



SETRIS PROJECT

DELIVERABLE REPORT

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14	Union Internationale des Chemins de fer	UIC	France
15	Union Internationale des Transports Publics	UITP	Belgium
16	The Association of the European Rail Industry	UNIFE	Belgium
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FOREWORDS

The **Strengthening European Transport Research and Innovation Strategies project (SETRIS)** is a project funded under the European Union (EU)'s Horizon 2020 research and innovation programme, specifically targeted at strengthening the research and innovation strategies of the transport industries in Europe. SETRIS assists the five **European Technological Platforms (ETPs)** to define their common research steps for strategy and aligning of programmes.

The main objectives of **WP1 “Connecting passengers for seamless travel and sustainable mobility”** within SETRIS are:

- To outline challenges that hinder passengers from achieving seamless travel and sustainable mobility (as delivered in D1.1),
- To define a truly integrated **urban** transport system from across related ETPs (as delivered in D1.2),
- To define a truly integrated **long distance** transport system (as delivered in D1.3),
- To review existing EU funded research in roadmapping strategic research and innovation agendas (SRIAs) to achieve a fully connected travel experience, affecting **urban** and **passengers transport modes** (D1.4),
- To review existing EU funded research in roadmapping SRIAs to achieve a fully connected travel experience, affecting **long distance passenger transport modes** (to be delivered in this D1.5);
- To define the necessary steps and actions to be taken by all stakeholders to satisfy the goal of a fully connected travel experience and to identify a design specification for a fully connected travel experience, affecting **urban** and **passengers transport modes** (D1.6 to be delivered in M22), and **long distance passenger transport modes** (D1.7 to be delivered in M22).

TABLE OF CONTENTS:

FOREWORDS	2
TABLE OF CONTENTS:	I
EXECUTIVE SUMMARY	1
TABLE OF TABLES:	2
LIST OF ACRONYMS:	2
1. INTRODUCTION	6
1.1. SCOPE	6
1.2. STRUCTURE AND METHODOLOGY	7
1.3. EXPECTED IMPACTS	8
2. ACARE	9
2.1. FP7 CAPPADOCIA (2013-2017)	10
2.2. FP7 CATER (2013-2017).....	11
2.3. FP7 OPTICS (2013-2017)	11
2.4. FP7 FORUM-AE (2013-2017).....	12
2.5. FP7 CORE-JETFUEL (2013-2016).....	13
2.6. FP7 GRAIN 2 (2013-2016).....	14
2.7. FP7 X-NOISE EV (2010-2015)	14
2.8. FP7 AERA – PRO (2012-2013).....	15
2.9. FP7 NEARS (2011-2012)	16
3. ERRAC	16
3.1. FP7 FOSTER RAIL (2013-2016)	17
3.2. FP7 ERRAC ROAD MAP (2009-2012).....	18
4. ERTRAC	19
4.1. FP7 FOSTER-ROAD (2013-2016).....	20
4.2. FP7 CAPIRE (2010-2014)	21
4.3. FP7 SAFIER (2009-2012).....	21
5. WATERBORNE	22
5.1. FP7 MESA (2013-2016).....	23
5.2. FP7 CASMARE (2009-2012)	24
6. JOINT APPROACHES	25
6.1. FP7 AWT (2013-2016).....	25
6.2. FP7 TRANSFORUM (2013-2015)	27
7. CONCLUSION AND RECCOMENDATION	27
8. REFERENCES	30

EXECUTIVE SUMMARY

The SETRIS project supports a holistic update of the research and innovation strategies, started by CSA funded EU projects supporting SRIA roadmapping activity, derived by surface transport roadmapping clusters (e.g. FOSTER RAIL and FOSTER ROAD). The scope of this Deliverable is (passenger) **long distance transport**. D1.5 is the twin SETRIS WP1 Deliverable with D1.4 which has scope to cover both private and public urban transport. The D1.5 agenda for long distance transport is much more suited to **public (mass) transport**, though private long distance would be mostly road based and so would very much depend on the road based governance. On the other hand, there is a target to shift the road transport to other modes, e.g. the rail sector, for both passengers and freight transport, so it is expected to have a greater quantity of movements and a better balanced scenario concerning the whole long-distance modes.

This Deliverable, D1.5, aims to explore advancements/changes in the past 5 years aimed at developing the different SRIAs related to long distance passenger transport. The focus is on collecting EU funded projects that contribute to the SRIA development. We conclude that for surface transport ETPs (ERRAC, ERTRAC, and WATERBORNE) very similar roadmapping activity is being carried out and there is a single CSA to support this roadmapping activity. By contrast the non-surface transport sector (ACARE) tends to be funded by CSA projects which specifically address thematic issues such as cost, time, safety, emissions, and alternative fuels.

The latest development of the surface transport ETPs roadmapping activity is a move towards joint ETPs' collaboration to address mutual problems which can only be addressed by cooperation, for example, the roadmap on Urban Mobility. There is, however, no evidence for a similar level of impact yet in long distance transport, though the non-surface transport sector has already specifically addressed the door-to-door theme that could encourage other ETPs to contribute to the roadmap for long distance transport. Formalized joint roadmapping activities cross ETP could be beneficial to achieve this through, for example inviting surface transport ETPs to contribute to the ACARE door-to-door service (time efficiency) cluster consultation process, and explicitly targeting improvement of the road and potentially –water –rail interface which has been lacking previously.

TABLE OF TABLES:

Table 1 Summary of FP7 funded CSA towards ACARE roadmapping activities	9
Table 2 Summary of FP7 funded CSA towards ERRAC roadmapping activities.....	17
Table 3 Summary of FP7 funded CSA towards ERTRAC roadmapping activities.....	19
Table 4 Summary of FP7 funded CSA towards WATERBORNE roadmapping activities.....	22
Table 5 Cross ETP modal collaboration derived from SETRIS D1.1 (2015a).....	25
Table 6 Summary of the four ETPs SRIA roadmapping challenges, enablers and targets	28

LIST OF ACRONYMS:

AAT	Aeronautics and Air Transport
ACARE	Advisory Council for Aviation Research and Innovation in Europe
ACMARE	Co-ordination Action to Implement an Advisory Council for Maritime Transport Research in Europe
AERA-PRO	Aeronautics and air transport European Research Agenda - Promotion
AG	Aktiengesellschaft (Swiss-German: stock corporation)
ALICE	Alliance for Logistics Innovation through Collaboration in Europe
Asbl	Association Sans But Lucratif (French: Non-Profit Organization)
BV	Besloten Vennootschap (Dutch: Limited liability company)
BVBA	Besloten Vennootschap met Beperkte Aansprakelijkheid (Flemish: private limited company)
CEREMA	Centre d etudes et d expertise sur les risques l environnement la mobilite et l aménagement (French: Centre for studies and expertise on the risks, the environment, mobility and development, Ministry of Ecology, Sustainable Development and Energy)
CESA	Community of European Shipyards' Associations
CAPIER	Coordination Action on PPP Implementation for Road-Transport Electrification
CAPPADOCIA	Coordination Action Pro Production Avionics Design on Cost-efficiency in Aeronautics
CASMARE	Coordination Action to maintain and further develop a Sustainable Maritime Research in Europe
CATER	Coordinating Air Transport Time Efficiency Research
CER	Community of European Railway and Infrastructure Companies
CORDIS	Community Research and Development Information Service
CORE-JETFUEL	Coordinating research and innovation of jet and other sustainable aviation fuel
CSA	Coordination and Support Action
DB	Deutsche Bahn (German: German Railway Company)
dd	Delniska druzba (Slovenian: stock company)
DG MOVE	Directorate General Mobility and Transport
DNV GL	Det Norske Veritas (Norway) and Germanischer Lloyd (German) (Certification body)

DLR	DEUTSCHES ZENTRUM FUER LUFT - UND RAUMFAHRT EV (German: German Aerospace Center, the national center for aerospace, energy and transportation research of the Federal Republic of Germany)
EBU	EUROPESE BINNENVAART UNIE (Dutch: European Barge Union)
EC	European Commission
ECATS	Environmentally Compatible Air Transport System
ECMAR	European Council for Maritime Applied R&D Association
ECSA	European Community of Shipowners' Association
ECTAA	European Community Travel Agents Association
EPF	European Passengers' Federation
ERRAC	European Rail Research Advisory Council
ERTICO	European Road Transport Telematics Implementation Coordination Organisation S.C.R.L
ERTRAC	European Road Transport Research Advisory Council
ETP	European Technology Platform
EU	European Union
EV	Eingetragener Verein (German: Non profit association)
FEHRL	Forum des Laboratoires Nationaux Europeens de Recherche Routiere (French: Forum of European National Highway Research Laboratories)
FP	Framework Programme
FSG	Flensburger Schiffbau-Gesellschaft mbH & Co KG
FORUM-AE	Forum on Aviation and Emissions
FOSTER RAIL	Future of Surface Transport Research Rail
FOSTER-ROAD	Future of Surface Road Transport European Research
GmbH	Gesellschaft mit beschränkter Haftung (German: Limited company)
GRAIN	Greener Aeronautics International Networking
H2020	European Union Framework Programme for Research and Innovation
HSVA	HAMBURGISCHE SCHIFFBAU-VERSUCHSANSTALT GMBH
IATA	the International Air Transport Association
ICOMIA	International Council of Marine Industry Associations
IFPEN	IFP Energies Nouvelles (French: a public sector research and training center)
IP	Innovation Programme (in Shift2Rail)
ISDEFE	INGENIERA DE SISTEMAS PARA LA DEFENSA DE ESPANA SA (Spanish: Engineering Systems for the Defence of Spain, State own company)
KG	Kommanditgesellschaft (German: partnership under legal name)
LLP	Limited Liability Partnership
Ltd	Limited company
MARIN	Stichting Maritiem Research Instituut Nederland (Maritime Research Institute Netherlands)

