



SPIDER PLUS NEWSLETTER



Sustainable Plan for Integrated Development through the European Rail network Projecting Logistics & mobility for Urban Spatial design evolution

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SPIDER PLUS AT A GLANCE

The project officially started on 1st December 2012. Project duration 30 months.

Background

SPIDER PLUS is the acronym of "Sustainable Plan for Integrated Development through the European Rail network-Projecting Logistics & mobility for Urban Spatial design evolution". The Project provides a new 2050 mobility VISION through a Strategic Design & Plan and a Road Map delivering Sustainable Solutions by then. The combination of the Time with Space management generates seamless transport chains reducing aggravations and costs.

The Project Objectives in short

SPIDER PLUS has to deliver a passenger & freight mobility Vision by 2050 encompassing seamless transportation where electrified High Speed Rail has a central role. Such Vision incorporates the envisaged technological innovations, the needs of an evolved European Society where environmental sustainability, energy saving, safety and security, noise abatement and life-quality are fundamental values.

SPIDER PLUS objective is to provide a new 2050 mobility VISION through a Strategic Design & Plan and a Road Map delivering Sustainable Solutions by then. The productivity of the available resources supported by ICT and other technologies is maximized by the combination of infrastructural nodes with spatial and urban planning integrating the missing links for sustainable mobility and city logistics. The combination of the Time with Space management generates seamless transport chains reducing aggravations and costs. E/Service, E/Freight, ICT technologies, satellite communications, Galileo are tools for achieving these objectives. Synchro-Mobility and Seamless liquid mobility are the 2050 SPIDER PLUS final goals.

Starting from "As Is Situation"

The people and cargo mobility is continuously increasing according to a number of long term trends and drivers of change. Transportation is related to GDP and this is normal, not only because it is part of the GDP itself but because both economic growth induced by trade and social growth generated by wellbeing, imply new mobility requirements. The "slope" of different growing curves may vary and their pattern may change as a consequence of modification. For passengers the travelling working needs are going to be reduced due to tele-working and other supporting technological tools. For cargos the "zero km" objective required by growing consumers' segments, is providing

Destination 2050 Sustainable mobility

By Franco Castagnetti Spider Plus Project Leader

Sustainable mobility represent the European Commission goal. The EU's sustainable transport policy has been made public through the White Paper where clear indications of shift to rail long term objectives have been made public both for passengers and freight with 2030 and 2050 time horizons. In order to support such objectives a number of initiatives are being implemented particularly on the European Corridors. The measures for the TENT T implementation have been disseminated at an important European Commission event which took place in Tallin on October 16th to 18th called TENT T DAYS 2013. The combined effect of increasing the rail market share and the development of the demand derive the "SpiderPlus-Vision" for the rail quantitative development. The emerging result is an overall growth in the range of about 4 times by 2050 for freight and even higher for Passengers compared to 2010 traffic volumes. An intermediate step at 2030 is considering the doubling of existing rail traffic. There are studies which consider the achievement of these targets not feasible. They believe it "impossible" to reduce the large road transportation dominance and even forecast the road transportation continuous growth in the market share.

The SpiderPlus vision elaborates how to make these EU targets achievable with the support of the new "Connecting Europe" corridors' role.

COM proposal connections between the corenetwork corridors

	Baltic-Adriatic Corridor	North Sea-Baltic Corridor	Mediterranean Corridor	Orient/East-Med Corridor	Scandinavian-Mediterranean Corridor	Rhine-Alpine Corridor	Atlantic Corridor	North Sea-Mediterranean Corridor	Rhine-Danube Corridor
Baltic-Adriatic Corridor	0								
North Sea-Baltic Corridor		0							
Mediterranean Corridor			0						
Orient/East-Med Corridor				0					
Scandinavian-Mediterranean Corridor					0				
Rhine-Alpine Corridor						0			
Atlantic Corridor							0		
North Sea-Mediterranean Corridor								0	
Rhine-Danube Corridor									0



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a marketing reason for limiting transportation. In addition the reduced volumes experienced in several industrial sectors because of the recession, brought companies to bring inside their factories some manufacturing activities formerly outsourced. The Industry relocation process is going to be reviewed not only on contingent but also on structural basis.

