1st iNTeg-Risk Conference

June 2 - 4, 2009
Haus der Wirtschaft, Stuttgart, Germany

Main Conference: Dealing with Risks of Tomorrow's Technologies
June 2 - 3, 2009

iNTeg-Risk Post Conference Workshop on KPIs/SPIs:
iNTeg-Risk - How to build KPIs for emerging risks and new technologies
June 4, 2009

International Exhibition
June 2 - 3, 2009

www.integrisk.eu-vri.eu

ver.12, May 24, 2009

CONTENTS

It is not just about R&D - it's about the safety for the next generation...
Come and share your views with iNTeg-Risk Project stakeholders at...

1st iNTeg-Risk Conference
Stuttgart, Germany, June 2-4, 2009

When, in October 02, 2006, about 25 professionals from EU industry, academia and research organizations met in Stuttgart, at premises of the at the time newly incorporated European Virtual Institute for Integrated Risk Management (EU-VRi, www.eu-vri.eu) to discuss how to possibly best reply to the forthcoming FP7 1st call in the area of NMP (FP7 - The 7th Framework Programme of the EU, http://cordis.europa.eu/fp7/home_en.html), three issues were shaping their brainstorming meeting: "New Technologies", "emerging risks" and "integration". The issues were highlighted already in the Strategic Research Agenda of the European Technology Platform Industrial Safety ETPIS (www.industrialsafety-tp.org), and it was clear that there were significant R&D needs in this area.
The results of the brainstorming was the FP7 proposal, now project iNTeg-Risk (Early Recognition, Monitoring, and Integrated Management of Emerging, New Technology related, Risks) based on the following cornerstones:

1. Out of about 50 candidates considered by the group, 17 New Technologies were selected, and, labeled as "ERRAs" (Emerging Risk Representative Applications) – as examples for research and test bed for the methods and tools to be developed.
2. The definition of the "emerging risks" proposed by the EU OSHA Risk Observatory was adopted and embedded into the concept of the project.
3. The integration concept has been proposed and it has involved two main elements: the "iNTeg-Risk ERMF" (Emerging Risk Management Framework), for integrating state-of-the-art methodologies, and the "iNTeg-Risk One-Stop-Shop" for integrating tools and practical solutions.

Over 80 institutions and companies with about 300 persons work in project tasks and the project involves the combined EU and stakeholders' effort worth almost 20 million € for the next 4.5 years. In June 2009 the project and the project stakeholders will share their first results, further plans and visions, both among themselves and also with other interested stakeholders. The event will be combined with a Post-Conference Workshop devoted to Key Performance Indicators (KPIs) of emerging risks and the project meetings (IAB - International Advisory Boardand GA - General Assembly). For project partners, participation at the Conference is a part of their work in the project, for others, an occasion to get informed and, if opportune, get involved in the project. Therefore, for all interested in emerging risks and in "responsible development and use of New Technologies", the 1st iNTeg-Risk Conference, combined with the respective exhibition and followed by the Post Conference Workshop, will be the right event and the right choice – we are looking forward to welcoming you in Stuttgart in June 2009.

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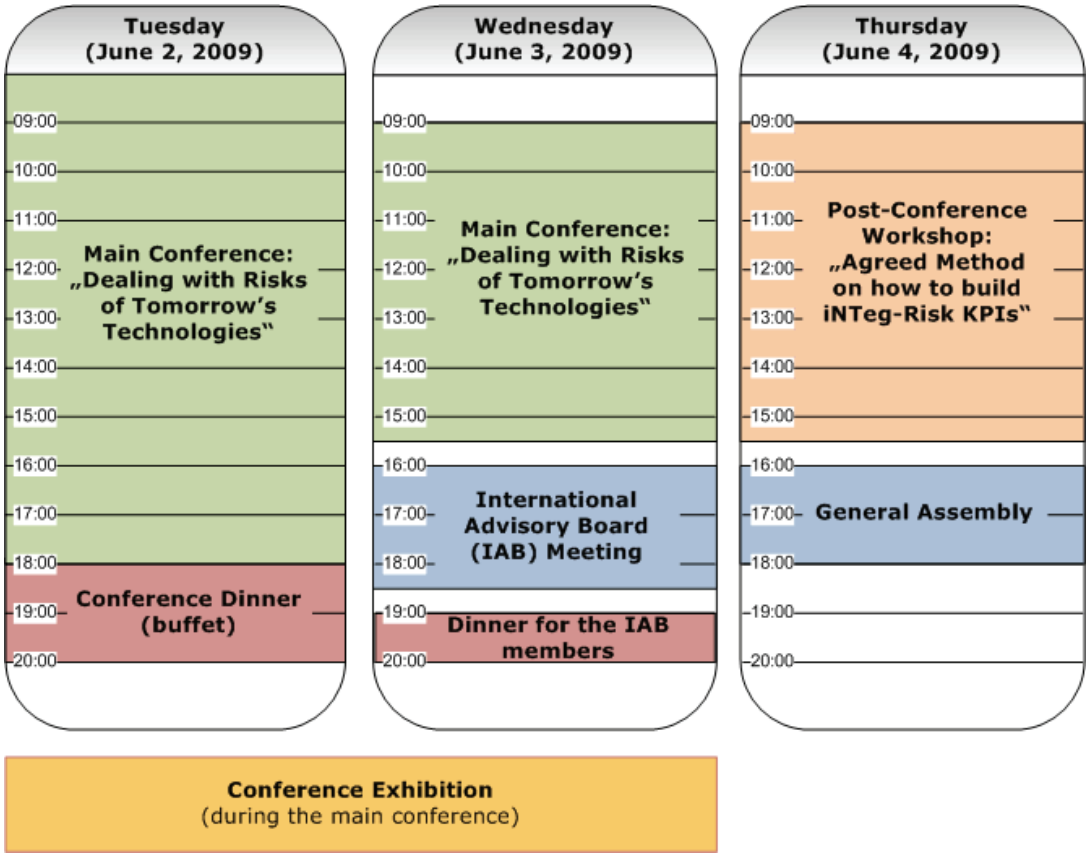
ACKNOWLEDGMENTS: The support of the European Commission provided for iNTeg-Risk project (Grant Agreement CP-IP 213345-2) is gladly acknowledged here, as well as the necessary complementing support provided by the project partners, in particular the European industrybringing in the major part of the complementing support. Special thanks go to all organizations and persons who helped the project idea develop from the early stage (thank you, George, thanks ETPIS and EU-VRi Founding Members!) to the "flagship project".

Event Overview



Target participants

Due to its main goals involving

- integrated Risk Management and
- emerging risks related to "New Technologies"

iNTeg-Risk is a very multi-disciplinary project. Among its 80 partners there are 23 industrial companies, 18 SMEs (small and medium enterprises), 3 government bodies and 2 standardization bodies. In the project these different partners will deal with 17 different applications including topics like CO_2, H_2, nano, advanced materials, LNG, health and other top-priority issues, down to generic issues like decision-making, methodology/tool developement, risk perception/management and education.

The above facts make the conference interesting for a large number of people working in the areas of:

- risk management
- HSE (health, safety, environment)
- new technologies
- insurance
- research & development
- regulation
- standardization
- safe design
- compliance
- FMEA

The participants of the conference will, therefore, have the unique opportunity to meet stakeholders also from many different interest groups - the Conference Exhibition and the venue of "Haus der Wirtschaft" in Stuttgart will offer an extraordinary convenient environment for that.

The conference papers, to be presented by leading experts in the area will, in addition, provide a deeper insight into the plans and first results from iNTeg-Risk as the currently "reference EU project" in the area of management of emerging risks and, thus, foster the benefits for all the participants.

1st iNTeg-Risk Conference: Dealing with Risks of Tomorrow's Technologies

Agenda

June 2-3, 2009
Haus der Wirtschaft, Stuttgart, Germany
König-Karl-Halle, www.hausderwirtschaft.de

www.integrisk.eu-vri.eu

organized by EU-VRi (European Virtual Institute for Integrated Risk Management) in cooperation with ETPIS (European Technology Platform on Industrial Safety), EU-OSHA (European Agency for Safety and Health at Work), Steinbeis Advanced Risk Technologies and Steinbeis GmbH & Co. KG für Technologietransfer (StC)

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NOTE: The conference is planned as a meeting occasion for ALL iNTeg-Risk project partners ("main beneficiaries", "Article 10 partner", "Subcontractors" and "IAB members") and their participation is foreseen in the Grant Agreement (Description of Work).

June 2, 2009

König-Karl-Halle

08:00 – 09:00	**Registration and getting together - visiting the exhibition (Coffee & refreshments)**
09:00 – 10:30	**1. Welcome & Introductory session** (Chair: W. Gerhardt, BASF, Germany; Ph. Klein, EDF; V. Laflèche, INERIS, France) 1.1 Welcome – Innovations Stabilize Existences and Jobs - H. Trasch, President Steinbeis Foundation, Germany 1.2 Welcome -Role of EU programs and large EU Projects in defining and performing of national R&D in the area of new technologies - H. Bauer, Federal Ministry of Education and Research, Germany 1.3 Welcome - Aligning national and EU efforts in the area of future-oriented innovation and education - C. Dumon, Consul General of France, Stuttgart, Germany 1.4 European RTD and emerging risks related to new technologies – S. Bowadt, EC DG Research, EU 1.5 EU-VRi – a common sustainable response of the European stakeholders to the needs of integrated risk management - V. Laflèche, Director General , INERIS, France 1.6 Academic education for emerging issues - how to keep abreast - W. Ressel, Univ. Stuttgart, Germany 1.7 iNTeg-Risk project: Providing the basis for a harmonized EU response to the challenges of New Technologies – A. Jovanovic, CEO EU-VRi, iNTeg-Risk Project Coordinator, Germany
10:30 – 11:00	**Coffee break - visiting the exhibition**
11:00 – 12:30	**2. Emerging Risks related to new technologies – the European perspective** (Chair: A. Jovanovic, EU-VRi, Germany; O. Renn, ZIRN Univ. Stuttgart, Germany P.-A. Schieb, OECD, France) 2.1 European Technology Platform on Industrial Safety (ETPIS) as a catalyst of matching stakeholder needs within EU research - C. Jochum, Chairman ETPIS, Germany 2.2 Healthy workplaces, "Good for you, good for your business" a European campaign on Risk Assessment – E. Brun, EU-OSHA, EU 2.3 How the industry copes with emerging risks due to new technologies – the case of nanotechnology at BASF - W. Gerhardt, BASF, Germany 2.4 Industry response to risks emerging from human and organizational changes – Ph. Klein, EDF, France 2.5 Emerging risks in public perception: Will we face an acceptance crisis? – O. Renn, ZIRN Univ. Stuttgart
12:30 – 13:30	**Lunch (buffet) in the iNTeg-Risk Exhibition area**
13:30 – 14:45	**3. Emerging Risks related to new technologies – international perspective** (Chair: M. Brun, EU-OSHA; C. Jochum, ETPIS, Germany) 3.1 New Technologies and Corporate Responsibility — The role of Carbon Accounting - S. Barthelmes, R. X. Ruter, Ernst & Young, Germany 3.2 Embedding HSE risk assessment procedures into R&D process for emerging technologies in Japan - A. Kishimoto, AIST, Japan 3.3 Situation and Development of Industrial Safety in China - C. F. Huang, B. Zhang and Y. Liu, Risk Analysis Council of China Association for Disaster Prevention, China 3.4 Recent OECD efforts to harmonize approaches to safety and risk indicators - P.-A. Schieb, OECD, France 3.5 Opportunities for and expectations of government organizations in EU R&D projects - M. Hailwood, LUBW Landesanstalt für Umwelt, Messungen und Naturschutz Baden-Württemberg, Germany, Chair of the OECD Working Group on Chemical Accidents
14:45 – 15:00	**Coffee break - visiting the exhibition**

15:00 – 16:15	**4. Emerging issues in emerging risks I** (Chair: L. Cusco, HSE/HSL, UK; R. Schneider, Swiss Re, Switzerland) 4.1 The limits of engagement in emerging technologies – R. Flynn, Univ. of Salford, UK 4.2 Emerging risks: a proactive view from insurance industry – R. Schneider, Swiss Re, Switzerland 4.3 Public Awareness Promoting New or Emerging Risks: The Case of Industrial Accidents Triggered by Natural Hazards - E. Salzano, A. Basco, CNR, Italy; V. Busini, R. Rota, E. Renni, V. Cozzani, CONPRICI, Italy 4.4 Emerging risks in complex systems – discovering risks in complex system by intelligent simulation of their behavior – H. Fujii, S. Yoshimura, Univ. of Tokyo, Japan 4.5 Overview of the project "Alfa-Bird" (Alternative fuels and biofuels for aircraft development)- O. Salvi, EU-VRi
16:15 – 16:30	**Break - visiting the exhibition**
16:30 – 17:30	**5. Emerging issues in emerging risks II** (Chair: G. Lenkey, BZF, Hungary; Jesús M López de Ipiña, LEIA, Spain) 5.1 How the regulator can anticipate and react to emerging risks proportionately - L. Cusco, HSE/HSL, UK 5.2 Searching for synergies among the EU R&D projects - H. Wenzel, VCE, Austria 5.3 Use of modern risk appraisal and modeling tools in nanotechnology applications (EU Project MUST) - D. Balos, R-Tech, Germany; N. Filipović, Harvard School of Public Health, US 5.4 Emerging Risks: How can standardization brokers/organizations support the anticipation and management process - H. Behrens, DIN, Germany
17:30 – 18:00	**6. Discussion**
18:00 – 20:00	**Conference Dinner (buffet) - exhibition area** Dinner Welcome: Large European research projects as a chance for fostering university cooperation and education in emerging scientific areas - C. Fourcaud, Embassy of France, Germany Steinbeis – Competitive Transfer of Technology and Innovation - U. Haug, Steinbeis Foundation, Germany

June 3, 2009

09:00 – 10:30	**7. Presenting the iNTeg-Risk project: Corner Stones** (Chair: F. Bagnoli, D'Appolonia, Italy; S. Bowadt, EC DG Research, EU) 7.1 From Shape-Risk to iNTeg-Risk - O. Salvi, EU-VRi 7.2 From IRGC Framework and sample applications (ERRAs) to Emerging Risk Management Framework (ERMF) - A. Jovanovic, O. Renn, P. J. Schweizer, ZIRN Univ. of Stuttgart, Germany 7.3 Non-mandatory forms offered by CEN for consensus building in EU RTD projects -A. Pirlet, CEN, Belgium 7.4 Catalogue of risks and its limitations - D. Proske, University of Natural Resources and Applied Life Sciences, Vienna, Austria 7.5 Combining LCA and RA for the integrated risk management of emerging risks- Leo Breedveld, 2B Consulenza Ambientale, Italy 7.6 UML as a tool modeling of risks - M. Ström, Swerea IVF, Sweden
10:30 – 11:00	**Coffee break – visiting the exhibition**
11:00 – 12:30	**8. Presenting the iNTeg-Risk project: Presenting and analyzing iNTeg-Risk ERRAs (Emerging Risk Representative Industrial Applications) (SP1)** (Chair: M. Zarea, GDF SUEZ, France; B. Debray, INERIS, France) 8.1 Aspects and needs related to emerging risks within industrial safety area including various dimensions of safety - An EU-Policy Perspective Viewpoint – A. Boenke EC DG Enterprise and Industry, EU 8.2 From specific industrial problems to a common European approach in iNTeg-Risk ERRAs - M. Zarea, GDF SUEZ, France; B. Debray, INERIS, France 8.3 Emerging risks due to extreme storage of hazardous materials - U. Krause, BAM, Germany; P. Lerena, SWISSI, Basel, Switzerland 8.4 Nanotechnologies & SMEs (Small and Medium Enterprises) - G. Klein, TÜV Süd, Germany 8.5 Emerging risks in alternative strategies of CO_2 capture and storage - P. Auerkari, S. Holmström, J. Salonen, A.-M. Heikkilä, VTT, Finland 8.6 Providing common basis for exploring and reporting on emerging risks ("ERRA template") - K. Øien et.al., SINTEF, Norway; E. Kon, EU-VRi, Israel/Germany
12:30 – 13:45	**Lunch (buffet) in the iNTeg-Risk Exhibition area**
13:45 – 15:15	**9. Presenting the iNTeg-Risk project: Harmonizing the approaches into a common framework (ERMF - Emerging Risks Management Framework) (SP2)** (Chair: C. Duval, EDF, France; V. Cozzani, UNIBO, Italy) 9.1 How a common solution for emerging risk will look like and be applied - C. Duval, G. Deleuze, EDF, France; V. Cozzani, CONPRICI, Italy 9.2 Process Improvement and Emerging Risk Management. The CMMI + SAFE Approach- F. Bagnoli, D'Appolonia, Italy 9.3 Methodology to build Key Performance Indicators (KPIs): for industrial or occupational safety? How to build efficient KPIs? - C. Duval, Y. Dien, M. Voirin, EDF, France 9.4 Decider: A Fuzzy Multi-Criteria Group Decision Support System Software - J. Ma, J. Lu and G. Zhang, Faculty of Engineering and Information Technology UTS, Australia 9.5 An investigation of the safety attitudes of designers in the Safety-Critical Industries - N. J. Beesley, K. Daniels, A. Cheyne, V. Wimalasiri, Loughborough University, UK 9.6 The Occupational Risk Model and the ORM tool - I. A. Papazoglou, O. N. Aneziris, M. Konstantinidou, National Centre for Scientific Research "DEMOKRITOS", Greece
15:15 – 15:30	**10. Final discussion and break-out session "Where do we want to be in iNTeg-Risk in June 2010, where in June 2013"** **Panel Discussion** : C. Jochum, ETPIS; J.J. Meulenbrugge, TNO; V. Laflèche, INERIS; G. Lenkey, BZF; J. López de Ipiña, LEIA; A. Pirlet, CEN; M. Zarea, GDF-SUEZ; R. Schneider, Swiss Re
15:30	**End of the Conference**

Note: IAB Meeting and Dinner will take place in the follow-up of the conference - please see the "Accompanying Events" Agenda

Post Conference Workshop on KPIs/SPIs : iNTeg-Risk - How to build KPIs for emerging risks and new technologies

Agenda

June 4, 2009
Haus der Wirtschaft, Stuttgart, Germany
Bertha-Benz-Saal, www.hausderwirtschaft.de

www.integrisk.eu-vri.eu

Organizing Committee:

H. B. Andersen, DTU, Denmark
V. Cozzani, Univ. of Bologna, Italy
C. Duval, EDF, France
M. Hailwood, Chair OECD Working Group on Chemical Accidents, Germany
P. F. Hansen, DNV, Norway
Ch. Jochum, EPSC, UK
A. Jovanovic, EU-VRi, Germany (Chair)
G. Kuhn, BASF, Germany
O. Salvi, EU-VRi, Germany
P.-A. Schieb, OECD, France

NOTE: The workshop is planned as a meeting occasion for ALL iNTeg-Risk partners, all other project members (Art. 10. IAB members,...) and it is open to external participants.

08:30– 09:00	**Registration and getting together**
09:00 – 10:30	**1. Session - KPIs/SPIs as a generally accepted but partly controversial concept in industry and governance** (Chair: A. Jovanovic, EU-VRi, Germany; G. Kuhn, BASF, Germany) 1.1 Methodology to build Key Performance Indicators (KPIs): for industrial or occupational safety? How to build efficient KPIs? - C. Duval, Y. Dien, M. Voirin, EDF, France 1.2 An example of process industry position towards KPIs - G. Kuhn, BASF, Germany 1.3 Overview of KPIs approached and practices and their possible use for emerging risks (example insurance/reinsurance - ERRA A2) - A. Jovanovic, EU-VRi, Germany, R. Schneider, Swiss Re, Switzerland
10:30 – 11:00	**Coffee break**
11:00 – 12:30	**2. Session - KPIs/SPIs in iNTeg-Risk** (Chair: B. Debray, INERIS, France; C. Duval, EDF, France) 2.1 OECD Guidance on Developing Safety Performance Indicators related to Chemical Accident Prevention, Preparedness and Response – Potential for application to areas of emerging risks - L. Cusco, HSL, UK; M. Hailwood, Chair OECD Working Group on Chemical Accidents, Germany 2.2 KPIs for Human Factors and Safety Management: Status and prospects - H. B. Andersen, DTU, Denmark 2.3 General Concept of KPIs in iNTeg-Risk (ERRA D1) - P. F. Hansen, T. G. Saetren, DNV, Norway 2.4 On-line monitoring and assessment of emerging risk in conventional industrial plants - possible way to implement integrated risk management approach and KPIs (ERRA C3)- G. Lenkey, BZF, Hungary; P. Stanojevic, NIS, Serbia; A. Jovanovic, EU-VRi, Germany

12:30 – 13:30	**Lunch**
13:30 – 15:00	**3. Session - Applying KPIs in ERRAs of iNTeg-Risk project (ERRA = Emerging Risk Representative Application)** (Chair: G. Lenkey, BZF, Hungary; M. Zarea, GDF SUEZ, France) 3.1 Applying KPIs in: Challenges to safety posed by outsourcing of critical tasks - in oil, gas, petrochemical and construction industries, DTU (ERRA C1) -H. B. Andersen, J. Thommesen, DTU, Denmark 3.2 Applying KPIs in: Emerging risks related to the industrial use of automated surveillance of linear industrial infrastructure, GDF (ERRA A3) -Ch. Schmidt, Definiens, Germany, M. Zarea, GDF-Suez, France 3.3 Applying KPIs in:The use of KPIs to identify emerging risks related to advanced Liquid Natural Gas(LNG) regasification technologies (ERRA A4) -V. Cozzani, CONPRICI, C. Giorgini, Saipem Energy Services, G. Uguccioni, D'Appolonia, Italy 3.4 Applying KPIs in: Emerging risks related to development and use of advanced engineering materials, composite materials, KMM-VIN (ERRA B3) -K. Dolinski, J. Trebicki, KMM-VIN, Poland 3.5 Applying KPIs in: Remote operation in environmentally sensitive areas, SINTEF (ERRA C2) -K. Øien, SINTEF, Norway 3.6 Industrial safety indicators: rationale and practical application to NaTech Risks (ERRA D2) - B. Affeltranger, Ch. Mazri, M. Reimeringer, INERIS, France
15:00 – 15:30	**Final Discussion** (Chair: K. Maile, MPA University of Stuttgart, Germany; H.B. Andersen, DTU, Denmark)
15:30	**End of the Workshop**

Note: The Genaral Assembly of iNTeg-Risk project will take place in the follow-up of the Workshop - please see the "GA Agenda"

iNTeg-Risk Project Accompanying Events

June 3, 2009

Turm A, www.hausderwirtschaft.de

1st iNTeg-Risk International Advisory Board (IAB) Meeting

15:30- 16:00	**Refreshments, getting together**
16:00 - 16:45	**1. Welcome addresses and round table** **2. Objectives of the IAB,** Olivier Salvi, EU-VRi **3. Nomination of the Chairperson and Rapporteur**
17:00 - 18:30	**4. Review of the project objectives and workplan**
	Based on the information of the project presented during the conference, each Member of the IAB will present in 5-10 min her/his comments on the project following the following structure: • 3 to 5 important aspects of iNTeg-Risk (activities, features of the project) because they will solve important issues for the industry and the society or because they are very innovative. • 3 to 5 not relevant or critical points of iNTeg-Risk (activities, features of the project) that need actions from the Management Team, to revise the activities or take specific measures. • 3 to 5 recommendations to the Management Team.
18:30 - 19:00	**5. Wrap-up and conclusions**
19:00	**End of the meeting**

19:00 – 21:00	**Dinner for the IAB members** "Calwer-Eck", Calwer Straße 31, 70173 Stuttgart, www.calwereck.de/english/start.htm

NOTE: Participation at this meeing is reserved exclusively to the members of the IAB.