MESA	Maritime Europe Strategy Action
MMITS	Multimodal Information and Ticketing Systems
NEARS	New European Aviation Research Strategy
ONERA	Le centre français de recherche aérospatiale (French: French National Aerospace Research Centre)
OPTIC	Observation Platform for Technological and Institutional Consolidation of Research in Safety
Plc	Public Limited Company
POLIS	Promotion of Operational Links With Integrated Services, Association Internationale (European Cities and Regions Networking for Innovative Transport Solutions)
PPP	Public Private Partnership
RATP	Regie Autonome des Transports Parisiens (French: Paris Public Transport Authority)
R&D	Research and Development
R&I	Research and Innovation
RDI	Research, Development and Innovation
RFI	RETE FERROVIARIA ITALIANA (Italian: Italy's Railway Network)
RIA	Research and Innovation Action
SA	Société Anonyme (French/Spanish: corporation)
Sarl	Société à responsabilité limitée (French: private company)
SAS	Società in Accomandita Semplice (Italian: Limited partnership)
SAFIER	Support Action for Implementation of ERTRAC's Road Transport Research Priorities
SENASA	Servicios Y Estudios Para la Navegacion Aerea y la Seguridad Aeronautica SA (Spanish: Services and Studies for Air Navigation and Aeronautical Safety)
SESA	Single European Sky Air Traffic Management Research
SETRIS	Strengthening European Transport Research and Innovation Strategies
Shift2Rail	the joint undertaking for rail research and innovation
SL	Sociedad Limitada (Spanish: Limited company)
SME	Small and Medium Enterprise
SNCF	Société nationale des chemins de fer français (French: National society of French Railways)
SNECMA	Société nationale d'études et de construction de moteurs d'aviation (French: National Company for the Design and Construction of Aviation Engines)
SpA	Società Per Azioni (Italian: shared company)
SRA	Strategic Research Agenda
SRIA	Strategic Research and Innovation Agenda
Srl	Società a Responsabilità Limitata (Italian: Limited liability company)
SRRRA	Strategic Rail Research Agenda
SRRRIA	Strategic Rail Research and Innovation Agenda
TAG	Transport Advisory Group (European Commission initiative to address Horizon 2020 Framework on Transportation Research Challenges)

TFL	Transport for London
TP	Technology Platform
TRA	Transport Research Arena
Trafikverket	Swedish: Swedish Transport Administration
TRIP	Transport Research & Innovation Portal
UIC	Union Internationale des Chemins de fer (French: International Union of Railways)
UITP	Union Internationale de Tramways/Internationaler Permanenter Strassenbahn-Verein (French: International association of public transport)
UNIFE	Union des Industries Ferroviaires Européennes (French: Professional association for the railway supply industry)
WEGEMT	A European Association of Universities in Marine Technology and related Sciences
WG	Working Group
WP	Work Package
WSRA	WATERBORNE Strategic Research Agenda
X-NOISE EV	Aviation Noise Research Network and Coordination

1. INTRODUCTION

1.1. SCOPE

There is a need to research the most appropriate ways in which to fully realise the future potential of transport services in general and therefore it is important to take a broad vision that emphasizes the likely interactions between transport modes. The vision would ideally address not only the technical (i.e. physical) aspect but also the structural/governmental and financial aspects (i.e. political, economic and operational) as concluded in the review of the ETPs' roadmap reports described in SETRIS D1.1 (2015a). This Deliverable focuses on understanding how to improve roadmapping Strategic Research and Innovation Agendas (SRIAs) across multiple Transport European Technology Platforms (ETPs), through reviewing and monitoring the progress and development of the SRIAs.

Whilst the scope of the urban sector is addressed in D1.4 (2016), the scope of D1.5 is limited to the **long distance passenger transport sector**. The Transport Advisory Group (TAG) report (McKinnon et al., 2014) argues (chapter "Conceptual framework for our review of the challenges¹") for the necessity of improving the integration between urban and inter-urban transport. As the actors are not common, the SETRIS structure aims to bridge the gap of both types of transport to be integrated, into a single system, through independent analysis. While SETRIS D1.4 is set within the first (urban) transport step, SETRIS D1.5 aims to address the second (inter-urban) transport step.

The **integration of long-distance transport** (air, water and surface land modes) and **short distance transport** should be seen as the missing part of a complete passenger and freight transport system.

To achieve the most practical and pertinent results this Deliverable is focused on the past 5 years. Going back any further would be extremely time-consuming and not necessarily produce more reliable results as financial and structural opportunities change frequently. External financing opportunities and structures may change frequently. A 5 year window facilitates the analysis of an updated financial structure, as well as an opportunity to assess current challenges and priorities in the structure of the Strategic Research and Innovation Agendas (SRIAs).

The research, development and innovation chain is not always restricted to the SRIAs although the main activities are encompassed within these visions.

- SRIAs are the outcome of a consensus among all stakeholders in a sector but individual entities could have their own priorities.
- The European Research and Innovation Programme (currently Horizon 2020) has the potential to greatly impact and enhance the main European research and innovation activities by defining common goals and targets in the European sector. With the size of the budgets involved (e.g. €80 billion for H2020), it is clear that the impact of such programmes is going to be significant;
- Furthermore, the new European Research and Innovation Programme (Horizon 2020) promises to trigger further breakthroughs in the knowledge and technologies available;

The importance of developing and updating the SRIAs, within the context of the framework is vital if their role within the research and innovation arena is to be realized and if they are to meet the expectations of H2020 for a stronger and more efficient European market. It is important to realize that SRIAs and H2020 can be aligned if a good understanding between the main actors involved in the process takes place. Robust collaboration will lead to a stronger and more efficient European transport sector.

¹ Consultation of the Horizon 2020 Advisory Groups - Response of the Transport Advisory Group; June 2014; Page 7

Since the objective of D1.5 is to collect EC-funded research contributions to roadmapping of long distance transport, the **Transport Research & Innovation Portal (TRIP)**² website platform was used to collect the EU related projects. Key words such as the ETP transport abbreviation, i.e. ACARE, ERRAC and ERTRAC were used to produce list of projects or related activities logged by the EU research and innovation stakeholders. One of the key characteristics of these types of projects, addressing the strategic research and innovation framework, is using '**Coordination and Support Action, CSA**' instead of Research and Innovation Action (RIA) as their instrument, facilitating a narrower search base. Another website platform: **Community Research and Development Information Service (CORDIS)**³ was also used to validate the funded projects reported in TRIP.

1.2. STRUCTURE AND METHODOLOGY

In accordance with SETRIS D1.4 (2016) (the twin document of this D1.5), this deliverable is structured as follows: chapter 3, 4 and 5 summarise the air, rail, road and waterborne SRIAs developments respectively, based on the same schema including i) **challenges**, ii) **enablers** and iii) **targets** (Figure 1) with special attention to EU funded projects supporting the European Technology Platform (ETP) for transport roadmapping activities.

- **Challenges:** Need to be solved by the updating of the SRIAs;
- **Enablers:** Specific measures and financial opportunities supporting the SRIAs development as well as practical and cost-effective solutions faced by the SRIAs. Within D1.4 and D1.5 the enabler criteria is research co-funded by the European Commission and completed in the past 5 years;
- **Targets:** Specific objectives to be achieved with the help of one or more enablers, in order to address one (or more) challenges.

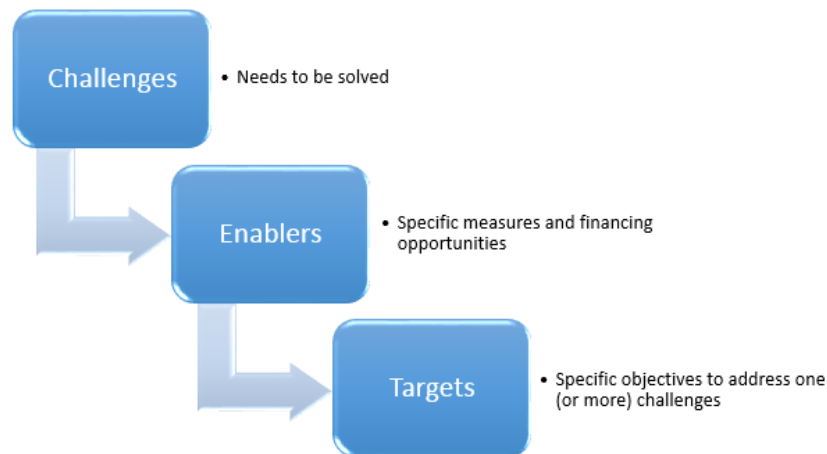


Figure 1: Challenges, enablers and targets

² www.transport-research.info

³ <http://cordis.europa.eu>

1.3. EXPECTED IMPACTS

When assessing previous EU funded research towards roadmapping SRIAs activities, some important and specific observations were made to gain a better understanding of addressing the general SETRIS strategic objective. Aspects for consideration include:

- Assessment of complementary and consistency levels of the SRIAs across different transport sector ETPs;
- Assessment of the relationship between challenges and possibilities;
- A clearer idea of the strengths and weaknesses of the SRIAs update process via:
 - o Identification of the policy context based on EU funded projects aimed at the update of the SRIAs: characterization, developments and impacts;
 - o Key lessons from the implementation phase of such schemes. Enablers and barriers;
 - o Clear identification of the critical changes required to address the SETRIS challenges.
- A common realigned strategy, based on a reinvigorated innovation strategy via:
 - o A clear statement about ACARE's 4 hours door-to-door goal (SRIA service, time efficiency goal), considering the other ETPs perspectives and vision;
 - o Facilitating a joint ETP collaboration addressing (passenger) long distance transport SRIA.

