TRA

The Research Arena Conference 2016 will take place in Warsaw, from 18th to 21st April 2016.

The most important transport research event in Europe, gathering every 2 years the key stakeholders: researchers, experts, operators, industry and policy-makers.

The main theme of TRA 2016 is – MOVING FORWARD Innovative Solutions for Tomorrow's Mobility.

TRA website: www.traconference.eu

Editorial

Jean-Pierre Loubinoux, Director General of UIC

2016 emerges as a very special year for transport research and innovation, placed under the headlines of co-modality, digitalisation and increased customer focus. Europe's well-being and economic growth are intimately linked to a transportation system that is capable of operating in a fluid, sustainable and cooperative manner. Clearly, Mobility, and particularly the freedom to chose one's preferred combination of transport modes, has infused the European mentalities as a fundamental right which must be facilitated by the transport system.

Incidentally, the 6th edition of TRA is taking place in a framework where the transport focus is shifting to reflect these ambitions. Cooperation between all modes is more than ever a necessity to build a cohesive, sustainable and attractive European transport system in 2050 and TRA is the place where gaps are bridged. Research and Innovation are definitely key elements in building this transport system and TRA is an excellent opportunity to demonstrate a joint transport commitment to work collaboratively for a greener and sustainable transport system that is respectful of its environment.

This evolving focus has been transcribed in the strategic documents setting and/or augmenting the vision for the 2050 European transport system.

The objectives set out by the European Commission in the 2011 Transport White Paper and subsequent Digital Agenda remain the cornerstones of the direction which transport research and innovation should take for outstanding achievements in transforming the transport system, notably railways. Its upcoming revision will undoubtedly bring new challenges and priorities to convey in technical work and the transport sectors are looking forward to contribute to this vision. The task in fact has already started with the publication of the Digital Agenda in 2015, widening the field of research and innovations objectives which were explored by individual modes and following the approach of small-scale cooperation. Alignment with and translation of the goals of the Digital Agenda into strategies is a necessity.

Further detailing the ERRAC Strategic Rail Research and Innovation Agenda (SRRIA), the ERRAC Routemaps reflect a productive cooperation of all railway stakeholders in Europe in defining the business needs towards achieving the Future European Railway System (FERS). They are expected to be published shortly after the joint meeting of ERRAC plenary and FOSTERRAIL final conference on 7 April 2016, scoping and sequencing the objectives of the SRRIA in concrete action plans to design and construct the 2050 system.

The European railway sector has been continuously committed to achieve the goals set in their strategic documents Challenges 2050 and its technical pillar, the Rail Technical Strategy Europe (RTSE) – respectively published in February 2013 and February 2014. Far from being isolated white elephants, both are currently evolving to reflect emerging challenges and objectives in Europe as set out on the one hand by the sector and on the other hand by the European political commitments.

(...)

Editorial

(...)

The RTSE II should come into reality this year, bringing the focus ever closer to the daily business needs.

Vehicles to turn the strategies into reality and implement the outputs are also transforming themselves to strengthen their scope of work and to help shape our society.

Since 2014, the Horizon 2020 programme appeared as a turning point in framework programme history, putting heavy emphasis on close cooperation between all transport stakeholders for railways. The 2015 calls have seen a sharp reduction of specific mode calls – sometimes completely deleting them for some modes like rail – and focus on transversal topics which maximise both outputs of projects and their concrete benefits for the transport system functioning. This new approach supports a transition from a mode-centred perspective to a broader collaboration on what can be done for the benefit of the customer.

However, topics related to specific modes are not ignored and focus was transferred to the Joint Undertaking to address them. Shift2Rail, which has been in development since 2012, has now become reality and is a vehicle to collaboratively undertake rail research and innovation with highly motivated representatives from the entire sector. The young initiative, after a long gestation, looks full of promising opportunities for solutions that will ease the life of European citizens in their journeys and railway staff in their daily work.

In the light of these major strategic changes and opportunities, the International Union of Railways, committed to a close collaboration with all transport modes, continues to provide expertise and that of its members in projects aimed at shaping the future of European transport with a particular emphasis on making the railway sector the backbone – in a cooperative spirit – of this future transport system for a sustainable mobility.

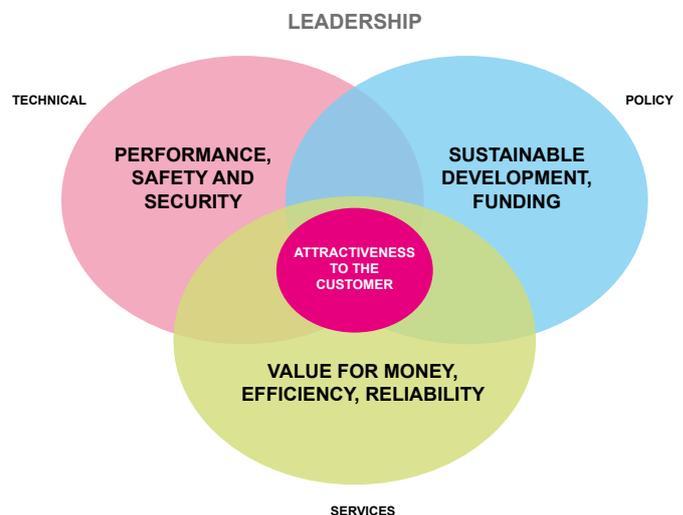*With my best wishes for a fruitful TRA 2016!*

Innovating for the Future European Railway System

In the 21st century, mobility of European citizens and goods has gradually become a fundamental right, boosting considerably the economic development of European countries and supporting a lasting well-being. However, such right cannot be exercised without a fully functional and cohesive transport system able to operate seamlessly between its modes and offer customers a choice of opportunities to travel from A to B.

Though it does exist and operates, the European transport system is unfortunately not yet fully integrated with most journeys using one or two modes with connections which could be enhanced. This situation is far from being optimal, being neither sustainable, cost-effective nor attractive to the customer.

Rail is a key component in tackling these issues and has a role to play in making the European transport system more efficient. What rail can help to achieve is a more environmentally-friendly transport system where Green House Gase emissions are drastically reduced, there is decreased oil consumption and a proper shift to rail leads to fewer congestion problems on Europe's raod network. In a situation where all modes play together to their strengths, the European transport system is in a position to generate continuous economic growth, stimulate opportunities and to support societal needs.

The Future European Railway System (FERS) of 2050 would see rail as the backbone of the integrated, consistent, attractive and sustainable European transport system. There will be cooperation with other modes through a complete co-modal system so as to boost European economy, developing attractiveness of railways to the customer

LEADERSHIP

TECHNICAL

POLICY

PERFORMANCE, SAFETY AND SECURITY

SUSTAINABLE DEVELOPMENT, FUNDING

ATTRACTIVENESS TO THE CUSTOMER

VALUE FOR MONEY, EFFICIENCY, RELIABILITY

SERVICES

These objectives are ambitious and cannot be achieved without strong support from rail research and innovation with enhancements that can be concretely experienced by the freight customers and passengers in their daily life.

In February 2013 the rail sector gathered together the core elements of what the rail system should look like in 2050. The strategic document entitled called "Challenge 2050" notably foresees that cementing attractiveness for the customer must be achieved through a three-way perspective: a technical input to develop performance, safety and security of the travellers and freight customers; a policy support to ensure sustainable development and sufficient funding; a services commitment to further develop value for money, efficiency and reliability of the rail system.

In February 2014, Challenge 2050's technical pillar was transcribed by the rail operating community into the Rail Technical Strategy Europe (RTSE) which developed objectives in ten fields of technological innovation (Rolling Stock, Infrastructure, Railway People, IT, etc.) supported by a list of enablers. Once achieved, those enablers are intended to contribute to the establishment of the FERS. The RTSE is a living document, evolving according to the business needs of the sector and taking into account the development suggestions from the European institutions such as a revised Transport White Paper and the evolving Digital Agenda.