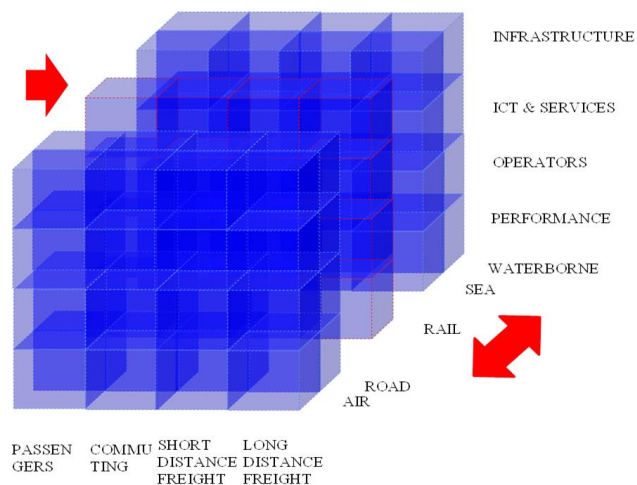
The emerging situation appears to be evolving in the direction of EU plans for a more sustainable mobility. The prevailing picture shows good results achieved in many sectors of traditional transport modes. Safety and transport efficiency improved significantly while the demand which increased more than the available capacity, has been reasonable satisfied at the price of growing congestion in urban areas. These evolutionary trends are coherent with the EU Commission plans despite the original ones have been revised moving ahead the targeted time for their completion. The updated plans incorporating substantial improvements have gained importance having tackled the mobility issues in a more structured and comprehensive way. A significant observation in this overall not negative picture is the limited success of rail freight transportation which declined to a share of 10,2% in 2010. Despite the strong efforts made during the last two decades, the co-modality achievements leveraging on rail capabilities appear still below expectations. This is perceived as a weakness due to the EU Commission long term modal shift objective. Co-modality is the only possible option for achieving a significant modal shift from road to rail or inland waterways when available or from air to rail for medium distances. Positive changes in creating better conditions for promoting modal shift in freight mobility, seem to be in place.

Also for passengers co modality is working with limited success with an overall rail market share for passengers transport of 6,3% in 2010. Here a number of actions are in place. These "technical" actions which are necessary may not be sufficient considering that performances are not yet satisfactory. May be the EU Commission governance was in the past too much oriented towards traditional modes' segmentation and not enough to co-modal objectives. The unsatisfactory modal shift is reflecting the existing situation hence the need of SPIDER PLUS project. This observation can be summarized as a "limited" capability of different networks working progressively together as integrated infrastructures for a more sustainable mobility. The network integration according to the principle of "the network of networks" is the pre-condition for realizing co modality. The word "network" includes both the infrastructures and the service performances associated to them. This weakness correction constitutes the SPIDER PLUS project starting point providing a Vision and a Roadmap for realizing a more rail centric mobility model in which electrified rail is the backbone for seamless co-modal mobility.

The first challenge is the establishment of the "As is situation" for evaluating the gaps to be filled, the practices and bottlenecks to be corrected, the business models to be ad-dressed. The "As is situation" is the foundation for planning a new 2050 mobility vision and the roadmap to get there through the 2030 intermediate step. The figure below to which the project team gave the name of "the Mobility Cube" summarizes at the

same time the complex mobility dimensions to be dealt with and the way Rail interconnects with other modes.

The Multi-dimensions of Mobility -



These Gaps Action Fields identify weaknesses both within the rail systems itself and in relationship between the rail systems and the other modes. These Gaps Action Fields provide the explanation of the "existing modal split". The "As is situation" includes the transport market development, the today's situation, the relevant market segments and deciding factors associated to costs, quality, the users' requirements and the rail's role in "Door-to-Door-Transport". Seamless transport chains, the urban dimensions and the need for integrating long and short distances as well as different transport modes are part of this research work.

Statistics and General data are relating at EU27. Individual Country data are provided when differences need to be evidenced at least on exemplary basis. During this Research development on the "As is Situation" the Gaps and Action Fields are listed assuming the EU 27 operating theatre. This assumption in itself might appear to be too large geographically or ambitious given the different mobility requirements within the Union. The Congestion in Central Europe and the Gaps Action Fields associated with it is more critical than in other European Regions. Equally the technological developments already in place could entail different degree of actions for obtaining the best possible results in certain places compared to others. The same situation could be described for "Best Practices" which are giving good market responses on certain analysed segments opposed to others where circumstances did not warrant the need of finding problem solutions. Therefore when describing Gaps and Action Fields, one had to put them in evidence, being aware that they did not have the same degree of applicability or intensity or the same geographical spread across the Union. However any different assumption might be perceived as wanting to make differentiations between members States. Such differentiation could not have the right of citizenship in an EU Commission Research Project. So it will be up to individual Countries or Companies or Key actors involved in a given mobility segments to interpret these Gaps or Action Fields according the degree of



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applicability to their particular situation for extracting the maximum value of effectiveness. The Evaluations reflect the team understanding and the “common opinion” of experts and stakeholders. They are the results of a research and they are supposed to prepare an assist although not limiting the subsequent research activities. Some topics involving more than one segment are addressed according to a principle of relevance. Some topics because of different aspects are mentioned several times.