As a result of this assessment, credible joint implementation opportunities and plans can be developed.

2. ACARE

Table 1 Summary of FP7 funded CSA towards ACARE roadmapping activities

Year	SRIA	Added value	Involved stakeholders
2013-2017	Cost efficiency in aeronautics (FP7 CAPPADOCIA)	On-going CSA for specific aviation theme in supporting SRIA development	8 partners: 3 SMEs, 4 large industrials; 2 R&D; 1 aeronautical and air transport (AAT) cluster/association
2013-2017	Time efficiency in aviation (FP7 CATER)	On-going CSA for specific aviation theme in supporting SRIA development	8 partners: 3 SMEs, 2 large industrials, 2 R&D, 1 airport authority
2013-2017	Safety and security in aviation (FP7 OPTICS)	On-going CSA for specific aviation theme in supporting SRIA development	10 partners: 3 SMEs, 1 large industrial, 4 R&D, 2 AAT associations
2013-2017	Aviation environmental concerns and emissions (FP7 FORUM-AE)	On-going CSA for specific aviation theme in supporting SRIA development	16 partners: 3 SMEs, 5 large industrials, 4 R&D, 2 AAT associations, 1 airport, 1 public authority
2013-2016	Alternative fuels in the aviation industry (FP7 CORE-JETFUEL)	On-going CSA for specific aviation theme in supporting SRIA development	6 partners: 1 SME, 2 public authority agents, 3 R&D
2013-2015	International joint research collaboration towards sustainable aviation (FP7 GRAIN 2)	Exploring opportunities and stimulating cooperation in research and innovation in China	24 partners: mainly Universities in developed EU (R&D centres); a few large industrials
2010-2015	Acoustics in aviation (FP7 X-NOISE EV)	SRIA development support for specific theme	28 partners: majority of universities (R&D); public/national aviation agencies, consultancies and a few large industrials
2012-2013	Orchestrating dissemination of the result of the SRA's aviation sector consultation process – engaging key stakeholders and beyond (FP7 AERA - PRO)	Visibility of ACARE roadmaps	2 partners: 1 consultant and 1 R&D
2011-2012	Consultation process to the updating of SRA in aviation (FP7 NEARS)	Establishing roadmapping mechanism for ACARE	3 partners: 1 R&D, 1 association, and 1 consultant

ACARE, the ETP for air transport was formed in 2001 as a result of the need to develop and maintain a strategic research agenda for European aeronautics. Interest from a number of EU key stakeholders, including Member States and the European Commission (EC) resulted in the Flightpath 2050 EC Vision for Aviation report (European Commission, 2011). Since the launch of ACARE, a number of Working Groups (WG) were formed functioning as the points of contact in respect to SRIAs development. A number of key ACARE EU projects were identified through the Transport Research & Innovation Portal (TRIP) website platform. Table 1 summarises collected EC funded projects from the past 5 years which contributed to the development of ACARE SRIA roadmaps. There are 4 on-going CSA funded projects dedicated to addressing particular themes of the EU aviation sector: cost efficiency, time efficiency, safety and security, and environmental and emissions. Each project is briefly described in the following sub-sections.

All of the projects listed in Table 1 have clearly addressed key issues identified in SETRIS D1.1 where the political, governance, economic and operational aspects of research and innovation activities are lacking in the roadmap developed by the transport ETPs.

2.1. FP7 CAPPADOCIA (2013-2017)

Coordination Action Pro ‘Production, Avionics, Design’ on Cost-efficiency in Aeronautics (CAPPADOCIA project)⁴

Goal: Assessing past, on-going, and future EC funded projects (research activities that mainly address the ACARE goals) focused on *cost efficiency in aeronautics*; and identifying gaps and bottlenecks within the targeted research landscape.

Programme call: FP7-TRANSPORT – Coordinating research and innovation in the field of Aeronautics and Air Transport.

Duration: 48 months (Oct 2013 – Sep 2017)

Budget: €1.6 million; EC contribution: €1.2 million

Coordinator: Efficient Innovation SAS (French based consulting firm)

Partners:⁵ Airbus Helicopters (DE); Airbus Operations (FR); Easn Technology Innovation Services (BE); Centro Italiano Ricerche Aerospaziali (IT); Aernova Aerospace (ES); Aerospace Valley (FR); Tusas-Turk Havacilik Ve Uzay (TR); National Aerospace Lab (NL); Institutul National de Cercetari Aerospatiale Elie Carafoli (RO).

Reason to submit in this call: Following a number of high level group reports on Aviation research which formulated Aeronautics and Air Transport (AAT) challenges (which refer to ACARE Vision 2020) and a new strategic research and innovation agenda (SRIA) (which refer to Flightpath 2050), numerous projects were funded on a cost-efficiency topic accordingly, with objectives targeted in ACARE SRAs. CAPPADOCIA responds specifically on cost-efficiency in which a scope analysis has been defined through: design systems and tools, production and avionics.

Final advantages and impact: This is an on-going project, but from the news section of the live project website, a number of events, such as meetings and workshops were announced that demonstrate engagement of key stakeholders in addressing multiple AAT issues. From the first

⁴ <http://cappadocia-fp7.eu/>

⁵ http://cordis.europa.eu/project/rcn/110485_en.html

periodic report summary⁶, CAPPADOCIA expects to contribute to the European aeronautical strategy SRA2 (predecessor of SRIA) defined by ACARE and subsequently the Flightpath 2050 (published in 2011), and the newly published SRIA (ACARE, 2012). The potential impact is a yearly strategic recommendation paper (report, brochure) mostly devoted to concerned research policy makers.

2.2. FP7 CATER (2013-2017)

Coordinating Air transport Time Efficiency research (CATER project)⁷

Goal: To be a research and innovation observatory and policy centre run by an expert group with in-depth industry knowledge, access to a network of all relevant organisations, and excellent information gathering and knowledge management processes and tools. The CATER focus is *time efficiency in aviation*, meaning reduced door-to-door journey times, seamless inter-modal connections and reliability.

Programme call: FP7-TRANSPORT – Coordinating research and innovation in the field of Aeronautics and Air Transport.

Duration: 48 months (Oct 2013 – Sep 2017)

Budget: €1.3 million; EC Contribution: €1.2 million

Coordinator: Finmeccanica (was Selex ES) (Italian based high-tech (aerospace, defense and security) sectors)

Partners:⁸ ICTS Ltd. (Security Service Provider) (UK); Transylvania Tirgu-Mures International Airport (RO); ISDEFE (ES); ONERA (FR); Altran AG (CH); Ciaotech Srl. (IT); EASN Technology Innovation Services BVBA (BE).

Reason to submit in this call: Europe, through the High Level Group on Aviation Research, ACARE and the Commission, has a vision for air transport in meeting societal and market needs over the coming 30 years. Central to this is time efficiency, meaning reduced door-to-door journey times, seamless inter-modal connections and reliability. CATER aims to deliver valuable and insightful reports and recommendations, packaged and disseminated effectively through annual reviews of state-of-the-art Research and Innovation specifically targeting the landscape of the six activities of ACARE SRIA.

Final advantages and impact: This is an on-going project.

2.3. FP7 OPTICS (2013-2017)

Observation Platform for Technological and Institutional Consolidation of research in Safety (OPTICS project)⁹

Goal: To provide an oversight of progress in research and innovation aimed at improving *safety and security of aviation* in accordance with Flightpath 2050 challenges and goals, exploiting as far as possible the identified metrics, achievements, main topic areas and broad industry knowledge and expertise base established in the development industry's SRIA.

⁶ http://cordis.europa.eu/result/rcn/176048_en.html

⁷ <http://www.cater-transport-time-efficiency.eu/>

⁸ http://cordis.europa.eu/project/rcn/110533_en.html

⁹ <http://www.optics-project.eu/>

Programme call: FP7-TRANSPORT – Coordinating research and innovation in the field of Aeronautics and Air Transport.

Duration: 48 months (Sep 2013 – Aug 2017)

Budget: €1.5 million; EC Contribution: €1.2 million

Coordinator: EUROCONTROL (Belgium based international organisation of pan-European Air traffic Management network, composed of EU Member States)

Partners:¹⁰ Deep Blue Srl (IT); Centro Italiano Ricerche Aerospaziali (IT); National Aerospace Lab (NL); Rolls Royce Plc (UK); European Aviation Safety Agency (DE); Bauhaus Luftfahrt EV (DE); ONERA (FR); Centro para el desarrollo tecnologico industrial (ES); DLR (DE)

Reason to submit in this call: OPTICS is addressing the safety-oriented research landscape in aviation through implementing sustainable processes supporting stakeholders with strategic recommendations and a comprehensive vision. The project is using a reference base and methodologies to perform assessment of progress both from a technological perspective and from the societal and economic perspective.

