



European Technology Platform on  
**Industrial Safety**  
Safety for Sustainable European Industry Growth


**European Technology Platform on Industrial Safety**  
Launching Event of the Italian TPIS  
Naples, 23 May 2006

*RESEARCH STRATEGY  
FOR EUROPEAN INDUSTRY  
SAFER AND WORLDWIDE  
COMPETITIVE*



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Technology Platform Safety for Sustainable European Industry Growth



## The Strategic Research Agenda

*A collaborative work to establish the  
roadmap to reach the Vision*

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## Preparation of the SRA

### Openness and transparency



- all 4 draft versions available on the website for free contribution
- 2 major open workshops
- ranking and prioritisation using Milan Workshops and the expertise of the FG leaders attentive to the industry and society expectations



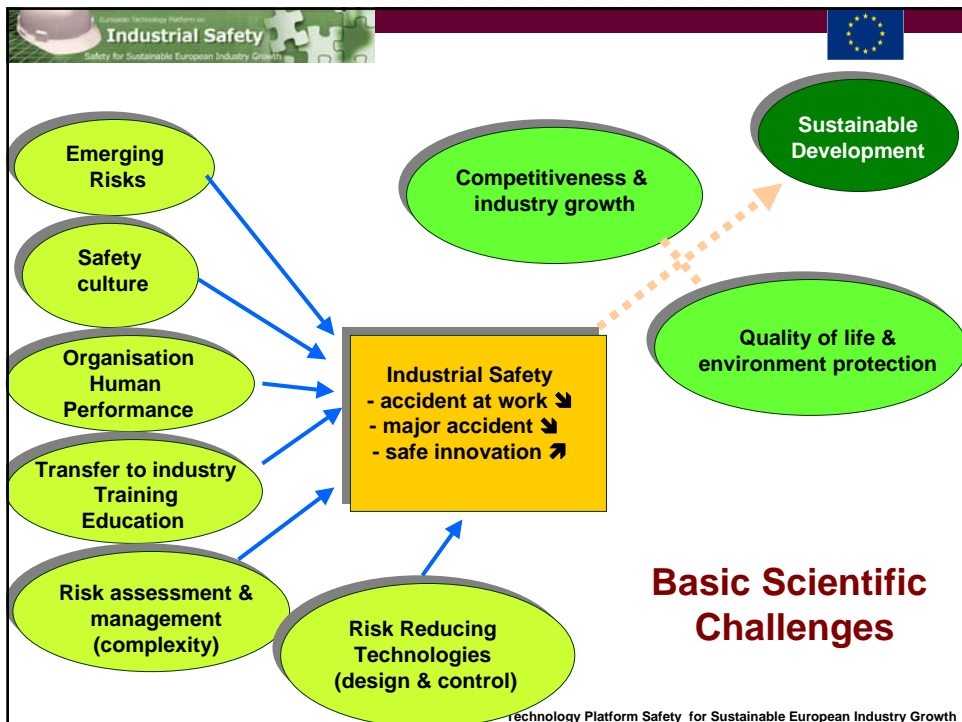


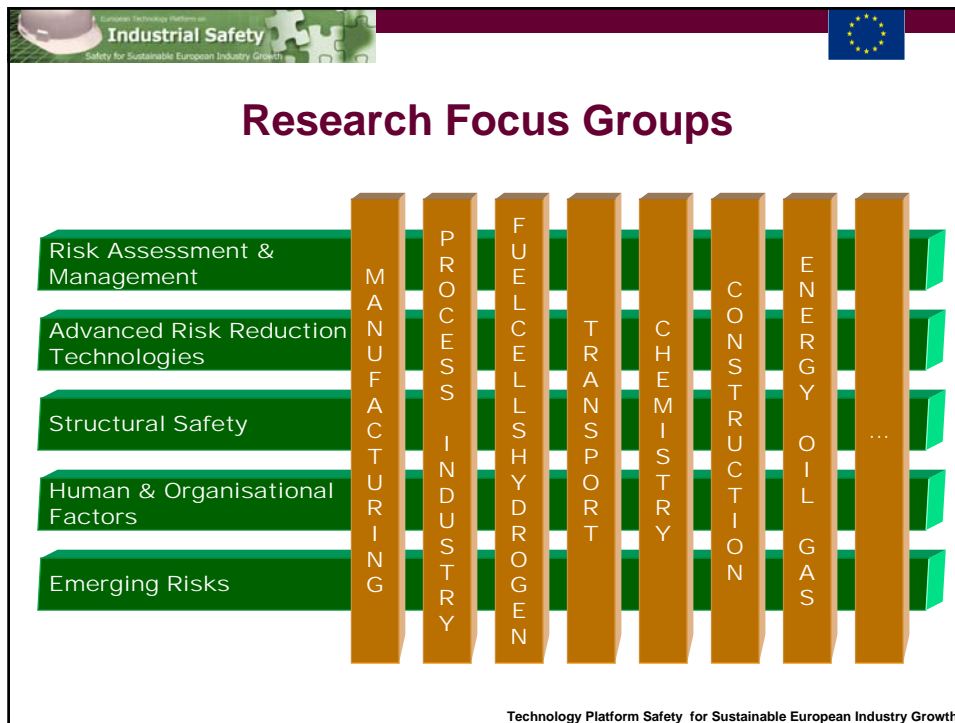
**20/10/2004 Brussels**  
*for orientation and creation of Focus Groups*  
60 participants