In line with the strategic document, the sector has been actively engaged in pursuing the objectives of the FERS and is involved in every possible research and innovation actions to make it a reality. Any successful research and innovation action carries in the end strong perspectives for standardisation – whether product- or research-related standards – which are the crowning achievement of projects and the translation in operational reality towards the FERS. Whether they are internal projects or cross-sector cooperation, there are many opportunities to achieve the objectives of the FERS and all possible vehicles to deliver research and innovation are joined.

EU-funded framework as a vehicle for research and innovation

Among vehicles for R&I, EU Research and Innovation programmes such as FP7 and Horizon 2020 are intended to initiate and support the emergence of European poles of excellence for sciences and competitiveness. Part of their added value resides in that they complement national research programmes with a European overlay. In practice, the multi-state applicability of project outcomes is highly valued by the Commission, which explains why participants in consortia are expected to come from at least three different countries.

The current European programme, Horizon 2020, is actually the largest EU Research and Innovation programme ever proposed with a funding reaching almost €80 billion over 7 years (2014-2020). The Transport Challenge is allocated a budget of €6,339 million for the whole life of the programme, among which there is a part (that needs to improve with the next programme) dedicated to surface transport and to rail in particular.

European funding is central to supporting the collaborative work of European stakeholders from different horizons working together in consortia, which otherwise would not necessarily consider such cooperation. Successful EU projects contribute considerably to the creation of European Norms, TecRecs or International Railway Standards, providing European rail stakeholders with direct access to a wide range of possible benefits in their daily business.

In 2015, the Commission put emphasis on projects dealing with co-modality and transversal issues concerning several modes of transport with a view to maximising impact and benefits of a targeted funding. Rail-dedicated calls notably disappeared from the opportunities of development, forcing the sector to refocus on either the Shift2Rail Joint Undertaking – with Calls for Members if a member or Open Calls if non-members – or external research and innovations activities for rail-specific topics. However, this reshuffle of calls triggered a new way of thinking for rail research and innovation; reflections on transversal subjects and/or participation to topics usually not considered for a joint development with railways have emerged.

The UIC, actively committed in H2020 through 10 new or ongoing project, now integrates a wider array of fields for the benefits of the final customer which were less prioritised before. Contribution to non-traditional sectors of research and innovation with partners not necessarily approached before will ensure that the railway perspective is brought in developing a more sustainable, consistent and pleasant environment for European citizens.

The UIC is also actively developing engagement, along a wide range of partner stakeholders, in a number of the open calls within the Shift2Rail programme.

With UIC involvement

An overview of 11 on-going projects

The following list provides details about all the EU projects in which the UIC is currently involved.

UIC COORDINATOR: CAPACITY4RAIL, FOSTER RAIL.

UIC PARTNER: BODEGA, CIPRNET, GPRS FOR ETCS, GRAFFOLUTION, NeTIRail-INFRA, PREDICT, REFINET, SETRIS, TETRIS.

BODEGA

BOrdDErGuArd - Proactive Enhancement of Human Performance in Border Control

BODEGA

WEBSITE:
http:// www.bodega-project.eu

DURATION OF THE PROJECT:
01/06/2015 – 31/05/2018

COORDINATOR:
VTT
(Mr. Veikko Ikonen)

UIC CONTACT:
Ms. Virginie Papillault

PROJECT DESCRIPTION:

The aim of BODEGA project is to provide innovative, ethical and societal socio-technical solutions for enhancing border guards' performance, support border management decision-making and optimize travelers' border crossing experience.

BODEGA's main objectives are to:
- Develop an approach with ethical, societal considerations into a set of human, organizational and technical factors
- Construct a greater understanding of border guard's work and border control (future smart borders)
- Design and develop new guidelines, recommendations and specifications
- Develop and validate a toolbox for decision-makers

The expected results of BODEGA's project are to:
- Bring a major contribution in improving the effectiveness of EU border control
- Contribute to the implementation of the Smart borders Initiative
- Help reinforcing checks while speeding up border crossing for regular travelers
- Optimize procedures and enhancing the security at the moment of the crossing of the EU external borders
- Proactively target the needs and requirements of users, such as border management decision-makers, border guards and citizens

KEY ACHIEVEMENTS TO DATE:

The project has already provided a comprehensive state-of-the-art review of the existing literature and research of human factors in border guards' work. The review was focused on BODEGA's scope namely to reveal the human factors that are like to be influenced by the new technology and automation and the introduction of the Smart Borders Initiative.

A complex research investigation method has already been developed to be used on the field. It is aimed to collect essential information about the current practice in border control, end-user feedback and needs, and to indentify the major human and technical challenges associated with the increased automation in border control. The methodology includes systematic observation guides, interview guides and short surveys.

Several field studies covering air, road, rail and maritime border control points from Greece, Finland, Belgium, Austria, Poland, and Italy are currently planned and some have already started. Study participants include border guard officers working at external Schengen Area borders, managers and trainers of border guards, security staff involved in the border control process, and European and non-European travellers.

Capacity4Rail

Capacity for Rail - Towards an affordable, resilient, innovative and high-capacity European Railway System for 2030/2050

C4R
Capacity for Rail

WEBSITE:
http://www.capacity4rail.eu

DURATION OF THE PROJECT:
01/10/2013 – 30/09/2017

COORDINATOR:
UIC

UIC CONTACT:
Mr. Laurent Schmitt

PROJECT DESCRIPTION:

Paving the way for the specification of the future railway technologies and system and bringing together the major stakeholders of Industry, Infrastructure managers, Railway Undertakers, Engineering and Academic sciences, C4R will contribute to the development of guidance documents identifying further actions to be undertaken and the future technologies and systems to be developed.

It will demonstrate that a step change in railway infrastructure and operations can be achieved within the constraints of the need to maintain railway services while the work is being performed.

KEY ACHIEVEMENTS TO DATE:

The stage is set:
- Vision and roadmap have been described
- Requirements are identified for the development of concepts
- Innovative slab, innovative wagon, advanced monitoring concepts have emerged
- Modelling and assessment tools and methodologies are being set up.

Technological developments are fully running:
- Progressive refinement of slab track concepts
- Optimisation of S&C design
- Design of wagons, terminals
- Algorithm developments for operation
- Advanced monitoring techniques

The definition of the global assessment framework is under way:
- Identification of suitable corridors and sites
- Building of global scenarios

CIPRNet

Critical Infrastructure Preparedness and Resilience Research Network

PROJECT DESCRIPTION:

The Critical Infrastructure Preparedness and Resilience Research Network or CIPRNet establishes a Network of Excellence in Critical Infrastructure Protection (CIP) and Resilience (CIR). CIPRNet performs research and development that addresses a wide range of stakeholders including (multi)national emergency management, critical infrastructure operators, policy makers, and the society.

By integrating resources of the CIPRNet partners acquired in more than 60 EU co-funded research projects, CIPRNet will create new advanced capabilities for its stakeholders. A key technology for the new capabilities will be modelling, simulation and analysis for CIP. CIPRNet builds a long-lasting virtual centre of shared and integrated knowledge and expertise in CIP/CIR. This virtual centre shall provide durable support from research to end users. It will form the foundation for the European Infrastructures Simulation & Analysis Centre (EISAC) by 2020.

KEY ACHIEVEMENTS TO DATE:

A novel advanced decision-support system (DSS) for critical infrastructure operators and public authorities committed to managing emergency management. By integrating historic data from various sources, nowcast and forecast weather data, and geophysical assessments, the system is able to generate short-term warnings for critical infrastructure (CI) elements at risk. The added-value information enables CI operators taking very precisely timed and therefore cost-effective precautions against failures of endangered CI elements. A prototype of the DSS is currently in use at an Italian CI operator.

CIPRTrainer©, a system for training civil protection crisis management staff. It allows What-If analysis, that is, exploring different courses of action in complex crisis and emergency situations. The system uses federated simulation for simulating the behaviour of dependent CI during such crises and how specific CI element failures cascade. Consequence analysis provides metrics for assessing the overall consequences of the emergency evolution in terms of fatalities, injuries, and economic damages. These metrics can be used to assess which crisis management decisions are most effective for responding to and mitigating a (potential) emergency/crisis situation.

