PROTECTRAIL

Project scope, objectives and key issues
THE BACKGROUND

The events of September 11-2001 could be really considered the moment when was dramatically brought to evidence:

- the inherent vulnerability of a way of life
- the need and the duty of civil society of developing and deploying a common prevention and reaction strategy for enhancing security of citizens and protecting the critical infrastructures.

This strategy needs the involvement and a strong commitment of all the responsible stakeholders:

- Governments
- Authorities
- Intelligence
- Operators of critical infrastructures and services
- Technologies providers
- Citizens
THE BACKGROUND

• Terrorism comes from far, but:
  – The targets were in the past (or were considered) limited to a national or local context, even if links and similarities between terrorist organizations existed.
  – The reactions and countermeasures adopted were mainly managed by the authorities of the country where the attacks were carried out.
  – Few organizations in terms of security measures were set up at international levels.
  – The risk was probably considered low or locally manageable.
THE BACKGROUND AND EU STRATEGY

- Europe is playing an important role
- Europe was and still remains one of the main targets
- Europe can deploy his potential resources in term of capability and knowledge in the global challenge of fighting terrorism
- In December 2003 the European Council adopted a common EU security strategy, recognizing the need to further develop the capabilities to protect its citizens and contribute to a safer international environment.
- R&D programmes could be a success key in finding efficient and affordable security solutions.
THE BACKGROUND AND EU INITIATIVES

Following the adoption of the EU security strategy, the European Commission launched a **Preparatory Action on the ”Enhancement of the European industrial potential in the field of Security Research 2004-2006”** for addressing key security challenges facing Europe and its partners.

The underlying proposition in the 2004-2006 PASR was that Europe must take advantage of its technological strengths to guarantee security.

- Although technology alone cannot guarantee security, without the support of technology, security does not seem feasible today.

In support of a comprehensive security approach, research activities were targeted at the development of systems and products that could be used to protect European critical infrastructures against transnational threats.
The PASR and Railway Security

- Under PARS 2005, the European Commission decided to fund the research project TRIPS (TRansport Infrastructures Protection System) to design and demonstrate an anti-terrorist security system architecture to better detect terrorist threats and hence better protect railway passengers and infrastructures.

- The almost contemporary attacks in London Underground and in Madrid Atocha showed the high vulnerability of public transport systems.

- The TRIPS project investigated possibilities offered by technology and improved processes to consider innovative solutions increasing the effectiveness and reactivity for protection of passengers and infrastructure.

- A number of measures have been identified, e.g.:
  - improved design of trains, stations and other facilities;
  - increased (and more visible) presence of trained staff;
  - more controlled or restricted access to stations, track etc.
  - improved detection, surveillance and communications technologies.
TRIPS Project

- As final event of the TRIPS project, a demonstration took place the October 17 2007, hosted by the SNCF, in the maintenance and marshalling yard of Villeneuve-Prairie, south of Paris.

- The objectives were to present some of existing technologies proposed by the project, and evaluate them in a real context for a possible adaptation to a railway environment.

- Scenarios simulating real events were performed in some workshops, in order to evaluate the devices developed by partners and the possible improvements in terms of detection capability and reaction.
TRIPS Project

TRIPS defined a road map for the future development:

- ... An enhanced cooperation between transport operators, rail organizations and industrial partners in an iterative process will identify requirements and possibilities to provide security in railways infrastructure and services as well as review the main results of research and potential use of technologies.

- ... A strong and tight cooperation will allow to identify and define expertise and orient research and industrial goals in more efficient way, achieving recommendations about how to reach a higher maturity level in rail context.
Between FP6 and FP7, EU reaffirmed the central role in the fight against international terrorism:

- **EPCIP**: European Programme for Critical Infrastructures Protection (2006)
  - Stepping up the fight against terrorism - 6/11/2007 COM(2007) 649

- **Stockholm Programme** (2006 – 2009)

In the First call on Security research under FP7 umbrella (2007)

- Towards a more secure society
- Towards increased industrial competitiveness
- SEC-2007-2.2-01 : *Integrated Protection of Rail Transportation*
The PROTECTRAIL project, submitted in the 1st Call, did not reach enough score to be funded.

