auxiliary systems, the combination of

various types of motorizations and fuels for optimal propulsion efficiency and cleanliness.

1.5 Integrating zero or near-zero emission propulsion systems and components such as fuel cells which offer high-energy efficiency benefits.

1.6 Development of holistic noise abatement solutions which consider the entire vehicle/vessel and infrastructure system, new technologies and systems approaches for improved noise control at source and the further support to legislation. Particular attention will be given to urban areas.

1.7 Integration and validation of measurement and sensing technologies to ensure the optimised environmental operation of both vehicles/vessels and infrastructure.

1.8 Technologies and related legislation for the effective, safe and clean supply and delivery of alternative and renewable fuels at fuel distribution points.

1.9 Development of concepts for innovative, non-polluting means of transport to achieve a more effective organisation of urban transport of persons and goods that would, as a consequence, result in a more rational use of motorised traffic.

1.10 Research to develop, compare and assess possible scenarios for the transport system and energy supply of the future taking into account ongoing research outside the research framework programme undertaken by or in co-operation with the Commission. The analysis includes modelling and forecasting and will consider such criteria as the autonomy and security of energy supply, effects on the environment and economic, technical and industrial viability including the impact of potential cost internalisation and the interactions between transport and land use.

Selected topics for Call 1B

- **Future generation of clean and economical engines for cars**

Objective: Through technological breakthroughs, to contribute to the European objectives to drastically reduce simultaneously the global CO_2 emissions from passenger cars towards 90 g/km as well as other greenhouse gases and their gaseous and particulate pollutants to near zero levels taking into account the requirements on alternative and renewable fuels as stated in the White Paper entitled "European transport policy for 2010: time to decide". Applications of the results to other road vehicle types such as two-wheel vehicles or trucks will be developed where the technologies are applicable.

Scope: It will cover the development of knowledge on ultra clean energy conversion technologies and new approaches for optimised energy use and energy management to model, develop and demonstrate very high efficiency fuel energy conversion and energy usage and near-zero emission power-trains based on advanced combustion modes and other energy conversion technologies capable to operate with alternative and renewable fuel sets in an optimised way. An overall vehicle system approach will be needed in order to reach the objectives.

Expected outcome: Passenger car demonstrators integrating in an optimised, flexible and cost effective way the most promising technologies, alternative fuel sets and combustion modes and control strategies in order to fulfil simultaneously the objectives of extremely low CO_2, gaseous and particulate pollutants and noise.

Preferred Instrument: Integrated project

- **Ultra low emissions for marine propulsion**

Objective: The research addresses the reduction of maritime and inland waterways transport pollution considering existing fuel infrastructure, emissions characteristics and new type of zero emission propulsion. The aim will be to reduce pollution by 50% with respect to IMO forthcoming legislation by 2020.

Scope: The approach includes the analysis of combustion characteristics using both heavy and non-conventional fuel, adoption of advances in injection, combustion, after-treatment exhaust technologies, control and introduction of micro-electronics and software systems for intelligent monitoring, control and prediction of failure or deterioration for engines, optimisation of the total operational ship efficiency.

Expected outcome: the project will deliver engines for maritime and inland waterways transport operating with both conventional and non-conventional propulsion with improved combustion efficiency and cleanliness, after-treatment systems to trap particulate, NO_X and SO_X advanced engine control taking into account real time operational conditions and loads, testing platform for system optimisation.

Preferred Instrument: Integrated project

- **Virtual institute on advanced combustion to develop clean and quiet power trains for road transport**

Objective: To integrate the European Research, including dissemination and training, on advanced combustion modes and systems based in particular on optimised alternative and renewable fuels in order to enhance and support the development of low CO_2 and noise and near-zero emission power trains for cars.

Scope: Structure and further develop the knowledge of the combustion physics, experimental techniques, advanced modelling and simulation software and techniques, data bases, new combustion mode control strategies and systems

Expected outcome: Setting up of a virtual research institute on high efficiency and near-zero emission energy conversion in internal combustion engines, encompassing the survey of State of the Art knowledge, the development of computer simulation software packages, data bases, the development of advanced innovative measurements methods and hardware capabilities optimised for advanced combustion modes. In addition, this virtual research institute shall focus at European level on the training of engineers and scientists and vocational training in a multicultural environment in the field of advanced combustion engines and assure a good dissemination of new technologies.

Preferred Instrument: Network of excellence

- **Virtual Centre for technology innovation and knowledge management in the railways sector**

Objective: To establish a framework to develop a process tool and infrastructure to generate, verify and validate technology innovations throughout the whole value adding chain. This activity will be fundamental to support the design-to-order-approach with regard to the railway development towards 2020.

Scope: To facilitate a better understanding of the system performance, the integration of systems and sub-systems, engineering interfaces, the technology/human factor relationship; secondly to create a structure for safety, and reliability testing and qualification of new products.

Expected outcome: The establishment of a virtual centre of knowledge enabling verifying the engineering process and interfaces; Agreed test and validation methods, procedures and infrastructure for « interoperable product solutions» and optimal system performance

Preferred Instrument: Network of excellence

Indicative topics for call 2B

- Flexible engines for Heavy Goods Vehicles
- Fuel cell powered road vehicle
- Hydrogen and fuel cell platform for transport means
- Quieter surface transport
- Vehicle after-treatment system for clean air

3.2 Objective 2 « Advanced design and production techniques »

3.2.1 Research to support the European Transport Policy

No specific research domain is foreseen under this objective.

3.2.2 Research, technological development and integration (Research domains from 2.1 to 2.7).

Research will concentrate on developing and promoting concepts of one-off, small series and mass customisation production environments specific to surface transport, based on the innovative use of advanced design and manufacturing.

The objective will be to achieve improved product quality and performance based on cost effective and environmentally friendly production systems on a life-cycle basis. Research will seek to reduce manufacturing costs by 30%-40% and production lead-times by 25%.

Research domains:

2.1 Integration and standardisation of enhanced product development tools for design, simulation, prototyping, testing and risk management that would reduce product development time and all associated costs and resources.

2.2 Application of advanced design and manufacturing techniques used in vehicle production and infrastructure aiming at developing clean, silent, safe and comfortable products and services with reduced operational cost and energy consumption.

2.3 Development of advanced, low-mass material structures and systems for vehicles and vessels offering product structural and functional integrity for rated performance at low cost.

2.4 Integration of manufacturing processes for products characterised by a high degree of complexity with emphasis on quality, cleanliness, flexibility and cost effectiveness.

2.5 Development of strategies and processes for clean maintenance, dismantling and recycling of vehicles and vessels. Emphasis will be put on clean, cost and energy effective processes, autonomous systems for maintenance and inspection, innovative dismantling and recycling operations.

2.6 Design and manufacture of new construction concepts for road, rail, waterborne and inter-modal infrastructures that are high quality, cost effective, energy efficient, low noise, safer, risk mitigating and low maintenance.

2.7 Design and manufacturing technologies to improve vehicle/vessel interfaces with transport infrastructure and other vehicles/vessels from the same and different transport modes including infrastructure vehicle inspection aspects.

Selected topics for call 1B:

- **Integrated design and manufacturing in shipyards for developing the most competitive production environment in the world**

Objective: The research aims to increase the competitiveness of EU shipbuilders while including leading edge knowledge on environmental aspects, safety, comfort and cost effectiveness of operations. The objective will be to develop optimum solutions for the entire life cycle.

Scope: Research will be based on integrated tools and methods for design and production of complex one-of-a-kind vessels. Aspects such as optimal multi-disciplinary design, education and training, innovation management in shipyards and co-operation with other initiatives and industries will be addressed as well.

Expected outcome: methods and tools for production integration and knowledge engineering in shipyards, modularization and standardisation of products and sub-assemblies, tools for supply chain management and e-procurement, total quality management procedures.

Preferred Instrument: Integrated project

- **Enhanced safety and capacity of European railways infrastructure**

Objective: To increase the capacity of infrastructure for passengers and freight traffic.

Scope:

Scope: The activities should focus on the functional requirements for infrastructure in order to achieve the increased capacity required to meet the future demands for heavier axle loads and increased traffic levels. This should consider the optimisation of capital expenditure, the maintenance demands, infrastructure condition monitoring systems and delivery of improved capacity without compromising the safety of the working railway.

This should be supported by a European infrastructure mapping or register of interoperable and non-interoperable existing characteristics of the national networks.

Expected outcome: Innovative solutions which will result in a high performance, safe, low life cycle cost infrastructure, incorporating efficient condition monitoring and maintenance regimes able to cope with future demands of higher loads, faster trains and higher intensity of traffic.

Preferred Instrument: Integrated project

- **Enhanced vehicle-infrastructure interaction for an efficient European rail system**

Objective: The objective is to ensure the enhanced performance of vehicle and infrastructure components and systems under changing operational conditions, thus leading to improved system capacity and efficiency, fulfilling environmental and safety standards.