**1-2/12/2005 Milan**  
*revision of the SRA (content & priorities)*  
130 participants

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## FG Leaders (2/2)

**Human and organisational factors**

- Simone Colombo, Politecnico di Milano, IT
- Patrick Lainé, Electricité de France, FR

**Emerging risks**

- Aleksandar Jovanovic, ZIRN - Univ. Stuttgart, GE
- Raija Koivisto, VTT, FI



**Hub education and training**

- Rosa Nomen, IQS, ES
- Dirk Oberhageman, ESMG GmbH, GE

**Hub NanoSafe**

- Frédéric Schuster, CEA, FR



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## Risk Assessment and Management

- Understanding hazardous phenomena to develop safety solutions, equipment and technologies
- Development and validation of methods and tools to improve risk assessment and management
- Impact of natural and man-made hazards on plant safety
- Harmonisation in risk assessment
- Risk management and governance (new forms of participative governance)

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## Risk Assessment and Management

- Multicriteria analysis and decision support tools
- Systemic methods to address the complexity of the industrial systems
- Uncertainties in risk assessment and management
- Reliability and safety of network systems
- Methods for dynamic reliability assessment
- Risk metrics and dynamic risk metering



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## Risk Assessment and Management Priorities for 2007

- Data, uncertainty, dynamics and context specific modelling in risk assessment and management
- Gaps in understanding of hazardous phenomena
- Define and recommend “Best Practices”
- Consistency, integration, harmonisation, standardisation, experience transfer between sectors
  - GHS – global harmonised system for labelling/classification of hazardous substances
  - Performance based, not prescriptive
  - Integrating Risk Management into a wider context – decision making
- Leading indicators – dynamic risk monitoring



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## Advanced Risk Reduction Technologies

- Technologies for inherently safer design and to reduce risks at source;
  - Technologies to reduce emissions of hazardous substances and aerosols
  - Novel and effective methods for reducing risks related to noise and vibration
  - Novel and effective methods for reducing risks related to electromagnetic hazards and optical radiations (non-laser and laser radiations)
  - Technologies and methods for inherently safer design of industrial plants and installations to reduce major-accident hazards



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## Advanced Risk Reduction Technologies

- Technologies for reducing risks by collective protective systems and devices ;
  - Protection systems and smart sensors for machines, production and transportation processes
  - Software tools for detecting dangerous situations in industrial systems
  - Systems and devices protecting against noise and vibration
  - Collective protection devices against electromagnetic hazards and optical radiations
  - Novel and advanced technology in lighting the workplaces
  - Application of information technologies in safety-related systems



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## Advanced Risk Reduction Technologies

- New materials, technologies and test methods for personal protective equipment (PPE);
  - Test methods and safety requirements for PPE applied against new specific hazards
  - Innovative materials & individual systems for the personal protection of health and life
  - Ergonomics innovations for PPE used in work and everyday life conditions



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## Advanced Risk Reduction Technologies Priorities for 2007

- Technologies and methods to reduce releases and emissions of hazardous substances and aerosols
- Technologies for inherently safer design of industrial plants and installations (to reduce major-accident hazards)
- New sensors, protection systems and software tools for detecting dangerous situations in machines and production processes
- Application of advanced information technologies in safety-related systems
- Development and assessment of innovative materials and individual systems for the personal protection against specific hazards

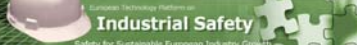
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## Structural safety