Final advantages and impact: This is on-going project, and similar to CAPPADOCIA (on cost efficiency for aviation) and CATER (on time efficiency for aviation) where stakeholder engagement is facilitated and communication channels established to disseminate news and events such as SRIA announcements by national authorities or newly launched research. All these were evident from the website demonstrating the AAT sector capability for monitoring Research and Innovation. From the first periodic report¹¹, OPTICS reported on the assessment of 44 FP7 projects that have improvement of aviation safety as their primary objective. OPTICS has also reported on expert workshops conducted with a focus on Human Factors. Additionally, OPTICS will extend its current analysis to include SESAR, Clean Sky and Horizon2020, national projects and international projects.

2.4. FP7 FORUM-AE (2013-2017)

FORUM on Aviation and Emissions (FORUM-AE project)¹²

Goal: To provide a technical and scientific forum addressing all the issues associated with *aviation environmental concerns linked to emissions*: impacts, technical solutions and regulation. The methodology offered is series of focused workshops aimed at better understanding impacts; at identifying the potential technical and technological solutions, their expected benefits and maturity and at addressing technical regulatory issues. FORUM-AE monitors and assesses EU research and innovation in the field of aviation environmental issues linked to emissions by compiling relevant information from all existing EU projects and the main national ones, and then making assessments against the ACARE environmental goals.

Programme call: FP7-TRANSPORT – Coordinating research and innovation in the field of Aeronautics and Air Transport.

Duration: 48 months (Jul 2013 – Jun 2017)

Budget: €1.5 million; EC Contribution: €1.2 million

Coordinator: SNECMA SAS (French based aircraft and rocket engine manufacturer)

¹⁰ http://cordis.europa.eu/project/rcn/108973_en.html

¹¹ http://cordis.europa.eu/result/rcn/168911_en.html

¹² <http://www.forum-ae.eu/>

Partners:¹³ Manchester Metropolitan University (UK); Lufthansa AG (DE); Flughafen Zuerich AG (CH); Airbus SAS (FR); ECATS International Association Aisbl (BE); National Aerospace Lab (NL); Rolls Royce Plc (UK); Servicios Y Estudios Para la Navegacion Aerea y la Seguridad Aeronautica SA (SENASA) (ES); ONERA (FR); DLR (DE); Rolls Royce Deutschland Ltd (DE); IFPEN (FR).

Reason to submit in this call: FORUM-AE is addressing equitably three complementary aspects: environmental impact (air quality and climate change), technical and technological mitigation solutions (aircraft, engine, operations, alternative fuels) and regulatory technical issues (CAEP issues, local regulations).

Final advantages and impact: Not completely known yet as this is an on-going project, but similar to CAPPADOCIA (on cost efficiency for aviation), CATER (on time efficiency) and OPTICS (on safety). Stakeholder engagement is facilitated and communication channels established to disseminate news and events such as SRIA announcements by national authorities or newly launched research. All these were evident from the website demonstrating the AAT sector capability for monitoring of Research and Innovation. From the first periodic report (http://cordis.europa.eu/result/rcn/171301_en.html), FORUM-AE reported on 7 dedicated workshops discussing aviation environmental impact as its primary objective. FORUM-AE reported after 18 months that the project:

- Has reinforced awareness of the FORUM-AE community on key environmental issues linked to air transport;
- Has provided robust status and research priority recommendations in the field of environmental impact (air quality, climate change); mitigation solutions (aircraft technology, ATM and flight optimization, alternative fuels); and regulatory issues (CO₂, particles, NOx, etc.)

2.5. FP7 CORE-JETFUEL (2013-2016)

Coordinating research and innovation of jet and other sustainable aviation fuel (CORE-JetFuel project)¹⁴

Goal: to evaluate the research and innovation 'landscape' in order to develop and implement a strategy for sharing information, for coordinating initiatives, projects and results and to identify needs in research, standardization, innovation/deployment, and policy measures at a European level. CORE-JetFuel is addressing *alternative fuels in the aviation industry* for a number of ecological and economic reasons.

Programme call: FP7-TRANSPORT – Coordinating research and innovation in the field of sustainable alternative fuels for aviation.

Duration: 36 months (Sep 2013 – Aug 2016)

Budget: €1.5 million; EC Contribution: €1.2 million

Coordinator: Fachagentur Nachwachsende Rohstoffe EV (German based coordinating institution for research, development and demonstration projects in the field of renewable resources)

Partners:¹⁵ SENASA (ES); Bauhaus Luftfahrt EV (DE); Wirtschaft und Infrastruktur GmbH & Co Planungs KG (WIP) (DE); IFPEN (FR); AIRBUS Group SAS (FR).

¹³ http://cordis.europa.eu/project/rcn/110283_en.html

¹⁴ <http://www.core-jetfuel.eu/default.aspx>

Reason to submit in this call: For a number of ecological and economic reasons, the aviation industry is currently in great need of alternative fuels. Highly ambitious goals for the reduction of the sector's overall greenhouse gas emissions, set from industry and politics, imply sustainable alternative fuels as a major contribution and requires research and innovation efforts in order to develop pathways for an economically feasible large-scale production of such fuels for aviation.

Final advantages and impact: CORE-JetFuel embraces the entire alternative fuel production chain in four domains: (1) feedstocks and sustainability; (2) conversion technologies and radical concepts; (3) technical compatibility, certification and deployment; (4) policies, incentives and regulation. Impacts the project may bring are enhanced knowledge of decision makers, support for maintaining coherent research policies and the promotion of a better understanding of future investments in aviation fuel research and innovation in alignment with the ACARE and SRIA as well as TAG goals of future emission reduction in aviation.

2.6. FP7 GRAIN 2 (2013-2016)

Greener Aeronautics International Networking-2 (GRAIN 2)¹⁶

Goal: The GRAIN 2 project is a joint research effort for sustainable aviation supported by the European Commission and Ministry of Industry and Information Technology of the Republic of China.

Programme call: FP7-TRANSPORT – Exploring opportunities and stimulating cooperation in research and innovation with China

Duration: 24 months with 7 months extension (Oct 2013 – May 2016)

Budget: €0.5 million; EC Contribution: €0.5 million

Coordinator: International Centre for Numerical Methods in Engineering (Research organization part of Technical University of Catalonia, Barcelona)

Partners:¹⁷ Mainly universities and higher education institutions across EU.

Reason to submit in this call: Coordination (or networking) action call to reduce greenhouse emissions, noise and local air quality issues derived from the aviation sector globally (as part of ACARE's SRIA)

Final advantages and impact: Workshop collaborations between European and Chinese academic and industry aviation sectors.

2.7. FP7 X-NOISE EV (2010-2015)

Aviation Noise Research Network and Coordination (X-NOISE EV Project)¹⁸

Goal: The X-NOISE EV project was a collaborative network project in the area of *aero acoustics*. The objective was to lower the exposure of the community to aircraft noise through research coordination and disseminations.

Programme call: FP7-TRANSPORT – Flight physics and Airports

¹⁵ http://cordis.europa.eu/project/rcn/108976_en.html

¹⁶ <http://www.cimne.com/grain2/>

¹⁷ http://cordis.europa.eu/project/rcn/110641_en.html

¹⁸ <http://xnoise.eu/home/>

Duration: 36 months with 10 months extension (Dec 2010 – Sep 2015)

Budget: €2.2 million; EC Contribution: €2.0 million

Coordinator: SNECMA SAS (French based aircraft and rocket engine manufacturer)

Partners:¹⁹ Rolls Royce plc (UK); ANOTEC Consulting SL (ES); National Aerospace Lab (NL); Manchester Metropolitan University (UK); Airbus Operation SAS (FR); DLR (DE); ONERA (FR); To70 BV (NL); GFIC Sarl (FR); University of Southampton (UK); ALENIA Aermacchi SPA (IT); Creo Dynamics AB (SE); TsAGI (RU); MSC Software (BE); Instytut Lotnictwa (PL); Romanian R&D Institute for Gas Turbine (COMOTI) (RO); Ecole Polytechnique Lausanne (CH); Integrated Aerospace Sciences Corporation (INASCO) (GR); Budapest University of Technology and Economics (HU); Czech Technical University in Prague (CZ); Vilnius Gediminas Technical University (LT); Trinity College Dublin (IE); Instituto Superior Tecnico (PT); National Aviation University (UA); Ain Shams University (EG); Universidade Federal De Santa Catarina (BR); Safran Engineering Services (FR).

Reason to submit in this call: Coordination (or networking) action call involving experts groups, scientific workshops, international cooperation seminars and a common information system, addresses the noise challenges faced by the aviation sector.

Final advantages and impact: X-NOISE EV reported in its final brief that the project has successfully formed an important pillar of the EU's research agenda to make noise reduction associated with air travel a priority²⁰. The network formed ensures that research efforts will be well coordinated for maximum impact.

Technical recommendations consistent with previous EU funded projects (AGAPE/OPTI) through reviewed case studies²¹.