Scope:

The activities will focus on the development of new designs which improve the vehicle/infrastructure interface leading to improved dynamic behaviour, reduced noise, lower electro-magnetic compatibility and will improve the durability and reliability of both vehicles and infrastructure. In addition to new designs, solutions may include the use of new materials and mechatronic applications and measurement to ensure the optimised behaviour of the vehicle/infrastructure interaction.

Expected outcome: Rolling stock and infrastructure with increased reliability and maintainability, improved availability and productivity and reduced life-cycle cost.

.**Preferred Instrument: Integrated project**

- **Centre of competence for structural analysis of ships with improved safety, environmental behaviour and comfort**

Objective: The objective is to develop methods and tools for improved safety, environmental behaviour, comfort and reliability of ships submitted to a wide variety of operational conditions. Improving reliability of vessels through advanced structural analysis will ensure public and commercial confidence, facilitate transferring freight movements from roads to waterborne transport and bring about further advances in new vessels and forms.

Scope: Activities will concentrate on structural reliability and advanced structural analysis of marine vehicles for safety, comfort and reliability aspects such as fatigue and collision strength, structural fire protection, noise and vibrations, system reliability.

Expected outcome: A programme for jointly executed research in the area of structural analysis for ships, creation of research facilities and platforms, dissemination and communication of research results, creation of a permanent organisation such as a virtual institute to ensure integration of a lasting nature.

Preferred Instrument: Network of excellence

Indicative topics for call 2B:

- Light weight and low mass vehicles
- Risk based ship design and approval
- Integration of Computing Fluid Dynamic tools to deliver a Virtual Basin
- Underground transport systems including construction
- New guided vehicles systems and concepts
- Concept design for ship types of the future

3.3: Objective 3 « Re-balancing and integrating different transport modes »

3.3.1 Research to support the European Transport Policy (Research domains from 3.1 to 3.13).

There is a growing imbalance between modes of transport in the European Union. The success of road and air transport is resulting in ever-worsening congestion while failures to exploit the full potential of rail and short sea shipping, and in general of intermodal transport, are impeding the development of real alternatives to road haulage. The present situation, and its trend, which is forecasted to push even more in this unsustainable direction, is leading to an uneven balance of modes on the main Trans-European network corridors.

Interoperability of the European Railway System

The "2020 Vision" of the European Rail Research Advisory Council (ERRAC) aims at tripling rail freight's volumes. This calls for a set of new measures; concepts of co-operation and technologies designed to increase rail services attractiveness. The focus is on increasing the interoperability and integration of the European Railway System to actually enable and push forward the implementation of the new regulatory framework and to foster innovation in the railway sector for the benefit of all stakeholders.

Research domains:

3.1 Implementation of change in the European Railway System

3.2 New concepts for trans-European rail freight services

The first research domain shall prepare the frame for the second one, new concepts for Trans-European rail freight services.

Intermodal transport and Logistics

Intermodal transport research activities will support technologies and services to ensure that the inherent advantages of the individual modes can be exploited in "Door to Door" transport chains. Activities should pay special attention to the needs and interests of the customers (shippers and passengers) so as to make intermodal transport more attractive to users.

The transport of freight also has to be understood as part of broader logistics systems which include packaging, scheduling, transporting, handling, storing, labelling, delivering etc. As transport costs are only a small part (10%-15%) of total logistics costs, shippers efforts to reduce total logistics costs often have significant negative impacts on transport demand (e.g. smaller more frequent deliveries, short delivery time windows etc.). Activities will focus on logistics practices that contribute directly to European transport policy objectives.

Research domains:

Intermodal Transport

3.3 Freight Transport Corridors

3.4 Intermodal Freight Transport Systems, Technologies and Strategies

3.5 Intermodal Freight Transport Management System

3.6 Improved Intermodal Loading Units (ILU)

3.7 Services and information for intermodal passengers

Logistics

3.8 Logistics Best Practice

3.9 City Logistics

Safe, secure, efficient and interoperable waterborne transport

90% of the EU external trade and 41% of the intra-EU trade in volume are transported by sea. Short sea shipping has shown an increase in growth rates over the last years, but it still offers an even larger capacity that should be exploited to re-balance the different transport modes. A major goal should be the integration and interoperability of maritime and inland waterways transport

In addition, shipping is a truly global business that, whilst being highly competitive, has to respond to an increasing political and public pressure for high-quality operations that include activities such as improved ship safety and environmentally friendly ship operations and design.

Research will lead to the take-up of innovative concepts and systems in large-scale European validation platforms. To this effect, research will support the implementation of the new regulatory framework and encourage best practice of the shipping community.

Research domains:

3.10 Maritime navigation and information services

3.11 Safe, environmentally-friendly and efficient shipping operations

3.12 Human resource development

3.13 Maritime transport co-ordination platform

Selected topics for Calls 1A and 2A

- **Implementation of change in the European Railway System (Call 2A)**

This research activity addresses also the fourth objective of the specific programme, 'Increasing road, rail and waterborne safety and avoiding traffic congestion'.

Objective: There is lack of true European interoperability in the rail sector. To overcome this – and to make the railway systems open for seamless transport services – is the objective of this work. Due to the size and scope of the work a Co-ordinated Action is deemed suitable. By gathering all the best expertise in all segments of the rail sector the activity should pave the way for an Integrated Project on new concepts for Trans-European rail freight services (see research activity 3.2 'New Concepts for Trans-European Rail Freight Services').

Scope: The work consists of three closely linked parts. These could either be addressed by one proposal with three parts or by three separate proposals. The Commission might decide to cluster and/or merge successful proposals into a larger contract for reasons of efficiency and coverage.

Part A should gather the necessary information to assess general progress in the establishment of a European Railway Area. In this context, the research should address the analysis and prospective work that enables the creation of a knowledge base for decision support in legislative and management issues. Particular emphasis should be given to aspects relating to the management of change (from a nationally based system towards a truly interoperable and integrated pan-European system). It is particularly important to assess the reasons for the differences in progress among Member /

Accession States particularly concerning rail freight and to identify the links between various organisational developments and progress in the rail sector.

Part B should analyse the prerequisites for innovative and new concepts for Trans-European rail freight services and more in detail pave the way for the IP on *New concepts for Trans-European rail freight services*. It should, e.g.,

- Analyse the business case for international freight services on up to ten possible Trans-European corridors Recommend suitable corridors for implementation and the type of service to be targeted
- Identify and suggest ways to overcome administrative, legal, cultural and technological barriers for the implementation of the selected freight services in the corridors.
- Suggest suitable quality standards for the services, taking into account for instance the aspects dealt with in the Commission Communication 23.1.2002 COM (2002) 18 "Towards an integrated European railway area".
- Suggest and implement schemes for evaluation

Part C should build on parts A and B and define a dedicated rail freight network on a European level. It should build on the Network Statements and the Register of Infrastructure. It should:

- Take into account major constraints and obstacles and suggest solutions in a short, medium and long-term perspective.
- Define the tools for the monitoring of services (e. g. by GIS) on the network.

The activity should work prior to the start of research activity 3.2 and continue to support it during four years. It should consist of a mix of disciplines – economists, lawyers, political scientists, engineers – from various backgrounds - researchers, railway undertakings, operators including logistics integrators, infrastructure managers, administrators and public authorities. The role of new entrants should be specially taken into account as well as the customer's needs.

Links to the EC Rail Market Monitoring Scheme should be maintained as well as the EC work on a Regulation for International Freight Quality and the work executed in the framework of conventional rail interoperability.

Expected outcome: Part A: A comprehensive picture of the change occurring in the rail sector as a result of the new European regulatory framework.

Part B: A careful selection of corridors to be used for the demonstration of seamless international rail freight services.

Part C: A detailed concept for developing a dedicated freight network by 2015.

Preferred Instrument: Co-ordination Action

➢ New Concepts for Trans-European Rail Freight Services

This research activity addresses also the fourth objective of the specific programme, 'Increasing road, rail and waterborne safety and avoiding traffic congestion'.

As research activity 3.1 'Implementation of change in the European Railway System' should pave the way for research activity 3.2 'New Concepts for Trans-European Rail Freight Services', an indicative description of this future research activity, not included neither in calls 1A nor 2A, is below:

Objective: European rail freight has declined for many years and especially international rail freight suffers from serious quality problems. There is some progress and growth, however, but with great variations from country to country. Serious action is urgently needed. These matters are highlighted in the Transport White Paper as well as in the Commission Communication 23.1.2002 COM (2002) 18 "Towards an integrated European railway area".

With an objective and unbiased approach this research activity should therefore develop the necessary technical, operational and logistic conditions for the set-up of seamless quality rail freight services in two or three Trans-European "corridors", building on the new European regulatory framework. Overcoming foreseen and non-foreseen technical and non-technical barriers is essential as well as evaluating the results.