PROTECTRAIL was revised and approved in the Second Call.

- The proposal has been submitted on: 02/12/2008
- Hearing took place on: 17/02/2009
- The ESR distributed by EC on: 09/03/2009
- Negotiation started with REA on: 09/2009
- **Start date:** 01/09/2010

EU Project Officer:

- Greg Ambroziewicz (REA)
- Andrej Grebenc REA (S3)

PROTECTRAIL starts where TRIPS ended

*Toward making the railway system more secure*
PROTECTRAIL scope and objectives were and still are valid.

Threats on Railways systems are yet significant in Europe and outside Europe:

- **2008/2/3, Colombo, Sri Lanka:** A suicide bomb attack killed 11 people and injured 92
- **2008/5/26, Dehiwela, Sri Lanka:** A powerful bomb ripped through a crowded train at Dehiwela killing 7 people and injuring at least 62
- **2008/11/26 Mumbai, India:** A series of coordinated attacks against various locations around Mumbai, including the Central Railway Station - 173 killed
- **2010/3/29, Moscow, Russia:** A double suicide bombing at Lubyanka and Park Kultury stations of the Moscow Metro caused 40 fatalities and more than 100 injuries
- **2010/9/21-29:** Attempted terrorist bombings of the TGV track and of the Eiffel Tower in Paris.
The PROTECTRAIL challenge is to face the problem of railway security by

- avoiding too ambitious systematic top-down approaches
- splitting the problem into smaller asset-specific problems (missions) applicable and usable in different threat scenarios
- making interoperable the single asset-specific solutions
- conceiving and designing a modular architectural framework where each asset-specific solution can be “plugged”
- assuring a streamlined process of federation, integration and interoperability of respective solutions
PROTECTRAIL OBJECTIVES

PROTECTRAIL will address the following submissions:

- protection of signal and power distribution systems
- track clearance
- clearance of trains before and after daily use
- staff clearance
- luggage clearance control
- passenger clearance control
- freight clearance control
- tracking and monitoring of rolling stock carrying dangerous goods
- protection of communication and information systems
- stations, buildings and infrastructure protection
PROTECTRAIL OBJECTIVES

• Security sub-missions will:
  – evolve as a complex protection “capability” missions, oriented to rail assets protection;
  – be developed in a common vision;
  – adopt the same “security design” criteria and consider the mutual dependency of function performed, using, the same or fully compatible “backbone” technologies,
  – ensure control of physical and functional interfaces with other security sub-missions and railway systems organization and structure
  – aim to performances, readiness, applicability, affordability, reliability, resilience.
PROTECTRAIL INTEGRATION PROCESS

• The integration process is based on the following activities:
  – to design an overall system architecture that will assure interfacing and interoperability between security sub-missions;
  – to design and demonstrate specific sub-system architectures by integrating the most suited and mature technologies

• The global level of integration will:
  – allow a more efficient capability to threat intelligence and detection;
  – assure a coherent and homogeneous approach to actions to be managed to face the risk or crisis situation
The project will be carried out by:

- Strictly monitoring **the impact of security measures on ethical issues and citizens rights**;

- considering the positive impacts against **other forms of threats** and for mitigation of consequences of natural events.
The project is structured in 7 Sub-Projects and 38 Work Packages.

- The technical SPs are supported by the Project Management & Technical Coordination (SP0) and Dissemination and Exploitation (SP1) subprojects.

- The Functional & Technical specifications for prevention, mitigation and crisis management will be defined (SP2) for the selected scenarios at the sub-mission and at global integration level.

- In SP3 and SP4, (for Fixed assets and Transported assets) will be demonstrated the feasibility of solving the identified railway protection submissions.

- SP5 will integrate the set of functional and technical results, developed in SP3 and SP4 at system level, taking into account security requirements defined in SP2.