2.8. FP7 AERA – PRO (2012-2013)

Aeronautics and air transport European Research Agenda – Promotion (AERA – PRO project)

Goal: AERA - PRO was the continuation of the FP7 NEARS project which developed a strategic research agenda for a 2030+ horizon for the European aviation sector through ACARE. In particular AERA – PRO's aim was in *orchestrating a dissemination campaign* matching expectations in transforming the strategic research agenda into a well-known reference document for all the ACARE stakeholders and beyond.

Programme call: FP7-TRANSPORT – Supporting the organization of conferences and events of special relevance to AAT research.

Duration: 13 months (Jan 2012 – Mar 2013)

Budget: €0.3 million; EC Contribution: €0.3 million

Coordinator: AeroSpace and Defence Industries Association of Europe - ASD (Association of civil aviation, space, security and defence industries in Europe based in Belgium)

Partners:²² Minerva Consulting and Communication (BE); and DLR (DE)

¹⁹ http://cordis.europa.eu/project/rcn/97238_en.html

²⁰ http://cordis.europa.eu/result/rcn/90632_en.html

²¹ http://cordis.europa.eu/result/rcn/149346_en.html

²² http://cordis.europa.eu/project/rcn/100186_en.html

Reason to submit in this call: Continuation of FP7 NEARS project. Coordination and support action to disseminate the (then) release of AAT vision beyond 2020 and towards 2050; and supporting the development of SRA based on the vision through involvement and consultation of all major AAT stakeholders through the former FP7 NEARS project.

Final advantages and impact: Visibility of ACARE SRIA. The full report²³ is well documented.

Open issues to be solved: Maximizing impact to ensure that Europe continues to maintain its leading position at the forefront of aeronautical research.

2.9. FP7 NEARS (2011-2012)

New European Aviation Research Strategy (NEARS project)

Goal: NEARS aimed to provide driving support to *the development of a strategic agenda for research* in the European aviation sector for a 2030+ horizon. In particular, to initiate and to execute the involvement and consultation of all major stakeholders of the aviation sector for the development of the agenda.

Programme call: FP7-TRANSPORT – Updating the strategic agenda for AAT research in Europe.

Duration: 21 months (Jan 2011 – Sep 2012)

Budget: €0.6 million; EC Contribution: €0.5 million

Coordinator: DLR (German national aeronautics and space research centre)

Partners:²⁴ Aerospace and Defense industries association of Europe (BE); and AD Cuenta BV (NL).

Reason to submit in this call: In 2001, the Group of Personalities, initiated by then-EC Commissioner Philippe Busquin, presented their Vision 2020 on the future of air transport and the resulting challenges for European research. This report was the impetus for founding the Advisory Council for Aeronautical Research in Europe (ACARE), which published the Strategic Research Agendas SRA 1 (2002), SRA 2 (2004) and a 2008 Addendum to SRA 2. NEARS project attempted to address coordination and support action calls to support the development of a strategic agenda for research in Europe for ACARE vision beyond 2030 horizon.

Final advantages and impact: NEARS reported in its final brief that the project has successfully supported the preparation of ACARE SRIA through 4 consecutive steps: (1) stakeholder engagement preparations; (2) enabling working groups to address goals set by Flightpath 2050; (3) assembled the different views and contributions from these working groups and drafted the new SRA; and (4) reporting the new findings (see attached full report²⁵). NEARS had successfully established a roadmapping mechanism for developing ACARE roadmaps.

Open issues to be solved: Continuation of the roadmapping activity through working groups.

3. ERRAC

²³ http://cordis.europa.eu/result/rcn/57972_en.html

²⁴ http://cordis.europa.eu/project/rcn/97838_en.html

²⁵ http://cordis.europa.eu/result/rcn/55980_en.html

ERRAC, the ETP for rail transport (from conventional, high speed and freight applications to urban and regional services) was conceived as a single European body with both the competence and capability to help revitalize the European rail sector and make it more competitive, by fostering increased innovation and guiding research efforts at a European level. ERRAC believes that a number of strategic research, development and innovation topics that are being developed by other sectors will help rail stakeholders make significant progress in the years to come. Its latest SRIA has been defined to guide and inspire future research and innovation over the coming decades.

ERRAC is convinced that research and innovation will enable the European rail sector to retain its leadership at the international market level and increase its competitiveness. The last SRIA which has been developed during the last 5 years that contribute to the roadmapping of long distance transport is the latest ERRAC Strategic Rail Research and Innovation Agenda (2014) as already reviewed in SETRIS D1.1 (2015a). The current roadmapping activity of ERRAC is supported by the FP7 FOSTER RAIL project that followed on from the previous FP7 ERRAC roadmap funded project. Table 2 provides a summary of EU funded projects supporting the ERRAC roadmaps development.

Table 2 Summary of FP7 funded CSA towards ERRAC roadmapping activities

Year	SRIA	Added value	Involved stakeholders
2013-2016	Continuing ERRAC roadmapping activity with focus on the current rail sector needs (FP7 FOSTER RAIL)	Defining rail business scenarios	20 partners: 4 large industrials, 3 R&D, 6 rail association, 4 operators(including infrastructure manager); 3 public authorities
2009-2012	Coordinating rail research activities (the implementation of ERRAC SRIA) (FP7 ERRAC Road Map)	Defining key rail research themes	21 partners: similar composition stakeholders' type to the above but with some differences in countries representation

Both projects listed in Table 2 are definitely addressing key issues identified at SETRIS D1.1 where the political (governance), economic and operational aspects of research and innovation activities are lacking in the roadmap developed by the transport ETPs. To complete the urban approach also discussed and considered in both FOSTER RAIL and ERRAC ROADMAP more information can be read in D1.4 "EC-funded research contribution to roadmapping of urban transport".

3.1. FP7 FOSTER RAIL (2013-2016)

Future Of Surface Transport Research Rail (FOSTER RAIL project). For more detail description of the project please refer to SETRIS D1.4.

Goal: FOSTER RAIL aims to expand the ERRAC ROADMAP project, *defining strategic research and innovation needs of the rail sector* in the EU. Deliverables include developing rail business scenarios, new research roadmaps and the setting up of a platform for recommendations from collaborative

European rail research. Long distance transport for passenger and freight is clearly considered as part of these scenarios.

Programme call: FP7-TRANSPORT – Updating the strategic agenda for aeronautics and air transport research in Europe.

Duration: 36 months (May 2013 – Apr 2016)

Budget: €1.8 million; EC Contribution: €1.6 million

Coordinator: UIC (International Union of Railways based in Paris, France)

Partners:²⁶ UNIFE (BE); UITP (BE); EURNEX (DE); Newcastle University (UK); Trafikverket (SE); Community of European Railway and Infrastructure Companies (CER) (BE); Spanish Railway Foundation (ES); Bombardier transportation AB (SE); Ansaldo STS SpA (IT); SNCF (FR); National Technology Platform (CZ); Network Rail Ltd. (UK); Alstom Transport SA (FR); Paris Public Transport Authority (RATP) (FR); Barcelona Public Transport Authority (ES); Instituto Superior Tecnico (PT); DB AG (DE); Austria Tech (AT); MERMEC (IT).

Reason to submit in this call: Coordination and support action call to strengthen the research and innovation strategies of the (rail) transport industries in Europe.

Final advantages and impact: This is on-going project. While, for the long term, nothing is known yet, for the short term, FOSTER RAIL has brought together 3 ETPs to discuss common priorities and strategy (ERRAC, ERTRAC and WATERBORNE); is designing the SRRIA (thus the vision of the rail sector up to 2050), its implementing roadmaps, and the regional and suburban rail (RSR) study, which give a clear view of the situation in major rail market segmentation. FOSTER RAIL comprises 7 work packages including one work package dedicated to cooperation, communication and coordination with other ETPs and national technology platforms. The potential main impact of FOSTER RAIL will be that all stakeholders work closely together in designing and implementing the railway system of the future through cooperation with, learning from and joint development with other modes of transport²⁷. For more description please refer to SETRIS D1.4.

3.2. FP7 ERRAC ROAD MAP (2009-2012)

European Rail Research Advisory Council Road Map (ERRAC ROADMAP project)²⁸. For more description about the project, please refer to SETRIS D1.4.

Goal: ERRAC ROADMAP aimed to *coordinate rail research activities* and to ensure that the ERRAC 2020 Vision could be turned into reality. The project aimed to deliver roadmaps to guide rail research in order to provide a rail option that is reliable, environmentally friendly, efficient and economically sound to its customers.

Programme call: FP7-TRANSPORT – Competitive transport operations and Interoperable rolling stock

Duration: 38 months (Jun 2009 – Jul 2012)

Budget: €1.6 million; EC Contribution: €1.5 million

Coordinator: UIC (International Union of Railways based in Paris, France)

²⁶ http://cordis.europa.eu/project/rcn/110534_en.html

²⁷ http://cordis.europa.eu/result/rcn/163923_en.html

²⁸ <http://www.errac.org/>

Partners:²⁹ European Rail Infrastructure Manager Asbl (BE); CER (BE); UITP (BE); Network Rail Ltd. (UK); Bombardier Transportation AB (SE); MERMEC (IT); SNCF (FR); Newcastle University (UK); TRENITALIA SpA (IT); ITALCETIFER SpA (IT); Ansaldo STS SpA (IT); European Federation of Railway Trackworks Contractors (LU); Instituto Superior Tecnico (PT); Tata Steel Ltd. (UK); Knorr-Bremse AG (DE); UNIFE (BE); Trafikverket (SE); EURNEX EV (DE); European Passengers’ Federation (EPF) (BE); RFI (IT).