Scope: This activity should establish a business case for an appropriate selection of (at least three) corridors based on the result of research activity 3.1, create the conditions for the operation of the freight services and for their field evaluation. Some examples of potential corridors (to be analysed in more detail by research activity 3.1) are:

- Iberia – Benelux
- Iberia – Germany
- Nordic Countries – Southern Europe
- British Isles – Eastern Europe (incl. CIS)
- Baltic states – Adriatic states
- Benelux – Balkan states

This activity should deal with the whole chain of events in the operation of international freight services, based on customers' needs and requirements. Identification of the infrastructure, operational and logistics requirements are required to implement the service concept defined above. Variations in axle loads, train lengths, loading gauge, rules & regulations, etc., also need special attention as well as data exchange matters. Requirements concerning dangerous goods must also be observed. Devising solutions to overcome the "gap-filling" needs in order to fulfil the requirements established above (e.g. one-stop-shop front end, corridor wide capacity management, tracking and tracing, asset and resource management, staff training, both from a system and regulatory point of view) would have high priority.

Incompatible driver rules concerning for instance their training and deployment, are important barriers to a truly interoperable European rail system. Connected to the driver issues are differing safety regimes and to some extent attitudes. These factors must be taken into account. Training of other staff such as traffic control staff and those responsible for capacity allocation may also be important to improve international operations.

This research activity 3.2 should continuously liaise with projects under research activity 3.1. It should also liaise with relevant EC activities such as the European Rail Traffic Management System and the Rail Market Monitoring System. It should furthermore liaise with the Strategic RTD plan of the European Rail Research Advisory Council (ERRAC). Finally it should take into account the effects of existing or non-existing cabotage in rail freight in general.

It is strongly advisable to engage expertise not only from the incumbent railway undertakings but also from other rail freight operators, and other transport and services sectors. New entrants and their organisations are much needed in this activity.

Expected outcome: A field-validated concept for Dedicated Rail Freight Operation in European wide corridors. This will include spin-off contributions to on-going legislative work on interoperability and safety. This means, i. a., a validation of telematics and traffic management concepts and solutions, new templates for operational activities,

including driver rules and regulations, innovative corridor-wide integrated safety management approaches, new technologies for reducing the environmental impact.

A higher market share for rail freight in these corridors. Environmental improvements, less road congestion, improved safety along these corridors. Evening out the differences between high and low performing countries. A dissemination of good practice on realistic testing and demonstration.

Preferred Instrument: Integrated project

- **Freight transport corridors (Call 1A)**

This research activity addresses also the fourth objective of the specific programme, 'Increasing road, rail and waterborne safety and avoiding traffic congestion'.

Objective: The aim of this activity is to demonstrate on key pan-European corridors innovative transport technologies, systems and strategies. The demonstrations should make a major contribution to developing the concept of "Motorways of the Sea" and revitalising the railways in door to door transport chains. Under strategic corridor leadership the demonstrations should cover all aspect of organising, implementing and promoting efficient alternatives to road-only transport.

The objective is to integrate, demonstrate and validate intermodal technologies, systems and strategies to increased the efficiency and interoperability of transport modes, their related infrastructure and vehicles, and to demonstrate the potential of intermodal transport to achieve European transport policy objectives.

Scope: The proposed corridors should have significant international traffic, suffer from road congestion and have quantifiable potential for mode shift (either road to rail or road to short sea shipping / inland navigation). The proposed corridors should have as the target mode either; short sea shipping and/or inland waterways (Motorways of the Sea) or rail services.

Under a strategic leadership the project must develop and maintain the broad partnership necessary to implement such concepts in the selected corridors, and should include public authorities, shippers and freight transport operators.

Past research activities developed a number of promising technologies (e.g. cargo handling equipment, vessel/vehicle interfaces, semi trailers etc.), systems (e.g. for booking, terminal/port management) and strategies (e.g. identification of mode shift potential.). There is now a need to validate the most promising results in integrated full-scale demonstrations.

The proposed demonstrations should not require significant infrastructure investments. There should be independent monitoring of the impacts in the target corridors including emissions, accidents, energy, mode shift, external costs etc. Marketing and training aspects should be addressed. In addition to Member States, Accession Countries and Associated States the involvement of other Mediterranean countries and Russia would be welcome.

Proposers should make clear distinction between proposed corridor activities (e.g. demonstration, marketing etc) and horizontal activities (e.g. co-ordination, dissemination and evaluation). The most promising elements will be merged by the Commissions services into a single integrated project.

Expected outcome: A significant increase in the potential of short sea shipping / inland navigation or rail as the prevailing transport mode in the selected corridors combined

with improved awareness and understanding of intermodal transport amongst stakeholders.

The project should make a major contribution to developing and testing the concept of Motorways of the Sea. The project should assess the potential of intermodal transport to make a substantial contribution to achieving transport policy objectives.

Preferred Instrument: Integrated project

- **City Logistics (Call 1A)**

This research activity addresses also the fourth objective of the specific programme, 'Increasing road, rail and waterborne safety and avoiding traffic congestion'.

Objective: The movement of goods has a major impact on urban areas however the importance of this subject is often underestimated. City deliveries are often part of long, frequently international, supply chains and city logistics should not be viewed in isolation from other transport policies (particularly mode shift policy).

This action should support all city logistics actors through the dissemination of best practice and encouraging exchange and co-operation.

Scope: Identification, dissemination and promotion of city logistics best practices that contribute to European transport policy objectives. Stimulate understanding, co-operation and exchanges between European actors (city authorities, transport operators, shippers, retailers, citizens etc.) on priority themes.

Quantification of the contribution city logistics can make to European policies, particularly encouraging mode shift, reducing emissions, noise and energy consumption and improving safety. Make recommendations for Community action.

Expected outcome: The actions will improve awareness of best practice in city logistics, enhanced co-operation and exchange between European cities and provide input to transport policy development. An increased contribution of city logistics to achieving transport, and energy, policy objectives.

Preferred Instruments: Co-ordination actions and Specific Targeted Research Projects

- **Maritime navigation and information services (Call 1A)**

This research activity addresses also the fourth objective of the specific programme, 'Increasing road, rail and waterborne safety and avoiding traffic congestion'.

Objective: Over the last years, considerable efforts have been undertaken at national and European level to facilitate and harmonise reporting, to integrate different sources of information, and to foster easy information exchange supporting maritime transport. Further enhanced co-ordination and integration of traffic and transport information will help avoiding data duplication and lead eventually to improved safety, security, environmental protection and efficiency of maritime transport operations.

With respect to new developments in this field, there are a number of issues in addition to the ones decided by Directive 2002/59on Traffic Monitoring, for which joint implementation measures are to be prepared such as the integration of navigation means into information networks, security, data handling in small ports etc.

Scope: *Impact of new technologies on maritime navigation and information:*

A first element should be the integration and validation of applications based on new technologies and in the area of localisation and navigation (EGNOS, Galileo, enhanced-

GPS), telecommunications and earth observation. The work should provide for a large spectrum of services such as traffic surveillance, seamless tracking and tracing of vessels, cargo and hazardous material also on long-distance (long-range Automatic Identification Systems (AIS)) and the earlier identification of ships approaching EU waters. It should further contribute to increase the level of security in the transport chain and improve environmental monitoring, in particular monitoring of illegal discharging at sea, contingency planning and management, including search and rescue as well as the efficiency of the administration and law enforcement at sea.

Integration with on-board equipment
A second element should be to ensure the integration and efficient interaction with advanced *on-board systems and equipment* (such as VHF, Navtex, GPS, Voyage Data Recorder, electronic maps, Integrated Bridge Systems, alert systems etc.). The work should, where required define further integrated bridge concepts, in particular reflecting latest developments in technologies and services.

Interaction with other information systems
A third element should be to define interfaces between ships' integrated information systems and shore systems other than maritime report systems such as River Information Services, environmental monitoring systems as well as freight transport management and port information systems in order to facilitate e.g. resource management, the pre- and on-haulage of goods. administrative and documentary procedures (e.g.. customs procedures) as well as to enhance security.

Essential requirements
The proposed work should, where appropriate, build on and bring together the technologies, systems and strategies developed during previous research programmes (in particular Nauplios, Embarc, VTMIS-Net, Indris, Compris, Waterman etc[3]).

An integral element of the work proposed should be the identification of the impact of new technologies and systems on the organisational, administrative and regulatory framework of maritime traffic and transport operations.

The work should be accompanied by an assessment of economical, safety and environmental costs and benefits against alternative. It should also identify training requirements and concepts as a result of new technologies, systems and operational procedures. Dissemination of the results and the development of an implementation strategy and implementation scenario would be of paramount importance. The work should be closely linked to the regulatory work at international and European level and take into account the corresponding time schedules.

The consortium should represent a cross-section of the relevant stakeholders including insurers, customs, immigration etc. and achieve a European coverage. The work should be governed by a High Level Steering Committee composed of Member States, Candidate Countries and Associated States, relevant organisations and industries.