- Structural reliability based design
- Structural Health Monitoring (SHM) and risk-informed inspection
- Structural Safety of Aged & Repaired Structures and Life Extension
- Fitness-for-Service (FFS) of Structures
- Integrity of Multi-Material (Hybrid) Structures
- Structural Safety against Natural Hazards and Accidental loads

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## Structural safety Priorities for 2007

- To develop reliability based design and structural health monitoring (SHM) and risk based inspection technologies
- To develop unified method to assess structural integrity of Multi-Material (Hybrid) structures
- To develop methods to maintain safety of aged and repaired structures and provide technologies for life extension
- To develop Fitness-for-Service (FFS) assessment routes for advanced welds with integration of SHM technologies

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## Human and organisational factors

- Human Factors in Organisational and Managerial Safety
- Human-Centred Design
- Integrated Risk Assessment and Management Methods & Techniques
- Human Performance & Technology Usability
- Human Factors in Emergencies and Crisis Management
- Safety and Quality: Could they be merged, do they really match?

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## Human and organisational factors Priorities for 2007

- Human Factors in Organisational and Managerial Safety : resilience engineering, organisational learning, integration of HF into SMS, impact of new technologies, decision-making and handling conflicting objectives, human performance in virtual environment
- Human-Centred Design
- Integrated Risk Assessment and Management
- Human Performance & Technology Usability
- Human Factors in Emergency and Crisis Management

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## Emerging risks

- Future Legislation, codes, standards, and their influence on industry
- New/emerging technologies
- Methodology for identification and assessment of new and emerging risks
- Networks, industrial parks and other interdependencies
- Future trends of economical aspects of risks and risk management – “Economic Price & Value of risk and risk management”
- Natural hazards triggering threat to industrial safety
- Attacks on and against industrial installations (security aspects in safety of industrial plants - CBRN Risks)
- Old/aged plants and integration of risk management in to the life cycle of industrial plants

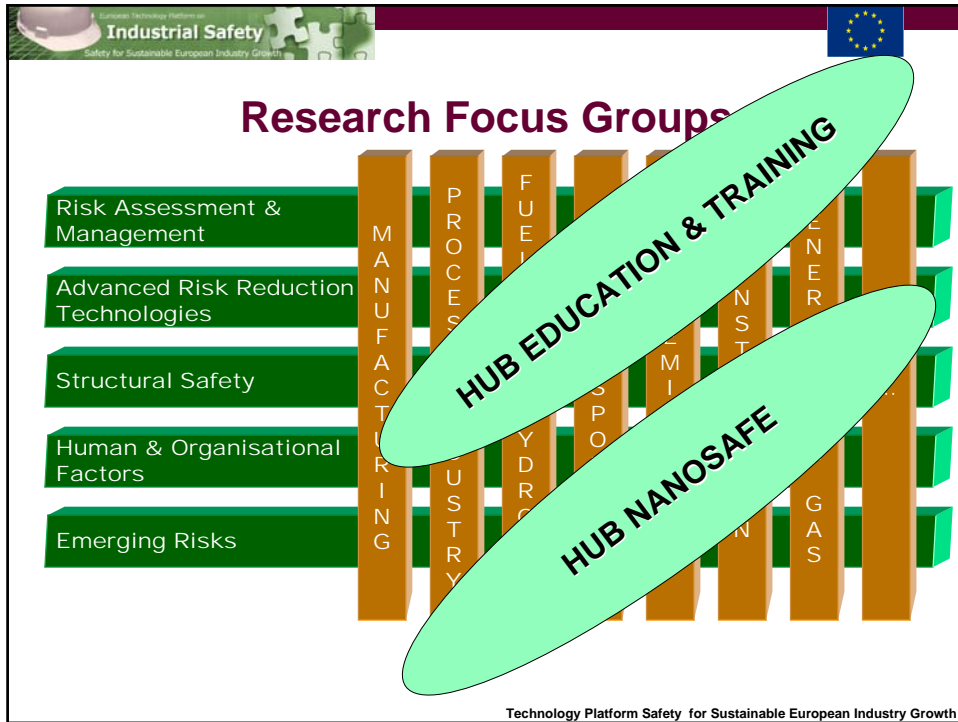
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## Emerging risks Priorities for 2007

- Agreed methodology for identification and assessment of emerging risk, including development of “Unified / consolidated legislation, codes, standards”
- Risks emerging from interaction of all (technical and non-technical) aspects of risk including interdependencies, complexity and unknown phenomena
- Risks emerging from introduction of New technologies including methodology of integrated risk management for new technologies
- Risks emerging from operation of “Old/aged plants” and “Integration of risk management in Life cycle