Reason to submit in this call: Coordination and support action to cover research related to all types of freight and passenger rail services as well as their interaction with other modes within the transport system (High Speed and conventional rail over long, medium and short distances, as well as urban rail and co-modal services). ERRAC ROADMAP aimed to translate, monitor and disseminate to the whole European industry the strategic recommendations and guidelines of the SRRA.

Final advantages and impact: ERRAC Roadmap has generated 9 themes (roadmaps) for rail research on (1) energy; (2) noise and vibration; (3) sustainable design and procurement; (4) freight and (5) passenger modal shift; (6) urban, suburban and regional rail; (7) urban mobility; (8) safety and security; and (9) strengthening competitiveness. In addition, 70 out of 160 rail projects were evaluated in order to assess the market uptake of EU-funded projects and the sectors that can benefit the most from this type of cooperation. A research innovation database was also developed through other projects³⁰. For more please see SETRIS D1.4.

4. ERTRAC

Table 3 Summary of FP7 funded CSA towards ERTRAC roadmapping activities

Year	SRIA	Added value	Involved stakeholders
2013-2016	Continuing ERTRAC roadmapping activity with focus on the current road sector needs for research and innovation (FP7 FOSTER-ROAD)	Joint collaboration with other transport ETPs to address some cross cutting issues (e.g. Urban Mobility)	17 partners: 8 large industrials (mainly car manufacturer), 2 R&D, 4 road sector/city association, 3 consultants
2010-2014	Preparing and supporting the realization of a Public Private Partnership (PPP) to promote European Green Cars Initiative (FP7 CAPIRE)	Consideration of PPP models to address cross cutting issues (e.g. road transport electrification)	14 partners: 5 automotive technologies suppliers; 4 car/bus/truck manufactures, 1 large goods manufacturer; 1 energy provider; 1 city transport authority; 2 consultants
2009-2012	Coordinating road research activities (the implementation of ERTRAC SRIA and addressing Lisbon treaty)	Disseminating the concept of sustainability in road research	12 partners: 6 large industrials (car makers and technology supplier), 2 R&D, 4 road sector/city

²⁹ http://cordis.europa.eu/project/rcn/92969_en.html

³⁰ http://cordis.europa.eu/result/rcn/57889_en.html

Year	SRIA	Added value	Involved stakeholders
	goals) (FP7 SAFIER)		association

ERTRAC, the ETP for Road Transport, is recognized and supported by the European Commission. As part of its responsibility, ERTRAC was given the task to provide a strategic vision for road transport research and innovation in Europe, and define strategies and roadmaps to achieve this vision through the definition and update of a Strategic Research Agenda (SRA) and implementation research roadmap. The SRIAs developed during the last 5 years are summarized in Table 3. The three funded CSA projects are also described in SETRIS D1.4. The focus on this D1.5 is to identify the projects contribution towards 'Long Distance Transport roadmaps' where applicable.

4.1. FP7 FOSTER-ROAD (2013-2016)

Future of Surface Road Transport European Research (FOSTER-ROAD project)

Goal: FOSTER-ROAD will support the ETP ERTRAC *to create and implement the needed research and innovation strategies* for a sustainable and competitive European transport system. Linking all relevant stakeholders FOSTER-ROAD will provide consensus-based plans and roadmaps addressing the key societal, environmental, economic and technological challenges in areas such as road transport safety, urban mobility, long distance freight transport, global competitiveness and all issues related to energy and environment.

Programme call: FP7-TRANSPORT – Strengthening the research and innovation strategies of the transport industries in Europe.

Duration: 34 months (Mar 2013 – Dec 2016)

Budget: €2.0 million; EU Contribution: €1.9 million

Coordinator: AVL List GmbH (German based powertrain systems and internal combustion engines builder)

Partners:³¹ Aristotle University of Thessaloniki (GR); FIAT (IT); CONCAWE IVZW (BE); Continental Automotive GmbH (DE); ERTICO (BE); FEHRL (BE); Automotive Intelligence Center (AICENTER) (ES); POLIS (BE); RENAULT SAS (FR); RICARDO Ltd. (UK); Robert BOSCH GmbH (DE); SCANIA CV AB (SE); UITP (BE); VALEO SA (FR); VW AG (DE); VOLVO AB (SE).

Reason to submit in this call: Coordination and support action to support ERTRACT ETP in creating and implementing the needed research and innovation strategies for a sustainable and competitive European road transport system. FOSTER ROAD aims to link all relevant stakeholders to achieve consensus-based plans and roadmaps addressing the key societal, environmental, economic and technological challenges in areas such as road transport safety, urban mobility, long distance freight transport, global competitiveness and all issues related to energy and environment.

Final advantages and impact: This is still on-going project but FOSTER-ROAD has reported to address a number of key issues in the road transport research sector through: (1) follow up of ERTRAC activities towards SRIA monitoring and development; (2) formulate input towards H2020; (3) cross ETPs collaboration with ERRAC, WATERBORNE and ALICE; (4) supporting TRA Conference (EU supported Transportation Research Community Conference)³².

³¹ http://cordis.europa.eu/project/rcn/109270_en.html

³² http://cordis.europa.eu/result/rcn/164324_en.html

Open issues to be solved: collaboration with ACARE and other ETPs to formulate a joint roadmap.

4.2. FP7 CAPIRE (2010-2014)

Coordination Action on PPP implementation for Road-Transport Electrification (CAPIRE project)

Goal: CAPIRE aimed to carefully consider options for *implementing Public Private Partnership (PPP)* and to identify technology roadmaps that can support the realisation of the Green Cars Initiative. The CAPIRE project was expected to guide the R&D needs of the European automotive industry towards achieving road transport electrification through strong cooperation between Original Equipment Manufacturers (OEMs), automotive and technology suppliers, road and traffic operators, energy and service providers and R&D organisations.

Programme call: FP7-TRANSPORT – Implementing Public-Private Partnership in the ‘European Green Cars Initiative’.

Duration: 48 months (Dec 2010 – Nov 2014)

Budget: €2.1 million; EC Contribution: €1.7 million

Coordinator: RENAULT SAS (French car manufacturer)

Partners:³³ P&G (BE); AVL List GmbH (AT); FIAT Scpa (IT); VOLVO AB (SE); VDI/VDE GmbH (DE); Robert BOSCH (DE); VALEO (FR); IBERDOLA DISTRIBUCION ELECTRICA SA (ES); Transport for London (TFL) (UK); CONTINENTAL (DE); HIDRIA dd (SI); Tuv Rheinland Consulting GmbH (DE); Solaris Bus & Coach SA (PL).

Reason to submit in this call: Coordination and support action to support the realization of a PPP sustaining and putting into practice the European Green Cars Initiative. CAPIRE aimed to address two major fields: a careful consideration of PPP paths and the identification of technology roadblocks and research needs of FP7.

Final advantages and impact: CAPIRE has established a number of working groups addressing the link between road and electrification through PPP collaboration. However, one working group was formed to specifically address ‘long distance road transport and logistics roadmaps’ led by Volvo (Swedish based car manufacturer). This working group has established roadmaps for Vehicle Technologies for Long Distance Trucks in collaboration with ERTRAC (the ETP); improved ICT for long distance transport (also through ERTRAC); and Infrastructure with focus on City Logistics that also foster the start-up of the (then) new ETP, ALICE³⁴.

4.3. FP7 SAFIER (2009-2012)

Support action for implementation of ERTRAC’s road transport research priorities (SAFIER project)

Goal: Similar to FOSTER-ROAD, SAFIER supported the road transport sector ETP ERTRAC *to create and implement the needed research and innovation strategies for achieving the Lisbon goals* (addressing key economic, technological, environmental and societal challenges for road transport). SAFIER aimed to develop the SRIA for the road transport sector, continuing the ERTRAC step through prioritizing research for road transport.

³³ http://cordis.europa.eu/project/rcn/96977_en.html

³⁴ http://cordis.europa.eu/result/rcn/168264_en.html

Programme call: FP7-TRANSPORT – Stimulation of International Cooperation within Surface Transport Research; and Encouraging step changes / radical technology changes.

Duration: 45 months (Feb 2009 – Oct 2012)

Budget: €1.5 million; EU Contribution: €1.5 million

Coordinator: AVL List GmbH (German based powertrain systems and internal combustion engines builder)

Partners:³⁵ FIAT Scpa (IT); CONCAWE Ivzw (BE); DELPHI Automotive Systems SA (LU); ERTICO (BE); FEHRL (BE); POLIS (BE); RWTH Aachen University (DE); UITP (BE); VALEO SA (FR); VW AG (DE); VOLVO AB (SE).

Reason to submit in this call: Coordination and support action to build the strategies for implementing a step-change in the road transport sector and more widely within the transport and energy sectors. SAFIER aimed to support ERTRAC ETP to function by proving objective, consensus-based plans for the road sector ETP.

Final advantages and impact: Many (if not all) of the current ERTRAC roadmaps were developed through SAFIER support. In the final brief report summary, SAFIER covered 14 priority areas for ERTRAC research and innovation including (only those themes link to long distance transport included here): (1) hybridization of road transport; (2) future light-duty powertrain technologies and fuels; (3) European technology and production concept for Electric Vehicles; (4) Safe road transport; Road user behavior and expectations; (5) European bus systems of the future; (6) Climate change resilient transport; (7) Infrastructure for green vehicles; (8) Electrification; (9) land use and transport interactions. SAFIER’s impact demonstrated through various dissemination activities (i.e. events’ contribution, newsletters)³⁶.