IAB Members

D. Anguita
Smartware & Data Mining, Gruppo Sosistemi, Italy
T. Biermann
European Commission, DG Environment , Belgium
J.-P. Birat
Arcelor Mittal,France
A. Boenke
European Commission, DG Enterprise and Industry, Belgium
R. Gowland
EPSC - European Process Safety Center,United Kingdom
M. Hailwood
Landesanstalt für Umwelt, Messungen und Naturschutz BW, Germany
J.-P. Hamelin
Soletanche-Bachy, France
C. Huang
Beijing Normal University, China
H. Koban
Lloyd's Register, Germany
C. Kranz
BASF SE, Germany
J.-P. Lacoursiere
University of Sherbrooke, Canada
J.Lu
University of Technology, Sydney, Australia
K.Maile
MPA University of Stuttgart, Germany
J. Meulenbrugge
TNO Built Environment and Geosciences, Netherlands
D. Osage
E2G The Equity Engineering Group, Inc., United States
D. Podgorski
CIOP - Central Institute for Labour Protection, Poland
R. Reiss
Environnement Canada, Canada
M. Renner
Bayer Technology Services GmbH, Germany
E. Rial González
European Agency for Safety and Health at Work, Spain
P.-A. Schieb
OECD - Organisation for Economic Co-operation and Development, France
A. Sieber
European Commission JRC Ispra, Italy
K. Thompson
Harvard School of Public Health, United States
P. Van Gelder
Delft University of Technology, Netherlands
G. Vinod
Bhabha Atomic Research Centre, India
J. Wiener
Duke University, United States
D. Wright
Trilateral Research & Consulting, United Kingdom
S. Yoshimura
University of Tokyo, School of Engineering, Japan

June 4, 2009

Bertha-Benz-Saal www.hausderwirtschaft.de

1 st iNTeg-Risk General Assembly (Preliminary Agenda)

NOTE: Only "main beneficiaries" in the project are contractually obliged to be present or legally represented at the General Assembly. The "Article 10 partners" and IAB members are invited and their participation as observer (no voting rights) is appreciated.

15:30 - 16:00	**Registration and getting together (coffee)**
16:00 - 16:30	**1. Welcome** **2. Roll-call of participants** **3. Approval of the agenda**
16:30- 17:00	**4. Presentation of results from board meetings** • 1 st Executive Board meeting (March 16, 2009) http://www.integrisk.eu-vri.eu/ma/DashboardEvent.aspx?eid=158#Documents ○ 3 month short reporting introduced ○ Procedure for reminding delayed or non-reporting partners (1 st first message,2 nd first reminder,3 rd second reminder,4 th decision of WP / SP Leader and EB member about expulsion ○ Possible and first practical problems of non-performance (confidentiality) and breaches) discussed • 2 nd Executive Board meeting (May 13, 2009) http://www.integrisk.eu-vri.eu/ma/DashboardEvent.aspx?eid=166 ○ Web tool accepted by the EU ○ Presented procedures and tools reconfirmed (cf. Grant Agreement / DoW / Task 5.2.4) as mandatory part of QMS in iNTeg-Risk for all project partners during the project work ○ Dealing with non-performing partners and breaches - potential problems discussed ○ Task Force for proposed modifications to DoW • 1 st IAB meeting (June 3, 2009) http://www.integrisk.eu-vri.eu/ma/DashboardEvent.aspx?eid=145 ○ Nomination of Chairperson and Rappoerteur ○ 3-5 important aspects, critical points and recommendations from IAB members • Discussion • Vote: Approval of the work of the EB in the first 6 months of the project
17:00- 17:15	**5. Review of Grant Agreement and Amendments to the Grant Agreement** • Financial aspects of the Grant Agreement ○ payments (done) ○ cost statements (due to Dec. 1, 2009) ○ audits • Amendment No. 1 to the Grant Agreement http://www.integrisk.eu-vri.eu/home.aspx ?lan=230&tab=425&itm=426&pag=419 ○ Main issue: Removal of beneficiary No. 51 (Regione Lombardia) with changes in Article 1.1 of the Grant Agreement and the Annex 1 of GA ○ Status: accepted • Amendment No. 2 to the Grant Agreement http://www.integrisk.eu-vri.eu/home.aspx?lan=230&tab=425&itm=426&pag=419 ○ Main issue: Removal of beneficiary No. 35 (URL) and addition of beneficiary No. 70 (IQS) with changes to Article 1.1 of the Grant Agreement and Annex 1 of the Grant Agreement (DoW) ○ Status: submitted to EU; waiting for finalization • Open issues in the Grant Agreement - Miscellaneous ○ See contract changes tracker on web tool under "Contract" http://www.integrisk.eu-vri.eu/home.aspx?lan=230&tab=425&itm=428&pag=421 • Discussion

17:15- 17:30	**6. Review ofConsortium Agreement and Amendments to the CA**
	• Amendment No. 1 to the Consortium Agreement http://www.integrisk.eu-vri.eu/home.aspx?lan=230&tab=425&itm=427&pag=420
	  ○ Main issue (Article 2 in CA Amendment No. 1): "Electronic signature" as equivalent to the amendment procedure specified in A rticle 11.4 of the CA
	  ○ Status: accepted
	• Amendment No. 2 to the Consortium Agreement http://www.integrisk.eu-vri.eu/home.aspx?lan=230&tab=425&itm=427&pag=420
	  ○ Main Issue: Implement d ecisions from the Executive Board meetings to the contract. Four main decisions are listed below:
	  ○ Decision on 3 month short reporting to Article 6.3.3.2 and 6.4 of the CA
	  ○ Decision on breaches to Article 4.2 and 9.7 of the CA
	  ○ Decision on the mandatory use of the web tool to Article 6.2 of the CA
	  ○ Decision on the Task Force for proposed modifications of the DoW
	  ○ Status: The modifications agreed at the EB will be embedded into the CA and the respected Amendment submitted for approval
	• Open issues in the Consortium Agreement - Miscellaneous
	  ○ See contract changes tracker on web tool under "Contract" http://www.integrisk.eu-vri.eu/home.aspx?lan=230&tab=425&itm=428&pag=421
	• Discussion

17:30 - 17:45	**7. Planning for 2009-2010** • Start of SP4 • 3 month reporting (May 31, 2009) • Annual reporting (Dec. 1, 2009) • Next C onference in September 2010 (Leipzig? Other candidates?) • Next General Assembly again linked to the Conference? • Discussion
17:45 - 18:00	**8. AOB - Final discussion**
18:00	**End of the meeting**

Links to the main documents:

- Grant Agreement - main document, signed by EU-VRi and European Commission: http://www.integrisk.eu-vri.eu/filedown.aspx?file=1191
- DoW Description of Work (original version), Valid: Dec. 1, 2008 through Feb. 14, 2009: http://www.integrisk.eu-vri.eu/filedown.aspx?file=994
- Consortium Agreement - with signature pagesof all beneficiaries: http://www.integrisk.eu-vri.eu/filedown.aspx?file=1103
- Amendment No.1 to the Consortium Agreement: http://www.integrisk.eu-vri.eu/filedown.aspx?file=1081

Voting rules and quorum (Article 6.2.3 of the Consortium Agreement)

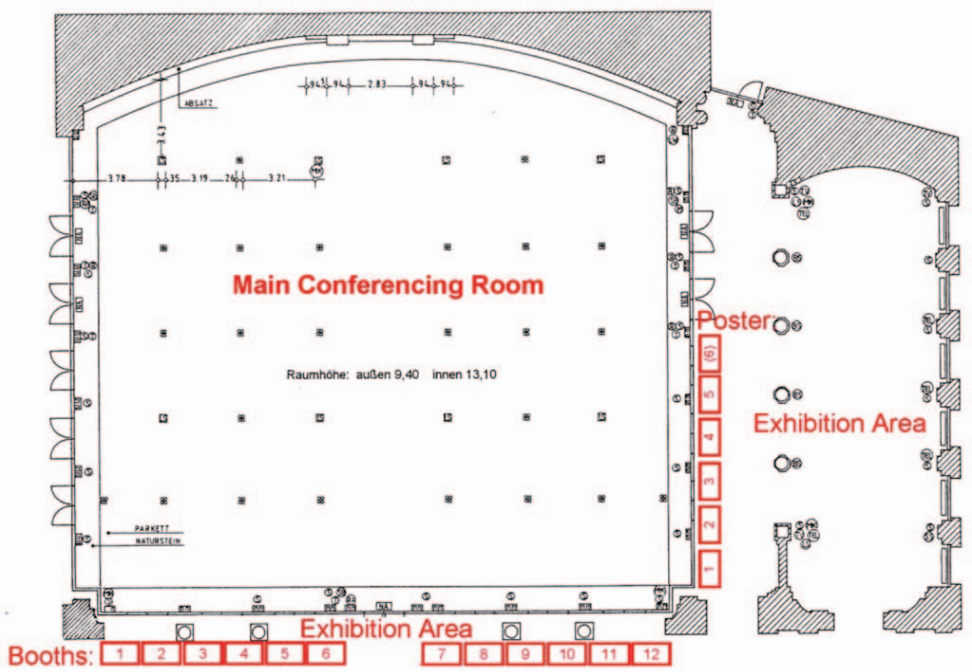
"Each Consortium Body shall not deliberate and decide validly unless a quorum of two-thirds (2/3) of its members are present or represented (quorum). Each Member of a Consortium Body present or represented in the meeting shall have voting rights according to its involvement in the project:

- major contributors have 3 votes (total budget > 500 k€),
- medium contributors 2 votes (200 k€ < total budget < 500 k€),
- minor contributors 1 vote (total budget < 200 k€).

Defaulting Party members may not vote. Decisions shall be taken by a majority of two-thirds (2/3) of the votes."

Exhibition

In parallel to the Conference an **Exhibition** will take place where iNTeg-Risk stakeholders have the chance to introduce themselves and their products and services. The obvious advantage of exhibiting parallel to this event are the face-to-face contacts, directly relations with the right people from industry, universities and other stakeholders and to experience the state-of-the-art in this rapidly expanding field. The Exhibition space will be located in front of the conference room.



Exhibitors list:

1 Steinbeis Foundation
2 Steinbeis Advanced Risk Technologies GmbH/ EU-VRi / ETPIS / University of Stuttgart (ZIRN)
3 CEFIC
4 Bundesanstalt für Materialforschung und -prüfung
5 Technische Universität Magdeburg
6 PESI/LEIA
7-8 Definiens AG / Enagas S.A./ Mavionics GmbH
9 INERIS
10 TÜV SÜD Industrie Service GmbH
11 Beuth Verlag
12 MIT GmbH

P1 KMM-VIN
P2 Enagas S.A.
P3-P4 MUST Project
P5 Bay Zoltan Foundation
P6 EU-OSHA

Additional Information & Registration

Proceedings/handouts, language

Proceedings / Handouts of the Conference and the Workshop containing

- program of the Conference
- program of the Workshop
- program of the Exhibition
- information about the organizers and exhibitors
- speakers' and chairpersons' CVs
- abstracts of the presentations

will be distributed to participants at the registration.

Presentations will be available to participants under the protected web-site until at least July 1, 2009.
For download please log-in with the credentials given below on
http://www.integrisk.eu-vri.eu/integriskconference1/presentations
username: *1stConfParticipant*
password: *integrisk*

The **language** of the conference and the workshop is English.

Special issue of the Journal of Risk Research:
Selected contributions (8-12) will be published as peer-reviewed **papers** , in the special issue of Journal of Risk Research, the official journal of SRA-Europe (see www.sraeurope.org/jorr.html).

Preliminary Instructions for Authors of the Papers

1. Submission of Manuscripts
Manuscripts must be submitted in English and must be original, unpublished work not under consideration for publication elsewhere. Three copies of the manuscript together with all original figures and tables should be submitted to the Editor or one of the Associate Editors. The manuscript will be subjected to blind review by one or two referees. Revisions may be required before a decision is made to accept or reject the paper. When a paper has been accepted, please send two copies of the manuscript in its final form to the Editor, together with a disc. Please use a standard word processing package and label the disc clearly.

2. Preparation of the Manuscript
The manuscript must be typed, double-spaced on A4 paper, with at least 3 cm margins (approx. 21x30 cm) and between 4000 and 6000 words. Low quality dot-matrix printers should not be used. Clearly written concise manuscripts should comprise:

2.1 Title page (page 1)
Including (a) a concise and informative title (b) the full names and affiliations of all authors (c) the full mailing address, telephone and fax numbers of the corresponding author.

2.2 Abstract (page 2)
Including a concise and informative abstract of 200 words maximum, summarizing the significant points of the paper.

2.3 Introduction (page 3)
The introduction should clearly state the purpose (aims and objectives) of the paper. It should include key references to appropriate work but should not be an historical or literature review.

2.4 Discussion
The discussion should emphasize the implications and practical significance of research findings, their limitations and relevance to previous studies. 2.5 References References in the text should be cited as follows one author - Smith (1993) or (Smith,1993) two authors - Smith and Brown (1993) or (Smith and Brown, 1993) three or more authors - Smith et al (1993) or (Smith et al 1993) Papers by the same

author(s) in the same year should be distinguished by the letters a, b etc References should be listed at the end of the paper giving the year of publication, title of paper, journal titles in full, volume number and first and last page numbers. References to books should include their edition, editor(s), publisher and place of publication. Examples: Book Eiser, J.R. (1994) Attitudes, Chaos and the Connectionist Mind, Oxford: Blackwell. Edited Book Kaplan R.S (1986) Advances in experimental social psychology, in K. Clark and C. Lorenze (eds) The Psychology of Attitudes, Oxford: Pergamon, pp 165-98. Journal Heberlein T.A. (1982) Some social psychological explanations for changing environmental attitudes, Risk Analysis 2, 81-90 It is the author's responsibility to check the accuracy of references.

3. Tables
Each table must be typed, double spaced on a separate page. They must be consecutively numbered and should have a brief informative title. Tables should be understandable without reference to the text. Explanatory footnotes should be brief, placed beneath the table and indicated by lower case letters. When using percentages state the absolute value that corresponds to 100%. Identify all statistical methods.

4. Figures
All illustrations of any kind must be submitted as sequentially numbered figures, one to a page. If photographs, please supply high quality glossy photographs. Line figures, graphs etc must be supplied as high quality laser print-outs (not photocopies). If it is necessary to submit drawings then these must be of the highest quality and clarity. The author(s) name and the figure number should be written on the reverse of the figure in pencil. When symbols, arrows, numbers or letters are used to identify parts of illustrations they must be clearly identified by a key in the figure legend rather than in the figure itself. Similarly, internal scales, staining or processing of the figure must be explained where appropriate. Figure legends should be listed sequentially on a separate page. Color illustrations are acceptable; however the cost of color production will be charged to the author.

5. Conventions
Use only recommended SI units. Numerals should be used for all numbers of two or more digits, and for single digits when attached to units of measure. Abbreviations should be defined in brackets after their first mention in the text in accordance with internationally agreed rules

6. Proofs
Proofs will be sent to the designated corresponding author and should be returned directly to the publisher within 3 days of receipt. Alterations in proofs other than the correction of typesetters errors may cause delay and extra charges that may be made to the author(s).

7. Offprints
The corresponding author will be sent 25 free offprints as well as a bound copy of the journal.

8. Copyright
Submission of a paper to Journal of Risk Research will be taken to imply that it presents original unpublished work, not under consideration for publication elsewhere. By submitting a manuscript authors agree that the copyright for their article is transferred to the publisher if and when the article is accepted for publication. The copyright covers the exclusive rights to reproduce and distribute the article, including reprints, photographic reproductions, microfilm or any other reproduction of similar or any nature including translations.

Registration

The Conference and the Workshop are part of the project participation for project beneficiaries and the IAB members and the costs incl. registration may be charged onto the project costs of the beneficiaries and charged to EU-VRi for IAB members.

Registration fee for the Conference (+ VAT, if applicable):

- 200 €, as cost participation share, for project partners and IAB members, and
- 450 €, as registration fee, for other participants.

The registration pack includes the handouts, coffee breaks, lunches and conference reception.
Registration fee for the Workshop (+ VAT, if applicable):

- 100 €, as cost participation share, for project partners and IAB members, and
- 250 € for other participants.

The cost participation share for exhibitors, in addition to the conference registration fees (+ VAT, if applicable):

- 100 € for project partners for two days
- 200 € for external exhibitors for two days

On-line registration at: www.integrisk.eu-vri.eu

On-site Registration form:

Company

Name of Staff

Address

ZIPCode/Town

Country

Phone / Fax / Email

Herewith I register for

☐ **Main Conference (June 2-3, 2009)**

- Project partners (200 €)
- Regular partners (450 €)

☐ **Conference Dinner (June 2, 2009)**
(free of charge for participants of the conference)

☐ **International Advisory Board Meeting (June 3, 2009)**
NOTE: Please be reminded that only the IAB members can apply for this meeting.

☐ **Workshop (June 4, 2009)**

- Project partners (100 €)
- Regular partners (250 €)

☐ **General Assembly of iNTeg-Risk (June 4, 2009)**

Please fill in and send back via fax: +49 711 1839 685 or e-mail integrisk-conference1@eu-vri.eu or make your registration directly on the website using the following link: http://www.eu-vri.eu/fwlink/?LinkID=210

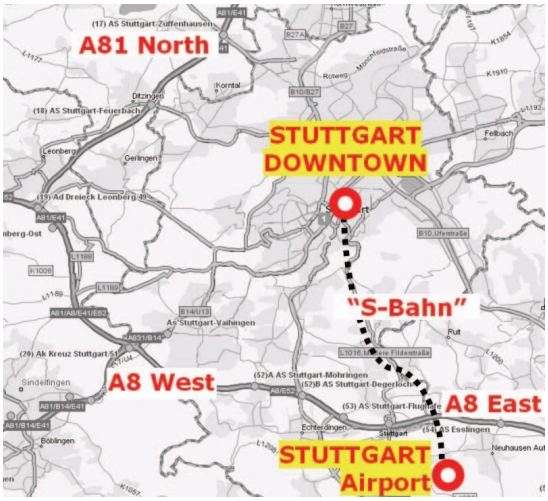
☐ **Special registration for ETPIS**
For the conference participants interested to become ETPIS members a special offer is foreseen: They will be entitled to register for ETPIS at a special rate of 100 € for 2009.

NOTE: VAT should be added to the above fees if applicable.