- SP6 will describe the Vision of the long term evolution of the future railway security system as result of various influence factors and their mutual interactions.
PROTECTRAIL KEY FACTS

**Total Project Cost:** 21,775,289 €

**Total EU contribution:** 13,115,064 €

**Total Effort:** 1330 man-months

**Duration:** 42 months

- **R&D:** 18,201,123.80 €
- **Demonstration:** 728,653.00 €
- **Management:** 2,174,513.00 €
- **Other:** 671,000.00 €
| ANSALDO STS S.p.A.                      |
| IT                                      |
| Nederlandse Organisatie voor toegepast-natuurwetenschappelijk onderzoek TNO |
| NL                                      |
| Elsag Datamat S.p.A.                    |
| IT                                      |
| **Union Internationale Des Chemins De Fer** |
| FR                                      |
| **Selex Sistemi Integrati S.p.A.**      |
| IT                                      |
| **Bombardier Transportation GMBH**      |
| DE                                      |
| **Alstom Transport SA**                 |
| FR                                      |
| **Thales Security Solutions & Services SAS** |
| FR                                      |
| **Sarad GmbH**                          |
| DE                                      |
| **UNIFE – The European Rail Industry**  |
| BE                                      |
| **Morpho**                              |
| FR                                      |
| **Ductis GmbH**                         |
| DE                                      |
| **Železničná spoločnosť Slovensko a.s.**|
| SK                                      |
| **Joint Stock Company Lithuanian Railways** |
| LT                                      |
| **ItalCertifer S.c.p.a.**                |
| IT                                      |
| **PKP Polskie Linie Kolejowe SA**       |
| PL                                      |
| **D'Appolonia S.p.A.**                  |
| IT                                      |
| **Elbit Systems Ltd.**                  |
| IL                                      |
| **Facultés Universitaires Notre-Dame de la Paix** |
| BE                                      |
| **EPPRA**                               |
| FR                                      |
| **Kingston University Higher Education Corporation** |
| UK                                      |
| **SODERN**                              |
| FR                                      |
| **Smiths Heiman S.A.S.**                |
| FR                                      |
| **Rail Cargo Austria**                  |
| AT                                      |
| **CEA Commissariat à l'Énergie Atomique** |
| FR                                      |
| **Institut Franco-Allemand de Recherches de Saint-Louis** |
| FR                                      |
| **Turkish State Railways**              |
| TR                                      |
| **MER MEC S.p.A.**                      |
| IT                                      |
| **Société Nationale des Chemins de Fer**|
| FR                                      |
Participants:

- End Users: 8 from 7 Countries
- Industries: 13 from 5 Countries
- R&D: 6 from 4 Countries
- SME: 2 from 1 Country

Cost share:

- IND: 77.5%
- USER: 8.5%
- SME: 5.1%
- R&D: 8.8%

Funding share:

- IND: 72.9%
- USER: 9.1%
- SME: 6.5%
- R&D: 11.5%
• PROTECTRAIL is an element in a wider strategy of “security programmes”

• PROTECTRAIL will take benefit from the results of other security related projects and activities:
  – EU project and support actions
  – National Project
  – Railway Initiative (e.g. Security Platform)

• Most of the PROTECTRAIL Partner:
  – Are already involved as leaders or participants in European security research project (IP, Capabilities and Support actions)
  – Are used to work together and cooperate
  – Are main stakeholders.
    • in Rail operation and infrastructures management
    • In Rail industries and Security systems
    • In Research and Development of technologies and equipments
It’s a long way…. 

..but..

we are really confident that during the project activities:

– Cooperation
– Competences and knowledge
– Commitment of all the actors

will be the success key.

Today evaluation..

• Scope, objectives, work structure are confirmed
• No new risks
Thanks

The PROTECTRAIL Coordinator

Vito Siciliano
Ansaldo STS S.p.A
via P. Mantovani 3-5
16151 Genova Italy
Tel ++39-010-6552976

e-mail: Vito.Siciliano.Prof110@ansaldo-sts.com