Expected outcome: Ultimately, the results should enable the implementation of operational solutions for information exchange and (one-stop) reporting in interoperable information networks, for a wide range of functions, in a harmonised context, and on a European scale. The results must be compatible with the data exchange systems built under Directive 2002/59 and with other related transport data exchange systems currently being developed in the EU.

[3] (See http://www.waterman-ts.net/ ; http://www.issus.fh-hamburg.de/iss_web/projekte/vtmis-net/index.htm; http://www.euro-embarc.com/)

The work should provide a clear picture of the administrative implications of new applications to the sector, provide recommendations for an administrative re-organisation addressing customs, port & maritime authorities, port state control, immigration, agriculture/veterinary etc. and develop implementation scenarios.

The work should identify EU legislation that would be needed, if any, to improve and facilitate the utilisation of new technologies. The results should serve directly the objectives of the European Maritime Safety Agency and provide tools and support to the implementation of the regulatory framework.

Preferred Instrument: Integrated Project

- **Maritime transport Co-ordination Platform (Call 1A)**

This research activity addresses also the fourth objective of the specific programme, 'Increasing road, rail and waterborne safety and avoiding traffic congestion'.

Objective: Maritime transport is a rather fragmented sector with a quite significant number of different players involved. Substantial efforts have been made during recent years to overcome the fragmented structure and to build an integrated maritime research community.

The idea of integrating expertise and enhancing co-ordination through networking activities is widely recognised as an important tool for stimulating the European research community as well as supporting policy development and implementation.

The activity should identify and address topics relevant to maritime transport policy, e.g. safety, traffic management, human element, education and training, and define strategies and concepts for maritime transport research and its implementation into maritime transport policies.

Scope: The activity should gather expertise to identify maritime safety and quality problems and to generate and assess European solutions. It should facilitate the exchange of information, raise awareness and disseminate research results, technologies and best practice at a European, national and regional scale.

It should provide a sound knowledge base to support decision-making, scenarios for the integration of research results into maritime policies and provide tools for the assessment and revision of policy measures.

It should serve as a European 'sector observatory' providing policy-makers and transport authorities with a sound data basis, including e.g. data economical, social and financial figures, fleet numbers, labour market, manning issues, costs etc.) at a national and European scale.

It should address technology forecasting and assessment in order to enable the EU to be a driving force in the development of new initiatives.

All relevant stakeholders as well as Member States, Candidate Countries and Associated States should be represented. The activity should build on the experience and results gained in past co-ordination activities such as thematic networks and link with on-going activities.

Expected outcome: Strengthening the scientific and technological expertise in maritime research. Establishment of a large-scale European knowledge basis to support the development, implementation and assessment of policy measures in the different fields of interest. Development of recommendations and implementation scenarios.

Preferred Instrument: Co-ordination action

3.3.2 Research, technological development and integration (Research domains from 3.14 to 3.17).

Research will target the development of transport technologies to achieve a sustainable modal shift from road to railways and water-borne routes including inland navigation and short sea shipping. Both innovative vehicle/vessel concepts and their effective integration in multi-modal door-to-door transportation chains will be addressed.

The objective will be to remove congestion from road infrastructure in Europe, to improve the mobility of travellers and goods and to promote a safe and clean transportation system for Europe. Research and policy measures for road freight would seek to limit growth from 50 % to 38% by 2010. Targets for rail include tripling freight and doubling passenger market share by 2020.

Research domains:

3.14 Development of vehicle and vessel concepts for both passengers and freight, characterised by interoperability and inter-connectivity, for cross-operation between different transport routes and networks supported by advanced mechatronics, on-board electronics, information and communication systems.

3.15 Development of new inter-modal vehicle/vessel concepts to attain optimal performance in terms of fuel economy, environmental impact (including noise), manoeuvrability (including obstacle avoidance), stability and maximum carrying volume.

3.16 Development of equipment, methods and systems for optimal accommodation, fast loading and unloading of intermodal transport units and definition of optimal use of storage space both in vehicles/vessels and terminals and efficient final distribution of goods.

3.17 Technologies to ensure effective, clean and safe operations of vehicles/vessels in terminals and minimisation of turn-round time combining manoeuvring assistance, terminal auxiliary services, waste management (including ballast water in ports) and integration of telematics support for improved communication with terminals control and management systems.

Selected topics for Call 1B

- **Innovative vehicle concepts for the future European rail system**

Objective: The aim is to improve rolling stock performance by the accelerated adoption and implementation of technical standards for interoperability through a modular approach to rolling stock architecture, guaranteeing functional and technical integration
Scope: Research will focus on the identification, specification, design and development of key vehicle modules – their interfaces, and validation procedures

Expected outcome: Innovative concepts and industry-compatible components to enhance system simplicity and encourage modular approaches in relation to the implementation of technical standards of interoperability.

Preferred Instrument: Integrated project

Indicative topics for call 2B

- Intelligent railways systems and components

3.4: Objective 4 « Increasing road, rail and waterborne safety and avoiding traffic congestion »

3.4.1 Research to support the European Transport Policy (Research domains from 4.1 to 4.10)

Road Safety Strategies

Currently, more than 40.000 persons are killed every year on EU roads and less than 1000 in the other modes of transport. The short term strategic objective of the Community is to halve the number of fatalities by 2010. The medium term objective is to cut by around 75% the number of persons killed or severely injured by 2025, while the long term vision is to render road transport as safe as all other modes.

To be effective road safety policy and the supporting research must target the human, the vehicle and the infrastructure environment. In addition, the interaction between these elements must be considered as well as the acceptability and cost-effectiveness of the proposed measures in a wider socio-economic context. Research should devise the economic mechanisms necessary to reward the introduction of advanced technologies with a view to their overall safety benefits, instead of the defensive approach taken today to avert possible liability risks.

Research will combine measures and technologies for prevention, mitigation and investigation of road accidents placing special attention to risky and vulnerable users groups, including children, handicapped persons and the elderly.

Research domains:

4.1 Accident analysis and injury analysis

4.2 Driver Safety Training

4.3 Road infrastructure safety

4.4 Enforcement of Traffic rules and drivers' aptitude to drive

4.5 Awareness campaigns and acceptability of measures

Integrating Intelligent Transport Systems

Clearly the wide array of technologies are meant to change the face of the transport system. All the research activities described in this work programme involve in one way or another the use of these technologies. Particular attention will be paid to the close co-ordination with Information Society technologies thematic priority, which address also Smart Transport Systems development. In this context, Galileo applications will be particularly encouraged and scrutinised. However, as well as the overall co-ordination and monitoring of the implementation of these technologies in the different activity areas, two particular actions are foreseen.

Research domains:

4.6 European service for electronic fee collection on roads

4.7 Multimodal real-time information for people on the move

Implementation of Transport Pricing

Successful implementation of the pricing reform, as put forward in the White Paper, is a complex issue. This requires first cross-modal research on cost calculation to ensure a coherent approach and level playing field in support of the European legislation

currently being prepared and put in place. Policy makers and the public also need further and more detailed information on the benefits of pricing. One way of demonstrating these are through real-life demonstration projects. These should be carefully designed to tackle both the technical and socio-economic complexities and to address acceptability problems, which can be particularly striking in urban areas.

This research area will be implemented through the research domains listed below. They will be closely co-ordinated with actions funded under *Clear Urban Transport* (objective 1) and *Integrating Intelligent Transport systems* (objective 4) areas, when relevant.

Research domains:

4.8 Costs of transport infrastructure use

4.9 Optimal investments and charging

4.10 Pricing demonstrations

Selected topics for Calls 1A and 2A

- **Accident analysis and injury analysis (Call 1A)**

Objective: Understanding of accident and injury causes, levels and trends through accident and injury data systems is a prerequisite for establishing and monitoring effective transport policy and it must be based on reliable accident and injury data. The persistent lack of disaggregated risk exposure levels is a major obstacle and more needs to be known about the different causes of accidents.

Scope: The research activity will develop and assess support tools such as in-depth accident research and analysis and road safety performance indicators. Risk assessment of whole journeys regardless of which mode of transport is used, is needed to take sound decisions on trips and the choice of modes.

Viable financial and institutional arrangements need to be developed to provide the basis for an independent accident investigation and the provision of such information in a databank over many years. Primary objective is not to assign legal liability in case an accident has occurred, but must be the identification of the true accident causes with the best available expertise on a comparable basis. Such data are gathered by interdisciplinary teams of technicians, doctors, psychologists etc. Institutional arrangements must provide for anonymity and accessibility of the data to all users free from any commercial interest. Legal frameworks need to be taken into account.

This action shall liaise with research activity 4.11 'Safety for European roads', which will address the same objective from the 'Research, technological development and integration' perspective.