Venue

- **Stuttgart, Haus der Wirtschaft**
- **Steinbeis Foundation**
- **Steinbeis Advanced Risk Technologies**
- **European Virtual Institute for Integrated Risk Management (EU-VRi)**

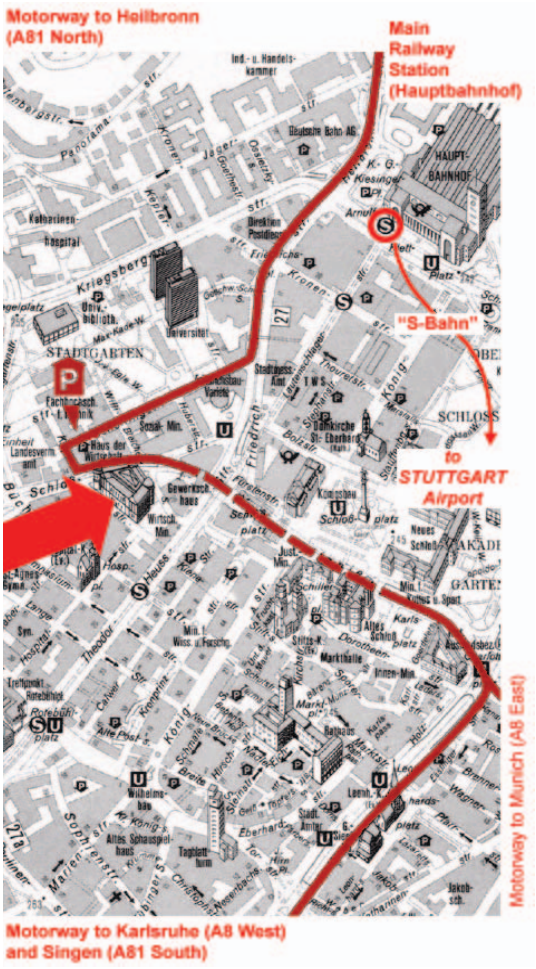
Haus der Wirtschaft,
Willi-Bleicher-Str. 19
70174 Stuttgart, Germany
+49 (711) 1839-5
www.stw.de



Walking from the main railway station (Hauptbahnhof): Take the main street (Koenigstrasse) for about 500 meters up to the main place Schlossplatz. Between the bookstore WITTWER and the ESPRIT, you have to turn right (kleiner Schlossplatz), go straight ahead, cross the 'Theodor Heuss Strasse' and you will reach automatically the 'Willi-Bleicher Strasse'.

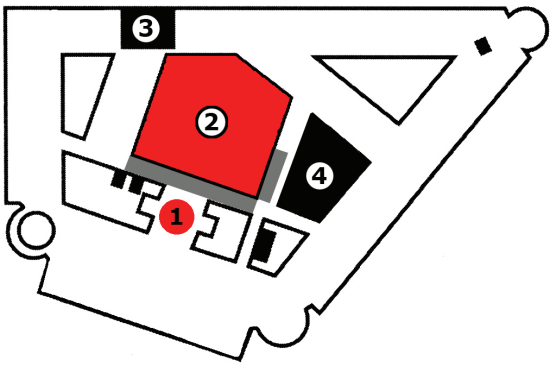
Public transportation: Take any of the subway lines ("S-Bahn") S1 to S6 (**S2 or S3 from the airport!**) and get off at the main railway station (Hauptbahnhof). Then follow the instructions above. Alternatively: use the tramway (the "U-Bahn") lines U9 or U14 and get off at the stop "Keplerstraße".

By car: From the main motorways follow always "Stuttgart Zentrum" or "Stuttgart Stadtmitte". Take exits "Degerloch" when coming from Munich (Autobahn A8), exit "Vaihingen" when coming from Karlsruhe (Autobahn A8) or Zurich (Autobahn A81), or Zuffenhausen when coming from Heilbronn (Autobahn A81). **Park** at "Hofdienergarage" in front of Haus der Wirtschaft (access to the garage from Schellingstraße).

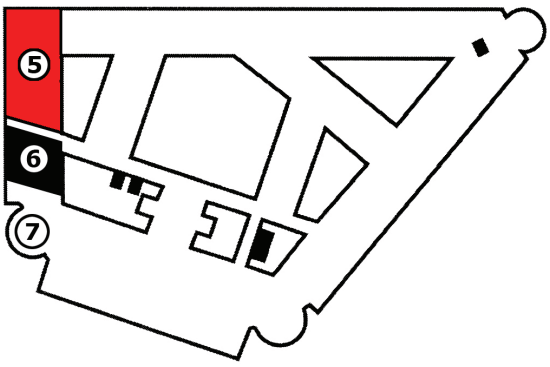


Conference Rooms

2nd Floor



1st Floor



① **Registration, Information**
② **König-Karl-Halle:**
iNTeg-Risk Main Conference
③ **Konferenzraum Ulm:**
VIP Room
④ **Foyer König-Karl-Halle:**
Conference Lunch
Conference Dinner
Exhibition Area

⑤ **Bertha-Benz-Saal:**
Post-Conference Workshop
General Assembly
⑥ **Foyer Bertha-Benz-Saal:**
Workshop Lunch
⑦ **Turm A:**
IAB Meeting

VIP room: For the organizers, speakers and chairpersons we provide a separate meeting room (Room Ulm) which can be used for separate discussions, presentation preparation and briefings.

Venue and Parking: Details of the venue you can find under: http://www.stw.de/fileadmin/content/Kontakt/110066-e.pdf or under "Venue" part of this booklet . For parking: The "Hofdienergarage" is situated in front of Haus der Wirtschaft. The parking is free of charge for organizers, speakers and chairpersons. Please ask for the voucher at the registration desk of the conference.

Technical support: The main conference room is equipped with data projector (beamer), flip chart, sound facilities and presentation PC (Windows XP / MS Office 2007) with wireless Internet connection. No other display facilities (e.g. OHP, dia-projectors) will be available.

Contact: During the event you can contact as at the registration desk or under following phone number: +49 174 93 911 66.

For further questions: Please contact us under integrisk-conference1@eu-vri.eu or phone: +49 711 1839 781.

Hotels

The prices are indicative – please check (e.g. Internet) for special offers in each particular case.

Hotel Name	www / tel	distance	Regular price	"Steinbeis" price
For the hotels below indicate **"Steinbeis Stiftung"** as the keyword				
Hotel Unger	www.hotel-unger.de Tel. +497112099-0	3 min	125 €	86 €
Hotel Wartburg	www.hotel-wartburg-stuttgart.de Tel. +497112045-0	5 min	88 €	79 €
Hotel Astoria	www.hotel-astoria-stuttgart.de Tel. +497114408000	5 min	99 €	79 €
Hotel Rega	www.rega-hotel.de Tel. +49711619340	10 min	115 €	101 €
Hotel Azenberg	www.hotelazenberg.de Tel. +49711225504-0	10 min	105 €	96 €
For the hotel below indicate **"SEZ152"** as the keyword				
Maritim Hotel	www.maritim.de Tel. +497119421210	5 min	152-189 €	130-160 €

For further info you may find useful to consult http://www.stuttgart-tourist.de/ENG/hotels/hotels_buchen.htm .
No special conditions would apply toother hotels.

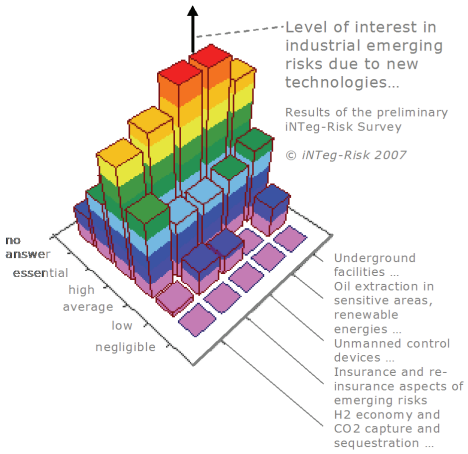
iNTeg-Risk Info Sheet Nr. 2 (February 2009) (ver. 4.0)

iNTeg -Risk

Early Recognition, Monitoring and Integrated Management of Emerging, New Technology Related Risks

FP7/NMP – Nanosciences, Nanotechnologies, Materials and new Production Technologies: Grant no. CP-IP 213345-2

Coordination: EU- VRi European Virtual Institute for Integrated Risk Management EEIG, A. Jovanovic
Contact: integrisk@eu-vri.eu / www.integrisk.eu-vri.eu
Start/End: Dec. 1, 2008 to May 31, 2013
Budget: ~ 19.3 million €



Partners
Main Beneficiaries (64):

1 **EU- VRi** European Virtual Institute for Integrated Risk Management, Germany
2 **EDF** Electricité de France, France
3 **GDF SUEZ** France
4 **Definiens AG** Germany
6 **MERL** Materials Engineering Research Lab. Ltd, UK
7 **TÜV** SÜD Industrie Service GmbH, Germany
8 **Novineon** GmbH, Germany
9 **R-Tech** Steinbeis Advanced Risk Technologies GmbH, Germany
10 **Iberdrola** S.A., Spain
11 **Atos Origin** Sociedad Anónima Española, Spain
12 **Eni Norge** Eni Group, Norway
13 **D' Appolonia** S.p.A., Italy
14 **MIT** Management Intelligenter Technologien GmbH, Germany
15 **DNV** Det Norske Veritas AS, Norway
16 **COWI** A/S, Denmark
17 **Pöyry** Forest Industry Oy , Finland
18 **MOL Plc.** MOL Hungarian Oil and Gas Public Ltd Company, Hungary
19 **VSH Hagerbach** Test Gallery Ltd, Switzerland
20 **Swiss Re** Swiss Reinsurance Company, Switzerland
21 **NIS** Petroleum Industry of Serbia, Serbia
22 **Saipem** Energy Services S.p.A ., Italy
23 **Technologica** Group - European Joint Venture cv , Belgium
24 **Eurogas -GERG** The European Association of the Natural gas Industry, Belgium
25 **BT** British Telecommunications plc, UK
26 **Enagás** S.A., Spain
27 **INCDPM** Alexandru Darabont , National Research and Development Institute on Occupational Safety, Romania
28 **SWISSI** Swiss Institute for the Promotion of Safety and Security, Switzerland
29 **KMM-VIN** European Virtual Institute on Knowledge-based Multifunctional Materials AISBL, Belgium
30 **INERIS** Institut National de l'Environnement Industriel et des Risques , France
31 **CEA** Commissariat à l'Energie Atomique, France
32 **BAM** Ba . für Materialforschung und -prüfung, Germany
33 **USTUTT** Universität Stuttgart (ZIRN), Germany
34 **LEIA** Fundación Centro de Desarrollo Tecnologico , Spain
35 **URL** Universitat Ramon Llull Fundació Privada , Spain
36 **Imperial** College London, Technology and Medicine, UK
37 **TU Crete** Technical University of Crete, Greece
39 **SINTEF** Stiftelsen , Norway
40 **DTU** Technical University of Denmark, Denmark
41 **VTT** Technical Research Centre of Finland, Finland
42 **BZF** Bay Zoltan Foundation for Applied Research, Institute for Logistics and Production Systems, Hungary
43 **Demokritos** National Center for Scientific Research, Greece
44 **IVF** Swerea IVF AB, Sweden
45 **VSB-TUO** Sc. Technicka Univerzita Ostrava, Czech Republic
46 **JSI** Jozef Stefan Institute, Slovenia

Basic idea and objectives

iNTeg-Risk is a large-scale integrating project aimed at improving the management of emerging risks, related to "new technologies" in European industry. This will be achieved by building new management paradigm for emerging risks as a set of principles supported by a common language, agreed tools & methods, and Key Performance Indicators, all integrated into a single framework. The project aim is to reduce time-to-market for the lead market EU technologies and promote safety, security, environmental friendliness and social responsibility as a trademark of the EU technologies. The project will improve early recognition and monitoring of emerging risks, seek to reduce accidents caused by them (estimated 75 B€/year EU27) and decrease reaction times if major accidents involving emerging risks happen.

Project structure and main planned achievements

The "EU response" proposed by the project will be based on 17 individual applications of new technologies like nano, H_2 technologies, underground storage of CO_2, new materials (ERRAs - Emerging Risk Representative Applications in EU Industry). The solutions will be generalized and the used for the framework, which will be validated in a second application cycle. Overall solution will be made available to the users in the form of the iNTeg-Risk "one-stop shop" for EU solutions addressing emerging risks. The solution will include issues of early recognition and monitoring of emerging risks, communication, governance, pre-standardization, education & training, dissemination, as well as new tools such as Safetypedia, Atlas of Emerging Risks, Reference Library, etc. The project involves leading EU industries and renowned R&D institutions. It is coordinated by the European Virtual Institute for Integrated Risk Management, the dedicated EEIG guaranteeing the sustainability the results after the project.

The project structure is a bottom-up one starting from the problems identified as representative (iNTeg-Risk ERRAs), over the development of the integrated/common approach and methods, towards the "one-stop-shop" containing solutions for different groups of stakeholders: from interested citizen, over students and concerned SMEs, to the scientists at academia or researchers in industry (each of them finding the information matching their respective interests).

Partners
Main Beneficiaries (64)

47 **HSE-HSL** Health and Safety Executive, UK
48 **JRC** Commission of The European Communities Directorate General Joint Research Centre, Belgium
49 **CEN** European Committee for Standardization , Belgium
50 **RIVM** Rijksinstituut voor Volksgezondheid en Milieu, The Netherlands
52 **vfdb** German Fire Protection Association, Germany
53 **ARPC** Agenzia Regionale Protenzione Civile - Emilia Romagna, Italy
54 **Mavionics** GmbH, Germany
55 **ARMINES** Association pour la Recherche et le Développement des Méthodes et Processus Industriels, France
56 **GDS** H.G. Geo Data Solutions GmbH, Germany
57 **TUKE** Technical University of Kosice, Slovakia
58 **FTN** University of Novi Sad, Serbia
59 **EKON** Modeling Software Systems Ltd., Israel
62 **SP** Technical Research Institute of Sweden, Sweden
63 **STUVA** Studiengesellschaft. für unterirdische Verkehrsanlagen e. V., Germany
64 **UNIBO** Alma Mater Studiorum Università di Bologna, Italy
65 **UNIPD** University of Padua, Italy
66 **POLIMI** Politecnico di Milano, CMIC Dpt, Italy
67 **UNIRM** Dipartimento Ingegneria Chimica Materiali e Ambiente, Sapienza Università di Roma, Italy
68 **CNR-IRC** CNR Istituto di Ricerche sulla Combustione, Italy
69 **UNIPI** University of Pisa, Italy

Article 10 partners (16):

2B , 2B Consulenza Ambientale, Italy; **EUR** , Erasmus University Rotterdam, Netherlands; **OttoUNI** , Otto-von-Guericke-Universität Magdeburg, Germany; **BristolUNI** , University of Bristol, UK; **STC** , Steinbeis Technologie-transfer GmbH & Co. KG, Germany; **DIN** , German Institute for Standardization e. V., Germany; **CrisisTox** , CrisisTox Consult, Netherlands; **IPPT** , Instytut Podstawowych Problemow Techniki Polskiej Akademii Nauk, Poland; **IMR SAS** , Institute of materials research, Slovak Academy of Sciences, Slovakia; **MCL** , Materials Centre Leoben Forschung GmbH, Austria; **UK HPA** , UK Health Protection Agency, UK; **FOI** , Swedish Defense Research Agency, Sweden; **FIOH** , Finnish Institute of Occupational Health, Finland; **BfR** , Bundesinstitut für Risikobewertung, Germany; **IQS** , Institut Químic de Sarrià, Spain; **ENSMP** , Ecole Nationale Supérieure des Mines de Paris, France

Project structure and main planned achievements

The subprojects in iNTeg-Risk, listed below, reflect the approach described above:

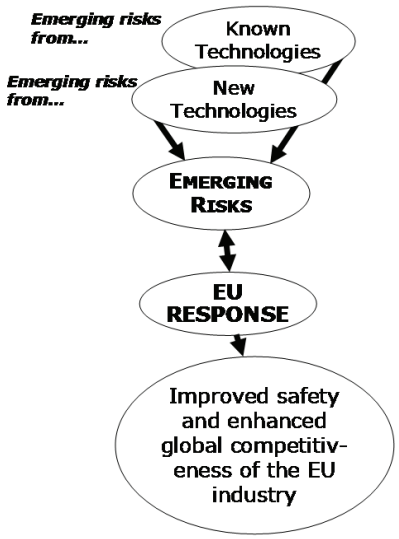
Subproject 1: Technology CASES: Identifying specific emerging risks and developing solutions to enter into the unifying framework, concept of ERRAs - Emerging Risk Representative industrial Applications

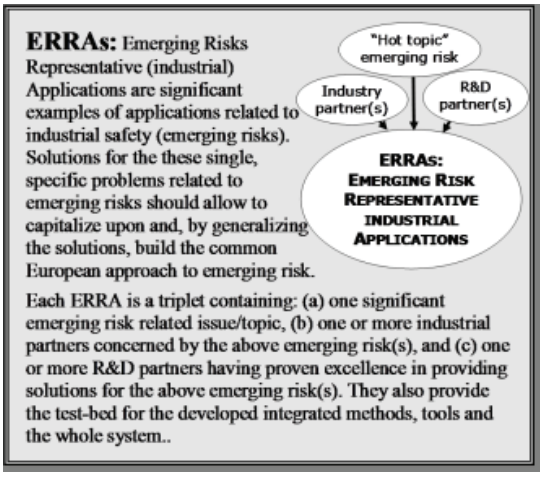
Subproject 2: CREATING AN INTEGRATED SCIENTIFIC & TECHNOLOGY FRAMEWORK: Emerging Risk Management Framework. (ERMF): iNTeg-Risk New Paradigm, Methods & Tools for dealing with emerging Risks

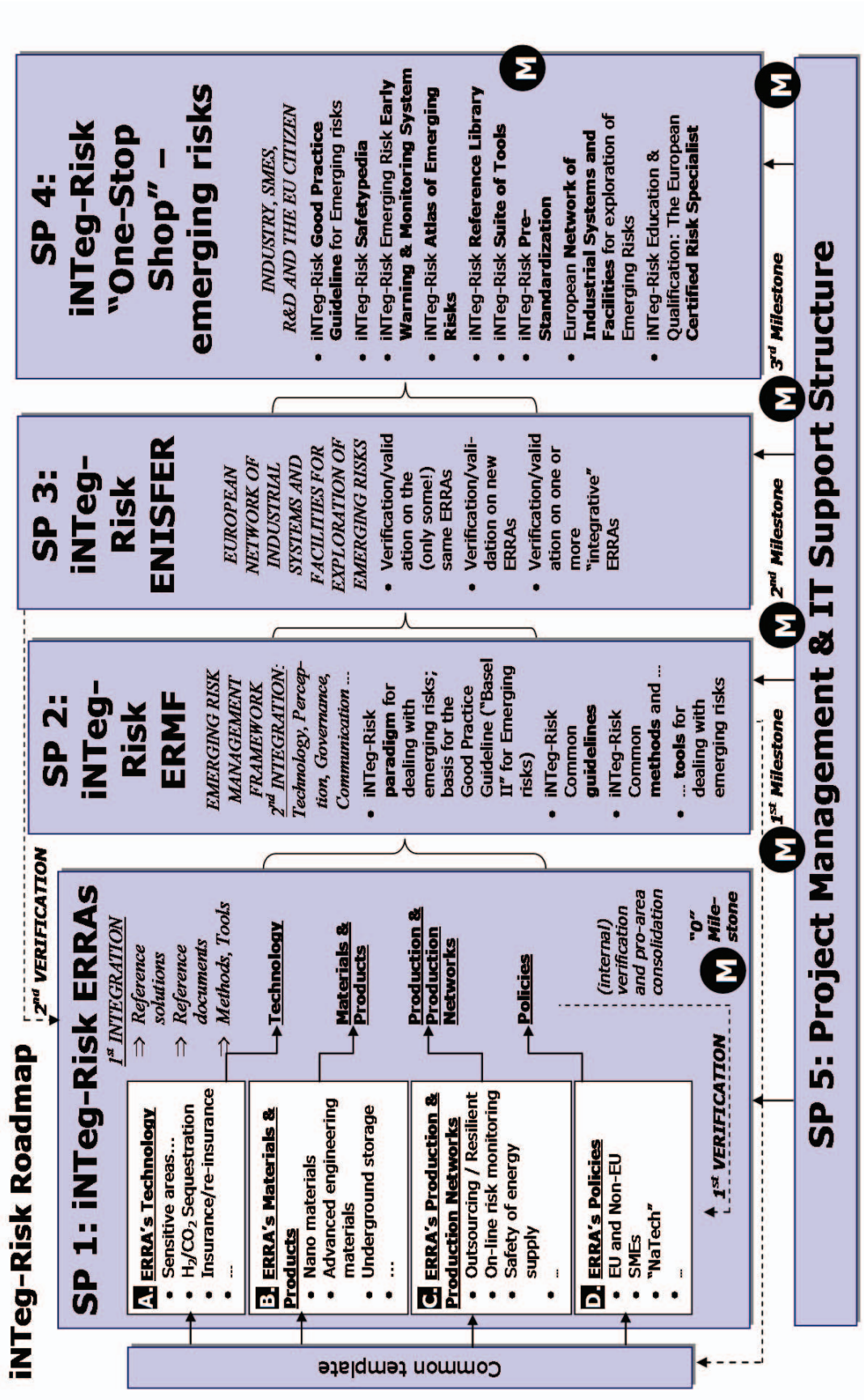
Subproject 3: APPLICATION, VERIFICATION & VALIDATION: European Network of Industrial Systems and Facilities for exploration of Emerging Risks (ENISFER); verifying the SP2 results and validating the whole method

Subproject 4: DISSEMINATION ONE-STOP-SHOP: iNTeg-Risk integrated EU solution, the "iNTeg-Risk one-stop-shop" for solutions addressing emerging risks

Subproject 5: MAKING IT HAPPEN & ASSURING SUSTAINABILITY; MANAGING A LARGE COLLABORATIVE PROJECT – PROJECT MANAGEMENT & MORE: Managing iNTeg-Risk and creating its I T and "post-project" infrastructure






iNTeg-Risk Roadmap
SP 1: iNTeg-Risk ERRAs
1st INTEGRATION
⇒ Reference solutions
⇒ Reference documents
⇒ Methods, Tools
A. ERRA's Technology
• Sensitive areas...
• H2/CO2 Sequestration
• Insurance/re-insurance
• ...
B. ERRA's Materials & Products
• Nano materials
• Advanced engineering materials
• Underground storage
• ...
C. ERRA's Production & Production Networks
• Outsourcing / Resilient
• On-line risk monitoring
• Safety of energy supply
• ...
D. ERRA's Policies
• EU and Non-EU
• SMEs
• "NaTech"
• ...
Technology
Materials & Products
Production & Production Networks
Policies
(internal) verification and pro-area consolidation
"0" Mile-stone
1st VERIFICATION
2nd VERIFICATION
Common template
SP 2: iNTeg-Risk ERMF
EMERGING RISK MANAGEMENT FRAMEWORK
2nd INTEGRATION: Technology, Perception, Governance, Communication ...
• iNTeg-Risk paradigm for dealing with emerging risks; basis for the Good Practice Guideline ("Basel II" for Emerging risks)
• iNTeg-Risk Common guidelines
• iNTeg-Risk Common methods and ...
• ... tools for dealing with emerging risks
SP 3: iNTeg-Risk ENISFER
EUROPEAN NETWORK OF INDUSTRIAL SYSTEMS AND FACILITIES FOR EXPLORATION OF EMERGING RISKS
• Verification/validation on the (only some!) same ERRAs
• Verification/validation on new ERRAs
• Verification/validation on one or more "integrative" ERRAs
SP 4: iNTeg-Risk "One-Stop Shop" – emerging risks
INDUSTRY, SMES, R&D AND THE EU CITIZEN
• iNTeg-Risk Good Practice Guideline for Emerging risks
• iNTeg-Risk Safetypedia
• iNTeg-Risk Emerging Risk Early Warning & Monitoring System
• iNTeg-Risk Atlas of Emerging Risks
• iNTeg-Risk Reference Library
• iNTeg-Risk Suite of Tools
• iNTeg-Risk Pre-Standardization
• European Network of Industrial Systems and Facilities for exploration of Emerging Risks
• iNTeg-Risk Education & Qualification: The European Certified Risk Specialist
M 1st Milestone
M 2nd Milestone
M 3rd Milestone
SP 5: Project Management & IT Support Structure

Abstracts - Main Conference

1.1 Welcome - Innovations Stabilize Existences and Jobs

Heinz Trasch
Chairman of the Board of Directors
Steinbeis Foundation, Stuttgart, Germany

Germany is a country with few raw resources and high production costs. Export-oriented enterprises had been benefiting from the opening up of international markets years ago. This advantage turned into a disadvantage today. The global trade is on the decline which especially affects the world champion in export - Germany. Just now, at a time when the national and international markets show distinctive volatility, the enterprises start up with projects not considered prior to it.