Open issues to be solved: Collaboration with ACARE and other ETP to formulate a joint roadmap.

5. WATERBORNE

Table 4 Summary of FP7 funded CSA towards WATERBORNE roadmapping activities

Year	SRIA	Added value	Involved stakeholders
2013-2016	Continuing WSRIA roadmapping activity with focus on the current waterborne sector needs for research and innovation (FP7 MESA)	Joint collaboration with other transport ETPs to address some cross cutting issues and the development of the SETRIS project to link to the non-surface transport ETP: ACARE	28 partners: 8 large industrials, 6 maritime cluster/association, 7 R&D, 9 consultancies/SMEs, 1 port authority
2009-2012	Coordinating waterborne research activities (the implementation of WATERBORNE SRIA) (FP7)	Consultation process for maritime SRIA development	8 partners: 2 large industrials, 6 maritime associations

³⁵ http://cordis.europa.eu/project/rcn/91193_en.html

³⁶ http://cordis.europa.eu/result/rcn/56563_en.html

Year	SRIA	Added value	Involved stakeholders
	CASMARE)		

WATERBORNE, the ETP for Waterborne Transport, is recognized and supported by the European Commission. WATERBORNE was tasked to provide a strategic vision of waterborne transport research and innovation in Europe, and define strategies and roadmaps to achieve this vision through the definition and update of a Strategic Research Agenda (SRA) as well as the implementation of a research roadmap. The SRIAs developed through this EC funding mechanism during the last 5 years are summarized in Table 4.

5.1. FP7 MESA (2013-2016)

Maritime Europe Strategy Action – FOSTER Waterborne (MESA project) (<http://www.waterborne-tp.org/>)

Goal: MESA's main strategic objective is to strengthen the effectiveness of the research and innovation capacities of the European maritime industry, through improvement of stakeholder networks, dissemination activities, the use of research results, and increasing the visibility of the research and innovation findings.

Programme call: FP7-TRANSPORT – Strengthening the research and innovation strategies of the transport industries in Europe.

Duration: 36 months (Sep 2013 – Aug 2016)

Budget: €2.0 million; EU Contribution: €1.9 million

Coordinator: Community of European Shipyards Association Asbl (Representation of shipbuilding industry from 17 EU Member States based in Belgium)

Partners:³⁷ CETMEF (Technical Direction for water, sea and river) (FR); MEYER WERFT GmbH (DE); European Community of Shipowners' Association (ECSA) (BE); DNV GL SE (DE); European Association of Universities in Marine Technology (WEGMENT) (NL); European Council for Maritime Applied R&D Association (ECMAR) (BE); International Council of Marine Industry Associations (ICOMIA) (BE); HSVA GmbH (DE); Rolls Royce Power Engineering plc (UK); Bureau Veritas SA (FR); Brookes Bell LLP (UK); D'APPOLONIA Spa (IT); FINCANTERI Spa (IT); DCNS SA (FR); Center of Maritime Technologies EV (DE); MEYER WERFT GmbH KG (DE); Scheepswerf Damen Gorinchem BV (NL); FSG GmbH KG (DE); RWT Aachen University (DE); Safinah Ltd. (UK); Netherlands Maritime Technology (NL); BMT Ltd. (UK); MARINTEK AS (NO); INLECOM Systems Ltd. (UK); DANAOS Shipping Company Ltd. (UK); Port of Valencia (ES); CEREMA (FR); Corporacion Maritima Lobeto Lobo SL (ES); University of Strathclyde (UK); MARIN (NL).

Reason to submit in this call: Coordination and support action to strengthen the effectiveness of the research and innovation capacities of the European maritime industry.

Final advantages and impact: The start-up of the SETRIS project was reported in the MESA working document as reported in SETRIS D1.1 (2015a). MESA has also reported on the achievements made to establish four thematic technology groups on energy efficiency, safety, production and e-

³⁷ http://cordis.europa.eu/project/rcn/109718_en.html

maritime³⁸, each performing in-depth analysis and assessment of research achievements at EU and National levels.

A further activity has involved: identifying gaps and Research, Development and Innovation (RDI) needs in the research reviewed and providing major timely recommendations for future RDI for the updating, by a bottom-up approach to RDI, of the Strategic Research and Innovation Agenda and Implementation Plan of the WATERBORNE TP.

In parallel, foresight activity will provide market, societal and regulatory trend studies, contributing to transport RDI policies, while an Integration Group will issue Strategic documents for the waterborne sector: VISIONS2030, Strategic Research Agenda, Innovation Agenda, Implementation Plan, consolidating the findings of the Thematic Technology Groups and the Foresight working group.

Open issues to be solved: Collaboration with ACARE and other ETP to formulate a joint roadmap.

5.2. FP7 CASMARE (2009-2012)

Coordination Action to maintain and further develop a Sustainable Maritime Research in Europe (CASMARE project)

Goal: Building on a previous project, (FP6 ACMARE that established ETP WATERBORNE as a key adviser to and a strategic partner of the European Commission for the generation of consensus views relating to maritime research policy), CASMARE aimed to support the maritime community to deliver and implement the Waterborne SRIA. The emphasis was on engagement with key stakeholders and the alignment of national programmes and industry activities.

Programme call: FP7-TRANSPORT – Innovative product concepts; and Competitive transport operations.

Duration: 41 months (Mar 2009 – Jul 2012)

Budget: €0.9 million; EU Contribution: €0.8 million

Coordinator: Community of European Shipyards Association Asbl (Representation of shipbuilding industry from 17 EU Member States based in Belgium)

Partners:³⁹ European Marine Equipment Council (BE); Lloyd's Register (UK); DNV GL AS (NO); ECMAR (BE); WEGEMT (NL); ECSA (BE); ICOMIA (BE); European Barge Union (EBU) (BE).

Reason to submit in this call: Coordination and support action to continue the work of FP6 ACMARE in shaping WATERBORNE roadmaps.

Final advantages and impact: CASMARE followed up on the successful development of ACMARE CSA project, which implemented and updated the WATERBORNE Technology Platform's Research Strategy, contained in the three original documents: Vision 2020, Waterborne Strategic Research Agenda and the Waterborne Innovation Road Map. In 2011 the WATERBORNE Declaration was published as position paper for HORIZON2020 and the Strategic Research Agenda and Implementation plan was revised and updated; the VISION2025 document was also published. A series of events and workshops were held designed to encourage the implementation of the WATERBORNE's documents by key stakeholders.

The new research priorities identified by CASMARE, which complemented earlier priorities, included: sustainable maritime transportation; low greenhouse gas emissions for waterborne products and

³⁸ http://cordis.europa.eu/result/rcn/56563_en.html

³⁹ http://cordis.europa.eu/project/rcn/91194_en.html

processes; waterborne products for renewable energy generation from the sea (including offshore wind farms). An additional Waterborne Strategic Research Agenda and Waterborne implementation route map were updated⁴⁰.

Open issues to be solved: Collaboration with other ETP to formulate a joint roadmap.

6. JOINT APPROACHES

For long distance passenger transport, collaboration cross transport ETPs is evident as concluded in SETRIS D1.1 (2015a) (Table 5). Table 5 is derived from research carried out to review SRIAs (R&D roadmaps) from across transport sector ETPs. The objective of SETRIS D1.1 was to find synergies across transport sector ETPs that lead to the identification of joint collaboration in either projects or traces of collaboration that have been documented in the SRIA roadmaps. These cross modal collaborations have been mainly supported through the EC CSA funded projects that required key stakeholders of each transport ETPs to collaborate with other ETPs. Whilst 'urban transport,' as reported in D1.4, has demonstrated strong collaboration between ERTRAC and ERRAC through a permanent ERTRAC 'urban mobility' working group, collaboration is not as advanced in the FP7 AWT project and FP7 TRANSFORUM project, for 'long distance transport'.. Collaboration between ERRAC/ERTRAC with ACARE is certainly key to addressing roadmaps for 'long distance passenger transport'. There is currently no collaboration between waterways and other modalities, so modal cooperation with road (e.g. passenger ferries) should be enhanced and the role of waterborne in an integrated long distance passenger travel system not neglected.

Table 5 Cross ETP modal collaboration derived from SETRIS D1.1 (2015a)

Modal cooperation	Passenger			
	Urban mobility		Long distance travel	
	Current cooperation level	Required for future SRIAs?	Current status	Required for future SRIAs?
Road-Rail	strong	yes	medium	yes
Road-Air	medium	yes	medium	yes
Road-Waterways	Non-existent	to be explored	Non-existent	yes
Rail-Air	medium	yes	medium	yes
Rail-Waterways	Non-existent	to be explored	Non-existent	to be explored
Air-Waterways	Non-existent	to be explored	Non-existent	to be explored

6.1. FP7 AWT (2013-2016)

All Ways Travelling (AWT project)⁴¹

Goal: FP7 AWT project was proposed to develop and validate a model for a multimodal pan-European passenger transport information and booking system. The goal of the project is to provide an essential contribution towards achieving the EC objective of making the best use of all existing

⁴⁰ http://cordis.europa.eu/result/rcn/52858_en.html

⁴¹ <http://www.allwaystravelling.eu/>

transport modes and infrastructure by addressing a clear requirement for easy access to travel solutions that combine different transport modes, thus enabling European residents and visitors to enjoy a seamless door-to-door travel experience.