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## HUB Education and training

- Maintain Competence
- Open Platforms for education and training
- Simulation – Using virtual reality
- Modular System for Training and Education

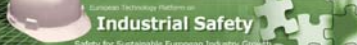

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## HUB Education and training Priorities for 2007

- Understand the particularities for the pedagogy in the field of safety (based on risk perception), and improve education and training for students, workers and safety managers
- Develop simulators for complex risky situations by using screen simulation, full extend simulation and virtual reality to train and educate
- Create open platforms and modular systems for education and training based on knowledge management techniques

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## Objectives of the Nanosafe Hub

Development of advanced detection technologies

Development of safe industrial processes  
Design of « safe factory for nano's »

Data collection at global level on  
Health & Safety aspects


Cyber Lab  
for  
NanoSafe

Demonstration Platforms  
for  
Safe Nanomanufacturing

Data base  
Internet educational  
courses

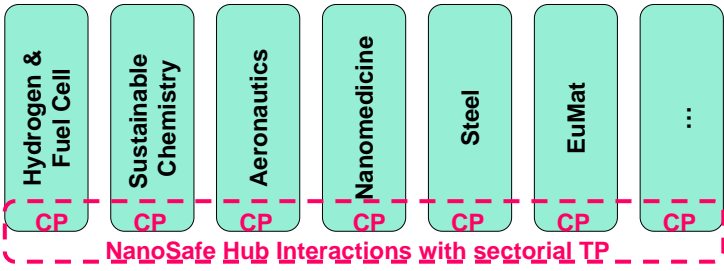
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## Trans-platform cross fertilisation

- Collection of generic aspects for the development of safe processes through strong interactions with sectorial European Technology Platforms dealing with nanomanufacturing
- 1 contact point in each sectorial TP (CP)




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## ETPIS internal interactions

- The objective is to develop benefits through interaction with the other focus groups of ETPIS
- Adaptation of generic tools for safety approach to safe nanomanufacturing (1 Contact Point in each focus group)





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## Nanosafe Hub Priorities for 2007

- Organisation of an international workshop on detection technologies used for nanomaterial
- Development of detection and measurement technologies at the industrial scale


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## Dissemination and update of the SRA

- Dissemination process by contacting industry and industry associations
- Collect comments with a formal process
- Annual scientific workshop to comment and update the SRA



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## Implementing the SRA

*Collecting needs and expectation*  
*Producing and sharing results*

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## Operating the ETPIS



Identify and collect needs to improve industrial safety


Prepare and share the Roadmap for industrial safety




Risk assessment and management methods
Advanced risks reduction technologies
Structural safety
Human and organisational factors
Emerging risks
HUB Education, training, transfer to industry
HUB Nanosafety
HUB Transport systems and tunnels
HUB Large scale experiment facilities (NEXIS)

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## Co-ordination of national resources




Understanding hazardous phenomena

- 1) Identify the teams in each MS
- 2) Define joint research programme with the teams in each MS
- 3) Obtain national funding with the credibility of ETPIS
- 4) Share the results at the European level
- 5) Support from the ETPIS

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## Perspectives (1/2)

- Influence the preparation of the 7th Framework Programme of the EC



*The research will focus on new applications and novel, step-change solutions responding to major challenges, as well as to the RTD needs identified by the different European Technology Platforms. The integration of new knowledge and nano-, materials-, and production-technologies will be supported in sectoral and cross-sectoral applications such as health, construction, space industry, transport, energy, chemistry, environment, textiles and clothing, pulp and paper, and mechanical engineering, as well as in the generic subject of **industrial safety**.*

From COM(2005) 440 final 2005/0185 (CNS) Proposal for a Council Decision concerning the Specific Programme "Cooperation" implementing the Seventh Framework Programme (2007-2013) of the European Community for research, technological development and demonstration activities

- Present the SRA to the Scientific Officers in charge of the various parts of the 7th FP where industrial safety is an issue

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## Perspectives (2/2)

- To present the SRA of ETPIS in each Member State thanks to the mirror national platforms and influence the national priorities on industrial safety research
- To coordinate the research effort between the Member States  
*Contact person : E. Gainza (LEIA)*
- To coordinate the interaction with other ETPs  
*Contact persons : A. Jovanovic (ZIRN Univ. Stuttgart) & C. Soares Guedes (IST)*