CIPedia©, a Wikipedia-like online glossary of CIP/CIR related terms. So far, it has received a total view count of over 230,000 views, with currently more than 1,000 views per day. It contains 329 content pages with definitions from 70 nations in more than 29 languages. A list of CIP related conferences, directories of CIP related organisations, and a list of acronyms complement the glossary.

FOSTER RAIL

Strengthening the Research and Innovation Strategies of the Transport Industries in Europe

FOSTER RAIL

PROJECT DESCRIPTION:

The FOSTER RAIL project is addressing the challenge to strengthen and support research and innovation cooperation strategies in the European rail sector. The project's work plan foresees to enhance coordination among main stakeholders and actors in the European rail sector and to integrate the work done so far by ERRAC and its working groups. Starting with the already published ERRAC-ROADMAP, the FOSTER RAIL project will continue to coordinate the research and innovation agenda and priority setting process among the wide range of relevant stakeholders in the rail sector. The highest level outcome of FOSTER RAIL is a new Strategic Rail Research and Innovation Agenda (SRRIA). FOSTER RAIL has produced as well in relation with the SRRIA various reports including the partners' Rail Business Scenario, a report on the Regional and Suburban Railway passenger market study update, and evaluations by project partners of past and ongoing rail research and development projects. The SRRIA is currently being translated into specific Rail Technology & Innovation Roadmaps. The FOSTER RAIL outcomes will, among others, be used to advise the European Commission, Shift2Rail and other research programmes on their rail-related activities.

The FOSTER-RAIL project is organised within a framework where the rail sector is seen as part of land transport systems integrated at various territorial levels (city, intercity, national, European, etc.). The development of a rail research strategy is challenging as it comprises a large scope of aspects of different nature. These aspects cover European, national, regional and local transport authorities and other stakeholders – namely rail industry and operators – academia and end-users. Numerous parties from other transport modes which modal share is higher than that of rail and which compete with rail on unequal basis are also considered.

Infrastructure development and management, operations of services and funding conditions are also very different according both to the rail domain – e.g. mainline or urban – and to the major category of services – freight/long and medium passenger services/local rail passenger services. In addition many (mostly local) rail services are fully integrated in multimodal public transport systems (road- and rail-based and sometimes waterborne as well).

With a view to realise the objectives of the Europe2020 Strategy and further on the vision of the White Paper 2011 for a competitive and resource-efficient future transport system, it is therefore essential to establish the proper links and cooperation between ERRAC constituents and other relevant transport related stakeholders. The FOSTER RAIL WP1 is designed to do address this mission and (re)consider cooperation with other transport European Technology Platforms (ERTRAC, WATERBORNE), rail-related National Technology Platforms (NTPs), the European Commission, decision makers and relevant transport and railway authorities both at European and Member-State level.

KEY ACHIEVEMENTS TO DATE:

- Rail Business Scenario
- Regional & Suburban Railways – Market Analysis Update
- Strategic Rail Research & Innovation Agenda
- 10 Rail Research & Innovation Technology Roadmaps
- Integrated Rail Research & Innovation Technology Roadmap

GPRS for ETCS

*also known as «ETCS over GPRS»:
Setting up the radio parameters of
the GPRS mode of GSM-R, to best
suit to the need of ETCS*

DURATION OF THE PROJECT:
01/01/2012 – 31/12/2016

COORDINATORS:
Technical: UIC
Administrative: ERTMS Users' Group

UIC CONTACT:
Mr. Piero Petruccioli

PROJECT DESCRIPTION:

The project intends to support the porting of ERTMS radio data carrier for Level 2 and level 3 applications towards IP based technologies, to make ETCS future proof from carrier dependency. GPRS is an IP based telecom solution and represents the very first step in this direction, mostly to prove the validity of the new concept and to tackle the end of technical life of GSM-R, currently estimated by around 2025. Being a more efficient transmission technology than the circuit switched classic technology used by GSM/GSM-R, the introduction of GPRS will also help to mitigate the lack of frequencies in very busy areas (like big stations) when operated with ERTMS L2/L3.

This project only addresses the problem from the radio carrier perspective, looking to the optimization of the GPRS radio link, especially for minimise the latency time.

The project is also providing technical support to ERTMS Users Group and UNISIG, which are in charge of the corresponding modification in the Euroradio protocol used by the ETCS onboard unit, to let it able to manage the exchange of safety data via the IP.

KEY ACHIEVEMENTS TO DATE:

- ETCS over GPRS - Phase 1 Final Report

GRAFFOLUTION

*Awareness and prevention
solutions against graffiti
vandalism in public areas and
transport*

GRAFFOLUTION
Understand . Collaborate . Improve

WEBSITE:
http://www.project.graffolution.eu

DURATION OF THE PROJECT:
01/03/2014 – 29/02/2016

COORDINATOR:
SYNYO GmbH
(Mr. Bernhard Jäger)

UIC CONTACT:
Mr. Grigore Havârneanu

PROJECT DESCRIPTION:

GRAFFOLUTION project aims to widen our understandings and seeks counter-intuitive responses for and from affected stakeholder groups and communities, including those who have utilised street art as part of city regeneration and place-making strategies.

The main outcome is the Graffolution platform (www.graffolution.eu) which delivers an extensive set of "Collaborative Tools and Resources" to empower transport operators and other stakeholders such as city administrations and law enforcement agencies to share knowledge and to create own intervention strategies. Furthermore, the Graffolution platform provides an interactive "Open Information Hub" addressing local communities, citizens and graffiti writers to strengthen public awareness and enforce the prevention of illegal spraying activities.

KEY ACHIEVEMENTS TO DATE:

- GRAFFOLUTION has widened the understandings and provided counter-intuitive responses for and from affected stakeholder groups and communities, including those who have utilised street art as part of city regeneration and place-making strategies.
- GRAFFOLUTION supports national and pan-European stakeholders to work together and share their knowledge to adapt graffiti vandalism prevention strategies based on reliable data and approved best practices.
- GRAFFOLUTION is also raising the awareness of impacts of graffiti writing on individuals and the community as well as offer legal alternatives for free creative expression of graffiti writers.

NeTIRail-INFRA

Needs Tailored Interoperable Railway Infrastructure

WEBSITE:
http://netirail.eu

DURATION OF THE PROJECT:
01/06/2015 – 01/06/2018

COORDINATOR:
THE UNIVERSITY OF SHEFFIELD
(Dr David Fletcher
Dr Jonathan Paragreen)

UIC CONTACT:
Ms. Isabelle De Keyzer
Mr. Airy Magnien

PROJECT DESCRIPTION:

Railway lines across Europe face different demands and challenges, from capacity constrained lines where the challenge is to further increase services and shorten travel time, through to underutilised and subsidised lines with aging infrastructure where cost reduction is critical whilst still maintaining interoperability and safety standards is critical to the sustainability of the track.

The approaches to maintenance and operation, and technology deployed on these lines should differ in order to provide an optimal solution for each scenario. The business cases for the marginally viable lines should also consider the societal impact which railway services provide. Indeed rail connects communities and provides economic agglomeration effects as well as diversionary routes which enhance the overall resilience of the railway system when perturbations occur elsewhere on the network.

NeTIRail-INFRA will be developing and demonstrating technologies (overhead line, track, smart monitoring) and best practices tailored to the needs of different categories of rail systems. The consortium consists of railway infrastructure managers and operators as well as supplier and research organisations. NeTIRail-INFRA will also assess the societal impact of railway and the business case for each alternative asset management strategy and the applications of the new technologies developed, including consideration of the incentives and regulatory and financial frameworks across the EU member states. For that purpose, a web application, supporting decision-making, will be developed. It will be based on the RailTopoModel currently developed under the umbrella of UIC.