Risks in connection with the planning and development of projects must be realized early by established risk management and must be kept as low as possible, better yet avoided at all. That´s one of the aims of today´s 1st iNTeg-Risk Conference. The resulting innovations ensure the enterprise's existence and jobs, as well as stabilize the competition, leading to growth for all parties benefit.

Let´s stop taking a gloomy view of the economic crises, seeing it as mere disaster, but let´s take it as a chance to come off it as winners in economical respect.

1.2 Welcome - Role of EU programs and large EU Projects in defining and performing of national R&D in the area of new technologies

Heike Bauer
Assistant Head of Division 512, Production Systems and Technologies
Federal Ministry of Education and Research, Bonn, Germany

The German Federal Ministry of Education and Research offers several programs to support research and development in emerging technologies. RTD policy makers face the challenge to match and define the national programs and the respective EU programs in order to avoid double work and to ensure the dissemination of results.

How can a better integration between national and EU programs be achieved? What kind of research topics should be dealt with on a European level? The presentation will try to show some possible approaches to this comprehensive subject.

1.3 Welcome - Aligning national and EU efforts in the area of future-oriented innovation and education

Christian Dumon
Consul General of France
Consul General of France, Stuttgart, Germany

Dr. Dumon will present the action of EU-VRi in the context of the political dialogue between France and Germany. This dialogue includes the scientifical and economical dimensions, and is taking place within Europe, in a changing world. The presentation will underline the attention paid by the French authorities on the EU-VRi initiative.

1.4 European RTD and emerging risks related to new technologies

Soren Bowadt
European Commission, DG Research - Directorate G, Industrial technologies - New Generation of Products, Brussels, Belgium

Putting knowledge and innovation stands as one of the cornerstones of the European strategy and policies related to growth. The EU policies, including those related to RTD are shaped to allow the EU business to create safer and better jobs, improve safety of industrial installations, reduce the environmental impact and, on the long term also contribute to increase both overall and financial sustainability of the EU economy. Developing "new generation of products" is one of the key factors of implementation of the above strategy, but their development is clearly linked to the need to ensure proper handling of the related risks. Practically, both the EU policies and their practical implementation measures, like these implemented in the EU Framework Programmes, include steps towards providing additional knowledge and cost-effective tools to allow for greater convergence of risk assessment practices between Member States and improving harmonized hazard prevention activities. These involve also the improved training, inspection and risk communication (cf. STARC-Project Report), analyses of the natural environment and activities to identify the hazards linked to a safe installation operation and the vulnerability of the surrounding area.

For the new technologies, in particular, the EU role as the promoter of the research must be harmonized with the EU role as the regulator and the responsible for the sustainability of the EU society as a whole. In other words, the development leading to the obvious technical benefits must "naturally" include all research needed to assess properly the elements like possible human or environmental exposure, and exploration, e.g., of the mechanisms and kinetics of possible releases, target identification, doses and other elements of the hazard assessment, occupational exposure, persistence and/or bioaccumulation effects. In the area of nanotechnologies, the EU research has already provided a number of examples of good practices which will be further explored, improved and applied to a broader range of "new technologies" like those 17 treated in iNTeg-Risk project. The presentation highlights the practical elements of the above strategy, both in terms of running and future, i.e. envisaged EU RTD projects and other activities. The involvement of the stakeholders in the above process (e.g. by means of the European Technology Platforms and other forums) will remain the key factor for achieving the right balance between technological, economic, environmental and social benefits expected.

1.5 EU-VRi – a common sustainable response of the European stakeholders to the needs of integrated risk management

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Innovation and the development of new technologies are essential to face the multiple challenges posed by the requirements of sustainable development ». This analysis greatly marked the INERIS Objectives Contract signed in September 2006. It places the accompaniment of this process of innovation, which consists of characterizing and assessing risks at an early stage in the design of new products or activities so that they are directly safe and clean, at the heart of INERIS's missions.

The complexity and scope of issues related to sustainable development pose a grand challenge to research, that of interacting on the issues on a global scale. This imperative is further incentive for INERIS to redouble efforts to optimize and better structure its international cooperation initiatives. At the European level, alliances allow us to be part of a larger undertaking: safety and security issues (health, industrial) are together prioritized in Europe at no. 27, in a single European regulatory framework. INERIS has decided to actively participate in the establishment of a European expertise, whether it is in support of public policy, or advising companies and local authorities. The efforts of the Institute were rewarded in the important successes achieved in the first tendering of the Seventh Framework Programme, particularly through the EEIG EU-VRi, technical coordinator of the iNTeg-Risk, ALFA-BIRD or F-Seveso projects. These examples demonstrate the relevance of the creation of a unique legal entity, representing more than 20 countries, and involving a large diversity of expertise capable to solve risk management issues in an integrative manner, combining the experience and knowledge of the best EU experts.

1.6 Academic education for emerging issues - how to keep abreast

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In the long, almost bicentennial history, of the University of Stuttgart two aspects have particular tradition: strong orientation towards the technical innovation and close collaboration with industry. Since the foundation of the "United Secondary and Vocational School" („Vereinigte Real- und Gewerbeschule") in 1829, supported by the chemical industry, the University has always played a leading role in educating the people who were capable to ensure the leading technical competitive advantage to the industries in the region known as the cradle of some of the most important innovation highlights in the modern times. Be it for Bosch, Daimler, Porsche, HP, or a for 99% of companies in Baden-Württemberg belonging to the class of SMEs, the University has introduced and maintained the highest standards of education corresponding both to the local needs and the global state-of-the art technology.

However, the two above two traditions have always and systematically been accompanied by the third one: devotion to responsible development and use of these technologies. Since the very beginning the curriculum did not only contain a technical education but a more general multidisciplinary orientation. This concept of a course of studies which gives students a general education in addition to pure technical expert knowledge is valid until today. This multidisciplinarity has included from the very beginning the aspects of risks and safety related to the technological development. Already in 1884 the engineering laboratories for ensuring safety (and mitigating risks!) of the leading technologies of the times were established.

Nowadays, these long year traditions are duly followed and expanded on the global level though, e.g., the interdisciplinary embedded in the concept of the "Studium Generale" of the University and the search towards responsible and sustainable technologies into the activities of ZIRN, the "Interdisciplinary Research Unit on Risk Governance and Sustainable Technology Development", as a part of IZKT, the "International Center for Cultural and Technological Studies" of the University. ZIRN aims to systematically research into the conditions and consequences of sustainable development of technologies, including its risks, and the interact of our research center is to coordinate and realize research projects in areas like sustainability and risk governance in the context of globalization and global interdependencies. In 2006 the University has internationalized these activities by founding, together with other leading European partners, the EU-VRi, the European Virtual Institute for Integrated Risk Management. The above initiatives, however, are just the most visible expression of the fundamental and permanent commitment of the University to educate young people who will not only be capable to bring in technical innovation, but also to ensure its long-term sustainability for the benefit of the society. Involvement in projects like iNTeg-Risk and initiatives like EU-VRi is, therefore, just a logical consequence of this commitment.

1.7 iNTeg-Risk project: Providing the basis for a harmonized EU response to the challenges of New Technologies

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The paper presents the main elements of the EU FP7 project iNTeg-Risk aimed at improving the management of emerging risks, related to "new technologies" in European industry. This will be achieved by building new management paradigm for emerging risks as a set of principles supported by a common language, agreed tools & methods, and Key Performance Indicators, all integrated into a single framework. The project will also contribute to reducing time-to-market for the lead EU technologies and promote safety, security, environmental friendliness and social responsibility. The project will also improve early recognition and monitoring of emerging risks and decrease reaction times if major accidents involving emerging risks happen.

The "EU response" proposed by the project will be based on 17 individual applications of new technologies like nanotechnology applications in SMEs, H_2 technologies, underground storage of CO_2, new materials (ERRAs - Emerging Risk Representative Applications in EU Industry). The solutions will be generalized and the used for the framework, which will be validated in a second application cycle. The project structure is a bottom-up one starting from the problems identified as representative (iNTeg-Risk ERRAs), over the development of the integrated/common approach and methods, towards the "one-stop-shop" containing solutions for different groups of stakeholders: from interested citizen, over students and concerned SMEs, to the scientists at academia or researchers in industry (each of them finding the information matching their respective interests).

The main innovation points of iNTeg-Risk are supposed to be an agreed way of dealing with risks yet unknown, new dynamic metrics of risk (based on Key Performance Indicators for Emerging Risks), the life-cycle considerations for emerging risks and new technologies, and use of new methods and new technologies for dealing with risks in complex industrial networks/systems.

The solution will include issues of early recognition and monitoring of emerging risks, communication, governance, education & training, dissemination, as well as new tools such as Safetypedia, Atlas of Emerging Risks, Reference Library, etc. With the help of the European (CEN) and national organizations (DIN) iNTeg-Risk will work on the pre-standardization aspects of innovation, in particular the one related to general iNTeg risk procedures, new technologies, new materials, new production and production networks, new policies (governance). The project (2008-2013, total budget 19.3 million €), involves over 60 main partners, including leading EU industries and renowned R&D institutions, and it is coordinated by EU-VRi, the European Virtual Institute for Integrated Risk Management, guaranteeing the sustainability of the project results.

2.1 European Technology Platform on Industrial Safety (ETPIS) as a catalyst of matching stakeholder needs within EU research

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The European Technology Platform on Industrial Safety since its creation aims at supporting the coordination of the investment in research in the field of industrial safety and risk management. The main deliverable regarding this objective was the publication in January 2006 of the Strategic Research Agenda (SRA). This document was the result of almost 2 years of work involving more than 250 experts from ETPIS, under the coordination of the Focus Group leaders. Several topics defined as key priorities have been in between turned into projects, such as the iNTeg-Risk project.

3 years after the publication of the SRA, most of the topics proposed by the experts are still valid and the funding available is still insufficient. Therefore, the High Level Group of ETPIS has started a process of defining the TOP 5 topics to improve industrial safety and reach the vision adopted by ETPIS. This process involves at the same time leading persons from the chemical industry, from the car manufacturing industry, the energy, oil and gas sectors.

The outcome of this strategic process will be made known to all experts and it is expected to improve significantly the benefits of the investment in research for the sustainable growth of the European Industry.

2.2 Healthy workplaces, "Good for you, good for your business" a European campaign on Risk Assessment

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Every year 5,720 people die in the European Union as a consequence of work-related accidents. An additional estimated 159,500 workers in the EU die every year from occupational diseases. Taking both figures into consideration, it is estimated that every three-and-a-half minutes somebody in the EU dies from work-related causes. Most of these accidents and diseases are preventable, and the first step in preventing them is to do a risk assessment. However, statistics from around Europe indicate that many enterprises do not assess their risks, especially small and medium sized enterprises (SMEs), which make up the majority of enterprises. This is also one of the top-ten emerging concerns identified in an Agency's forecast by experts from 21 European countries - beside nanoparticles and ultrafine particles; sensitizing and allergenic substances; carcinogens, mutagens and reprotoxicants; dangerous substances in emerging sectors (such as waste treatment, homecare); and combined exposures.

In 2008, the Agency launched the European Campaign on Risk Assessment aimed at providing employers and employees with the guidance, information and resources that they need to carry out proper risk assessments and keep the workplace safe. The campaign covers more than 30 countries and will run until end of 2009. It seeks to demystify the risk assessment process; risk assessment is not necessarily complicated, bureaucratic or a task only for experts. A wide variety of activities take place in the scope of the campaign, for example the Good Practice Awards which recognizes companies and organizations that have made outstanding contributions in promoting risk assessment in the workplace. All campaign material is available free of charge in 22 EU languages at the campaign website: http://hw.osha.europa.eu. The site also gives access to simple risk assessment tools by sector and hazard.

2.3 How the industry copes with emerging risks due to new technologies – the case of nanotechnology at BASF

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Nanotechnology is one of the key future issues and opportunities for BASF. It offers the possibility to develop innovative and successful solutions for tomorrow e.g. for climate protection by novel energy conservation and generation. Between 2006 and 2008 the company invested 185 Million € in nanotechnology research. Moreover BASF has a limited number of nanotechnology enhanced products already on the market such as components for dirt resistant façade paints or self-cleaning textiles. Parallel to the technological development, BASF implemented management structures to deal with related environment, health and safety issues. As basis for the responsible and sustainable development of nanotechnologies at BASF a Code of Conduct Nanotechnology has been introduced. The presentation gives an overview on the importance of nanotechnology for BASF. It shows the BASF management concept and the Code of Conduct for Nanotechnology and demonstrates its implementation in the company.

2.4 Industry response to risks emerging from human and organisational changes

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The economical and regulatory environment of the nuclear power industry is deeply changing, introducing internal transformations or new constraints. In order to face these recent evolutions while keeping of course a high level of industrial safety in the context of a competitive international market, some of the nuclear sector utilities have launched deep modernization initiatives which include all or parts of the following aspects:

- design and construction of more competitive plants, giving a larger place to automation and NTIC,
- introduction of new technologies in existing plants,
- restructuring of the operational documentation,
- industrial policy changes (outsourcing, scope of the services…)
- organizational and practice changes.

The nuclear power plants like other high-risk industrial installations are socio-technical systems producing performance (safety, economical, environmental…). The performance of these socio-technical systems depends on several dimensions (technology, human, organization…) and any change on these dimensions or on their interactions could have positive or negative impacts on the working activities and then on the industrial performance.

So, modernisation initiatives must be implemented carefully considering all dimensions of the socio-technical systems.

Considering the results of the analysis of the Operating Experience Feedback, EDF attaches much importance to the socio-organizational and human impacts of its modernization approach for optimizing the performance of its installations.

Therefore, EDF has closely linked its modernisation approach to research and actions concerning Human and Organizational Factors and the following research programs have been launched to better understand operational requirements and to solve present or future operational difficulties:

- Improvement of the Operating Experience Feedback process
- Socio-organizational and human impacts of organizational changes or introduction of new technologies in the existing plants
- Improvement of the Safety Management, WANO's Human performance tools and development of integrated approach of Safety Management
- Assessment of the Safety Culture and impacts of the change on the safety culture or measure of the occupational safety perception
- Extension of the application of the Human Reliability Assessment (HRA)

2.5 Emerging risks in public perception: Will we face an acceptance crisis?

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Risk perceptions have a reality of their own: Just like the characters in animated films who, suspended in mid-air, do not plunge to the ground until they realize their predicament, people construct their own reality and evaluate risks according to their subjective perceptions. This type of intuitive risk perception is based on how information on the source of a risk is communicated, the psychological mechan¬isms for processing uncertainty, and earlier experience of danger. This mental process results in perceived risk – a collection of notions that people form on risk sources relative to the information available to them and their basic common sense. Thus this paper will focus on constructed reality, i.e. the world of notions and associations which help people understand their environment and on which they base their actions. The examples will be taken from the field of emerging technologies, in particular nanotechnology and genetically modified organsisms.

3.1 New Technologies and Corporate Responsibility — The role of Carbon Accounting

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The adequate measurement of carbon emissions is a necessity for companies – with or without applying or developing new technologies - to successfully and convincingly manage their Greenhouse Gas (GHG) emissions as part of their climate change risk management. The lack of a precise measurement will result in improper carbon management („Only what gets measured gets managed") and will inevitably create risks with financial, operational and reputational consequences.

Carbon Accounting stands as a synonym for the proper measurement of GHG emissions to manage corporate GHG emissions and to calculate - where applicable - the product or company carbon footprint. In this respect, corporate responsibility goes beyond avoiding child labor and corporate funding of local cultural events: Companies set carbon emissions reduction targets to express their responsible behavior towards future generations.

Ernst & Young has developed an audit approach to monitor the implementation of a carbon accounting system which is in line with the global GHG Protocol Corporate Accounting and Reporting Standard. In our view, a carbon accounting system must not only withstand the GHG protocol's five principles Relevance, Completeness, Consistency, Transparency and Accuracy but also an external scrutiny to secure authenticity. On the basis of carbon data, companies can develop carbon key performance indicators (KPIs) to monitor and steer the company, product or services carbon footprint. Our methodology includes the review of the existing systems to measure carbon emissions, the identification of potential risks, the adequate calculation of carbon emissions, the testing of the carbon accounting systems, the recommendations to improve the carbon reporting system, a final audit and the publication of the assurance statement.

3.2 Embedding HSE risk assessment procedures into R&D process for emerging technologies in Japan

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Risk assessment should be carried out at the early stage of product/technology development in order to promote innovation and to enjoy the benefit of new technologies. AIST (National Institute of Advanced Industrial Science and Technology), a national laboratory in Japan, engaging in research and development of innovative industrial technologies, addresses health, safety and environmental (HSE) issues in parallel to R&D activities. This presentation introduces how our institute addresses HSE risk issues in the cases of emerging technologies, such as engineered nanomaterials, alternative fuels, carbon capture and storage, etc.

We regard risk assessment methodologies as one of industrial technologies that are indispensable for innovation. Therefore, we started to persuade industry to change attitude toward EHS risk and tackle them proactively, prepare guidelines and platforms for industry to conduct voluntary risk assessment and management, and give technical support to small and medium sized companies and venture companies.

These activities will be shown especially in the case of engineered nanomaterials as an typical example of emerging technologies.

3.3 Situation and Development of Industrial Safety in China

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Since the opening and reform in 1978, China's industrial structure has undergone profound changes. By 2008, China's industrial value-added is 189 billion dollars which is 42.8 percent of the GDP. China has led the world in the production of steel, aluminum, cement, coal, chemical fertilizer and micro-computer. Since 2002 all types of production safety accidents showed an annual decline in the number of deaths, but the overall production safety situation is still grim. For example in coal-mine accidents, deaths dropped from 7360 in 1990 to 3786 in 2007. The death rate per million tons in 2007 is 1.485 (It is about 0.03 in the United States).

The reasons why the situation is still grim are:

1. the industrial safety support system is inadequate;
2. there are many authorized agencies in management and supervision, over-decentralization of power, and regulatory weaknesses;
3. some enterprises do not pay enough attention to safety management.

To improve the safety situation, in 2005 the Chinese Government issued the 11th Five-Year Plan for Safety Production which lists 10 main tasks. For achieving intrinsic safety, it is necessary to perfect risk management. In this paper we list 10 tasks that would be completed to improve the risk management in safety production.

3.4 Recent OECD efforts to harmonize approaches to safety and risk indicators

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The OECD is an international governmental organization started as a follow up to the Marshall Plan and composed of 30 industrialized countries from Europe, North-America, and Asia-Pacific.

The OECD Committees and the Secretariat reflect typical Member government structure, therefore for most of its work, approaches to risk are more or less sectoral. The coverage of the risk management cycle, as well as the time horizon, are dependant on priorities expressed by the Committees themselves (made up of delegates of the 30 Member countries).