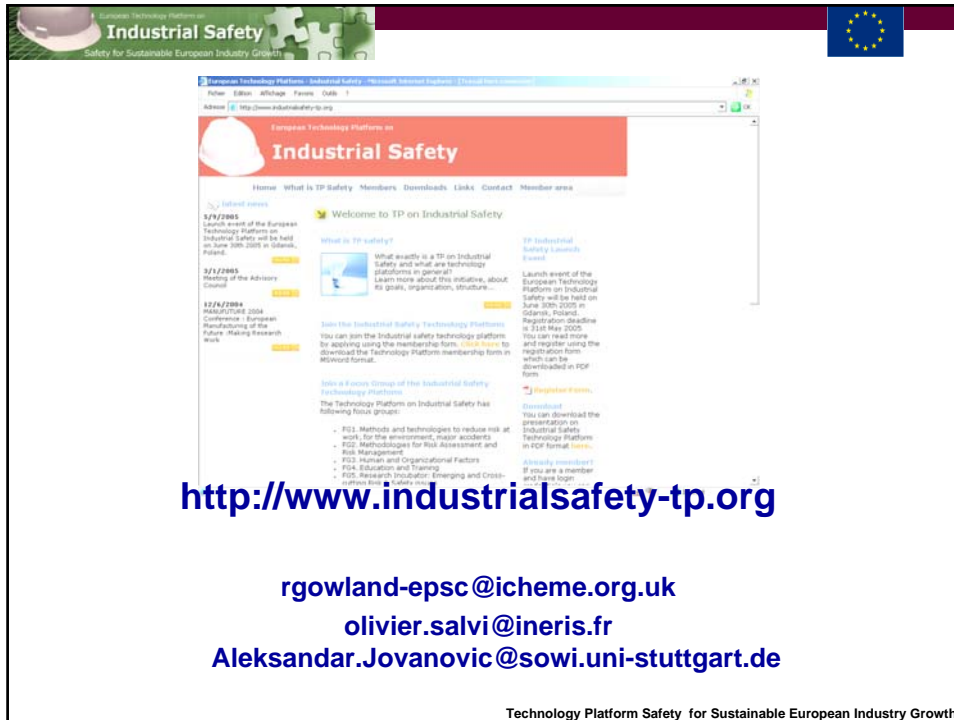
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## Create a favourable climate

- **Education and culture**
  - Promote prudent behaviours at work and increase awareness for safety issues
- **New governance framework**
  - Introduce comprehensive risk governance, explain benefits while considering risks
- **Develop transdisciplinary approaches**
  - Promote system solutions for complex safety issues using transdisciplinary capacities
- **Coordinate the use of existing testing and large scale facilities for safety research**
  - Enable the creation of up-to-date experimental infrastructures and provide a global service offer concerning large-scale experiments (to be coordinated with ESFRI)

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Home What is TP Safety Members Downloads Links Contact Member area

**Welcome to TP on Industrial Safety**

**What is TP safety?**  
The safety reality is a TP on Industrial Safety and what are technology platforms in general? Learn more about this initiative, about its goals, organization, structure...

**Join the Industrial Safety Technology Platform**  
You can join the Industrial safety technology platform by applying using the membership form. [Click here](#) to download the Technology Platform membership form in MSWord format.

**Take a closer look at the Industrial Safety Technology Platform**  
The Technology Platform on Industrial Safety has following focus groups:

- F01: Methods and technologies to reduce risk at work, for the environment, major accidents
- F02: Methodologies for Risk Assessment and Risk Management
- F03: Human and Organizational Factors
- F04: Education and Training
- F05: Research Initiator: Emerging and Cross-domain Risks

**TP Industrial Safety Launch Event**  
Launch event of the European Technology Platform on Industrial Safety will be held on June 30th-2005 in Széchenyi, Poland. Registration deadline is 21st May 2005. You can read more and register using the registration form which can be downloaded in PDF form.

**Registration forms**  
You can download the presentation on Industrial Safety Technology Platform in PDF format: [here...](#)

**Already a member?**  
If you are a member and have login...

**14/7/2005**  
Launch event of the European Technology Platform on Industrial Safety will be held on June 30th 2005 in Széchenyi, Poland.

**11/7/2005**  
Meeting of the Advisory Council

**12/4/2004**  
MANUFACTURE 2004 Conference - European Manufacturing of the Future: Making Research Work

**http://www.industrialsafety-tp.org**

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