KEY ACHIEVEMENTS TO DATE:

- Power supply technologies from different railway types across Europe analysed and best practices identified
- Geospatial analysis of costs drivers and track failure mechanisms
- Identification of best practice and track technologies to suit particular line types

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PREDICT

PREparing for the Domino effect in Crisis siTuations

WEBSITE:
www.predict-project.eu

DURATION OF THE PROJECT:
01/04/2014 – 31/03/2017

COORDINATOR:
CEA
(Mr. Dominique Sérafin)

UIC CONTACT:
Mrs. Virginie Papillault
Mr. Jochen Grimmelt

PROJECT DESCRIPTION:

PREDICT provides a comprehensive solution for effectively dealing with cascading effects in multisectoral crisis situations covering different aspects of critical infrastructures.

The PREDICT project started from an in-depth analysis of recent cases (over 8500 incidents worldwide), which will be accompanied by scenarios of potential crisis. Project partners will set up a generic approach (common framework) to prevent or mitigate cascading effects which will be applied in selected cases agreed with end-users. As modeling each phenomenon separately in a specific environment is not effective, the PREDICT project will propose cohesive and comprehensive models of dependencies, cascading effects and common mode failure which will include causal relations, multisectoral infrastructure elements and environment parameters, as well as the human factor aspects.

The PREDICT solution will be composed of three pillars: methodologies, models and software tools. Their integrated use will increase the awareness and understanding of cascading effects by crisis response organizations, enhances their preparedness and improves their response capability in case of cascading failures.

In the cold phase of a crisis PREDICT tools are suited to increase the awareness and the understanding of cascading effects in crisis situations (training), thus enhancing the preparedness for cascading effects. In the warm or hot phase of a crisis, the PREDICT tools are aimed to improve the capability to respond at the level of decision makers.

KEY ACHIEVEMENTS TO DATE:

- PREDICT will deliver software tools bundled in the PREDICT Incident Evolution Tool. It will consist out of two core components: a Foresight and Prediction Tool (for simulation of the evolution of cascading effects and impacts on multi-sectoral dependencies) and a Decision-Support Tool (for determining the best course of action and to calculate the risk associated with them).
- The usefulness of the tools will be validated by end users and recommendations for it's employment will be made.

REFINET

REthinking Future Infrastructure NETworks

REFINET
INFRASTRUCTURE ⬢ MOBILITY

WEBSITE:
http://refinet.eu/

DURATION OF THE PROJECT:
01/05/2015 – 01/05/2017

COORDINATOR:
CSTB (FR)
(Mr. Alain Zarli)

UIC CONTACT:
Mr. Dennis Schut

PROJECT DESCRIPTION:

Launching a European long-term ambition and initiative to increase the overall performance of multimodal transport infrastructures, the REFINET CSA intends to:

■ create a sustainable network of European and international stakeholders' representatives of all transport modes and transport infrastructure sectors,

■ deliver a shared European vision of how to specify, design, build or renovate, and maintain the multimodal European transport infrastructure network of the future along with innovative processes so as to enhance the effectiveness of the sector, and

■ elaborate a Strategic Implementation Plan with a comprehensive set of prioritised actions to made the REFINET vision a reality as well as providing private and public decision makers with a set of up-to-date recommendations and guidelines (including good practices and lessons learnt) for strategic actions and required levels of cooperation between all stakeholders.

REFINET will consider two complementary scenarios, namely maintenance and upgrading of existing transport infrastructures, and development of new transport infrastructures. REFINET will contribute to create a European-wide consensus on where to focus in terms of research and innovation to improve the productivity of the assets (reducing maintenance costs, extending the life span…) and reduce drastically traffic disruptions of transport flows from inspection, construction and maintenance activities, and to accommodate increasing/changing traffic demand.

Thus, REFINET will pave the way to enhanced technology integration and transfer and mass-market development for innovative materials, components, systems and processes supporting the pan-European generalization of advanced multimodal infrastructures, handling the demand within various industrial sectors and help match the EU-2020 Strategy, and achieve goals of main stakeholders. The REFINET consortium is made of 8 partners from 5 European countries (Spain, France, Italy, Belgium, United Kingdom).

KEY ACHIEVEMENTS TO DATE:

■ Online Directory of stakeholders

■ Mid-term strategy plan on consolidation and expansion of REFINET network

■ REFINET multi-modal transport infrastructure (RMMTI) model.

SETRIS

Strengthening European Transport Research and Innovation Strategies

SETRIS

WEBSITE:
http://newrail.org/setris/

DURATION OF THE PROJECT:
01/04/2015 – 31/03/2017

COORDINATOR:
UNIVERSITY OF NEWCASTLE UPON TYNE & ECTRI

UIC CONTACT:
Mr. Dennis Schut

PROJECT DESCRIPTION:

The aim of SETRIS is to deliver a cohesive and coordinated approach to research and innovation strategies for all transport modes in Europe.

To fulfil the aim of SETRIS, the following objectives are envisaged:

1. To identify synergies between the transport European Technology Platforms (ETPs) strategic and research and innovation agendas (SRIAs) and between these and relevant national platforms;

2. To review and update the existing SRIAs for each of the transport ETPs within a multi-modal and integrated transport system framework;

3. To benchmark past and present research initiatives affecting the achievement of integrated transport SRIAs and market uptake;

4. To define comprehensive, credible and realistic implementation plans for each SRIAs in a coordinated framework of running ETPs;

5. To support, shape and contribute to future TRA events.

Objectives 1-4 lead to two integrated agendas highlighting not only innovations or research activities that need to be done but also the changes in governance that are required to facilitate these Agendas.

These objectives will be implemented through the involvement, for the first time, of representatives of all relevant transport modes and European Technology Platforms within one single collaborative initiative. The ETPs will develop a framework for long-term cooperation between actors from all transport modes that will support the cohesive and coordinated approaches to research and innovation strategies that will facilitate the delivery of a truly integrated transport system.

The potential impact of SETRIS for the transport sector is extremely significant and the successful outcome of SETRIS is essential for Europe's transport future. SETRIS will impact by defining comprehensive, credible and realistic implementation plans for joint SRIAs in a coordinated framework of running ETPs. This is a leap forward is cooperation between the ETPs and has been fully supported by the ETPs.

KEY ACHIEVEMENTS TO DATE:

■ Report Truly Integrated Urban transport System.

■ Report Truly Integrated Long Distance Transport System.

■ Recommendations on the future TRA structure.

TETRIS

*Terrorists in Europe Targeting
Railway InfrastructureS*

DURATION OF THE PROJECT:
06/2014 – 06/2016

COORDINATOR:
CEIS (BE)
(Mr. Axel Dyèvre)

UIC CONTACT:
Mrs. Marie-Hélène Bonneau
Mr. Jochen Grimmelt

PROJECT DESCRIPTION:

TETRIS supports member States in their counter-terrorism strategies by developing tools allowing for a better understanding of the terrorist threats targeting railway systems and training those involved in managing the consequences of an attack.

■ The TETRIS project provides EU Member States, special transport police forces, firefighters, railway operators and private contractors, securing railway networks, with a typology of terrorist groups as well as typical scenarios of attacks, which could be used for operational and training purposes.

■ TETRIS will support the users in this endeavor by developing tools allowing for a better understanding of the terrorist threat targeting railway systems, and enabling the training of the actors engaged in the management of the consequences of an attack.

■ The end-users will be immersed in a crisis management exercise, during which the tools provided by the project will enable them to visualize the consequences of a terrorist attack and take decisions to mitigate the crisis with the support of a role-play tool.

KEY ACHIEVEMENTS TO DATE:

The project will deliver the following outputs:

■ A threat assessment tool enabling the analysis of operational capabilities of terrorist groups and operational components of an attack. The project compiled and analyzed a data base of 259 terrorist attacks which were perpetrated in Europe since the 1970s, to identify cases of attacks against railway infrastructure and to identify trends in the way attacks against railway infrastructures were conducted.

■ Identification of typical scenarios stemming in the threat assessment tool. Based on the analysis of the gathered information, different options for the scenario of a terrorist attack were identified and validated by end-users during a workshop.

■ Specifications and guidelines for the organization of an exercise. A basic exercise scenario was developed and augmented by numerous inserts allowing participating entities to perform a crisis management exercise at different levels (management level, ops center level) and in different forms (table top, staff exercise).