Expected outcome:

- Road accident data bank on the causation of accidents
- Risk exposure data
- Recommendations for independent accident investigation including insurance companies, enforcement agencies, industry
- Validated tools to assess and to implement road safety policies at EU level, in particular the development and refinement of a coherent system of safety performance indicators that allows the EU to keep track of the performance all the

different stakeholders. National and regional levels are also relevant to the extent that the White Paper requires their involvement with a view to road safety.

Preferred Instrument: Integrated Project

- **Road infrastructure safety (Call 1A)**

Objective: To avoid and mitigate accidents, Europe's roads should be built and maintained according to concepts of forgiving road environments and self-explaining roads. Standards, even if applied, represent solutions that can be second best in terms of their safety performance. Only systematic, independent reviews undertaken by teams of qualified safety experts are able to provide the useful advice. Previous research has identified an alarming divergence of variable message signs adding to the existing problems of different signing and road marking. As a result, drivers from abroad are confused and overloaded with different roadside information, some of which is presented in languages they do not master.

Special attention will be given to vulnerable road users, i.e. pedestrians, cyclists, motor-bikers and user groups like children and elderly people, which presently account for significant number of road accident victims.

Scope: (1) The research activity will provide best practice information for the cost efficient safety oriented management of road infrastructure including roads, the road environment and tunnels. This should form the basis for guidelines for road safety audits and safety inspection. The tools to monitor the safety critical conditions of roads and vehicles at different weather conditions (e.g. roughness, weigh-in-motion of axle loads) with least obtrusion of the flowing traffic need to be assessed.

(2) The research activity will support the development of policy and industrial strategies to build a consensus on priorities for regulation and standardisation processes with a view to integrate the deployment of the different traffic management and information systems in order to achieve an enhanced management of the existing infrastructure as well as interoperability of the transport system. Assessing the safety potential of driver assistance systems in combination with road side equipment and maps is necessary, taking into account human machine interface requirements, e.g. for intelligent speed adaptation systems. Modelling (simulating) the behaviour of different types of road users should enhance traffic simulation tools in their ability to predict the safety impact of measures including driver assistance and traveller information systems and other telematics measures. Vertical and horizontal signing (including the ever-proliferating variety of variable message signs) need to be understandable and harmonised in particular for drivers from abroad. Special attention will be paid to long road tunnels**,** including the training of operational and emergency staff and their users.

This action shall liaise with research activities under research domains 2.2, 2.5, 2.6 and 2.7 (objective 2) where most aspects of active safety are addressed, and 4.12, 4.14 and 4.16 (objective 4).

Expected outcome: (1) Recognised good practice guidelines are necessary to cover the minimum requirements for auditors/reviewers as well as clear rules to provide a sufficient funding for such work. Cost benefit analysis needs to be considered systematically when drafting best practice guidelines and allocating funds to projects. Develop and validate training curricula for professional tunnel users and operators so that they know how to behave in case of emergency.

(2) An implementation scenario taking into account the interests of industry, road users and public authorities to support possible action at all levels of government. Simulation

model(s) capable of safety simulation. A best practice guide on harmonised signing, and validated training curricula for tunnel staff.

Preferred Instruments: Specific Targeted Research Projects

- **European service for electronic fee collection on roads (Call 2A)**

Objective: The question of European interoperability of services is of primary importance. In the domain of electronic fee collection, the present situation is that truck drivers will have to accept in their driver's cabs many national electronic blackboxes, and many different operating modes, due to the low level of design co-operation across Member States. Most of the technology being presently available, the aim of this research activity is to focus on large-scale demonstrations and their necessary conditions.

Scope: A new Directive proposed by the European Commission will require Member States to deploy a single European service for electronic fee collection on motorways and other kinds of roads, both in urban and interurban conditions. This service, planned to be launched in 2005 for trucks, and extended, at the latest, in 2010 to all types of vehicles, will be based on the principle: *"one single onboard unit and one single contract for one vehicle"*. The Directive will state that three technologies are to be integrated in the vehicle: microwave 5.8 GHz, satellite location and mobile communications. Thus, the resulting European service will allow anyone to drive across all European Union paying all tolls and charges for road use. The onboard unit provided will form a generic platform for many other ITS services utilising the same basic technologies.

Expected outcome: Expected results will be a first implementation of the contractual documents and specifications provided by the European Commission under the European Directive, and this will allow a large-scale demonstration of the European electronic fee collection Service to be undertaken. For this, particular attention should be given to the cross-border exchange of information (transaction files, clearing systems, blacklists…); to an efficient enforcement process; to after-sales services - all based on the integration of technologies in the single onboard unit at a reasonable price.

This pilot demonstration will aim at solving all the practical questions in the deployment of the European Service, and will feedback the Commission in its decisions.

Preferred Instrument: Integrated Project and/or Specific Targeted Research Project

- **Costs of transport infrastructure use (Call 2A)**

This research activity addresses also the third objective of the specific programme, 'Rebalancing and integrating different transport modes'.

Objective: Pricing systems that reflect the costs occasioned by the use of the transport infrastructures, based on the marginal cost pricing principle, have been proposed in the White Paper. This approach is considered to maximise the efficiency of the use of the transport system. European legislation is currently being prepared regarding transport infrastructure pricing. It is therefore a priority that the results of previous research on this subject be rapidly gathered, codified and up-dated in order to help define harmonised approaches, suitable across Europe, as input to the legislative work. Research has developed approaches to transport cost accounting at the aggregate national level and conducted marginal cost case studies at the disaggregate micro level.

These need to be refined and further developed, in particular, additional results regarding the air and waterborne sectors are urgently required.

Scope: The objectives of the research work are:

(i) Based on previous research[4] to further develop and refine transport cost accounting methods in view of monitoring the implementation of pricing reform in Member states and accession countries. All relevant fixed and variable, use dependent cost and charge categories should be included. Based on information on marginal costs, a methodology to allocate variable costs to different user categories will be developed.

(ii) To conduct a series of case studies covering those cost categories and modes where knowledge on costs and cost drivers is most lacking. The case studies should cover a variety of geographical and traffic contexts across the enlarged Europe and should take into account the needs of regions at the periphery as well as at the centre. The case studies will cover among others: (i) All cost categories for air and waterborne transport. (ii) The cost of transport noise, using results from other areas of the Framework Programme. (iii) Congestion costs of road transport using definitions developed under Scientific Support to Policies area 1.2.1. (iv) Scarcity cost of rail transport. (v) Environmental costs in sensitive zones.

(iii) To develop simple and transparent methods to determine charges to be levied using results from individual marginal cost case studies and national cost accounts. The research will develop European cost functions for the different cost categories and for key cost drivers making the derivation of costs and charges possible also for regions and modes for which detailed analysis does not exist. The cost drivers should include at least type of infrastructure, vehicle technologies, average traffic volumes in different time periods (peak / off-peak), geography, number of people or population densities.

(iv) To propose ways to determine an optimal balance between simplicity of charges and the complexity and high variability of the underlying marginal costs, taking account of acceptability issues. The role of prices in providing incentives to behavioural changes (change in demand, travel time/route/mode, vehicle purchase etc.) will also be looked at.

(v) To refine existing tools to assess the broad socio-economic impacts (on congestion and modal shares, environmental nuisance, accidents, employment, growth, accessibility etc. and distribution thereof) of the pricing reform.

(vi) To bring together relevant policy makers, other stakeholders and researchers to exchange information in view of reaching consensus on the methods and results to be applied in setting tariffs for the use of transport infrastructure. The purpose is to provide a discussion platform for policy makers, transport operators, researchers and other stakeholders to exchange views on the implementation of new pricing regimes, cost calculation methods derivation of tariffs to be levied and on successful approaches to overcome barriers and to affect attitudes and perceptions.

Third country participation with relevant experience in cost analysis and efficient transport pricing (e.g. North America, Australia) could be envisaged.

Expected outcome: Generalised cost estimates for different geographical and traffic contexts covering all cost categories. Air and waterborne cost analysis. Noise cost calculation methods and cost estimates for road, rail and aviation. More detailed

[4] See e.g. UNITE (Unification of accounts and marginal costs for transport efficiency) at http://www.its.leeds.ac.uk/research/index.html, RECORDIT (Real cost reduction of door-to-door intermodal transport) at www.recordit.org.

estimations of the impacts of pricing reform. Validation of the methodological approach with policy-makers and other end users of the research results.

Preferred Instruments: call for tenders, specific targeted research project, specific support action and/or co-ordination action

- **Optimal investments and charging (Call 2A)**

This research activity addresses also the third objective of the specific programme, 'Rebalancing and integrating different transport modes'.

Objective: The White Paper raises the difficulty of mobilising capital as the main obstacle, apart from technical or environmental considerations, to carrying out infrastructure projects. The White Paper suggests that the new infrastructure projects should benefit from an "income" even before opening to traffic. One option to do this could be to pool the revenues from charges in an intermodal infrastructure fund. Another possibility, which already exists for the rail sector, is to add a mark-up on top of charges levied to cover financial deficits, where these occur. Research to date has looked at the pooling of revenues from efficient pricing at the national and local levels. To complement this the objective for further research is to: (i) propose principles to set mark-ups to efficient charges in a certain mode to enable financing of investments and (ii) propose a methodology for a European multi-modal transport infrastructure fund.