If we limit ourselves to new technologies such as IT, nano, bio, new generation of nuclear and space based technologies, the degree to which safety and risk indicators are harmonized is also highly linked to the maturity of the field in terms of socio-economic development. "Established" technologies, such as civil nuclear technologies under the OECD Nuclear Energy Agency, receive more attention and efforts toward harmonization than upcoming technologies (in terms of economic importance) such as nanotechnologies or biotechnologies.

Therefore, different levels of improvements are to be achieved according to the status of technologies as part as of an economic sector and/or according to the degree of priority assigned to potential risks.

1. Some new technologies, such as nanotechnologies, can be reviewed as a potential area for emerging risks therefore mostly discussed at the risk assessment level within relevant OECD Directorates. Other new technologies are reviewed in light of their future potential to drive economic growth or provide societal benefits. Examples are: the Security Economy, the Space Economy and now the Bioeconomy. For these new technologies, the first steps are to try to harmonize between Member countries (mainly a pilot group of Member countries) what could be: a) a common definition of the new sector and its future potential; b) a short list of common indicators; and c) which country would be ready to measure what? Safety and risk indicators could be part of this short list of indicators but not necessarily.
2. Significant and more direct efforts to harmonize approaches to safety and risk indicators are also underway within the organization. For example, the NEA is conducting a number of experiments in joint projects with Member countries in order to explore and possibly identify the parameters, boundaries and potential safety indicators brought by new nuclear technologies. The Environment Directorate is exploring how safety and risk indicators for nanotechnologies can be covered in OECD guidelines. The Statistics Directorate of the OECD is conducting a major project on "Measuring the Progress of Societies" which can have the potential to cover social risk indicators, including risk perception. The Global Science Forum is launching a Global Earthquake Model, which will be the first global, open source model for seismic risk assessment. The Futures Programme is considering launching a pilot effort to take stock of infrastructure assets, including safety and risk indicators and has identified a convergence of reasons why it is a timely initiative.

As discussed, the obstacles to global or multilateral harmonization of safety and risk indicators are varied. In the case of new technologies, basic research and development efforts are the first requirement. Once completed, the "business as usual" barriers take over: dual use technologies, confidentiality issues, incumbent stakes, appropriation by levels of the government structure, lack of political will or financial resources to provide national agencies the incentive to measure or disclose data. As a consensus rule-based organization, the OECD has a preference for indicators and databases that are shared by all Member countries and in the development period, for pioneering efforts provided by a pilot group of Member countries on a voluntary basis. Over time these approaches have been highly beneficial.

3.5 Opportunities for and expectations of government organizations in EU R&D projects

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The involvement of government organizations in EU R&D projects provides opportunities for both the researchers and the government authorities. Research projects which have a direct link to practical application, such as iNTeg-Risk, require a mechanism for communication and acceptance to ultimately transfer the research into the commercial world of everyday life. Communication processes with government organizations can benefit the research, to the effect that those topics which relate to the issuing of licenses or permits for operation, e.g. for innovative technologies can be addressed at an early stage and thus avoid delays in implementation due to the lack of a regulatory framework. At the same time a government authority which is at the forefront of the research and development communication is able to provide informed advice to government and politicians, thus allowing the development of informed debate, which is a part of democratic society.

Alongside the opportunities for communication and thus allowing the participation of society in the results of R&D projects, authorities have expectations of such projects. In particular large EU projects should be expected to show a high degree of transparency. Not only should the results of the research be communicated to government organizations and society in general, but also these results should be communicated in such a way that possible impacts of the research on society can be understood and that questions related to the acceptability of the applications may be debated in the relevant fora. For such a project as iNTeg-Risk, which has a large number of elements related to hazardous activities and their associated risks, government authorities would expect that researchers have addressed risk management in a systematic manner, that the approaches used to identify the hazards and access the risks together with the data used in doing so are presented in a transparent and plausible fashion and that a mature approach to risk communication, involving the relevant stakeholders has been adopted.

Many innovative technologies have in the past suffered from problems of acceptance, which are in part related to the risk management and risk communication policies which have pursued. Similarly large EU research projects have problems of widespread acceptance amongst stakeholders, which is linked to the communication and transparency of information towards those not involved in the R&D work directly.

4.1 The limits of engagement in emerging technologies

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Criticism of previous attempts to improve the public understanding of science and technology identified the inadequacy of the 'deficit model'. Now, many analysts recommend the principles of deliberative methods and 'upstream' public engagement. These are a means of overcoming the mistaken notion of a homogeneous and passive public simply needing better information and risk assessment. Instead, emphasis is placed on the active involvement of citizens and consumers in debating alternative options for innovations, at the earliest stages of research and development, and on identifying pluralistic viewpoints to assist in the policy-making process. This approach is seen as especially useful in new or emerging technologies, where the trajectory of development is not yet fixed and the science is particularly uncertain. Notably, Renn (1999; 2008) has been a leading pioneer in developing these deliberative methods. In the UK, there have been several recent important applications of upstream engagement (for example concerning nanotechnologies) which have sought to elicit public perceptions of risk and benefits. However, there has also been growing caution – indeed skepticism – about the impact of these exercises on stakeholder's decisions. The limitations constraining such processes include: at what stage of R & D does engagement occur? How are laypeople expected to offer realistic assessments of embryonic technologies without having some direct experience of them, at least as demonstration projects? How is 'societal embedding' to occur unless citizens and consumers are able to debate developments within a wider 'whole systems' framework?

This paper examines some aspects of this debate and its implications for the development of a hydrogen energy system. It briefly summarizes qualitative evidence drawn from a series of case-studies and focus groups in the UK, which tried to discover people's awareness of hydrogen as an energy carrier, and also their views about its potential as an alternative, low-carbon replacement for fossil-fuels in transport and other uses in a prospective hydrogen economy.

4.2 Emerging risks: a proactive view from insurance industry

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The contribution discusses the issue of emerging risks from the point of view of insurance and reinsurance companies. The emerging risks considered are those arising in economic, technological and social (including political) sector. For new technologies the three aspects are more complex than in the conventional technologies because the legal consequences arising from the new situation which might appear as a consequence of development and use new technologies pose a series of open issues related to both legislation (codified law as embodied in the statutes) and jurisprudence (the application of the law as reflected in court rulings, especially with regard to civil liability regimes (compensation law).
In other words the link between sources and consequences in relation to new emerging risks is significant for insurers since it may be subject of the transfer of liability risks to insurance under poorly defined, inconsistent and possibly unfavorable conditions. The uncertainties associated with the financial commitment become all the greater as future court rulings on emerging risks become less consistent.
In such a situation the insurers must have a good overview of the emerging risk "landscape", where the term refers to the totality of risks faced by the insurers on various levels and in various environments: such as a nation, a business enterprise or a family. If the environment changes, so does the risk landscape and for risk related to new technologies it is often characterized by the perception that the possible consequences tend to be greater and the increasing uncertainty is rendering risks less calculable.
In order to deal with the issue and manage future risks successfully, the insurers must be able to recognize the changes in the risk landscape as early as possible and influence them systematically in their "infancy". The approach the methodology and the tools needed to collect 'Notions of emerging risks', prioritizing them, generating plausible scenarios, making impact assessments, and implementation recommendations are described in the presentation, as well as the linking of these to the developments undertaken in iNTeg-Risk project.

4.3 Public Awareness Promoting New or Emerging Risks: The Case of Industrial Accidents Triggered by Natural Hazards

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In the last decade, dramatic natural events have stroke several countries worldwide. Industrial operators have been in most cases un-prepared or off-guard either for un-announced events, as in the case of fast events (earthquake), or despite effective early warning, as in the case of hurricanes. In both cases, accidental scenarios triggered by the natural events (Na-Tech events) have contributed to the overall damages. Large fires, long term environmental pollution, economical losses, and overloading of emergency systems have been recognized by post-event studies, in most cases. Furthermore, public awareness has raised Na-Tech risks to higher ranks, thus promoting effectively existing risks to new or emerging risks.

This new perception of risk by the worldwide community has been confirmed also quantitatively - at least for flooding and earthquakes - in recent papers by the current authors: the likelihood and magnitude of related Na-Tech events are indeed comparable to the industrial accidents triggered by classical internal loss of control of production processes. This contribution analyses Na-Tech knowledge gaps respectively for floods, lightning and earthquakes events, with specific reference to industrial installations containing hazardous substances, aiming at the improvement of the resilience of industrial facilities to technological accidents caused or aggravated by natural hazards. The analysis is included in the iNTeg-Risk Task 1.5.3 and 2.5.4, starting from the review of the state of the art of Na-Tech risk assessment methodologies

4.4 Emerging risks in complex systems - discovering risks in complex system by intelligent simulation of their behavior

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To simulate a human society, we must consider two kinds of non-linearity. The one is the non-linearity of a human being itself, while the other is the non-linearity of a complex system. Both of them play key roles in risks in social systems. In this research, we intend to develop the technology of discovering risks associated with road traffic as an example of such complex social systems. Road traffic is a key part of infrastructure to support mobility and transportation of human beings and goods. At the same time, it includes various risks. One of the most critical risks is a traffic accident. To evaluate the incidents of it quantitatively, we develop and refine a multi-agent traffic simulator that is named MATES (Multi-Agent Based Traffic and Environment Simulator). In MATES, each component creating traffic phenomena is modeled as an intelligent agent, and interaction among numerous agents simulates nonlinear behaviors of urban traffic systems.

A traffic accident occurs when a car driver overlooks something to watch, such as other cars, pedestrians, traffic signals, or obstacles. But in most simulators using a multi-agent model, an agent can recognize everything around it instantly and correctly, and then it drives safely. We implement a recognition error model into our simulator. In this new model, an agent has its own field of view and gazing point, and cannot recognize objects off the gazing point. In this way, traffic accidents are simulated more precisely in MATES than other traffic simulators. We can discover such a dangerous situation that accidents frequently occur, and evaluate the effectiveness of countermeasures by using MATES.

4.5 Overview of the project "Alfa-Bird" (Alternative fuels and biofuels for aircraft development)

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ALFA-BIRD aims at developing the use of alternative fuels in aeronautics. In a context where the price of oil is increasing and with impact of fossil fuels on climate change, the sustainable growth of the civil aviation is conditioned by the respect of the environment.

In this context using biofuels and alternative fuels in aeronautics is a great challenge, since the operational constrains(e.g. flight in very cold conditions) are very strict, and due to the long lifetime of current civil aircraft (almost 50 years). To address this challenge, ALFA-BIRD gathers a multi-disciplinary consortium with key industrial partners from aeronautics (engine manufacturer, aircraft manufacturer) and fuel industry, and research organization covering a large spectrum of expertise in fields of biochemistry, combustion as well as industrial safety. Bringing together their knowledge, the consortium will develop the whole chain for clean alternative fuels for aviation. The most promising solutions will be examined during the project, from classical ones (plant oils, synthetic fuels) to the most innovative, such as new organic molecules. Based on a first selection of the most relevant alternative fuels, a detailed analysis of up to 5 new fuels will be performed with tests in realistic conditions.

5.1 How the regulator can anticipate and react to emerging risks proportionately

Laurence Cusco
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The Regulator's mission is to prevent death, injury and ill health to those at work and those affected by work activities. The regulator plays a pivotal role in formulating and providing strategic direction and leading the health and safety system as a whole. To achieve this, the regulator can scan the horizon for, and address, new and emerging work-related health & safety issues. This is achieved best in partnership with other stakeholders – critically with the duty-holders such as the industries who 'create' the risk. However, there will also be times when regulators must preserve their independence from possible or apparent undue influence, for example from industry in the perception of the public or workers organizations.

Regulator can work with other stakeholders to anticipate and alert dutyholders to new and emerging risks as they are identified, and to conduct systematic examination of any existing and potential risks, threats, opportunities and likely future developments, including those at the margins of current thinking and planning. The regulator is often well placed to impartially compare practices between different dutyholders and installations.

Some examples are presented of how the UK Health & Safety regulatory (HSE) has used research at its laboratory (HSL) on emerging risks from changes in infrastructure and technologies, including

- carbon capture & sequestration,
- use of hydrogen as a fuel and
- nanotechnology

This is in addition to conducting incident investigations to learn from past events to help prevent prevent past major incidents from recurrence in similar circumstances elsewhere.

5.2 Searching for synergies among the EU R&D projects

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President
VCE Holding GmbH, Vienna, Austria

European research is very fragmented. This also applies to projects within the 7th Framework Program of the European Commission. Useful overlapping and collaboration will enhance the impact considerably and enable best use of limited funding. The following aspects are to be considered:

- Critical mass of stakeholders within a sector
- Basic knowledge creation for the entire community
- Dissemination aspects
- Exploitation strategies
- A lead market for Europe

The FP7 Project IRIS shows considerable interfaces with potential links to iNTeg-Risk. The project IRIS is led and driven by industry to consolidate and generate knowledge and technologies which enable the integration of new safety concepts related to technical, human, organizational and cultural aspects. The partnership represents over 1 million workers. The proposed project integrates all aspects of industrial safety with some priority on saving human lives prior cost reductions and is particular underpinning relevant EU policies.

5.3 Use of Modern Risk Appraisal and Modelling Tools in Nanotechnology Applications (EU Project MUST)

Daniel Balos [1]
Aleksandar Jovanovic [1]
Nenad Filipovic [2,3]
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Nanotechnology application offers a large spectrum of possible improvements in a great number of applications and areas of industry. In the field of corrosion protection this can be the use of nanocontainers as carriers of polymerization agents to provide the self-healing effects in case of external damage. However the use of this technique may lead to various types of risks which broadly belong to two main categories: the risk of non-performance (e.g. the coating not providing the desired self-healing feature) and the risk of adverse or other possible undesirable impacts.

The paper deals primarily with the non-performance risks and presents the two tools being developed in the EU FP7 project MUST (Multi-level protection of materials for vehicles by "smart" nanocontainers; project no.: NMP3-LA-2008-214261) for the appraisal and assessment of these risks at macro- and nano-scale. The risks at the macro-scale are assessed primarily based on experience from the practice and expert opinions. This analysis includes the assessment of probability of occurrence of sample scenarios and their consequences at the macro-scale. The nano-scale tool is based on the DPD (Dissipative Particle Dynamics) simulation method and it helps to explore the conditions which may lead to, e.g., unsatisfactory self-healing of the crack. The probability of such a scenario is quantitatively assessed by means of numerical simulation. The tools and the first results are shown in the paper.

5.4 Emerging Risks: How can standardization organizations support the anticipation and management process

Hermann Behrens
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DIN German Institute for Standardization, Berlin, Germany

Many new technical systems are developed with such rapidity that standardization in its traditional form cannot adequately keep pace. Characteristic for many innovative technologies, however, is that the resulting systems are so complex that without some form of normative structuring they will not function. Such complex systems are further characterized by their development proceeding in iterative stages that do not initially produce a stable "state of the art", which it has been the traditional task for standards to document. For this reason, DIN has introduced the specification concept with which to create specifications (DIN SPEC) faster and hence in step with rapidly developing technologies. This involves a proactive approach to questions of standardization very early on in the overall process, which can then benefit from the timely formulation of recommendations on structural aspects of the developing product/system. The aim, then, is to define and agree on specifications at the R&D phase that can serve as jump-off points for further phases in the development process. The normative instruments designed to facilitate this are referred to by DIN collectively as R&D phase standardization.

Hitherto, standards prepared at the "round table" of DIN have reflected more the interest in the practical, safe and effective implementation of existing technology. R&D phase standardization, by its nature, represents a certain shift in interest and requires much higher involvement on the part of R&D experts. Achieving that involvement means persuading those concerned to see standardization in a new light: as an instrument that can be usefully applied to areas of rapid innovation and technological transfer. R&D phase standardization is a strategic instrument that today should form an integral part in the creation of new technology.

Dinner Welcome 1: Large European research projects as a chance for fostering university cooperation and education in emerging scientific areas

Christine Fourcaud
Attachée de coopération universitaire (in charge of university cooperation, French Embassy)
French Embassy, Germany

Ms Fourcaud will present the framework for cooperation of French-German Universities in relation with EU-VRi and the iNTeg-Risk project. The cooperations can be bi-lateral in a context of European multi-lateral cooperation.

Dinner Welcome 2: Steinbeis – Competitive Technology Transfer and Innovation

Uwe Haug
Managing Director Steinbeis Forschungs- und Entwicklungszentren, Head International Steinbeis
Steinbeis, Stuttgart, Germany

The name Steinbeis has become synonymous with the successful transfer of tangible, market-based knowledge and technology. Managed by entrepreneurs, Steinbeis Centers build solid, steady bridges between science, academia, trade and industry – always focused on how everyone involved in the transfer will actually benefit, our customers in particular.

7.1 From Shape-Risk to iNTeg-Risk

Olivier Salvi
General Manager of EU-VRi and General Secretary of ETPIS
EU-VRi European Virtual Institute for Integrated Risk Management, Stuttgart, Germany

Between 2004 and 2007, 19 European organizations representing 12 Member States worked together in a coordination action called SHAPE-RISK (sharing experience on risk management (health, safety and environment) to design future industrial systems). Co-ordination Actions are multi-partner actions intended to promote and support the networking and co-ordination of research. They cover the definition, organization and management of joint or common initiatives, as well as activities such as the organization of conferences, meetings, the carrying out of studies, exchanges of personnel, the exchange and dissemination of good practice, and setting up common information systems and expert groups. The project was coordinated by INERIS (Institut National de l'Environnement Industriel et des Risques). The overall objective of the SHAPE-RISK project was to optimize the efficiency of integrated risk management in the context of the sustainable development of the European process industry. In this initiative, risk management was related to the environment (referring to the IPPC Directive), major accident hazards (referring to the SEVESO II Directive), and occupational health and safety (referring to the Directive on the safety and health of workers at work, and in particular the ATEX Directives).

The main results of the project were recommendations organized in four categories:

- Regulatory issues: creation of a meta-directive define the principles to implement an integrated risk management
- Technical issues: creation of a European "one-stop shop" to support integrated risk management
- Human and organizational issues: improve safety management by working on human performance
- Risk Communication and governance: take into account the risk perception in the risk decision making process

Based on these results and other work performed at international level such as the projects of IRGC, the iNTeg-Risk project was developed. The papers will present the main results of SHAPE-RISK and their use in the design of the iNTeg-Risk project.

7.2 From IRGC Framework and sample applications (ERRAs) to Emerging Risk Management Framework (ERMF)

Aleksandar Jovanovic, Ortwin Renn, Pia-Johanna Schweizer
ZIRN Univ. of Stuttgart
Stuttgart, Germany

Basic idea and the vision of iNTeg-Risk have their background in a series of past and still running documents, activities and projects, as for instance, the New EU Community Strategy on Health and Safety at Work, the European Technology Platform Industrial Safety (ETPIS, especially its Focus Group Emerging Risks) and/or the FP6 project Shape-Risk (2004-2007, especially its 4-dimensional framework T-C-H-R). Among above initiatives, the particular place in terms of structuring the main deliverable of iNTeg-Risk project, "the consolidated EU response to the emerging risks due to new technologies", belongs to the IRGC Risk Governance Framework of the International Risk Governance Council (www.irgc.org). The framework has been taken as the cornerstone of iNTeg-Risk solution in the sense that its principles of the circular process (procedure) covering the main phases of risk pre-assessment, risk appraisal, assessment of risk acceptability and risk management, combined with the emphasis on risk communication, have been adopted for iNTeg-Risk, too.
The paper shows that, in order to adapt the IRGC framework for the particular needs of treating emerging risks due to new technologies, the applicability of the framework is examined for a series of given sample applications. Seventeen sample applications of new technologies, selected out 50+ possible candidates, have been selected in the preparatory phase of the project and, in the project labeled as ERRAs (emerging risks representative applications). Performing comparative analyses and extracting commonalities is envisaged to take place at two levels: first on the level on a single ERRA and then on the level on ERRA group – one on new products and materials, one on new production processes and technologies, one on new production and other industrial networks, and one on new policies and management approaches. For each of the ERRAs the so-called ERIs (Emerging Risk Issues) will be identified – actually representing the most relevant or plausible scenarios to be analyzed (the technology as such is rarely a risk – these are rather the scenario in which single aspects of the technology may become a threat i.e. risk).
Apart from the qualitative comparison and analysis, the key performance indicators (KPIs) are to used for a more quantitative analysis and the tools to be developed to support the above. The presentation highlights the first results and confirms the need for having the involvement of all the stakeholders.

7.3 Non-mandatory forms offered by CEN for consensus building in EU RTD projects

André Pirlet
P. Manager
CEN European Committee for Standardization, Brussels, Belgium

EU RTD projects in applied research all aim at solving, at least partially, an important problem. But research alone might not be sufficient, there could also be a need to improve the legislation, and/or to foresee amending existing standards or producing new ones, while not forgetting all the necessary complementary measures, in a so called "integrated approach". CEN offers a choice of efficiently reaching consensus, in the form of high status written documents called European Standards, Technical Specifications or CEN Workshop Agreements. Within CEN, consensus does not mean perfect unanimity, but a large majority and no sustained important opposition to the chosen solutions. In many cases, it is best to start the standardization process as soon as possible. This applies also to EU RTD projects, which can usefully encompass a WP Standardization. Experience has shown all the structuring benefit resulting from standardization, which forces to think beyond the RTD project and more into its future exploitation. Therefore, the existence of a WP Standardization is usually well appreciated at the evaluation stage of EU RTD proposals!