■ A platform, allowing the simulation of the consequences of an attack. A 3D simulation tool that provides the visualization of the described scenario, in a 3D animation, showing the events and the consequences for the exercise participants.

■ Building on the lessons learned, the project will deliver recommendations and a user-manual for future exercises.

■ A public dissemination report of the non restricted findings of the project and an exploitation plan.

Recent success stories

Below are a number of EU co-financed projects in which UIC was involved either as Project Coordinator or as Dissemination workpackage leader. Those projects came to an end in 2015 or in 2014 but are perfect illustrations of the high quality of work UIC delivered within these collaborative projects.

EMC Axle Counter validation

Validation of the CCS TSI measurement specification and assessment of the compatibility of selected rolling stock with all axle counters in use in the EU railway system.

WEBSITE:
http://www.ertms.be/#/T2011

DURATION OF THE PROJECT:
01/12/2012 – 30/06/2015

COORDINATOR:
EEIG ERTMS Users Group

UIC CONTACT:
Mr. Piero Petruccioli

PROJECT DESCRIPTION:

The project was aimed at the validation of parameters and requirements of the part of the EU railway system referring to axle counters and specifying how conformity with these requirements is to be achieved in the TSI.

The objectives of the activity were two-fold:

■ Validate the CCS TSI measurement specification against existing methods for assessing compatibility, for selected axle counters, with selected existing rolling stock types;

■ Assess the suitability of the selected rolling stock to meet the requirements for compatibility with all axle counters covered by the frequency management as defined in the CCS TSI.

A series of nine parallel national test campaigns has taken place following the agreed work programme basically composed of 1 week of testing in traffic/operation or on a test ring per Member State and per power supply system (25kV AC, 15kV AC, 3kV DC, 1.5kV DC) and 3 weeks of data processing, analysis and reporting.

A validation report has been produced by each participant with change proposals for the vehicle emission limits and measurement specification in the CCS TSI, if supported by test results. Finally the project gave confirmation of the ERA measurement methodology defined for interoperable axle counters as a suitable one for existing axle counters and formulation of the long term migration strategy to the target system in individual MS where applicable.

The methodology can be extended at individual MS level to non TSI compliant axle counters and allows lifting of existing national on-site verifications, supporting the cross acceptance process.

KEY ACHIEVEMENTS AT PROJECT END:

■ TEN-T 2011-EU-60013-S WP11-EMC Axle Counter Validation Project Final Report 30/09/2015, ISBN 978-2-7461-2433-2, UIC ©.

FRMCS

Future Railway Mobile Communication System - Finding the best solution for the substitution of GSM-R and the management of the transition

DURATION OF THE PROJECT:
01/01/2012 – 31/12/2015 (+ future follow up)

COORDINATORS
Technical coordinator: UIC
Administrative coordinator: ERTMS Users' Group

UIC CONTACT:
Mr. Piero Petruccioli

PROJECT DESCRIPTION:

The project aims to ensure the mobile communications for railway needs on the long term by tackling in advance the end of technical life of the current GSM-R standard Tlc system, that is currently estimated to arrive at around year 2025. A smooth migration to other solution(s) is also one of the primary targets of the project, as well as to keep costs under control.

The main principles that will be followed in the project can be summarised as in the following: Evolution to IP based technologies; Split of application layer from communication layers, for both voice and data communications, so to let the functions evolve independently from the supporting technology(-ies);

Using off the shelf technology as far as possible, with no railway dedicated development (to control the costs);

Identifying and promoting Common operational requirements; Maintaining a high level of safety; Promoting the evolution in a structured way.

KEY ACHIEVEMENTS AT PROJECT END:

■ FRMCS Users' Requirements Specifications, v. 1.4, March 2016 © UIC

GSM-R Interferences

Protecting the GSM-R system from interferences produced by Public Mobile Networks

DURATION OF THE PROJECT:
01/01/2012 – 31/12/2015

COORDINATORS:
Technical: UIC
Administrative: ERTMS Users' Group

UIC CONTACT:
Mr. Piero Petruccioli

PROJECT DESCRIPTION:

The project intends to tackle the serious problem of GSM-R Interferences mainly caused by public operators, including new broadband technologies (UMTS, LTE, etc.) in 900 Mhz. The activity covers 4 specific tasks:

1. Lab and Field Test campaign to check the broadband technologies effects on the GSM-R system and recommendation of technical as well as coordination solutions to reach a functional and future-proof co-existence between Public Mobile and GSM-R networks (UIC report O-8736, now published)

2. Analysis of possible technical solutions for the Railway and Public Operators, in collaboration with EU Tlc Authorities (mainly CEPT\ECC and ETSI);

3. Definition of specifications for Radio Modules (interferences resistant), including external filter solution;

4. Evaluation for other possible GSM-R-complementary solutions (e.g. raised minimum network coverage level); validation of such through test campaign, propose Change Requests if applicable.

In any case the proposed solutions will be backward compatible, future proof and economically viable.

KEY ACHIEVEMENTS AT PROJECT END:

■ GSM-R Interference new UIC database (in operation)

■ UIC study for the max allowed interference levels from public emitters (doc. O-8736)

■ ECC Report 229 (with contribution of UIC) for coordination of railway-public radio deployment

MAINLINE

Maintenance, renewal and improvement of rail transport infrastructure to reduce economic & environmental impacts

MAIN LINE

WEBSITE:
http://www.mainline-project.eu

DURATION OF THE PROJECT:
01/10/2011 – 31/09/2014

COORDINATOR:
UIC

UIC CONTACT:
Mr. Björn Paulsson

PROJECT DESCRIPTION:

Growth in demand for rail transportation across Europe is predicted to continue. Much of this growth will have to be accommodated on existing lines that contain old infrastructure. This demand will increase both the rate of deterioration of these elderly assets and the need for shorter line closures for maintenance or renewal interventions. However, interventions on elderly infrastructure will also need to take account of the need for lower economic and environmental impacts. This means that new interventions will need to be developed. In addition tools will need to be developed to inform decision makers about the economic and environmental consequences of different intervention options being considered. MAINLINE proposes to address all these issues through a series of linked work packages that targeted at least €300m per year savings across Europe with a reduced environmental footprint in terms of embodied carbon and other environmental benefits.

Project benefits will come from keeping existing infrastructure safely in service through the application of technologies and interventions based on better life cycle cost (LCC) considerations.

KEY ACHIEVEMENTS AT PROJECT END:

- Guideline to extend life of elderly rail infrastructure
- Guideline for replacement of elderly rail infrastructure
- Life Cycle Assessment Tool ready to use in parts like metallic bridges and track

MERLIN

Sustainable and Intelligent Management of Energy for Smarter Railway Systems in Europe: An Integrated Optimisation Approach

merlin

WEBSITE:
http://www.merlin-rail.eu/

DURATION OF THE PROJECT:
01/10/2012 – 30/09/2015

COORDINATOR:
UNIFE
(Mr. Andrea Demadonna)

UIC CONTACT:
Ms. Isabelle De Keyzer
Mr. Gianfranco Cau

PROJECT DESCRIPTION:

MERLIN's main aim and purpose was to investigate and demonstrate the viability of an integrated management system to achieve a more sustainable and optimised energy usage in European electric mainline railway systems.

MERLIN was aimed at providing an integrated optimisation approach that includes multiple elements, dynamic forecasting supply-demand scenarios and cost considerations to support operational decisions leading to a cost-effective intelligent management of energy and resources.

MERLIN also delivered the interface protocol and the architecture for energy management systems in the railway domain, combining the technical development with new business model that would enable and foster their application.

The final conference of the MERLIN project was held in Madrid on 10 December 2016.

KEY ACHIEVEMENTS AT PROJECT END:

- Global Consumption Map and Analysis
- Reference Architecture for Operational REM System Making
- MERLIN Business Models
- Proposals for TecRecs (D7.3 Specification and verification of energy and power consumptions of railway systems / D7.4 Energy and power related information protocols at operational level)

REFRESCO

Towards a REgulatory FRamework for the usE of Structural new materials in railway passenger and freight CarbOdyshells

PROJECT DESCRIPTION:

The overall objective of REFRESCO was to set the framework for the implementation of new lightweight materials in the railway sector through the evolution of certification processes for rolling stock. REFRESCO was aimed at generating recommendations and providing the information needed to adapt the regulatory framework of railway carbody structures to the introduction of new lightweight materials. Delete: (and at paving the way for the wider application of new lightweight materials in railway vehicle construction).