Programme call: FP7-TRANSPORT – Appointed by DG MOVE.

Duration: 32 months (Apr 2013 – Jan 2016)

Budget: Not known

Coordinator: Amadeus SA (Global leading provider of advanced technology solutions for global travel industry)

Partners: BeNe Rail International NV (a joint venture of NS, Dutch Railways and SNCB, Belgian Railways) (NL); IATA (UK); Thales SAS (IT); UNIFE (BE); Zeppelin University (DE).

Reason to submit in this call: By appointment of the EC to form a coordination and support action initiative to address the roadmap for a single European transport area. The roadmap aims to build a more efficient, sustainable transport system to increase mobility across Europe, drive growth and associated employment within the transport sector, and reduce carbon emissions.

Final advantages and impact: AWT project is addressing key issues identified in SETRIS D1.1 where the political (governance), economic and operational aspects of research and innovation activities are lacking in the roadmap developed by the transport ETPs. This is especially the case for a joint multi-modal transport sector (-air, -rail and -road) coordination plan that aims to establish a well-functioning marketplace for Multimodal Information and Ticketing Systems (MMITS). Since AWT addresses multimodality towards seamless passenger travel, the roadmap coverage is relatively broad and certainly touches on the long distance passenger transport challenges. AWT project established an Advisory Panel which was open to participation by all interested stakeholder associations included CER, ECTAA, EPF. The Advisory Panel met three times during the project Phase 1 (about 1+ year), and stakeholder meetings were held by DG MOVE (ALL WAYS TRAVELLING, 2014). The report concluded that multimodal travel behavior data is still lacking, as available evidence to date only mirrors the modal nature of different transport markets. This means that available data is limited to only understanding how many people took a plane, a train or used public transport and does not provide a more intricate picture of the full journey – for example taking a metro, bus or taxi to the airport/ train station and how they might have reached their final destination. (ALL WAYS TRAVELLING, 2014, p.9).

The AWT project has been divided into two phases of which the first phase (In-depth study of multimodality) has been completed (2014) and the second phase (Proof of Concept) is on-going but is due to deliver the final report. The Phase 1 Final Report (2014) concluded a number of enablers to address MMITS including:

- Industry collaboration through a Full Service Model (FSM) and Shift2Rail IP4 initiatives;
- Further deregulation of the rail sector in the EU;
- Clarification of multimodal conditions of carriage and passenger rights in a multimodal journey;
- Improvement of the physical connectivity and infrastructure to facilitate connections and transfers between transport modes, increasing the number of available and attractive travel options;
- Availability and development of technologies that enable the establishment of MMITS solutions with reasonable investment levels, including new search and mobile internet technologies.

Open issues to be solved: Collaboration with WATERBORNE to formulate roadmap embracing the entire transport system.

6.2. FP7 TRANSFORUM (2013-2015)

Transforming European Transport through an Active Actors Forum (TRANSFORUM project)⁴²

Goal: Unlike the other ETP roadmap discussed above that is heavily engaged by stakeholders from particular transport sector, FP7 TRANSFORUM project was proposed by a consortium of independent and experienced policy advisers and researchers to address four specific thematic groups from the 2011 White Paper goals. The four goals can be further classified into 2 goals for freight related roadmap (Long Distance Freight (Akerman et al., 2014) and Multimodal Transport Information, Management and Payment Systems (Kressler et al., 2014)) and the other two for passenger: Urban Transport Roadmap (Gudmundsson et al., 2014) and High-Speed Rail Roadmap (Crozet et al., 2014).

Programme call: FP7-TRANSPORT – Forum to help implement the future orientation of the overall transport system as defined by the White Paper.

Duration: 24 months (Feb 2013 – Jan 2015)

Budget: €1.9 million; EU Contribution: €1.5 million

Coordinator: Ruprecht Consult GmbH (German based transport consultant)

Partners: 1 consultant and 11 R&D organisations (mainly EU universities)⁴³

Reason to submit in this call: Coordination and support action call

Final advantages and impact: The TRANSFORUM project is definitely addressing key issues identified in SETRIS D1.1 where the political (governance), economic and operational aspects of research and innovation activities are lacking in the roadmap developed by the transport ETPs. For long distance transport, the TRANSFORUM project developed one single roadmap dedicated to address High Speed Rail (HSR). Four 2-day workshops over the two years designed specifically to address the HSR roadmap concluded that the huge challenge HSR has had with a number of choices to be made centered on consideration between a market driven-policy and a politically-driven economy (Crozet et al., 2014).

Open issues to be solved: Collaboration with ACARE to formulate roadmap beyond surface transport.

7. CONCLUSION AND RECCOMENDATION

SETRIS D1.5 summarises the status of existing SRIA and identifies relevant EC-funded research that, in the last 5 years, have directly contributed to the roadmaps and vision activities of the ETPs in addressing long distance transport. Reviews of EC funded projects (the enablers) demonstrated that the four ETPs have different challenge levels for roadmapping activity. ACARE has the most comprehensive roadmapping activity with 4 live projects addressing different thematic clusters while ERRAC, ERTRAC and WATERBORNE are at a similar level with each having a single funded project to address the current SRIA. In parallel there are other joint CSA funded projects that aim to address particular Transport White Papers goals, such as Multimodal Information Ticketing System (MMITS)

⁴² <http://www.transforum-project.eu/>

⁴³ http://cordis.europa.eu/project/rcn/110373_en.html

that certainly touches on the challenges of long distance passenger transport; and High Speed Rail that certainly functions as one of the key enablers of sustainable long distance passenger transport. Whilst there appears to be evidence of joint collaboration cross ETPs towards addressing the EC sustainable transport goals, the current scope of collaboration can be further extended to involve wider multimodal transport key stakeholders. Additionally the findings of a joint approach to collaboration and their related studies should be disseminated into current transport TP roadmapping activities. This can be achieved through the engagement of modal transport TPs in joint and mutual stakeholder workshops and for each modal transport TP to utilize and disseminate joint approach conclusions and recommendations which, by their very nature, benefit multi modal transport TP roadmapping SRIA activities.

Table 6 Summary of the four ETPs SRIA roadmapping challenges, enablers and targets

ETP	Current Challenges and Vision	Enablers	Targets
ACARE	Roadmapping SRIA based on thematic cluster: cost efficiency; door-to-door service (time efficiency); safety and security; and environmental and emissions	Last regime of FP7 programme call on CSA towards research and innovation of AAT	Coordinating and monitoring the progress of many R&D funded projects towards the thematic cluster
ERRAC	Roadmapping SRIA for the whole rail sector with particular focus on rail business scenarios	A single FP7 call towards CSA on supporting ERRAC roadmapping activity	Collaborating beyond the surface transport ETP joint collaboration
ERTRAC	Continuing roadmapping SRIA for the whole road sector with particular focus on expanding joint collaboration with other transport ETP	A single FP7 call towards CSA on supporting ERTRAC roadmapping activity	Maintaining the effective roadmapping activity with particular focus on further collaboration beyond the surface transport joint collaboration
WATERBORNE	Roadmapping SRIA for waterborne sector with particular focus on sustainable waterborne transport	A single FP7 call towards CSA on supporting WATERBORNE roadmapping activity	Continuing the joint collaboration with other transport ETPs to address joint ETP SRIA
JOINT APPROACH	Roadmapping SRIA for high level 2011 Transport White Paper Goals	FP7 call towards CSA to address the Transport White Paper Goals	Forum to help implement the future orientation of the overall transport system as defined by the White Paper

Table 6 summarizes the reviewing exercise of the EC funded projects for ETPs roadmapping activity. The conclusion of the challenges and targets description from each of the transport ETPs were based on available information from each of the funded projects (i.e. through websites, newsletters, meetings and workshops) supported by SETRIS deliverables (SETRIS D1.1 (2015a), D1.2 (2015b), D1.3 (2015c) and D1.4 (2016)). It is important to note that there is no fully developed and structured format (e.g. WG, joint ETP) for addressing a SRIA for long distance passenger transport. Formalized joint roadmapping activities cross ETPs could be beneficial to achieve this through, for example inviting surface transport ETPs to contribute to the ACARE door-to-door service (time efficiency) cluster consultation process, and explicitly targeting improvement of the road and potentially –water –rail interface which has been lacking previously. This is especially true since the latest long distance transport sector RIA initiatives: rail through Shift²Rail aims to complete the Single European Railway Area (SERA)⁴⁴; and air transport through Single European Sky Air Traffic Management Research (SESAR) aims to complete the Single European Sky (SES) objectives⁴⁵. Another recommendation is to utilize the current ‘strong’ collaboration between ERRAC and ERTRAC WG, for example on urban mobility, and inviting ACARE to join the WG workshops. With this collaboration, competing (though complementary) objectives from both sectors, which are well documented in the literature (Pellegrini and Rodriguez, 2013), can hopefully be harmonized and help to address the vision of the European Commission’s common future of transport systems.

⁴⁴ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3Atr0041>

⁴⁵ <http://www.sesarju.eu/discover-sesar/history/background-ses>

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