The contents are focused on rail transport and on co-modal nodes where feeding transport systems are interconnecting into each other. Competing modalities are also considered. The geographical focus is on EU 27 countries and when appropriate on candidate countries like Croatia, Macedonia, Montenegro and EEA/EFTA countries, Switzerland, Norway, Liechtenstein and Iceland. The time line considers the developments between 2000 and 2010, if possible looking backwards at 1990, using available forecasts up to 2030 and beyond. The gaps’ analysis considers the results of both the Offer and the Demand sections

The Drivers of Change

Evolving from the “As is Situation and the Gaps identification” the next challenge to be overcome is the DRIVERS OF CHANGE identification. The stated objective is to identify and evaluate the mega trends that would shape the 2050 Vision of a society overwhelmingly served by electrified rail. It is recognised that the ways in which Society evolves over the coming thirty seven years would have a major impact on future demands for mobility. Gaining an understanding of society in 2050 would necessarily involve determining the future needs of both business and consumers: their attitudes, values and behaviours; their goals and expectations; their working and life styles. In the early stages of the research and analysis it became evident that a focus strictly on mega trends would be too narrow in scope and would impair both the development and evaluation of the vision. It is judged that the determination of the 2050 Vision is better achieved through an understanding of the Drivers of Change that will over the thirty seven period transform both the external environment and the rail industry. In this context, it is considered appropriate to identify and assess the counter forces of change; those drivers that impede the realisation of the vision. The Drivers of Change are divided into two categories:

- External drivers: those driving forces which act on the transport system from the outside: energy; economy; resources; demographics; technology; climate change & the environment, society, culture & values, national, European and global politics and law; globalisation and global and EU governance issues; policy formulation and implementation.
- Internal drivers: those driving forces which act on the transport system from the inside: they originate in the transport sector or arise as a consequence of the impacts transport has on business and society: the environment; competition; profitability; investment; technology; customer expectations; industry bodies; regulation; and stakeholders.

A process which combines both forecasting and back casting techniques is designed through which the impacts and consequences of the Drivers of Change

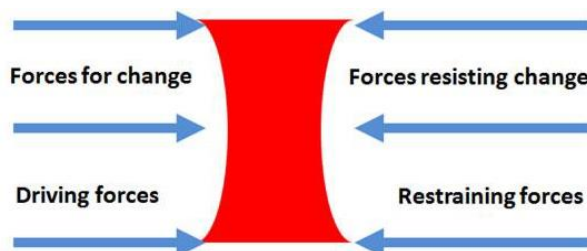
are assessed and the validity of the 2050 Vision is judged and evaluated. This is visualised as an iterative process of interaction and debate. The results of the foresight work are being presented in three stages:

A. “Forces of Change” - an overview of the findings and conclusions of the Drivers of Change work which includes: secondary research findings, driver assessments and consequences.

B. “Destination 2050” – a presentation of the alternative futures for rail transport in Europe to 2050 in. This is presented in the form of four contrasting scenarios.

C. “On track” – presenting the probable future for rail transport in Europe to 2050.

The overall results affect the back casting process. This process incorporates the 2030 intermediate step. The correct assessment of the Drivers of Change is crucial to the determination of a credible 2050 Spider Plus Mobility Vision.



A scenario for travelling in Europe in 2050

Travelers in the connected, smart world of 2050 make intelligent decisions about their journey: travelling at a convenient time, via a smart route, using the most suitable means of transport. The connected traveler benefits from seamless multi modal transport, using a virtual travel companion that is aware of the traveler’s preferences and the real time context. New mobility routines and behavioral changes have led to more flexible and service oriented ways to provide for individual mobility and varying lifestyles. There are smart hubs in the periphery of the city for in and outbound logistics and transport. Combustion engine technology has disappeared. It is all electric! Spatial pressure is very high: 75% of the population are living in cities. Public transport is the main means of transport in urban environments. Multi modal use is easy due to the Virtual Travel Companion; there is a wider selection of transport modalities available; there has been a radical decline in the ownership of personal transportation. Virtual presence technology is mainstream: there is little difference between the “real” and “virtual”. Virtual shopping, learning, working, entertainment, 3d printing is virtual living. People are exploring the world without leaving the neighborhood.

Is this a probable scenario or should it be considered a pipe dream?