Such materials are already used in other sectors, both within and outwith transport. In aeronautics, structural and non-structural parts of aircraft are being made from composite materials. The industry has done this progressively, gaining confidence over decades in the performance of such materials for aircraft construction. These materials are also being used in the wind power sector, in the manufacturing of turbines. REFRESCO built upon the extensive knowledge developed in such sectors, in order to apply them in the rail sector and without duplication of the work already carried out by others. This was done in part by taking advantage of the presence in the REFRESCO consortium of partners with direct and indirect involvement in aeronautics.

KEY ACHIEVEMENTS AT PROJECT END:

- Benchmarking current and state-of-the-art materials and of existing homologation processes and technical standards
- FST strategy for structural composite parts based on material properties
- Characterisation of composite materials in railways for structural calculations, including Crashworthiness and damage scenarios
- Benchmarking of DT strategy and NDT catalogue

Recommendations and provide the information needed to adapt the regulatory framework of railway car-body structures to the introduction of new materials.

RESTRAIL

REduction of Suicides and Trespasses on RAILway property

PROJECT DESCRIPTION:

The aim of the RESTRAIL project was to help reduce suicides and trespassing accidents on railway property and mitigate the consequences following from such incidents, by providing the rail industry with an analysis and identification of cost-effective measures. RESTRAIL's main objectives were to:

- Analyse the causes of suicides and trespass on railway property based on existing data, studies and research results
- Identify the various available prevention and mitigation measures and analyse their conditions for success in the rail environment
- Test some of the selected measures and evaluate their effectiveness on the field
- Propose a toolbox of the most relevant and cost-effective measures and recommendations at European level both to reduce the occurrence of incidents as well as to manage incidents and reduce consequences

KEY ACHIEVEMENTS AT PROJECT END:

- Several peer-reviewed publications by RESTRAIL Consortium partners in international journals and conference proceedings. Publications include literature reviews on existing measures and best practice, methodologies to assess and select recommended measures, theory-based intervention models to analyse the antecedents of rail suicide and trespass related incidents, and reports on some RESTRAIL field studies. More publications are currently under review.
- Eleven pilot tests conducted by several RESTRAIL partners brought additional empirical evidence for the effectiveness of new measures.
- The RESTRAIL toolbox is available online and is under continuous updates since the end of the project. It includes a collection of recommendations, guidelines, best practice and study results which support better decision making and optimise the implementation of measures.

SATLOC

Satellite based operation and management of local low traffic lines

(((SATLOC)))

WEBSITE:
http://satloc.uic.org/Project-summary

VIDEO PRESENTATION:
https://youtu.be/tpIxf_O1ac4

DURATION OF THE PROJECT:
01/01/2012 – 30/04/2014

COORDINATOR:
UIC

UIC CONTACT:
Mr. Teodor Gradinariu

PROJECT DESCRIPTION:

The project has successfully addressed the development and demonstration of innovative GNSS safety in live rail application for the train control, speed supervision, traffic control and traffic management of low traffic lines (LTL). The application contributes to the adoption of EGNOS in rail primary safety and paves the way for the introduction of Galileo in the rail safety domain. Application is in a broad context since it introduces the GNSS train positioning and speed determination with SoL characteristics in all critical operations of a railway line. The project includes the development of new rail integrated operational concept, software, hardware, services and datasets compatible with the current evolution of rail signalling and rail standards.

The application target is the low traffic lines (UIC E lines category) which represent a large market (40% of the European network, and much more world-wide) in full complementarity and migration to the ETCS when GNSS is applied in a holistic approach.

The demonstration has enabled the proof of concept for train integrity monitoring using GNSS, which can be used for the ERTMS/ETCS Level 3 application first through the concept validation in a laboratory and later on the pilot line from Brasov to Zarnesti in Romania. The ERTMS Regional (the UIC project with pilot line in Borlange – Sweden) has directly benefited from this development and the results of the SATLOC project are being promoted.

KEY ACHIEVEMENTS AT PROJECT END:

- GNSS train positioning and speed determination with SoL characteristics in all critical operations of a railway line
- Development of new rail integrated operational concept, software, hardware, services and datasets compatible with the current evolution of rail signalling and rail standards
- A fully operational – low cost - rain integrity monitoring using GNSS, which can be used for the ERTMS/ETCS Level 3 application – a very sound solution for especially low density lines

SECRET

SECurity of Railways against Electromagnetic aTtacks

SECRET
PROJECT

SECURITY OF RAILWAYS AGAINST
ELECTROMAGNETIC ATTACKS

WEBSITE:
http://www.secret-project.eu/

DURATION OF THE PROJECT:
0108/2012 – 30/11/2015

COORDINATOR:
IFSTTAR (FR)
(Mrs. Virginie Deniau)

UIC CONTACT:
Mrs. Marie-Hélène Bonneau

PROJECT DESCRIPTION:

The SECRET EU project addresses the issue of electro-magnetic attacks targeting rail infrastructure and contributes to reinforce the signalling systems. The electro-magnetic attacks considered in SECRET are low power intentional interferences that can break the communication links and affect voice communication and the good transmission of signalling information.

The SECRET consortium and its 10 members came together to assess the risks and consequences of electromagnetic (EM) attacks on the rail infrastructure, to identify preventive and recovery measures and to develop protection solutions to ensure the security of the rail network, subject to intentional EM interferences, which can disturb a large number of command-control, communication or signalling systems.

The project illustrated the risk by implementing some electromagnetic attacks and analyzing their effects, thereby inciting the different railway actors to work together to strengthen the resilience of a system that must remain effective and safe for the serenity of our society.

Then, the project opened ways to resilience solutions regarding this type of attack. Preferring to avoid unconstructive and alarming rhetoric, which is unjustified as the European railway system is above all a very safe means of transport, the project identified and proposed strategies in which each actor would be able to inspire itself in order to act towards resilience.

KEY ACHIEVEMENTS AT PROJECT END:

The project has produced about 40 recommendations at organisation, standardization and technical levels. They have been identified, classified, and described.

The 3 types of recommendations identified are the following:

- Prevention from EM jamming effects: these recommendations can be adopted permanently and can permit to inhibit or reduce the impact of jamming signal (precautionary principle).
- Detection of EM attack solution: different detection techniques and their potential applications which were studied in SECRET are presented.
- Mitigation of EM jamming effect: these recommendations focus on solutions which can be activated temporally in situation of EM jamming. These recommendations are then conditioned by the existence of an attack detection solution.

All these recommendations have been compiled in a white paper available on the project website.

SPECTRUM

Solutions & Processes to Enhance the Competitiveness of Transport by Rail in Unexploited Markets

WEBSITE:
http://www.spectrumrail.info

DURATION OF THE PROJECT:
01/05/2011 – 30/04/2015

COORDINATOR:
Newrail
(Mr. Tom Zunder)

UIC CONTACT:
Mr. Dennis Schut

PROJECT DESCRIPTION:

SPECTRUM has explored the market opportunities for transport of low density, high value (LDHV) goods, utilising new and innovative rail concepts. Focus was on the extension of existing 21st century rail services and more visionary rail logistics services. Early project proceedings set the foundations for detailing concepts by defining technological and operational requirements.

SPECTRUM has developed a detailed design concept for a high performance freight train that is efficiently lightweight, has driving performance characteristics that facilitate mixed running with passenger services and is capable of accommodating the required types of freight container unit. The SPECTRUM Final Conference - Innovation and Opportunities for Rail Freight in the 21st Century - was held at the UIC on 30 March 2015

KEY ACHIEVEMENTS AT PROJECT END:

- Market based operational requirements for new railfreight services
- Detailed structural design concept for a high performance freight wagon...
- Prototype demonstrator system(s) and validation report..
- SPECTRUM Electronic Handbook...