Scope: To develop a scientifically sound approach to determine optimal investments in transport infrastructure applicable in countries with different transport needs and comparison with Member states' and Accession countries' current investment plans.

- Drawing on state-of-the-art research results to assess revenues from pricing and to determine the (possible) financing gap per mode, region and period of time for the EU15 and Accession countries.
- To develop a methodology to determine mark-ups to marginal cost based charges. These mark-ups should not lead to unwanted modal shifts or other perverse effects in terms of sustainable transport. The methodology should be applicable to all modes as well as to links and nodes.
- To develop a methodology for a European multi-modal infrastructure funds. The methodology should aim at combining efficiency and equity issues between European territories and focus at the funding of the Trans-European transport network projects. The research will also address the optimal coverage in terms of geography, modes, scale of network, types of investments, etc. of such a fund.
- To demonstrate the methodology for selected scenarios and geographical coverage.
- To bring together the relevant policy makers and other stakeholders to assess the feasibility of the research solutions, as they emerge.

The research should actively liaise with research on Quality of transport services, to be supported under Specific Support to Policies of the Work Programme, and Costs of transport infrastructure use (research activity 4.8).

Expected outcome: Method to determine optimal investments in transport infrastructure. Assessment of revenues from pricing and estimation of potential financing gaps. Methodology to determine mark-ups in an efficient and fair way. Methodology for a European multi-modal transport funds.

Preferred Instruments: call for tenders, specific targeted research, specific support or co-ordination action.

3.4.2 Research, technological development and integration (Research domains from 4.11 to 4.16).

The research will focus on increasing the capacity of existing and new transport infrastructure by maximising safety and well being of drivers, passengers and crew. The aim will be the development of strategies, systems and technologies to attain optimal operational performance of vehicles/vessels and their supporting infrastructure, seeking to halve the number of transport fatalities by 2010 and increasing capacity by 15%.

Technological innovation will largely rely on computer-based decision support tools, information services on the condition of transport routes (e.g. road holding, sea state or traffic congestion) and vehicle/vessel operational responsiveness.

Research domains:

4.11 Integrating technologies for driving, piloting and manoeuvring assistance to improve safety and maximise the effective capacity of the infrastructure, including the secure transportation of hazardous goods.

4.12 Developing technologies to sense and predict natural and infrastructure conditions affecting safety and efficiency of transport operations.

4.13 Developing integrated safety systems which are reliable and fault tolerant (preventive, active and passive) taking into account human-machine interface concepts focusing on the system implementation.

4.14 Designing user-friendly driver interfaces based on human-centred design philosophies taking into consideration bio-mechanical ergonomics, injury reduction measures, environment perception and effective lay-out of signalling and piloting information for improved safety.

4.15 Developing computer-based training systems for drivers, that are cost effective, with monitoring capability of fitness to navigate and muster, including crisis management conditions

4.16 As part of the development of a large-scale integration and validation platform across modes for the realisation of the intelligent transport vehicle and infrastructure of the future technology will concentrate on intelligent management and guidance systems. This will include satellite navigation systems capable of stabilising vehicle trajectory, with respect to lateral and longitudinal displacement, and will regulate vehicle speed and separation with high accuracy and reliability.

Selected topics for Call 1B

- **Safety for European roads**

Objective: The research aims at improving road safety in Europe by developing integrated safety systems.

Scope: Emphasis should be placed on the development and introduction of advanced protection and rescue systems including compatibility problems (between vehicles and with infrastructure and pedestrians) and vulnerable road users. Reference and connection with other Integrated Projects on accidentology and vehicle active safety is strongly recommended. This action shall also liaise with research domains 2.3, 2.6 and 2.7 (Objective 2) and 4.3 (Objective 4).

Expected outcomes: development of human substitutes for injury assessment (crash dummies, computer models), developing test methods (including tools), developing design counter-measures, reports on the evaluation of regulations and counter-measures.

Preferred Instrument: Integrated project

- **Virtual Centre of Excellence for enhanced road passive safety**

Objective: To improve the road safety and to reduce the number of deaths and casualties in Europe. It is a major societal concern common to all European countries and requires a sustained effort at European level for achieving a significant improvement.

Scope: To further integrate research activities at European, national and regional level. Activities must consider vehicle passive safety including the link with pre-crash and post-crash issues, the integration of active safety and the link with road infrastructures. Standardisation, harmonisation and legislation issues should be included.

Expected outcome: Creation of a permanent organisation (virtual centre of excellence) in the field of passive safety for road transport at European level; programme for jointly executed research for road vehicle safety (including links with pedestrians and infrastructure); creation of research facilities and platforms; dissemination and communication of research results.

Preferred Instruments: Network of excellence

4. LINKS TO OTHER RESEARCH TOPICS

To maximise its impact, research on sustainable surface transport will have to integrate the most recent developments in areas such as Information Society technology, materials and new production processes, renewable energy sources and energy efficient systems, intelligent satellite navigation systems. The specific links to other priorities and identified research topics are:

a) Objective 1: New technologies and concepts for all surface transport modes (road, rail and waterborne).

New power train technologies will have an impact on transport sustainability provided new sources of cleaner and renewable energy can be developed and introduced in a way that is compatible with market and societal conditions.

In particular, critical mass will be needed to move towards totally clean mobility solutions such as cars fuelled by hydrogen. As a consequence, advanced vehicle technology will have to be linked with technology for economically affordable hydrogen production and efficient manufacture of fuel cells compatible with surface transport requirements as defined in sub-priority 1.1.6.1 (sustainable energy systems). Equally, technologies for low CO_2 and near zero emissions powertrains must take into account new advances on possible alternative fuels (sub-priority 1.1.6.1).

The programme '*Energy Intelligent Europe*' will promote non-technological activities on the rational use of energy in urban transport complementary to those described for CIVITAS II– Clean Urban Transport. Both will be closely co-ordinated. The CIVITAS II Initiative (research domain 1.1) is an activity jointly funded by the sub-priority 1.6.2 (Sustainable Surface Transport) and sub-priority 1.6.1-i (Sustainable Energy Systems, research activities having an impact in the short to medium term).

b) Objective 2: Advanced design and production techniques.

Generic developments on new materials and production systems will be the basis to achieve lighter vehicle structures, effective and reliable manufacturing processes and

decreasing production lead time (relevant to priority 1.1.3 Nanotechnologies and nanosciences, knowledge-based multifunctional materials and new production processes and devices).

c) Objective 3: Rebalancing and integrating different transport modes

Several initiatives launched in the context of the European Transport Policy like Marco Polo (start up initiative for intermodal transport services) and major infrastructure projects of the trans-European Transport Networks (TEN-T), and other research avenues like Galileo will be linked with the activities described in this section.

d) Objective 4: Increasing road, rail and waterborne safety and avoiding traffic congestion.

Applied research within priority 1.1.2 (Information Society technologies) in the area of mobility (1.1.2.I) addressing vehicle infrastructure and portable systems to provide integrated safety, comfort and efficiency will be relevant to attain targets as defined in this objective. Equally, in the area of embedded systems (1.1.2.II), systems dealing with integration of fault tolerant embedded controls will be relevant to efficiency and safety for all modes of surface transport. Links will also be established with programmes such as EuroNCAP and other research activities at national level. In addition, applications of GALILEO and GMES will facilitate information acquisition on infrastructure conditions affecting safety and operational performance of the transport system. Activities are also closely co-ordinated with priority 8 (policy-oriented research) - Area 3.2 '*The development of tools, indicators and operational parameters for assessing sustainable transport and energy systems performance (economic, environmental and social)*' and Area 3.3 '*Global security analysis and validation systems for transport and research relating to accident risks and safety in mobility systems*'.

Synchronised calls are envisaged in the following research topics:

- Integrated Road Safety (Call 1A and 1B) in collaboration with research priority 1.1.2.I and specific activity 1.2.1.
- Hydrogen/Fuel Cell Platform (Call 2B) in collaboration with sub-priority 1.1.6.1. Generic RTD work on fuel cells will be tackled by sub-priority 1.1.6.1 whereas research for system integration for transport vehicles and vessels will be dealt with by sustainable surface transport.

Combined calls are envisaged in the following research domain:

- Testing implementation and transition strategies for Clean Urban Transport – **CIVITAS II**, call combined in this sub-priority 1.6.2 (Sustainable Surface Transport, Research to support the European Transport Policy) and sub-priority 1.6.1-i (Sustainable Energy Systems, research activities having an impact in the short to medium term), with deadline December 2003 (call 2A).