7.4 Catalogue of risks and its limitations

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Risks can be classified and listed based on different characteristics. Such characteristics can be causes of damages, consequences or sizes of risks. Classifications may help to improve the understanding of risks and, even more important, may help decision makers to deal properly with risks in terms of spend resources. However, as often shown, the classification of risks can not be done definitely, since definitions of risks are limited in their accuracy and the size of risks is strongly related to the risk parameters used. For example many investigations have shown, that health risks are of utmost importance for humans since 95 % of all deaths in developed countries are related to health problems. In contrast other studies reveal that the greatest risks to humans are social failures since many health problems are related to social failures. Such classifications are even more difficult for emerging risks related to new technologies or current changes in social systems. For such systems experience and therefore statistical data is still missing. Even further such systems also belong to the class of complex systems with missing causal chains (or in other terms relationships with extremely high numbers of variables).

7.5 Combining LCA and RA for the integrated risk management of emerging risks

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Emerging risks of innovative technologies, like for instance nanotechnology and the hydrogen economy, require proactive assessments in order to guarantee that their future materials and products will not result in adverse effects on health, safety and the environment. The combination of Life Cycle Assessment (LCA) and Risk Assessment (RA) offers an early warning system to identify and assess potential impacts. LCA is a well-known analytical tool, standardized in ISO 14040-14044, to assess the environmental impact of the entire life-cycle of an activity. Its strengths is the systematic approach to analyse all life-cycle stages of complex systems. Integrated risk management can benefit in various ways from LCA. Firstly, LCA offers a new dimension to the safety paradigm, exploring the principles and synergies between LCA and RA. Secondly, LCA offers a procedural approach to analyse the risks of innovative technologies along their entire life-cycle (from design, building, maintenance, operation to decommissioning). Thirdly, LCA offers an analytical tool to quantify the environmental impact of emerging technologies. In combination with RA, LCA can provide scientifically sound information for the early assessment of potential impacts on health, safety and the environment.

7.6 UML as a tool modeling of risks

Mikael Ström
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UML (Unified Modeling Language) is a language for modeling business processes, information, hardware, interaction between objects and many other things. In total there are 13 different modeling methods (diagrams) included in UML. UML can be applied to almost any area. Models can be very simple and also very complicated. UML models are in most cases displayed as diagrams. UML is known for its graphical notation. The graphical notation of UML diagrams will visualize relations, dependencies and course of events in a system of actors, hardware objects, software objects, information, interfaces etc. Applied in the area of emerging risks it is assumed that UML-models will visualize the target system, its actors and conditions in the system. The UML model will enlighten conditions that have impact on the parameters defining the emerging risk. To make UML more powerful the iNTeg-Risk project proposes to extend UML and make it more applicable in the area of emerging risks. This can be done from two starting points. One would be to extend UML with a graphical notation that will make it easier to understand the UML diagrams by people experienced in risk management but not in UML. Another starting point is to extend UML to better model the full essence of the emerging risk and target system.

8.1 Aspects and needs related to emerging risks within industrial safety area including various dimensions of safety - An EU-Policy Perspective Viewpoint

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It is important to implement the New Industrial Policy - 'Partnership for Growth and Jobs' through innovation approaches to a wide variety of safety measures which build upon the existing responsible care and corporate responsibility activities of industry. It is hoped that the EC, Integrisk-Project will contribute to make Europe a more attractive place to work and provide knowledge and cost effective tools to allow businesses to create safer and better jobs. Fewer accidents and occupational diseases do not only mean a better quality of life. It also means fewer outages of industrial installations, fewer absences from work, lower health care costs. All this contributes to higher capital efficiency. In capital intensive sectors like the chemical sector these effects on capital efficiency can be a decisive factor for competitiveness. Analysis in the context of the industrial policy communication shows that a negative perception of certain industries can be an important impediment for investors who face difficulties to find motivated skilled workers. Accidents and safety problems have an extremely negative impact on the image of an industry. The 'human factor' is at the origin of several accidents. Accident prevention and reduction approaches are needed which focus on the improvement of working conditions and training. At present, different studies are performed obtaining detailed information on the implementation of the Seveso II Directive including the impact from the Global Harmonized System (GHS). The EC, Integrisk-Project could make a substantial contribution for implementation by means of its activities related to guidance and training activities. Referring to the current discussions on the benefits and risk of nanomaterials, this Project could contribute to the closure of the identified knowledge gaps in the fields of industrial, workplace and environmental safety. This will be decisive to ensure the success of nanotechnologies. In conclusion and from an EU-policy perspective viewpoint, this Project's objectives, its expected results as well as its careful targeted dissemination and, hence, the follow-up of this project are seen as important.

* NOTE: he views expressed in this presentation are personal and may not necessarily reflect those of the European Commission.

8.2 From specific industrial problems to a common European approach in iNTeg-Risk ERRAs

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Industry is permanently facing the challenge of emerging risks. These emerging risks result from the necessary technological evolution but also from changes in the way society perceives and accepts industrial activity. The iNTeg-Risk project aims at defining a new paradigm and a new methodological framework for the management of emerging risks. To ensure usability of its results it was decided to base the reflection on practical industrial cases called emerging risks representative applications ERRAs, mostly carried out during the first subproject (SP1). Each of these ERRAs is addressing a specific Industrial Emerging risk situation, answering a specific industrial and societal concern related to a technology, material, process or policy. It has its own objectives of developing a practical solution in the form of a tool, method or guideline. In the first part we will present a typology of specific objectives of the ERRAs as described in the iNTeg-Risk DOW. This first part will also describe the particular industrial concerns and needs which motivated their participation to the project and their expectations for the final outcomes of the project. SP1 has also the objective of producing the material on which subsequent SPs will base their own production: namely SP2 will develop the paradigm and the framework, SP3 will validate them and SP4 will set up the one-stop-shop for their use. The second part of this presentation describes how the ERRAs will contribute to the production of the common collective results of the project. This will be done by applying to all ERRAs a common initial reference framework composed by the association of the IRGC risk management process and the ERMF conceptual framework. Feedback on the use of these two frameworks and practical solutions deployed in the ERRAs will be the foundation for subsequent SPs.

8.3 Emerging risks due to extreme storage of hazardous materials

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Storage of materials is an inevitable part of industrial processes. New risks emerge due to an increase in size of storage facilities, to new energy carriers, to an increase in the amount of industrial wastes and to a re-assessment of their hazardous potential.
In addition, the growing sensitivity of modern societies against industrial and environmental risks effects also storage of industrial good or wastes. The present paper discusses several examples for extreme storage of hazardous materials and highlights the risks connected to them:

- Storage of hydrogen as a new energy carrier in amounts of technical relevance and subsequent processing,
- Above-ground and underground storage of fossil fuels for power station supply in extreme tonnages,
- Unexpected reactions of wastes in underground storage facilities.

The emerging risks are compared to the state of the art of risk assessment for these applications. A study is presented which reflects the necessity of improvement of risk assessment tools in the aftermath of a fire in an underground storage facility for hazardous goods.

8.4 Nanotechnologies and SMEs (Small and Medium Enterprises)

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Production of engineered nanomaterials is ongoing with increasing rates. While fundamental research is trying to identify and characterize important exposition paths, biotransformation, interaction of nanomaterials with cells and many other issues, manufacturers have to produce today. Since the "nano-industry" has a considerable share of SMEs, this problem of product liability is of crucial importance for all of them: How can one responsibly produce substances without being aware of all relevant safety issues? In this presentation we are discussing a case study for a SME and how such an evaluation did work in practice.

8.5 Emerging risks in alternative strategies of CO_2 capture and storage

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The worst case models of the greenhouse effect suggest significant or even apocalyptic global changes in the human living conditions, such as rise of sea water and widespread drought at low latitudes within the next 40 to 90 years. Even accounting for the considerable uncertainties in predicting climate, suggested mitigating action could easily be late or otherwise insufficient. This is partly because of the huge scale of the problem, and partly due to the inertia in both the global carbon cycle and in implementation of large scale countermeasures before the symptoms are severe or very long-lasting. Here some of the suggested technical routes to curtailing human CO_2 emissions are considered from the risk point of view. While the risks related of carbon capture and sequestration (CCS) can be significant depending on the applied techniques, they are all likely to dwarf in comparison to the impact of the warming climate. Nevertheless, it is not unimportant which technique or which combination of them is applied, because the variation is also large in the required investment, applicability in different parts of the world and the speed of implementation. Therefore, the overall extent of climate change and the related risk is also dependent on the technical tools and processes selected for mitigation, and this selection is affected by the accompanied short and long term risk factors of CCS. There is also a challenge in risk management, because while the issues of CO2 and warming climate are clearly global, the accompanying risks and opportunities to invest in mitigation can be quite unequal in geographic and temporal distribution.

8.6 Providing common basis for exploring and reporting on emerging risks ("ERRA template")

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Over 80 institutions and companies with about 300 persons work in the iNTeg-Risk project involving the combined EU and stakeholders' effort worth almost 20 million Euros for the next 4.5 years. A major part of this work is devoted to Subproject 1 (SP1) with 55 partners and 17 "case projects" (ERRAs – Emerging Risk Representative Applications), which will produce the "project foundation" necessary for the subsequent parts of the project. In order to obtain this it is imperative that the efforts laid down in each of the 17 ERRAs pull in the same direction and that the results are extracted and stored in an efficient manner.

This has been the purpose of the two first tasks in the project; "Common template for performing ERRAs and reporting about their results" (T111), and the accompanying task "Common IT template 'ERRA Database' for storing intermediate and final results" (T112). Both the ERRA template and the IT template will be covered in this presentation.

The function of the ERRA template is to lay down requirements to the generic results that each ERRA shall deliver to the project as well as the format of the deliverables. The purpose of the template is thus to ensure that the iNTeg-Risk framework becomes filled with the type of content foreseen in the vision of the project and that the content is delivered in a form that is useable in the subsequent project phases.

The function of the IT template is to prepare IT structure definition which will ensure that the ERRA results can be reliably used in SP2, SP3 and SP4. It means that the main results must be stored in a structured and transparent way, allowing search and examinations from different point of views and by different users. This includes data description as a "code-book", high-level Entity Relation Diagram design, and analyzing projects data-flow to assure that all sub-projects deliveries contribute to the iNTeg-Risk "One Stop Shop".

9.1 How a common solution for emerging risk will look like and be applied

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Latest catastrophes put in evidence [Dufour 2008, Perrow 1999]:

- an increase of complexity in systems: the technological systems became more complex, their components more numerous, integrating common software…
- the emergence of other causes of these accidents: until 1980, the system was viewed through its intrinsic technical side, but now it has been recognized that external hazard factors need to be taken into account as well.

This leads to a framework in which the different and complex nature of risk should be explored and understood:

- technical, T
- human and organizational, H
- regulatory and concerning standardization, R,
- issues related to governance and communication, C,

Further aspects may be added according to the GLORIA paradigm [Deleuze 2003, 2004]:

- environmental in its physical meaning, natural hazards (as it is considered in ERRA D3). It has never been mentioned and has to be considered, E?
- resources including raw material, data, energy, infrastructures, supply chain management and business continuity, Res?
- finances for exchange rate, credit rate, financial market, reluctance of insurances to deal with some kinds of risks, F?
- costumer/market to be coherent with ISO 9000, CM?

This also leads to propose a new framework for risk management focused on Emerging Risks as they are defined in the DoW of the iNTeg-Risk project [DoW]. The notion of ER is a measurement which is qualitative or quantitative. This implies to define a method to assess this measurement. That's the reason why we can use the IRGC Framework dealing with emerging risks with its pre-assessment phase and propose to indicate on this framework the field covered by ISO 31000 and its terminology CEI 73. The IRGC will enable us to enlarge the scope and stakeholders involvement planned by ISO 31000.

A further issue that needs to be understood is that related to the sustainability of risk, that should be assessed considering all the impacts related to the different receptors in a process and product life-cycle prespective. In the presentation, we will take the example of ERRA C1, risks dealing with outsourcing a task critical to safety. We will present the Risk Management Process based on [Gouriveau 2003], [CEI73], [ISO 31000], [Duval 2007], [Léger 2008] applied to this ER situation. This application will allow us to conclude on the importance of linking IRGC framework and ISO 31000 in this new Risk Management Framework. A tentative application of the proposals for new risk paradigm will also be developed.

9.2 Process Improvement and Emerging Risk Management. The CMMI + SAFE Approach

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CMMI®, Capability Maturity Model for Integration, has been developed by the Software Engineering Institute (SEI) at Carnegie Mellon University, Pittsburgh USA, to improve organizational practices in the use and development of technology. CMMI® presents successful practices for improving development, sustainment and maintenance, and management of software-intensive systems.

Although CMMI® provides a framework in which safety activities can take place, the model is not focused on safety. In order to fill the gap of including Safety Processes within a common CMMI® framework, the +SAFE approach has been developed by the Australian Defence Materiel Organisation (DMO). +SAFE is, in fact, an extension of the CMMI® for the safety of software and systems engineering. The extension consists of two additional process areas to the CMMI® model, providing a basis for process improvement and appraising of Safety related issues of any organization. As an extension to CMMI, +SAFE is a process model defining goals to be achieved and increasing levels of performance capability. The model provides indicators of how goals can be achieved, but these are not prescriptive and an organization is able to select the approaches it wishes to adopt to achieve the goals. +SAFE can be applied as an integrated framework for improving an organization's capability in developing, sustaining, maintaining and managing an integrated Safety Management System.

The flexibility of the +SAFE model allows strong synergies with most of the safety standards. Usually, safety standards are focused on specific application. The Safety Management System built on the +SAFE model, can be modulated according to the level of details that needs to be achieved. This allows to tailor the high level definition of the +SAFE model on the specific needs and requirements of each application.
New processes, new technologies and new ways of working imply emerging risks related to Safety. These risks are nowadays not fully recognized and managed at the same level in a EU context. A key question to which the Integ-Risk project is trying to answer is: Is it possible to address all emergingisks with a same management framework ? Objective of the Integ-Risk project is, in fact, to define a new safety paradigm, based on a common framework for integrated risk management.

+SAFE is focused on Software and Systems Engineering, thus more addressed, by its nature, to the development of new technologies. Starting from this point the model can be adapted to create common guidelines for emerging risks that could support the definition of the above mentioned paradigm, considering the emerging risk throughout the whole life-cycle of the system or of the process involved in the emerging risk. During the Integ-Risk project the +SAFE model will be tailored according to the definition of the emerging risk and processes will be proposed to assure that +SAFE is followed in the management of emerging risks. To integrate this approach already defined methodologies will be evaluated in terms of compliance with this approach. and a gap analysis including specific recommendations will be provided.

9.3 Methodology to build Key Performance Indicators (KPIs): for industrial or occupational safety? How to build efficient KPIs?

Carol Duval, Yves Dien, Marc Voirin
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The iNTeg-Risk project aims at answering questions initially asked in the European Technology Platform Industrial Safety. The development of new methods/tools to increase Emerging Risk Management and its application on a set of ERRAs (Emerging Risk Representative Applications) will improve Industrial Safety. However, very often, improving industrial safety has been evaluated referring an improving occupational safety: number of injured people, dead people… The presentation will primarily focus on the differences between industrial safety and occupational safety and the impact of these differences on indicators. A state of the art on indicators will be presented: how they are used to make diagnostic and prediction; which indicators are currently employed in the nuclear industry. Good properties for indicators, whether they are technological, human or organisational, will follow knowing that their number is increasing with the need of data collection, treatment and analysis, their uncertainties and bias on interpretation. Differences between Safety and Performance Indicators will be discussed. A reference to IAEA (International Atomic Energy Agency) conclusions will be presented.

We will discuss on how it is important to define context of indicators building and treatment Furthermore, organisational indicators could not be built without defining a model of organisation. The lessons of accidents led to take into account concepts as: the incubation period, the coupling between the technical system and the people working in, their organisation and the major role of "meta-organisational factors" (e.g. production pressure, weakness of operational system, failure of control authority, …). The complexity of these systems could also lead to meaningful accidents. The main factors characterizing the health of an organisation are defined by markers and signs/symptoms and articulated with the human indicators and the technical side of the system. The advantages and drawbacks of indicators will be presented: they are able to formalize intuitions and observations, play the role of early alarms but the cartography is not the reality. Indicators are tools but the following question must be asked: 'Could risks or deficiencies go throw the indicator system?'.

9.4 Decider: A Fuzzy Multi-Criteria Group Decision Support System Software

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Many evaluation tasks such as emergency management evaluation, risk level evaluation, product development evaluation, strategy evaluation and any other alternatives-based evaluation have to consider the following issues. The first is the determination of evaluation criteria, their interrelationship, and the degrees of importance. The second is that there may be a group of evaluators to conduct an evaluation with different roles and, therefore, with different weights in the evaluation process. The third issue is that multi-information sources (subjective and objective information) may be involved for ranking a set of alternatives. The fourth issue relates to a need for an effective method to aggregate objective data and subjective results under multiple criteria. These issues also contain an important requirement for linguistic information processing as the weight of criteria, the weights of evaluators, and the judgments (scores) of evaluators are often expressed in linguistic terms. To handle the above-mentioned issues in management and decision evaluation, this study first establishes a comprehensive evaluation model which includes both subjective and objective criteria with weights under a multi-level hierarchy. An extended fuzzy multi-criteria group decision making method (FMCGDM) for aggregating data collected under the evaluation model is proposed. A fuzzy multi-criteria group decision support system software, called Decider, is then developed, which can handle information expressed in linguistic terms and boolean values, as well as numeric values, to assess and rank a set of alternatives within a group of decision makers. Several real applications illustrate that the Decider is able to effectively handle multi-level criteria, multi-evaluators, fuzziness, and multi-information source issues in decision-making, and generate approximate evaluation results.

9.5 An investigation of the safety attitudes of designers in the Safety-Critical Industries

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Design engineers are subject to the natural social and cognitive processes guiding group decision making in the design process. However, designers working on the safety –critical design work e.g. hazardous installations are also required to consistently attend to great detail in their work tasks. Our research has found that this can raise certain contradictory effects in a group-working ethos. These findings are suggested by the decisions which confront the designer and their decision-making on behalf of other members of the team. This poses a real challenge to the management of the design process. Clearly designers need to be encouraged to work in interdisciplinary teams to be more efficient and effective whilst on the other hand they need to be creative when addressing complex issues. A designer population of n = 167 completed a questionnaire booklet and up to four weekly diary trials over a six month period using Personal Digital Assistants. The findings suggest a counter-intuitive outcome with a marked difference between the team safety climate and that corresponding to individual attitudes towards safety. This outcome is used to explain why certain work tasks maybe executed in a particular fashion and why the design contribution to certain accidents may be better explained.

9.6 The Occupational Risk Model and the ORM tool

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This paper presents the occupational risk model (ORM) and the software tool developed under the WORM project for quantifying occupational risk. ORM quantifies occupational risk of a worker, by taking into account his various tasks, activities and their hazards. Risk is evaluated for three types of consequences: recoverable injury, permanent injury and death. The occupational risk model is based on a set of 63 bowties, which assess risk owing to different hazards such as fall from ladder, scaffold, roofs etc. Data for quantifying these models come from the analysis of 9000 occupational accidents in the Netherlands in the period 1998-2004 and of the corresponding exposure data of activities and working conditions of the Dutch working population. ORM calculates also the risk profile of a company, consisting of several workers with different jobs. Furthermore, ORM is a tool for risk optimization, since it evaluates alternative risk reducing strategies by taking into account monetary cost, risk of recoverable injury, risk of permanent injury and risk of fatality. Occupational risk assessment and risk optimization together with the software tool will be demonstrated with a case study from an industrial sector. The reported work was performed on behalf of the Ministry of Social Affairs and Employment of the Netherlands under the name of WORM (Workgroup Occupational Risk Model)

Abstracts - Workshop

W1.1 Methodology to build Key Performance Indicators (KPIs): for industrial or occupational safety? How to build efficient KPIs?

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The iNTeg-Risk project aims at answering questions initially asked in the European Technology Platform Industrial Safety. The development of new methods/tools to increase Emerging Risk Management and its application on a set of ERRAs (Emerging Risk Representative Applications) will improve Industrial Safety. However, very often, improving industrial safety has been evaluated referring an improving occupational safety: number of injured people, dead people… The presentation will primarily focus on the differences between industrial safety and occupational safety and the impact of these differences on indicators.

A state of the art on indicators will be presented: how they are used to make diagnostic and prediction; which indicators are currently employed in the nuclear industry. Good properties for indicators, whether they are technological, human or organizational, will follow knowing that their number is increasing with the need of data collection, treatment and analysis, their uncertainties and bias on interpretation. Differences between Safety and Performance Indicators will be discussed. A reference to IAEA (International Atomic Energy Agency) conclusions will be presented.

We will discuss on how it is important to define context of indicators building and treatment Furthermore, organizational indicators could not be built without defining a model of organization. The lessons of accidents led to take into account concepts as: the incubation period, the coupling between the technical system and the people working in, their organization and the major role of "meta-organizational factors" (e.g. production pressure, weakness of operational system, failure of control authority, …). The complexity of these systems could also lead to meaningful accidents. The main factors characterizing the health of an organization are defined by markers and signs/symptoms and articulated with the human indicators and the technical side of the system.

The advantages and drawbacks of indicators will be presented: they are able to formalize intuitions and observations, play the role of early alarms but the cartography is not the reality. Indicators are tools but the following question must be asked: 'Could risks or deficiencies go throw the indicator system?'.