SUSTRAIL

Sustainable Freight Railways: Designing the freight vehicle-track system for higher delivered tonnage with improved availability at reduced cost

WEBSITE:
http://www.sustrail.eu/

DURATION OF THE PROJECT:
01/06/2011 – 31/05/2015

COORDINATOR:
Consortium Train
(Mr. Donato Zangani)

UIC CONTACT:
Mr. Laurent Schmitt

PROJECT DESCRIPTION:

The Sustrail objective was to contribute to the rail freight system to allow it to regain position and market, accounting for:

The increase of the demand of the total freight transport volumes: 40% (in tonne-kilometres) by 2030 and 80% by 2050;

The shift of 30% of road freight over 300km to other modes such as rail or waterborne transport by 2030 (50% by 2050) as targeted by the European Commission.

Within this framework and motivated by the necessity and opportunity for change in rail transport, Sustrail provided the approach, structure, and technical content to improve the Sustainability, Competitiveness, and Availability of European railway networks thanks to an integrated approach.

KEY ACHIEVEMENTS AT PROJECT END:

- Outline design of a novel innovative lightweight high performance freight wagon body, braking system and bogie design.
- A set of design requirements in the form of a design handbook for sustainable freight vehicles.
- Performance analysis of vehicle and infrastructure upgrades for higher freight capacity.
- And many more – see the project website for all deliverables to download

STAR TAP TSI PHASE II

Startup of the Telematics Applications for Passenger Rail

WEBSITE:
http://TAP-TSI.uic.org

DURATION OF THE PROJECT:
February 2013 – July 2014

COORDINATOR:
UIC

UIC CONTACT:
Mr. John Lutz

PROJECT DESCRIPTION:

The objective of the project is to establish the architecture, baseline specifications and governance for the implementation of the 'Telematics Specification for Interoperability, Telematics Applications for Passenger,' European Regulation 454/2011.

Currently, many underlying information systems cannot talk to each other. Therefore, the purpose of the TAP TSI is to define European-wide procedures and interfaces between all types of railway industry actors (passengers, railway undertakings, infrastructure managers, station managers and ticket vendors) that will guarantee an interoperable and cost-efficient information exchange system for Europe. The TAP TSI establishes the legal framework that enables the provision of high quality journey information and ticket distribution to Passengers in a cost effective manner.

The STAR Project addresses the development (Phase II) of the TAP TSI implementation. The development effort builds upon existing investment and activity by introducing common European specifications for rail ticketing, operations management and information systems in order to support integration within the European Union. UIC delivered the baseline standards through the implementation preparation (Phase I project) in 2012.

KEY ACHIEVEMENTS AT PROJECT END:

The results of the STAR project serve to achieve the continuous improvement of European rail ticketing, operations and passenger information systems through the Full Service Model, thus providing a more attractive and convenient service to rail passengers in the European Union, enabling a quality product to meet the mobility and transport needs of its users. Conformant to Article 4 of the TEN-T Guidelines, the implementation of the TAP TSI significantly contributes to the stated mobility objectives and fosters economic growth and competitiveness within the Union.

The key achievements of the project were successfully delivered:

- Publication of a harmonised data Catalogue for operations. The project resulted in a consolidation of the data catalogues used for both the TAF and TAP TSI. The poject assured that the business needs of both Freight and Passenger operators were taken into account, resulting in a streamlined system for maintenance of the ERA Technical Documents.

- Establishment of an IT Architecture for interoperability. An overall system architecture was defined that comprises the entire TAP Ecosystem, allowing access to required data amongst all stakeholders required to implement the Regulation. This architecture assures interoperability of both Operational and Retail systems.

- Establishment of the TAP-TSI Master Plan. The project produced the TAP-TSI Master Plan that brought together the implementation plans of over 40 railways and groups of railways, covering 70 individual railway undertakings (RUs) and infrastructure managers (IMs). This result significantly strengthened the collaboration between the Railway Operating Community (ROC) stakeholders and provided the framework for future implementation and monitoring. Although DG Move and ERA are the primary recipients of this output, it provides a harmonised work plan for the rollout of the TAP-TSI. This deliverable currently is published by ERA.

- Establishment of an Agreed Governance Structure Framework amongst myriad stakeholders. The solution delivered in the STAR project provides a robust legal framework for future implementation of the required TAP Regulatory Services. In addition, it defines the basic operating rules that will govern implementation activities, including tendering future systems as delivered in the IT Architecture for interoperability.

The SEESARI Project – the South East Europe Strategic Alliance for Rail Innovation

SEESARI is the initiative to support the development of the transport system in South East Europe – ranging from Austria to Turkey - with the focus on railway research, development and innovation, (re)-establishing cross-border connections and linking the area to rail corridors, harbours and airports and to the TEN-T network. Looking at the official maps issued by the European Commission, the TEN-T transport corridors are situated mainly on the territory of the EU Member States. However, connecting Europe should include also the other Balkan countries which form a major part of this strategic North – South corridor and connection between Northern and North West Europe and the Middle East with the so-called 'Silk Route". SEESARI aims to establish a well developed, well connected and efficient transportation system with the railway as its backbone, stimulating the development of the economy of this region.

The idea about the South East Europe Alliance was first presented by Dr. Peter Verlic of the Slovenian Railways at the South East Europe Rail Conference in October 2014 in Belgrade with the support of the UIC. Following a very positive response, preparatory meetings were held in Ljubljana and in Belgrade with the major interested parties.

The main goal of the initiative is the clustering of the main stakeholders such as the railway operators and infrastructure managers, railway and transport associations, universities, transport research institutes, financial institutions, investors as well as other interested organisations and working towards a public private partnership developing and implementing essential projects.

On the basis of a Strategic Innovation Plan an Action Plan is under preparation in order to identify the needs, set the priorities and launch the innovative solutions and projects that would support the development of railways in South East Europe and its contribution to the wider European railway system. A first draft of the Strategy and Action Plan was be presented and discussed during the kick-off meeting of the SEESARI project. As main priorities were discussed: development of the regional rail network and a high speed network, integration of passenger transport, common rolling stock procurement, Interoperability & technical standards, cooperation in freight transport and human resources and skills issues

The Kick-off event was hosted by the Serbian Railways and brought together 70 organisations from 16 countries!

The SEESARI work programme has been built on a number of European Union sources including the topics in the 2011 Transport White Paper, Horizon 2020 research and innovation programme, SHIFT2RAIL, CEF and also the rail sector's long term vision as set out in the Challenge 2050 document and in the UIC's Rail Technical Strategy Europe (RTSE) and Global Vision for Railway Development (GVRD).

A Memorandum of Establishment has been signed by the Serbian Railways, the UIC and the Transport Research Institute (Prometni Institut) of the Slovenian Railways. Following this event, the Memorandum has been sent for signature to all other interested organisations. Dr. Peter Verlic – former Slovenia State Secretary responsible for the Railways and Director of the Institute – has been elected as the chairman of the Alliance and project and will be supported by Dennis Schut of the UIC in the role of the SEESARI secretary. All members of SEESARI will be member of the Plenary Committee with the core-members will form the Steering Committee, which will convene in May or June. The Terms of Reference are under preparation.

For more information please contact:
   Mr. Dennis Schut - schut@uic.org or
   Mr. Blaz Jemensek - blaz.jemensek@prometni-institut.si.
Visit the project website: http://www.seesari.org

SHIFT²RAIL – Joint Undertaking officially started its activities

The SHIFT2RAIL (S2R) Joint Undertaking officially launched its first calls – both for members and open calls – in December 2015, finally turning from an ambitious project to a concrete reality for the rail research and innovation scene in Europe.

S2R, AN AMBITIOUS VEHICLE FOR RAIL RESEARCH AND INNOVATION

Based on a European Commission legislative proposal dated December the 16th 2013, Shift²Rail has set itself out to become the single rail research and innovation (R&I) European initiative. S2R, in line with Europe's current social and economic needs, centred its action on three core principles: augmenting European rail system capacity to meet an ever-growing demand for mobility of people and goods, further developing reliability and quality of the rail system and bringing down the overall system life cycle and maintenance costs.