5. Implementation Plan and Related Issues

ROADMAP – Thematic priority 1.6.2 "Sustainable Surface Transport"

Type of Activity **Focussing and integrating Community research**		**Indicative budget (m€)** **Date of publication in OJ:** ***[date]*** **Deadline for submitting proposals**				**Type of instrument** **Open in each call (1)** **IP** – integrated project **NE** – network of excellence **STREP** – specific targeted research project **CA**: co-ordination activity **SSA** - specific support action
Thematic Priority	**Area**	**Call 1A**	**Call 2A**	**Call 3A**	**Call 4A**	
6.2 Sustainable Surface Transport. Research to support the European Transport Policy	*1.New technologies and concepts for all surface transport modes (road, rail and waterborne)* *3.Rebalancing and integrating different transport modes* *4.Increasing road, rail and waterborne safety and avoiding traffic congestion*	Dec 2002-April 2003 39 M€	June 2003 – Dec 2003 48 M€	June 2004 – Dec 2004	June 2005 – Dec 2005	IP, NE, STREP, CA, SSA
Thematic Priority	**Area**	**Call 1B**	**Continuous Call**	**Call 2B**	**Call 3B**	
6.2 Sustainable Surface Transport. Research, technological development and integration	*1.New technologies and concepts for all surface transport modes (road, rail and waterborne)* *2.Advanced design and production techniques* *3.Rebalancing and integrating different transport modes* *4.Increasing road, rail and waterborne safety and avoiding traffic congestion*	Dec 2002-April 2003 170M€	Dec 2002 – March 2006 5 M€	Dec 2003-March 2004	Dec 2004-March 2005	IP, NE, STREP, CA, SSA

Number of participants and budget per instrument for each area in the call for proposals

Instrument	Number of participants	Indicative budget per group of instruments (%)
Integrated Projects	See general Rules for Participation	70
Networks of Excellence	See general Rules for Participation	
Specific Targeted Research Projects, Co-ordination Actions and Specific support Actions	See general Rules for Participation	30

6. CALL INFORMATION:

Call 1A[5]

1. **Specific Programme**: Integrating and strengthening the European Research Area

2. **Activities**:
- Priority thematic area of research "Aeronautics and Space".
- Priority thematic area of research "Sustainable development, global change and ecosystems". Sub-priority "Sustainable energy systems"
- Priority thematic area of research "Sustainable development, global change and ecosystems". Sub-priority "Sustainable surface transport"

3. **Call title**: Periodic call in the area of "Aeronautics and Space", "Sustainable energy systems" and "Sustainable surface transport".

4. **Call identifier**:[6].

5. **Date of publication**[7]: 17 December 2002.

6. **Closure date(s)**[8]:
- "Aeronautics and Space": 20 March 2003 at 17.00 (Brussels local time).
- "Sustainable energy systems": 18 March 2003 at 17.00 (Brussels local time).
- "Sustainable surface transport": 3 April 2003 at 17.00 (Brussels local time).

7. **Total indicative budget**: 140 million €, broken down as follows
- "Aeronautics and Space": 19 million €
- "Sustainable energy systems": 82 million €
- "Sustainable surface transport": 39 million €

Instrument[9]	€ (millions)
IP	91
STREP or CA	49
SSA	

[5] Note that this call for 'Sustainable surface transport' will form part of a call including elements of 'aeronautics and space' and 'sustainable energy systems'.

[6] The call identifier shall be given in the published version of this call.

[7] The Director-General responsible for the publication of this call may publish it up to one month prior or after its envisaged publication date.

[8] When the envisaged date of publication is either advanced or delayed (see previous footnote), closure date(s) will be adjusted accordingly.

[9] IP = Integrated project; NOE = Network of excellence; STREP = Specific targeted research project; CA = Coordination action; SSA = Specific support action

8. Areas called and Instruments:

– Aeronautics and Space

Area	Topic	Instrument
1.3.1 Open Upstream Research. Research Area 1.3.1.4 Increasing the operational capacity and safety of the air transport system	Technical domain 1.3.1.4 c)	STREP and CA
	Technical domain 1.3.1.4 h)	CA
1.3.2 Integrated Focused Downstream Research	Topic 9 (phase 1)	IP
	Topic 10 (phase 1)	IP
	Topic 11 (phase 1)	IP

– Sustainable energy systems

Area	Topic	Instrument
Section 6.1.3.1.1.1 « Cost effective supply of renewable energies »	Large innovative wind turbines, components and design tools	IP
	Low cost photovoltaic modules with integrated dc/ac inverters that can feed directly into the grid	IP
	Innovative combinations of biomass and wastes with fossil fuels	STREP
	Innovative wind turbines, components and design tools	STREP
	New generation of PV technologies / products	STREP
	Geothermal energy	STREP
	All	CA and SSA
Section 6.1.3.1.1.2 “Large scale integration of renewable energy sources and energy efficiency”	RES-Electricity	CA and SSA
	Distributed electricity generation	CA and SSA
	Electricity storage systems	CA and SSA
	Heating and cooling	CA and SSA
Section 6.1.3.1.2.1 “Eco-buildings”	Innovative architecture aiming at low-energy demand buildings	IP and STREP
	Integration of renewable energy technologies and efficient technological solutions	IP and STREP
	Low energy construction and/or retrofitting materials, innovative components and technologies	IP and STREP
	Innovative building management systems (BMS)	IP and STREP
Section 6.1.3.1.3 “Alternative motor fuels”	Large scale integration of alternative fuels into the transport system. Considering resources, production, storage, distribution and use. Tools to monitor and stimulate demand.	IP, STREP, CA and SSA
	Assessment and monitoring of new and alternative fuel research activities	CA and SSA

– Sustainable surface transport

Area	Topic	Instrument
Objective 3 « Re-balancing and integrating different transport modes »	Freight Transport Corridors	IP
	City Logistics	STREP and CA
	Maritime navigation and information services	IP
	Maritime transport co-ordination platform	CA
Objective 4 « Increasing road, rail and waterborne safety and avoiding traffic congestion »	Accident analysis and injury analysis	IP
	Road infrastructure safety	STREP

9. Minimum number of participants[10]:

Instrument	Minimum number of participants
IP, STREP and CA	3 independent legal entities from 3 different MS or AS, with at least 2 MS or ACC.
SSA	1 legal entity from a MS or AS.

10. Restriction on participation: None.

11. Consortia agreements:
- Participants in IP are required to conclude a consortium agreement.
- Participants in STREP, CA, and SSA resulting from this call are encouraged, but not required, to conclude a consortium agreement.

12. Evaluation procedure:
- The evaluation shall follow a single stage procedure
- Proposals will not be evaluated anonymously.

13. Evaluation criteria: See Annex B of the work programme for the applicable criteria (including their individual weights and thresholds and the overall threshold) per instrument.

14. Indicative evaluation and contractual timetable:
- Evaluation results: estimated to be available within some 3 months after the closure date;
- Conclusion of first contracts: it is estimated that the first contracts related to this call will come into force 8 months after the closure date.

15. Additional terms:

- It is expected that this call should not result in more than 50 to 60 projects

[10] MS = Member States of the EU; AS (incl. ACC) = Associated States; ACC = Associated candidate countries.
Any legal entity established in a Member State or Associated State and which is made up of the requested number of participant may be the sole participant in an indirect action.

Call 2A[11]

1. **Specific Programme**: Integrating and strengthening the European Research Area

2. **Activities**:

- Priority thematic area of research "Aeronautics and Space".
- Priority thematic area of research "Sustainable development, global change and ecosystems". Sub-priority "Sustainable energy systems"
- Priority thematic area of research "Sustainable development, global change and ecosystems". Sub-priority "Sustainable surface transport"

3. **Call title**: Periodic call in the area of "Aeronautics and Space", "Sustainable energy systems" and "Sustainable surface transport".

4. **Call identifier**: [12]

5. **Date of publication**[13]: 17 June 2003.

6. **Closure date(s)**[14]**:** 17 December 2003 at 17.00 (Brussels local time).

7. **Total indicative budget:** 175 million €, broken down as follows
- "Aeronautics and Space": 20 million €
- "Sustainable energy systems": 107 million €
- "Sustainable surface transport": 48 million €

Instrument[15]	€ (millions)
IP	115
STREP or CA	60
SSA	

8. **Areas called and Instruments**:

- Aeronautics and Space

Area	Topic	Instrument
1.3.2 Integrated Focused Downstream Research	Topic 9 (phase 2)	IP
	Topic 10 (phase 2)	IP

- Sustainable energy systems

[11] Note that this call for 'Sustainable surface transport' will form part of a call including elements of 'aeronautics and space' and 'sustainable energy systems'.

[12] The call identifier shall be given in the published version of this call.

[13] The Director-General responsible for the publication of this call may publish it up to one month prior or after its envisaged publication date.

[14] When the envisaged date of publication is either advanced or delayed (see previous footnote), closure date(s) will be adjusted accordingly.