W1.2 An example of process industry position towards KPIs

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In the past, tremendous progress in the chemical industry was achieved with safety indicators for occupational safety. After the "Texas City" incident, the focus in the chemical industry switched to process safety. For some time now, companies in the chemical industry have had established safety management systems covering different aspects e.g. workflow, SHE reviews, training, etc. All these activities are normally checked by audit systems. To further develop safety performance, the application of new indicators seems sensible. This presentation describes the thoughts of the evaluation of practical safety indicators for a major chemical company. Relevant questions are: How many indicators are manageable? What is a simple goal for process safety improvement? How can we distinguish between internal and external reporting? How do new indicators tie-in in with the officially reported numbers of incidents? First results and experiences will be reported.

W1.3 Overview of KPIs approached and practices and their possible use for emerging risks

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The consent about the general and practical usefulness of key performance indicators (KPIs), in general, and the safety performance indicators (SPIs), in particular, is often seriously challenged by the lack of the internationally recognized and accepted references and de facto standards, lack of consistency between the higher-level indicators (e.g. those dealing with corporate responsibility or business continuity) and the differences, incompatibilities and, often, respective exclusion of similar indicators used in different branches of industry (e.g. chemical industry vs. nuclear industry vs. IT). Particular difficulties are present in the area of "new technologies" (e.g. nano, H_2, CO_2, renewable energy production, etc.) and the use of the leading indicators, and this is issue is emphasized here.

Recent efforts of organizations and bodies like OECD, CCPS and/or HSE have largely improved the situation in terms of guidelines and anchoring of basic references, but a lot remains to be done.

Apart from the efforts undertaken in the areas of the EU legislation, regulation and harmonization of practices, significant efforts have been recently undertaken also at the level of the supporting European research activities. Several activities at the EU level, are currently addressing the above issues of KPIs/SPIs and the sustainable use KPIs/SPIs in the EU industry, and, in the area of emerging risks in particular, it is the project iNTeg-Risk "Early Recognition, Monitoring, and Integrated Management of Emerging, New Technology related Risks" that has KPIs as one of the cornerstones. KPIs will play a pivoting role in the process of the envisaged definition of the common consolidated EU response to the risks related to the development, introduction and use of new technologies.

The project aims at development of a comprehensive data and information base containing not only KPIs, but also the comprehensive background information base and the options to compare and hierarchically organize KPIs/SPIs for different areas of application and industry. The database is intended to be used by different users, and to include in particular the aspects of interest for insurance and re-insurance issues.

On a broader scale, the indicators and their use for emerging risks in iNTeg-Risk will be considered in the definition of the future activities related to the European (CEN) and national (DIN) standardization bodies.

W2.1 OECD Guidance on Developing Safety Performance Indicators related to Chemical Accident Prevention, Preparedness and Response – Potential for application to areas of emerging risks

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In September 2008 the OECD published the second edition of its Guidance on Safety Performance Indicators (SPI) related to Chemical Accident Prevention, Preparedness and Response. The initial publication was released as an "interim publication" in 2003 with the object of testing the guidance amongst stakeholder groups so as to improve the content and structure and therefore make it more readily used. The Working Group on Chemical Accidents (WGCA) which developed and published the document set up a Pilot Programme with volunteers from industry, public authorities and communities to test the initial guidance. At about the same time the UK Health and Safety Executive (HSE) and the Chemical Industries Association (CIA) worked with companies in the UK to develop a generic model for establishing process safety indicators. Following the Pilot Programme the WGCA convened a small group of experts to review the comments received as well as to consider related developments, and to revise the Guidance on SPI accordingly. This revised guidance is published in two volumes; one for industry and the other for public authorities and communities / public so as to address the roles of the particular stakeholder groups more appropriately in evaluating the success of their contribution to chemical accident prevention, preparedness and response.

The Guidance considers two types of Safety Performance Indicator: "outcome indicators" and "activities indicators". Outcome indicators are designed to assess whether safety related actions have reached their desired goals, whereas activities indicators are designed to help identify whether organizations are taking actions believed necessary to reduce risks. The Guidance does not specify which indicators should be applied by an individual organization. Rather it focuses on the process of establishing an SPI programme. It then provides a menu of possible outcome indicators and activities indicators to help organizations towards choosing appropriate indicators for their own situation.

Then development of an SPI-Programme is broken down into seven steps. Which following on from the initial establishment of the SPI-Team (Step One) becomes a cyclical process of: identify the key issues of concern (Step Two), defining outcome indicators and related metrics (Step Three), define activities indicators and related metrics (Step Four), collect the data and report indicator results (Step Five), act on findings from safety performance indicators (Step Six), evaluate and refine SPIs (Step Seven), and thus returning to Step Two. Steps Three and Four, experience suggests, are often an iterative process.

The process described in the Guidance for developing SPIs could be adapted to other applications which involve the management of risk and the assessment of the performance of the management control systems and activities. The field of emerging risks may be one area where this could be applied.

W2.2 KPIs for Human Factors and Safety Management: Status and Prospects

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This talk will present an overview of some proposed methods and techniques of assessing, measuring and benchmarking the level of performance or quality of Safety Management and Safety Culture / Safety Climate.

Examples will be presented of correlations with safety culture /climate measures (as provided by questionnaire surveys) and safety performance as measured in terms of incidents or accidents.
The presentation will review some of the dilemmas and problems in transforming qualitative information into quantitative and statistically meaningful indicators.

W2.3 General Concept of KPIs in iNTeg-Risk (ERRA D1)

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The publication "Guidance on Developing Safety Performance Indicators", OECD Environment, Health and Safety Publications, No. 18 2008, state that: *The term "Safety Performance Indicators"(SPI) is used to mean observable measures that provide insights into a concept – safety – that is difficult to measure directly.* The same definition as that of SPIs also applies to Key Performance Indicators (KPI). The OECD publication continues the argumentation for using SPIs (or KPIs): *"By taking a pro-active approach to risk management, enterprises not only avoid system failures and the potential for costly incidents, they also benefit in terms of business efficiency. For example, the same indicators that reveal whether risks are being controlled can often show whether operating conditions are being optimized."* From this it is apparent that KPIs are tightly connected to the results of risk analysis. To properly understand KPIs and to properly set requirements to these we will in this presentation address three main questions related to the operation with Key Performance Indicators, KPI. The first question to be asked is:

1. *What is understood by a key performance indicator?* The answer to this shall identify what needs the KPIs shall fulfill. It shall clarify what information the KPIs must provide and on what basis the assessment of the KPIs shall be rooted. Should the metric on which the KPIs are measured be quantitative or would a qualitative measure be sufficient? Should it be possible to aggregate KPIs or is it sufficient to have a spectrum of individual KPIs?
2. *Who are the stakeholders?* The KPIs provide information about the safety of the system in a certain form. The relevance of the information and its form is directly linked to the final user. If reference again is made to the OECD publication on SPIs then this publication is divided into two parts: one for industry (owner) and one for society. This indicates that the KPIs are stakeholder dependent. We will discuss and frame why we also consider the owner and the society (in broad sense) as the most important stakeholders.
3. *Which stakes (human, environment, economic consequence, assets ...) should we consider when assessing KPIs?* KPIs shall provide insights on the effects that policies, practices and procedures (including human resources and technical measures) that should be in place, may have on reducing the loss to above-mentioned stakes if an accidents should occur. We will re-visit the discussion of aggregation of KPIs in this discussion.

Based on the answers to the above three questions we will discuss what framework to use for KPIs within iNTeg-Risk.

W2.4 On-line monitoring and assessment of emerging risk in conventional industrial plants –possible way to implement integrated risk management approach and KPIs (ERRA C3)

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Current methods and practices do not support to monitor and assess online the risk emerging due to changing of technology, product, operation conditions, as well as organization in petrochemical plants. For risk assessment typically only off-line methods are used and have been developed, and also the different aspects of risk (i.e. process risk, risk related to structural integrity, organizational risks, health and environmental risk, etc.) are usually assessed and treated separately. Thus the risk assessment and the decision in case of a hazardous situation must be done based on information from several separate sources. And in addition the risk can emerge during operation due to unexpected changes in the technology, abnormal operational situations and as a consequence due to unexpected degradation of the equipment. Usually process monitoring provides a lot of data and information about the main process parameters, and they are recorded and stored, but they are usually used only for process control. In the design and development of process control and monitoring systems only the process aspects and the process risk are considered in short terms. There is no consideration about further aspects of risk in long term, i.e. health, environment, etc. A new approach will be presented in the paper to assess and monitor the changing and emerging risk on-line in conventional industrial plants, i.e. petrochemical, power, etc..

W3.1 Applying KPIs in: Challenges to safety posed by outsourcing of critical tasks - in oil, gas, petrochemical and construction industries (ERRA C1)

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Thomas Thommesen
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The presentation gives a preliminary overview of an application case of iNTeg-Risk that concerns risks associated with outsourcing, subcontracting or deregulation where responsibility for safety management becomes distributed across several organizational entities. It has been suggested in accident analysis reports that outsourcing and subcontracting may create new risks related to heterogeneous safety cultures, multiple lines of responsibility, unclear ownership of safety responsibility and, in general, fragmentation of work.

We shall outline the iNTeg-Risk plan for analyzing and developing solutions to the safety challenges posed by subcontracting / outsourcing, including how information about the nature of the challenge will be collected and analyzed and how a guideline for developing best practice will be developed and tested. Finally, our presentation will outline some ideas for ways of developing and testing KPIs related to safety challenges associated with subcontracting/outsourcing.

W3.2 Applying KPIs in: Emerging risks related to the industrial use of automated surveillance of linear industrial infrastructure (ERRA A3)

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(2) GDF SUEZ, St Denis La Plaine, France

Currently, energy transmission pipelines are among the safest transport facilities, with very low failure frequencies, that are collected by the industry (EGIG for gas and CONCAWE for oil) as global safety performance indicators. Respective contributions of individual causes are indicators that help focusing prevention actions to achieve highest effectiveness. External interference being the first failure cause for pipelines (51% for gas), their prevention relies on multiple actions, among which pipeline surveillance is most important. Automatic aerial surveillance represents a technology breakthrough that could significantly improve the effectiveness and cost-efficiency of surveillance measures, therefore presenting a good potential for further improving pipeline safety. Automatic aerial surveillance is based on automated image collection by a drone or UAV (unmanned aerial vehicle), followed by their automated processing using a specifically developed set of rules. These two new technologies pose different challenges not yet settled. In order to assess the risk and value of this technology, a detailed research and development action is underway in this project.

As small UAVs are a quite new technology, possible risks about safety and reliability of the drones and their control software have to be evaluated, and specific KPIs are set up to assess e.g. its ability to follow the prescribed flight path and attitudes. Images are automatically taken by an integrated camera and have to be preprocessed which already poses risks of having insufficient or unusable data. The following automatic image analysis, despite facilitating the work load, also bears a yet unknown risk of false positive and false negative alarms that has to be qualified and compared to current manned surveillance methods. All these specific KPIs that quantify the performance of each subsystem, and finally of the automated surveillance system, are necessary in order to qualify the system's ability to fulfill the function better and cheaper than existing practices.

W3.3 Applying KPIs in: The use of KPIs to identify emerging risks related to advanced Liquid Natural Gas (LNG) regasification technologies (ERRA A4)

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(2) Saipem Energy Services, San Donato Milanese, Italy
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Natural Gas is an important part of the European energy market and more than 50% of the Natural Gas used in Europe is imported (almost all from three only countries: Russia, Norway and Algeria). The Natural Gas import is expected to increase up to 70% in 2020. Reliability of the supply, where the diversification of the sources plays an important role, is an important issue for the energy future of Europe. 13 LNG receiving Terminals are presently operating all throughout Europe, and approximately 20 more are planned or are waiting for the authorization by the Competent Authorities.

New technologies, mainly related to advanced floating and off-shore LNG terminals are now tackling the market of the new regasification plants proposed both in Europe and in the US. However, new and emerging risks related to floating or off-shore installations were not fully explored to date and the hazards associated to these installations is highly perceived by the population.

The emerging risks related to these issues will be explored within the "LNG ERRA" (Task 1.2.4) of iNTeg-Risk project. In this framework, the safety issues related to new and existing technologies will be assessed and critically compared within the iNTeg-Risk project. The comparison of alternative technologies at different stages of development (R&D, conceptual design, basic design, existing) and the identification of emerging risks related to new technologies are the more challenging issues that need to be addressed within the project. In this framework, the definition and the application of leading KPIs, able to explore risk issues may allow a breakthrough in the assessment of the emerging risks in an integrated framework.

Preliminary results were obtained concerning inherent safety and sustainability indicators for the assessment of emerging risks related to technological issues. A preliminary application of these KPIs to the assessment and comparison of new technologies, still under development, demonstrated the potentiality of the approach in the identification and comparison of the critical safety issues in LNG regasification technologies.

W3.4 Applying KPIs in: Emerging risks related to development and use of advanced engineering materials, composite materials (ERRA B3)

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The main objective of this ERRA is to propose a consistent approach to manage the emerging risks connected with the introduction of new materials into a new generation of products and technologies. The Key Performance Indicators assumed here are quantifiable (measurable) and reflect the emerging risk related to developing and use of advanced engineering composite materials. Applying KPIs in this ERRA we should identify the possibilities to evaluate the successful way towards the goals listed below even in the presence of many uncertainties (emerging risks) related to new materials. The following goals might be considered to be assessed with the KPIs:

- Physico-chemical complexity of the new materials versus some given reference materials, especially the proportion of some very unique components which make up the new material.
- Possibilities to measure and decrease the incompatibility creating a hazardous reaction (corrosion, say) while the material comes into direct contact with another material.
- Possibilities to measure and decrease of reactivity that material undergoes a chemical reaction with an energy release.
- Possibilities to measure and improve the stability, i.e. an ability of the material to remain unchanged under the service conditions and during the service time anticipated.
- Possibilities to measure and decrease the probability of decomposition, e.g. that material disassociates or breaks down into parts or simpler compounds.
- Number/list of the methods for characterization of emerging risk-related features of new materials.
- Number/list and reduction of the potential health hazards connected with the production and use of new materials.
- Number/list and reduction of the potential negative impact on environment during processing, use and recycling of new materials.
- Identification and reduction of failure uncertainties (leading to fugitive emissions, fires and explosions), analysis and identification of subsequent material loss and impact on the environment and humans as well as possibilities to reduce the unit cost of new material production.

W3.5 Applying KPIs in: Remote operation in environmentally sensitive areas (ERRA C2)

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It is of strategic importance that the European citizens have predictable and reliable energy supply, avoiding unfortunate situations such as the one experienced by the Ukrainians in their supply of gas from Russia, and further transit to EU countries. Opening for oil activity in certain areas (e.g. Barents Sea and Lofoten) is a controversial topic of social debate in Norway, particularly due to environmental and fisheries interests. Political acceptance for opening of these prospective exploration acreages depends on public confidence in the ability to produce oil and gas without any harmful spills. Our contribution/solution to deal with this challenge is first of all the development of early warning indicators (EWIs) – to be aware of problems and avoid incidents/accidents. In this presentation we will give some initial thoughts on possible approaches for the establishment of early warning indicators (EWI). The possible approaches include e.g. risk-based indicators (technical and organizational indicators), performance-based indicators (event, barrier and activity indicators), incident-based indicators and resilience-based indicators. We have not decided on the most appropriate approach for ERRA C2, but knowledge about risk-based indicator development (which will be the focus for this presentation) may be useful also for other parts of the iNTeg-Risk project.The risk-based approach presented here covers both technical indicators (a technical framework) and organizational indicators (an organizational framework). The technical part is directly linked to the quantitative risk analysis, whereas the organizational part requires an extension of the present quantitative risk analysis. Quantification of the organizational part is made possible by the use of Bayesian Belief Networks, which means that for both the technical indicators and the organizational indicators it is possible to link them to the overall risk, and determine the effect on risk for a given change in the indicator values. This is the main difference between a risk indicator and "just" SPIs or KPIs for which we do not know the impact on risk.

W3.6 Industrial safety indicators: rationale and practical application to NaTech Risks (ERRA D2)

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An indicator is an information or an aggregation of multiple information with a purpose of decision and / or action. Such a definition encompasses multiple challenges that need to be addressed : What are the relevant information according to the considered action? How should this information be formulated in order to be well understood by the various stakeholders? How should aggregation be conducted, so as to avoid any loss of information? How to make sure that those information are reasonably available according to resources available?

All those questions remain relevant for all types of indicators. Nevertheless, when thinking about safety related to emerging risks, an additional layer of complexity should be considered because of high level of uncertainties, and sometimes ignorance, that characterize those kind of risks. The impact of natural hazards on industrial facilities (Natural-technological hazards, or NaTech) is a typical example of such issues. Earthquakes, floods, hurricanes… can be highly harmful because of the possible consequences on both physical installations and on organizational capabilities.

For such risks, the development of leading indicators for the appreciation of both hazards and vulnerabilities is of high added value for risk management. Developing such indicators requires in-depth investigation of past NaTech events. This communication will first clarify the relevance and limitations of indicators, with a focus on leading ones, and as applied to reduction of major accident risks. Second, the issue of natural technological hazards will be discussed. Finally, the perspectives of further developments related on KPI's in the NaTech ERRA will be presented.

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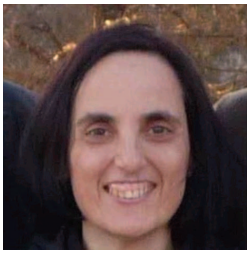
- 2008-09, Danish project (Dan. Inst. Med. Simulation; Trygfonden) "Identifying factors behind adverse events related to patient transitions/handoffs in hospitals", coordinator.
- 2008-13 Site leader of DTU participation in EU project IntegRisk: 2007-09 Participant/site leader in national project (Højteknologifonden) on Tracking Technhologies and Privacy in Airports.
- 2006-7 Leader of survey project of patient safety managers' perceptions across 3 hospitals
- 2006-9 Site leader of national project on passenger tracking technologies in airports and related privacy issues;
- 2006-7 Leader of survey project on reactions to and evaluation of quality of speech recognition technology for health care records
- 2004-5 Leader of FMEA project for pharmaceutical industry
- 2005-6 Leader of project on surveying arthritis patient attitudes to drug risks



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Olga Aneziris is a researcher at the National Center for Scientific Research "DEMOKRITOS". She holds a degree in chemical engineering from the National Technical University of Athens (NTUA) and a PhD in Reliability of chemical plants from NTUA. She has twenty years experience of research in Safety and Risk Analysis of Chemical Plants, Safety Auditing in the process Industry, Dynamic reliability and Occupational Risk Assessment. She has participated in EU funded R& D projects in the Area of Risk Analysis and Impact Assessment on Population and the Environment, software development for Consequence Analysis and in numerous studies for the Greek and European process industry.

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Mr. Pertti Auerkari works as a Senior Research Scientist at the VTT Technical Research Centre of Finland, where his principal professional activities include particularly materials engineering and risk informed life management for power and process plants. Mr. Auerkari has been and remains the national project leader as well as a national delegate to the management committees of the European COST project series (COST 501/505 1985-1998, COST 522 1999-2003, COST 536/538 2004-2009) for developing materials and life management for highly efficient and environmentally friendly power plants. He is a national delegate in European groups for developing and supporting European standardization on high temperature materials (ECCC and CEN TC 54 WG C), and in the national group on materials standards for pressure equipment; and is the chairman of the International Baltica Conference series on Life Management and Maintenance for Power Plants (organized tri annually since 1988).

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Mr Bagnoli graduated summa cum laude from the University of Genoa in Electronic Engineering in 1998. After his master degree he joined D'Appolonia S.p.A., a consultancy engineering company of about 400 people, based in Italy and working in different fields of engineering. Mr Bagnoli is currently responsible in D'Appolonia of the Electronics Division (about 50 people, 7 M€ turnover), with the following main tasks:

- Identifications of new business opportunities and market;
- Commercial activities for the products and services of the Division, proposal preparations and customer management (main customers: Selex SI, MBDA Italia, Thales Alenia Space Italia, Thales, Orizzonte Sistemi Navali, Elsag Datamat, Abu Dhabi System Integration, Italian Space Agency, European Space Agency, European Commission, Frontex, European Defence Agency);
- Administrative and financial management of the projects performed within the Division;
- technical management of some strategic projects

Mr Bagnoli was coordinator of several EC project since FP5 (MEDASHIP, OPTESS, WEBLINC) and achieved a large experience as Project Manager, directly following specific projects carried out by D'Appolonia both at national and International Level (e.g. supervisor for the maritime border surveillance system in Yemen, coordinator of the design of the port and coast security system in Algeria, project manager for the information security programme of Frontex at Warsaw).
He is responsible of D'Appolonia activities in the United Arab Emirates, related to specific projects for UAE Navy, Airforce and Police. Particularly he followed the development of a safety management system for the flight test and development center of the Air force. Mr. Bagnoli was member of the European Space Agency Working Group "Telemedicine Technology Development in Satcom" and professor for the University Master in e-Health for the University of Camerino (academic year 2004-2005). Mr. Bagnoli is in charge of the Focus Group "New methodologies for risk assessment and risk management" within the European Technology Platform on Industrial Safety and is responsible for D'Appolonia for the activities within the Integ-Risk project. He was member of the Advisory Board of the Italian anti Cancer League, Genoa section. He is now representing D'Appolonia within EOS (European Organization for Security) and is member of AFCEA (Armed Forces Communications and Electronics Association) and ISACA (Information Systems Audit and Control Association). He is also Responsible in the Security Organization of D'Appolonia for the storing of classified information.