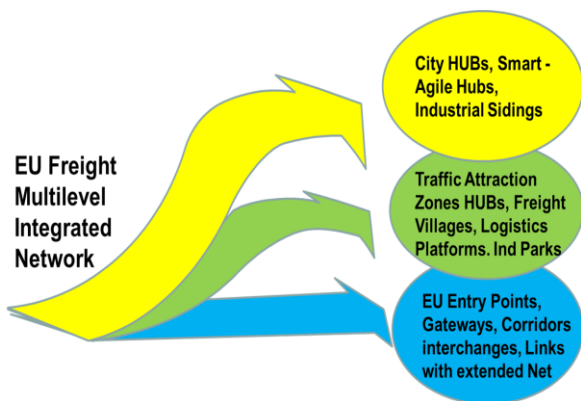
The objectives of the SPIDER PLUS project are to define an achievable vision for mobility in 2050 and determine the means whereby it can be achieved. The roadmap to 2050 must take account of both the drivers of change which enable the achievement of the vision and the counter forces acting against its achievement.



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The Vision Components

After having dealt with the “As is Situation” the “Drivers of Change including the Restraining Forces” the evaluation of the Vision Components assume great importance in the formulation of the ultimate 2050 Mobility Vision. The Vision Components dimension takes into account the whole future rail system. The role of high speed rail and the European rail corridors are assessed together with their integration in national, regional and local transport systems. The passengers’ mobility is provided in prevalence by high speed lines and services interconnecting with underground and surface transport means where “way finding technologies combined with ICT technologies” are the visual guide at interfaces in seamless transport chains. The European rail corridors are the backbone of the European rail network for competitive freight. While the high speed services move people, the European rail network for competitive freight moves the cargo necessary for the people livelihood in the urban areas. The rail corridors are key links in the medium, long distance transport for the industrialised services in economies of scale from point to point. Trains depart to/from traffic attraction zones where traffic bundling is a consolidated practice for destination to/from other terminals, hubs, freight villages in the vicinity of urban/metropolitan areas where subsequent distribution can be arranged with lighter trains in combination with electric powered vehicles to/from high street shopping areas. The local rail network interconnecting the high speed network is significantly serving local mobility and commuting together with more specialised infrastructure such as underground, urban rail, etc. The Network nodes have a strategic role in this design be them ports, hubs, freight villages, terminals, for freight or Stations for passengers becoming more and more shopping transit opportunities.



During the Vision Components evaluation the 2050 Forecasting had to be supported by the Back Casting process capable of imagining the time line obstacles interfering with the desired Future.

The Technical Coordination

The Spider Plus Project is directed by the Technical Coordinator overlooking the correct execution of the various Work Packages and Tasks. The Project Board is the putting the Project resources together for fulfilling the desired Project objectives. A Project Board took place in Bologna hosted by IBI. During this meeting all the operational issues regarding the activities to be carried out had been dealt with in details together with the emerging actions for fulfilling all the Tasks described in Work Packages.

The Project Management

At the top of the Project organisation there is the Steering Committee having the objective of guiding the whole project to a safe conclusion. The Steering Committee is responsible to the European Commission for the full contract execution. A steering Committee has already taken place in Bologna hosted by IBI. the Steering Committee the makes the full assessment of the situation by receiving reports on the horizontal, management and administration activities.

Events with SPIDER PLUS featuring

1 December 2012 <i>Rome</i> – Kick Off Meeting
15 May 2013 <i>Frankfurt</i> –WP5 Meeting with Experts
16 May 2013 <i>Frankfurt</i> – Air Rail Conference
23-24 May 2013 <i>Istanbul</i> – F&L Conference
4-7 June 2013 <i>Munich</i> – Transport & Logistics
3 July 2013 <i>Frankfurt</i> – WP6 Meeting with Experts
9 October 2013 <i>Hamburg</i> – Intermodal Europe 2013
21-22 November 2013 <i>Rotterdam</i> – F&L Conference
5 December 2013 <i>Wien</i> – Rail Net Europe Conference
13 December 2013 <i>Genoa</i> – TIGER DEMO/MOS 24 Confer.
11 March 2014 <i>Madrid</i> – WP7 Meeting with Experts
14 – 17 April 2014 <i>Paris</i> – TRA 2014 Transp. Research Arena
16 April 2014 <i>Paris</i> – WP7 Meeting with Experts

The SPIDER PLUS Project Partners

Vital competencies include Research, Academia, Technology Innovation, Consultancy, Transport of both Passengers and Freight, High Speed Rail intermodality, Hubs, Stations, Nodes, Aviation, Planning and Engineering.



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