[15] IP = Integrated project; NOE = Network of excellence; STREP = Specific targeted research project; CA = Coordination action; SSA = Specific support action

Area	Topic	Instrument
Section 6.1.3.1.1.2 "Large scale integration of renewable energy sources and energy efficiency"	CONCERTO – Managing energy demand and renewable energy supply in high performance communities	IP
	All	STREP, CA and SSA
Section 6.1.3.1.2.1 "Eco-buildings"	CONCERTO – Managing energy demand and renewable energy supply in high performance communities	IP
Section 6.1.3.1.2.2 "Polygeneration"	CONCERTO – Managing energy demand and renewable energy supply in high performance communities	IP
Section 6.1.3.1.3 "Alternative motor fuels"	Testing implementation and transition strategies for Clean Urban Transport – CIVITAS II	IP and SSA

– Sustainable surface transport

Area	Topic	Instrument
Objective 1 « New technologies and concepts for all surface transport modes (road, rail and waterborne) »	Testing implementation and transition strategies for Clean Urban Transport – CIVITAS II	IP and SSA
Objective 3 « Re-balancing and integrating different transport modes »	Implementation of change in the European Railway System	CA
Objective 4 « Increasing road, rail and waterborne safety and avoiding traffic congestion »	European service for electronic fee collection on roads	IP and/or STREP
	Costs of transport infrastructure use	STREP, CA and/or SSA
	Optimal investments and charging	STREP, CA and/or SSA

9. Minimum number of participants[16]:

Instrument	Minimum number of participants
IP, STREP and CA	3 independent legal entities from 3 different MS or AS, with at least 2 MS or ACC
SSA	One legal entity from a MS or AS.

10. Restriction on participation: None.

11. Consortia agreements:

- Participants in IP are required to conclude a consortium agreement.

[16] MS = Member States of the EU; AS (incl. ACC) = Associated States; ACC = Associated candidate countries.
Any legal entity established in a Member State or Associated State and which is made up of the requested number of participant may be the sole participant in an indirect action.

- Participants in STREP, CA and SSA resulting from this call are encouraged, but not required, to conclude a consortium agreement.

12. Evaluation procedure:
- The evaluation shall follow a single stage procedure
- Proposals will not be evaluated anonymously.

13. Evaluation criteria: See Annex B of the work programme for the applicable criteria (including their individual weights and thresholds and the overall threshold) per instrument.

14. **Indicative evaluation and contractual timetable:**
- Evaluation results: estimated to be available within some 3 months after the closure date;
- Conclusion of first contracts: it is estimated that the first contracts related to this call will come into force 8 months after the closure date.

15. Additional terms:

- It is expected that this call should not result in more than 40 to 50 projects.

Call 1B

1. **Specific Programme**: Integrating and strengthening the European Research Area

2. **Activity**: Priority thematic area of research " **Sustainable Surface Transport**".

3. **Call title**: Thematic call in the area of "Surface Transport 1B".

4. **Call identifier**: [17]

5. **Date of publication**[18]: 17 December 2002.

6. **Closure date(s)**[19]: 3 April 2003 at 17.00 (Brussels local time).

7. **Total indicative budget**: 170 million €, broken down as follows

Instrument[20]	€ (millions)
IP or NOE	120
STREP or SSA	50

8. **Areas called and Instruments**:

Area	**Topic**	**Instrument**
Objective 1 « New technologies and concepts for all surface transport modes (road, rail and waterborne) »	Future generation of clean and economical engines for cars.	IP or NOE (IP preferred)
	Ultra low emissions for marine propulsion	IP or NOE (IP preferred)
	Virtual institute on advanced combustion to develop clean power trains for road transport	IP or NOE (NOE preferred)
	Virtual Centre for technology innovation and knowledge management in the railways sector	IP or NOE (NOE preferred)
	Research domain 1.7 for all surface transport modes	STREP
	Research domains to 1. 4 to 1.10 for all surface transport modes	CA
Objective 2 «Advanced design and production techniques»	Integrated design and manufacturing in shipyards for developing the most competitive production environment in the world	IP or NOE (IP preferred)

[17] The call identifier shall be given in the published version of this call.

[18] The Director-General responsible for the publication of this call may publish it up to one month prior or after its envisaged publication date.

[19] When the envisaged date of publication is either advanced or delayed (see previous footnote), closure date(s) will be adjusted accordingly.

[20] IP = Integrated project; NOE = Network of excellence; STREP = Specific targeted project; CA = Coordination action; SSA = Specific support action

	Enhanced safety and capacity of European railways infrastructure	IP or NOE (IP preferred)
	Enhanced vehicle-infrastructure interaction for an efficient European rail system	IP or NOE (IP preferred)
	Centre of competence for structural analysis of ships with improved safety, environmental behaviour and comfort	IP or NOE(NOE preferred)
	Research domains 2.5, 2.6 and 2.7 for all surface transport modes	STREP
	Research domains to 2.1 to 2.7 for all surface transport modes	CA
Objective 3 « Re-balancing and integrating different transport modes »	Innovative vehicle concepts for the future European rail system	IP or NOE (IP preferred)
	Research domain 3.15 for all surface transport modes	STREP
	Research domains to 3.14 to 3.17 for all surface transport modes	CA
Objective 4 « Increasing road, rail and waterborne safety and avoiding traffic congestion »	Safety for European roads	IP or NOE (IP preferred)
	Virtual Centre of Excellence for enhanced road passive safety	IP or NOE(NOE preferred)
	Research domains 4.11 and 4.14 for the rail and maritime sectors	STREP
	Research domains to 4.11 to 4.16 for all surface transport modes	CA

9. Minimum number of participants[21]:

Instrument	Minimum number of participants
IP, NOE, STREP and CA	3 independent legal entities from 3 different MS or AS, with at least 2 MS or ACC

[21] MS = Member States of the EU; AS (incl. ACC) = Associated States; ACC = Associated candidate countries.
Any legal entity established in a Member State or Associated State and which is made up of the requested number of participant may be the sole participant in an indirect action.

10. Restriction on participation: None.

11. Consortia agreements: Participants in RTD actions resulting from this call are required to conclude a consortium agreement.

12. Evaluation procedure:

- The evaluation shall follow a single stage procedure
- Proposals will not be evaluated anonymously.

13. Evaluation criteria: See Annex B of the work programme for the applicable criteria (including their individual weights and thresholds and the overall threshold) per instrument.

14. Indicative evaluation and contractual timetable:

- Evaluation results: estimated to be available within some 3 months after the closure date;

- Conclusion of first contracts: it is estimated that the first contracts related to this call will come into force 8 months after the closure.

Continuous Call

1. Specific Programme: Integrating and strengthening the European Research Area

2. Activity: Priority thematic area of research "Sustainable Surface Transport ".

3. Call title: Thematic call in the area of "Sustainable Surface Transport Specific Support Actions".

4. Call identifier: [22]

5. Date of publication[23]: 17 December 2002.

6. Intermediary and final closure dates [24]: 03.04.2003 and 19.09.2003, at 17.00 (Brussels local time).

Indicative intermediary and final closure dates of 2004, 2005 and 2006 will be found in the relevant updates of the work programme. The final closure date will be in March 2006.

[22] The call identifier shall be given in the published call for proposals.

[23] The Director-General responsible for the publication of this call may publish it up to one month prior or after its envisaged publication date.

[24] Where the envisaged date of publication is either advanced or delayed (see previous footnote), closure date(s) will be adjusted accordingly in the published call for proposals.

7. Total indicative budget: 5 million € for 2003.

Total indicative budget for 2004, 2005 and 2006 will be given in periodic updates of the work programme.

Instrument[25]	€ (millions)
SSA	5

8. Areas called

Area	Topic	Instrument
All research domains for Research, technological development and integration	Promoting SME participation	SSA
	Stimulating dissemination and exploitation of results	
	Realising the European Research Area	
	Promoting Candidate Countries participation	
	Stimulating international co-operation	

9. Minimum number of participants[26]:

Instrument	Minimum number of participants
SSA	1 legal entity from a MS or AS

10. Restriction on participation: None.

11. Consortia agreements: Participants in RTD actions resulting from this call are required to conclude a consortium agreement.

12. Evaluation procedure:

- The evaluation shall follow a single stage procedure
- Proposals will not be evaluated anonymously.

13. Evaluation criteria: See Annex B of the work programme for the applicable criteria (including their individual weights and thresholds and the overall threshold) per instrument.

14. Indicative evaluation and contractual timetable:

[25] IP = Integrated project; NOE = Network of excellence; STREP = Specific targeted project; CA = Coordination action; SSA = Specific support action

[26] MS = Member States of the EU; AS (incl. ACC) = Associated States; ACC = Associated candidate countries.
Any legal entity established in a Member State or Associated State and which is made up of the requested number of participant may be the sole participant in an indirect action.

- Evaluation results: estimated to be available within some 2 months after the closure date;

- Conclusion of first contracts: it is estimated that the first contracts related to this call will come into force 6 months after the closure date.