Aimed at concentrating the efforts and maximising outputs of developed business-led solutions, the S2R framework will equally support a fast integration of new and advanced technologies into innovative solutions, effectively bolstering a highly reliable, efficient and sustainable Future European Railway System (FERS) that is attractive to the customer. The ambition of the Rail Operating Community (ROC) is such that rail becomes the first choice mode of land transportation in Europe. Shift²Rail's ambitious mission encompasses research, innovation and demonstration activities in all areas relevant to the future rail system.

The JU's activity is divided into 5 Innovation Programmes (IP) whose work streams follow the main components of the railway system:

- IP1: Cost-efficient and reliable trains, including high capacity trains and high speed trains
- IP2: Advanced Traffic Management and Control Systems
- IP3: Cost Efficient and Reliable High Capacity Infrastructure
- IP4: IT Solutions for Attractive Railway Services
- IP5: Technologies for Sustainable & Attractive European Rail Freight

All of these elements are bound together with a transversal sixth work stream – entitled Cross-Cutting Activities – covering vital topics enabling a consistent and cohesive functioning of the railway system. The systemic perspective is the sine qua non condition to achieve this objective although is not necessarily the top priority of all the stakeholders.

To support its fast and sound development as well as the work of these six IPs, the JU can rely on a number of internal bodies designed to focus on the system perspective and consider the practicalities of the innovations developed within the JU.

The System Integration Working Group will notably manage this first aspect through a constant monitoring of the outputs of the JU. Two Users Group on Requirements and on Implementation and Deployment will respectively be tasked with conveying the ROC business needs in JU-innovation and to accompanying the smooth deployment of developed solutions into real life operation.

S2R is also supported by a States Representatives Group ensuring a balanced development within the Member States and Associated States as well as a Scientific Committee supervising the scientific and technical soundness of S2R innovations.

AN UNPRECEDENTED JOINT EFFORT FOR RAIL R&I

Shift²Rail undoubtedly represents an unprecedented joint effort of almost €1 billion by the European rail sector and the European Union to initiate and push a real breakthrough in rail technology with a view to developing and completing the future European railway system.

Over half of its financing comes from railway sector stakeholders, comprised of 8 Founding members and 19 Associated Members from the manufacturing world and the Rail Operating Community (ROC). Such a gathering of knowledge and ambition from the sector is hoped to produce outstanding concrete results over the 7 year lifespan of the initiative

With the appointment of Mr. Carlo Borghini as Executive Director on 16th February 2016, taking up his post on 16th May, S2R should be able to rapidly reach its line speed and expected efficiency after a somewhat lengthy gestation period. The time the JU took to initialise and develop the rules governing its structure and members' work is expected to be rapidly made up for by intense activity on the work on detailed projects.

Indeed, undaunted by the delay, the sector is now actively working from both inside and outside the JU together with the European Commission to ensure that the objectives proclaimed by S2R will turn into reality and open the way for the Future European Railway System.

Ongoing realisations and work ahead: a busy agenda

Work connected with the S2R programme actually started in 2014 through three so-called lighthouse projects which are preparing a solid ground for future developments.

- IN2RAIL focuses on developing the foundations for a resilient, consistent, cost-efficient, high capacity European network through the delivery of building blocks enabling the innovation inside S2R

- IT2RAIL is seeking to develop solutions providing a seamless travel experience by offering a complete multimodal travel solution, connecting door-to-door long journeys.

- ROLL2RAIL targets key technologies which will tackle existing blocking points to radical innovation in railway vehicles, with a long-term view to revolutionise the future rolling stock.

For its first phase of projects, the JU and its members decided to focus on a handful of key topics split between calls for members of the JU (CFM) and open calls (OC).

- These topics will notably cover the following subjects:
- Start-up activities for Advanced Signalling and Automation System
- Shopping, booking and ticketing of multimodal travel solutions
- Travel companion and tracking services
- Development of functional requirements for sustainable and attractive European rail freight.
- Start-up activities for freight automation
- Freight propulsion concepts
- Start-up activities for System Platform Demonstrator Integrated Assessment and socio-economic effects
- Energy and sustainability, including noise and vibrations baselines assessment
- Integrated Mobility and Safety Management
- Development of concepts towards the next generation of traction systems and management of wheel/rail adhesion
- Development of new technological concepts, standard specifications and architectures for train control and monitoring, with specific applications in train-to-ground communications and high safety electronic control of brakes
- Research into enhanced track and switch and crossing system
- Intelligent maintenance systems and strategies
- Start-up activities for System Platform Demonstrator Integrated Assessment and socio-economic effects
- Energy and sustainability, including noise and vibrations baselines assessment
- Integrated Mobility and Safety Management
- Start-up activities for Advanced Signalling and Automation System
- Shopping, booking and ticketing of multimodal travel solutions
- Travel companion and tracking services
- Development of functional requirements for sustainable and attractive European rail freight.

- Start-up activities for freight automation
- Freight propulsion concepts
- Long-term needs of different actors in the railway sector
- Energy usage, generation and saving approaches
- Noise reduction methodologies
- Safer infrastructure – improved object detection and prevention of safety critical events and integrated mobility
- Threat detection and profile protection definition for cyber-security assessment
- IT virtualization of testing environment
- Technical specifications for a new Adaptable Communication system for all Railways.
- Freight Automation on lines and in yards
- Improved vehicle/train dynamics
- Intelligent freight wagon with predictive maintenance
- Development of concepts towards the next generation of traction systems and management of wheel/rail adhesion
- Development of new technological concepts, standard specifications and architectures for train control and monitoring, with specific applications in train-to-ground communications and high safety electronic control of brakes
- Research into enhanced track and switch and crossing system
- Intelligent maintenance systems and strategies
- Tools and methodologies supporting the development of next generation traction systems, and brakes
- Technology feasibility studies supporting the development of next generation TCMS, and safe control for brakes
- Research into new radical ways of changing trains between tracks
- Interoperability Framework governance, ensuring its market uptake and sustainability
- Interoperability Framework Converters

Both types of calls are intended to work in synergy to maximise the benefits they will generate and make sure the focus is put on the same priorities – favouring constant exchanges between JU members and OC consortium. As a way to support diversity through consortia and strengthening proposals technical soundness, the JU indicated that they would not accept any single-stakeholder proposals for OC.

THE ROC AND THE JU

Fully committed to a joint development with all the sector's stakeholders, the ROC is highly motivated and well involved in the promising field of research and innovation opened up by the work of Shift2Rail.

The ROC is involved in S2R in different forms, allowing for a wide range of opportunities to efficiently participate in S2R in conjunction with the sector:

- Network Rail (UK) and Trafikverket (SE) are Founding Members of Shift2Rail, actively contributing to shape S2R to reflect the business needs of daily operation for the ROC.

- DB (DE) and SNCF (FR) applied for and received Associate Membership as single entities, enthusiastically pledged large commitments in S2R to converge in achieving significant outcomes toward the future railway system.

- the European Rail Operating Community (EUROC) consortium gathers a group of ten willing innovators – BLS (CH), CP (PT), FTA (FI), IP (PT), ÖBB (AT), PKP (PL), PRORAIL (NL), SBB (CH) SZ (SI) and TCDD (TR) – investing a lot of energy in turning S2R into a success story for the operating community

- Groupe Eurotunnel SA (FR) within the SWI'TRACKEN consortium to provide the rail insight and needs in its consortium

All representatives of the ROC were recently extremely busy working on the details of the 2015-2016 proposals together with the other JU members. The estimated projects value, including in-kind contributions by the members, other than the Union or their affiliated entities is worth €170 million

The proposals were submitted on 17th March, offering a lull in activity whilst the proposals are reviewed and approved. It is anticipated that this will be achieved around June 2016. However, the apparent reduction of activity in S2R does not mean idling, the ROC and JU members are starting to reflect on the content of the 2017 calls, developing the fields they would like to see undertaken as the next steps in developing the future European railway system.

More information: www.shift2rail.org