BALOS Daniel

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Daniel Balos (Dr. Dipl.-Ing, 1971) is presently Project Manager. He has experience in risk and safety assessment, modeling of mechanical behavior of materials; technology transfer and training. With his good engineering and software skills (Microsoft Certified Professional and Microsoft Certified Solution Developer) he participated in various FP5 and FP6 EU research and network projects (CCS2001, UNCERT, UNCERT-AM, TOFDPROOF, RIMAP, RIMAP-Network, HIDA-Applicability, etc.).

BARTHELMES Stefan

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Stefan Barthelmes is a Senior Manager in Ernst & Young's Sustainability Assurance and Advisory Services Group. Since the mid-1990s, Stefan has worked in senior advisory positions for a number of private clients in the infrastructure, transport, utilities, postal services and manufacturing sector and for public sector clients including European central and regional governments, cities and counties. His focus is on sustainability management (incl. sustainability report review and assurance, non-financial reporting, carbon accounting and stakeholder dialogue) and it was on corporate finance (incl. privatizations, M&A, transaction strategy advice, feasibility studies and regulation).

Starting in 1996 at Price Waterhouse, he moved to Arthur Andersen Corporate Finance in 1998 and built the Infrastructure Advisory Team of the German practice. In 2002, he joined Ernst & Young Corporate Finance through the merger with Andersen. In 2005, he was seconded to Ernst & Young's Brussels office to develop and coordinate EU/EBRD/EIB-funded mandates for Ernst & Young in Central and Eastern Europe with a focus on the infrastructure sector. Since 2006, he has built the Ernst & Young Sustainability Services practice in Germany. He is a member of the Committee Non-Financials of the German Investment Professional's Organization (DVFA). Stefan holds a Master's Degree (1995) in Economics from Free University Berlin and a License en Sciences Economiques (1992) from the University of Grenoble.

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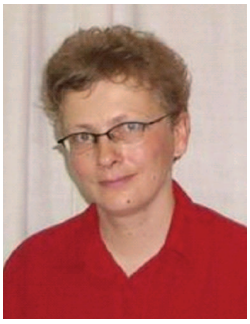
Master degree in Chemical Engineering from the University of Napoli "Federico II" (Italy), 2007.

Currently grant holder at the Istituto di Ricerche sulla Combustione of National Research Council of Italy, where I am following the research activities of the Center of Competence on the analysis and control of Vulcanic Risk, with specific reference to industrial installations located in the surrounding of Mt. Vesuvius.

Main research experiences are in the development of methodologies for the risk assessment of the interaction between natural events and relevant risk industries and on the definition of risks due to storage of pyrotechnics.



BAUER Heike

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Dr. Heike Bauer is Assistant Head of Division for Production Systems and Technologies at the German Federal Ministry of Education and Research, BMBF.

She has a doctoral degree in organic chemistry. Her research was focused on pharmacological active compounds in natural products. In 1994 she left academia to work with the Project Management Organization Health Research on behalf of BMBF. From there she changed to the Asia Department of the International Bureau of BMBF to establish and foster scientific cooperation with Vietnam, South Korea and Singapore.

In 2001 Heike Bauer moved to Hanoi, Vietnam to work as a science management consultant for the Vietnamese government to support the Ministry of Science and Technology in reforming the Vietnamese research and research funding system.

When she came back to Germany more than four years later she joined BMBF to take over responsibility for water research and technologies in the Division for Sustainability in Production and Services. Since last year she holds her current position in the Directorate-General for Key Technologies and is German Delegate to the NMP-Program committee.

BEHRENS Hermann

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Dipl.-Ing. Hermann Behrens, 1963, Head of the Group "Research and Development Phase Standardization" at DIN is responsible for the activities on linking standardization and innovation. His areas of expertise include standardization in fields like e-Government, e-Learning, e-Business, Knowledge-Management, Services, Nanotechnology as well as strategic projects on "Innovation and Standardization". Currently he is working on concepts for integrating standardization aspects into higher education.
Hermann Behrens joined DIN e. V. in 1989. Prior to his appointment at DIN, he studied Electrical Engineering and Information Technology at the University of Applied Sciences, Emden. He has been a member of the CEN Committee STAIR (Standardization, Innovation and Research) since 2008 and member of the research advisory board of FIR Research Institute for Operations Management at RWTH Aachen University since 2006.

BEESLEY Nick

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Nick Beesley (MA, MSc, PhD) has a PhD in hazard and risk management and is currently a researcher at Loughborough University. He is working on research concerned with how medical device designers can negotiate the twin requirements of developing safe and innovative product EPSRC funded project EP/F02940X/01s. The focus is on the management of designers, and particularly how designers use the characteristics of their jobs (e.g. level of autonomy to make design decisions) in their day-to-day work to create and innovate within the requirements imposed on them through safety regulations. Other funded work includes the EPSRC funded project EP/D04863X/1 investigating risk and the designer. Previously, Nick was the AMEC Oil and Gas technical safety community of practice team leader. He has in excess of 25 years experience in senior and managerial positions on a variety of safety critical engineering projects. He was an active member of the 'Safety in Design' HSE working group, industry bodies concerned with health and safety in engineering and is part of the EPSRC Network on risk perception and assessment in design. He regularly presents work at industry conferences. His research interests lies in the discipline of engineering design and cognitive processes.

BELLABY Paul

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Paul Bellaby is Research Professor in Sociology, University of Salford. He has published widely in the sociologies of education, health and illness, risk and latterly sustainable energy, and recently has led or been part of major projects in the ESRC 'E-Society' and the EPSRC 'Supergen' programs.

BOENKE Achim

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Achim Boenke is a chemist, specialized in bio-organic and analytical chemistry as well as toxicology. He holds a PhD in natural sciences. Currently, he occupies the position of a Principle Administrator and Policy Officer at the European Commission, in the Directorate General Enterprise and Industry and there in the Chemicals Unit. His policy areas includes, amongst others, industrial safety; emission of chemical installations; nanomaterials; bio-based products; sustainable industrial and consumption policy; energy policy and its implications on raw materials and innovation policy. He is also an active member of various European Commission inter service groups, European Technology Platforms (i.e. Sustainable Chemistry (SusChem) and Industrial Safety (ETPIS)) and working groups of various international organizations including the OECD. His previous activities in the European Commission, Directorate General Research, consisted of project management/coordination of different research projects on certified Reference Materials (CRMs) for various applications in areas such as industrial process control, process development and demonstration, risk assessment, and contamination prevention strategies. From 1996 to 2002, his responsibilities included part of the horizontal activities on preparatory and accompanying measures. He published a number of articles in various journals and books.

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Dr. Søren Bøwadt is an analytical chemist specialized in extraction procedures and analytical determination of organic pollutants. His main educational background in organic synthetic and analytical chemistry has been obtained from the University of Odense, Denmark. After Ph.D. studies at the European Joint Research Centre in Ispra in Italy, he spend a total of 3 years in the United States, working first at the University of North Dakota in Grand Forks, and secondly as Product Specialist at LECO Corporation in St. Joseph, Michigan. He moved on to a position as Principal Chemist at the Water Quality Institute in Hørsholm (Denmark) before joining the Measurement and Testing unit of the European Commissions Research Directorate at the end of 1999. Since July 2003, he has been working for the Directorate for Industrial Technology in DG Research, where he is responsible for research within industrial chemistry. Søren Bøwadt has published over 50 papers in various areas of chemistry related research.

BREEDVELD Leo

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2B is an environmental consultancy specialized in life cycle assessment (LCA) which offers a range of related services like ecodesign, ecolabel, industrial ecology and environmental marketing. Our philosophy consists in sharing our know-how and personalised service, providing optimal decision support in relation to sustainable development. Among LCA experts at the European level, Leo Breedveld (founder 2B) has introduced this tool in the BAT working groups for the IPPC directive and in the Dutch water policy, actively contributing to the adoption of LCA. 2B is the Italian Competence Centre for the LCA software SimaPro, and is part of a worldwide LCA network of 20 partners. 2B has experience in various sectors, like energy, waste, chemistry, agriculture, water management, paper and pulp, ceramics, building sector, food, packaging and leather. 2B is active both in Italy and abroad with clients in many industrial sectors, public administration, consultancies and more than 20 Italian universities. Leo Breedveld is currently participating in the FP7 projects PlasmaNice and IntegRisk. Furthermore, he has been actively involved in the ShapeRisk project, defining a new integrated framework for risk assessment.

BRUN Emmanuelle

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After graduating from the "Ecole Nationale Supérieure de Chimie, Université de Montpellier" (France) in 2000, Emmanuelle Brun started her career in Germany at the BGIA – the German institute for research and testing of the German Berufsgenossenschaften (BG), the institutions for statutory accident insurance and prevention - where she was in charge of multidisciplinary research projects. Since 2004, Emmanuelle has been working as a Project Manager in the European Risk Observatory Unit of the European Agency in Bilbao (Spain), first as a seconded expert from the BGIA in Germany, and from 2006 as a member of the Agency staff. At the Agency, she has managed a range of projects aimed at identifying new and emerging occupational risks. She was responsible for the four Agency's expert forecasts on emerging physical, biological, chemical and psychosocial risks, and she is now developing the Agency's large-scale foresight study that will start in 2009 and look at emerging risks that may arise from new technologies in green jobs by 2020.

BUSINI Valentina

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Valentina Busini was born in June the 22nd, 1979, and is married. She took her 5 years degree in Chemical Engineering (grade 100/100 cum laude) in 2003 and her Ph.D. in Chemical Engineering (cum laude) at Politecnico di Milano, Italy in 2007. She was visiting student in the research group of prof. R. Langer at the Massachusetts Institute of Technology (MA) in 2006 winning the 'Foundation R. Rocca' prize for academic excellence, and post doctoral associate fellow in the research group of prof. Rota at Politecnico di Milano from 2007 to 2008. She is now assistant professor of Chemical Engineering Principles at Dept. Chimica, Materiali e Ingegneria Chimica, Politecnico di Milano, where she teaches 'Evaluation of the consequences of accidents in industrial plants'. She has participated to the international research project Aims Sixth framework program, priority 'Nanotechnology and Nan science', 'advanced interactive materials by design', and now to IntegRisk Seventh framework program, priority 'Nan science, Nanotechnologies, Materials and New Production Technologies', 'Early Recognition, Monitoring and Integrated Management of Emerging, New Technology Related Risks'. Her scientific work is summarized in 7 publications, in international journals.

CHEYNE Alistair

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Alistair Cheyne (BA, MA, PhD, CPsychol) is a Senior Lecturer in Organizational Psychology. He has a first degree in psychology and a doctorate in safety psychology. Alistair's main research interests centre on the impact of organizational culture at various levels in the organization, modelling individual and organizational influences on safety across large organizations and assessing employee attitudes to safety. Alistair has worked with a number of large organizations and government agencies, including Health and Safety Executive and is co-investigator on EP/D04863X/1. He has experience with attitude and perception measurement methodologies, and associated statistical techniques.

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Master degree in Chemical Engineering from the University of Pisa (Italy), 1992. Ph.D. in Chemical Engineering from the University of Bologna (Italy), 1996. Formerly lecturer at Pisa University and research associate at Italian National Council of Research. Visiting Scientist at the Industrial Hazards Unit, European Community Joint Research Centre, in 1996.Currently professor at the Faculty of Engineering of Bologna University. Main research experience in the fields of safe design of process plants and in the development of innovative risk analysis techniques. Coordinator of national and international research projects on industrial safety and inherently safe design. Responsible of research projects on HSE topics for Tecnomare, STI, Shell Research. Member of the Editorial Board of the Journal of Hazardous Materials and of executive board of European Technology Platform for Industrial Safety.

CUSCO Laurence

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Laurence Cusco is Head of Fire & Process Safety Unit at the United Kingdom Health & Safety Laboratory. He is a Chartered Engineer and a Fellow of the Institute of Chemical Engineers with wide experience of scientific research & development and related business, project and staff management. He manages a unit of approximately 30 specialist staff whose remit includes: chemical reaction hazards, hazardous substances, pressurised releases, fire engineering, pressure relief systems, major hazards modelling, incident investigation, process engineering and safety case assessment.

After obtaining a degree in Chemical Engineering from UMIST (University of Manchester Institute of Science & Technology), he completed his PhD in experimental thermodynamics, sponsored by BP Exploration, at Imperial College London in 1992. He then carried out post-doctoral contract research, also at Imperial, for Shell Petroleum on the blowdown of pressure vessels and on identifying a new non ozone-depleting fluid mixture for use in sonar targets. In 1994 he was invited to spend two years as a guest researcher at the US National Institute of Standards and Technology where he worked in the Thermophysics Division on the measurement the thermal conductivity of hydrocarbons and alternative refrigerants and also on the development of viscometers. Prior to joining HSL in January 2000, he worked for over 3 years at the National Physical Laboratory where he led development of new national standards for the thermal properties of molten metals and polymers. He was also lead author of the Institute of Measurement & Control / NPL Guide to the Measurement of Pressure and Vacuum. Since joining HSL in 2000, he has undertaken and project managed a wide range of research projects and incident investigations, including laboratory and large scale experimental tests with high hazard potential and has worked on several European research projects. In 2006 he was invited to be one of six members of the Explosion Mechanism Advisory Board to the Buncefield Major Incident Investigation Board. He has published widely in the scientific literature and is on the editorial board of the journal Transaction of the IChemE: Process Safety and Environmental Protection. In 2007 he was winner of the Frank Lees Medal 2007 for the best contribution to safety in an IChemE publication for his work on Carbon Capture & Sequestration.

DANIELS Kevin

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Kevin Daniels is Professor of Organizational Psychology at the Business School, Loughborough University, UK. He has a PhD in Applied Psychology and is a Chartered Occupational Psychologist. His current research interests are focused on job design, emotion, stress, well-being and safety at work. He is particularly interested in the role of cognition in shaping emotional reactions to work, subsequent coping responses and the implications for cognitive performance. His recent work, with projects by the East Midlands Development Agency and Engineering and Physical Science Research Council, has been concerned with emotions, problem-solving, safety critical decision making and innovation. Kevin is an associate editor of Human Relations and is on the editorial boards of *British Journal of Management, Journal of Management and Journal of Occupational and Organizational Psychology* .

DEBRAY Bruno

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Ingénieur civil des mines (ENS Mines de Saint-Etienne), M.Eng McGill University, PhD (INSA Lyon)

Bruno Debray began in 1993 a teaching and research carrier in the field on industrial environment and risks at the Ecole Nationale Supérieure des Mines de Saint-Etienne.

He joined INERIS in 2004. He animated the knowledge management activities of the accidental risk division of INERIS, participating to several national and European projects (VIRTHUALIS, EDFORSA, L-SURF). Since march 2007 he is scientific manager of the Accidental risks division

DELEUZE Gilles
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Gilles DELEUZE is project leader and expert engineer at the EDF R&D Industrial Risks Management Department. He currently works on two domains. First, he works on the implementation of global risk assessment frameworks, risk assessments and risk mappings for various projects and technologies (nuclear, gas turbines, distribution, etc.), in short and very long term (nuclear waste storage, future power production); and for corporate risk management (project GLORIA). Secondly, he works on the improvement of the modeling of I&C systems in nuclear probabilistic safety assessment (project SPINOSA). Previously, he worked for THALES in the field of electronic components and systems dependability for space, avionics and military equipments (project PCP, field return of A320 flight computers and PR4G tactical radio set, PURE (French-Swedish partnership for COTS qualification). Born in 1964, he received an Engineering Degree (Naval & Nuclear Engineering) from ENSTA (École Nationale Supérieure de Techniques Avancées) in 1986 and a Technology Management Degree from Paris IX University in 1987.

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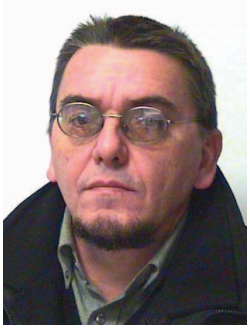

Yves Dien is an expert researcher at EdF–R&D's Industrial Risks Management Department and is involved in a project dealing with "Organizational Factors of Industrial Accidents, Incidents and Crises". Born in 1955, he has a postgraduate degree in Human Factors (Université Paris XIII – Villetaneuse). He started to work at EdF–R&D in 1982 in a project on the design and evaluation of the new computerized control-room for nuclear power plants. He was also involved in the design and evaluation of several operator aids (emergency operating procedures, computerized aids in conventional control rooms, …). In 1996, he went to the EdF Nuclear Operations Division to head a project dealing with "operational feedback system" for Ukrainian nuclear power plants. Then he became an advisor at EdF's International Division, in charge of nuclear affairs for Central and Eastern Europe. In 1999, he was acting Geographical Director for the former Soviet Union at EdF's Human Resources Division. He returned to EdF-R&D in 2002. His areas of expertise include: human and organizational factors in multidisciplinary approaches, risk governance approaches, project management.

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Born in Marseilles (France), on February 14, 1947 ,
Married, 3 Children,
Studies of Business Administration - Ecole des Hautes études commerciales (HEC - 1969)

- 1969-1970: National Service in Québec (Canada) – Ministère du Travail, Minimum Wage Commission (Planning, Programming, Budgeting)
- 1970-1975: Business Management – Design, Production and Trade of Equipments for Bulk Powder Products – société CIMAP (Z.I. Aix-Les Milles)
- 1975-1981: Management of Cultural Organisations, Public Cultural Management –Centre d'action culturelle (CAC), Ville Nouvelle de Fos ; Relais culturel (CAC), Aix en Provence ; Cultural Adviser in the City of Aix-en-Provence ; Technical Adviser in the Ministère de la Culture, Paris .
- 1982-1987: Director Institut Français, Stockholm (Sweden)
- 1987-1993: Director Institut Français, Cologne (Germany)
- 1993-1996: Ministère des Affaires étrangères , Paris, Direction des Affaires économiques et financières, sous-direction de l'environnement – Diplomatic Coordinator of the National French Follow-up of the Climate Change Convention.
- 1996-1998: Director Institut Français, Warsaw (Poland)
- 1998-1999: Cultural Attaché, culturel à Brussell (Belgium)
- 1999-2002: Ministère des Affaires étrangères , Paris , Direction des Affaires économiques et financières, sous-direction de l'environnement – Diplomatic Coordinator of the French Follow-up of the Biodiversity Convention.
- 2002-2006: French Embassy, Tokyo , First Secretary (Political Section, Follow-up of the Japanese Foreign Policy, Global Questions, Environment, Development)
- From September 2006: General Consul of France for Baden-Württemberg, Director of the French Institute in Stuttgart.

DUVAL Carol

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Since 2008:

- Expert at EDF R&D with company mission on 'integrated risk analysis for complex systems'
- Strategic support for skills and cooperations management

Between mid-2006 and 2008:

- Responsible for an EDF project focused on the development of an integrated risk analysis methodology for industrial systems taken in their physical environment and including human actions (maintenance, conducting) in their organizational context
- Strategic support for skills and cooperations management

Between 2001 and mid-2006: Head of a group of searchers working on 'Risk analysis in technical and organizational systems'

- Risk analysis, Reliability, Availability, Safety, T echnical and global

Between 1998 and 2000 : Head of a group of searchers working on 'Nuclear core physics' including:

- Global 1D and detailed 3D Thermalhydraulics
- 3D Neutronics
- Associated computers codes and their couplings
- Uncertainties evaluation and propagation in these computer code simulations

Between 1990 and 1997: Responsible for projects solving thermalhydraulic-neutronic large computer code couplings for accidental

FILIPOVIĆ Nenad

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Nenad Filipović, associate professor at University of Kragujevac, Serbia, since 1999, received his B.S. and Ph.D. degrees from Faculty of Mechanical Engineering of University of Kragujevac, in 1994, and 1999.

From 2003 Dr. Filipović is engaged as a research associate at the Harvard School of Public Health, Boston. From 2008 he has been the vice-director of R&D Center for Bioengineering 'BioIRC', Kragujevac, Serbia. He was a Humboldt Fellow at Steinbeis University, Germany in 2006; and visiting researcher at Biomedical Research and LBI, University of Vienna, Austria, in 2001. Professor Filipović has been teaching courses in computer programming, biomechanics and computational methods - with implementation in engineering and bioengineering. He is guiding a number of Ph.D. theses. Research interests of Dr. Filipović have been in computer methods in general, and in fluid mechanics in particular. The methods include the finite element method and discrete particle methods, such as dissipative particle hydrodynamics. His research has been especially oriented to enhance the PAK program in fluid mechanics, coupled problems, flow through porous media and biomechanics. Interests of Dr. Filipović have also been in imaging techniques and coupling medical recordings with modeling procedures and engineering software. He has been participating in a number of national (Serbian) and international projects as a PI or as a researcher.

He has authored and coauthored a significant number of papers published in computational and bioengineering journals. He is the author of textbook in the field of computer programming, in Serbian. He is a member of: European Society for Artificial Organs, European Society of Biomechanics (corresponding member for Serbia), Internet Electronic Discussion Forum, Serbian Society for Mechanics; Secretary of the Serbian Society for Computational Mechanics, and managing editor of the Journal of the Serbian Society for Computational Mechanics

Rob Flynn is Professor of Sociology at the University of Salford, Salford, Greater Manchester, UK. His research interests include public perceptions of risk and public engagement in science and technology. He has also researched and published widely about health service policy-making and the regulation of professionals. He has previously been Chairperson of the Editorial Boards of the journals 'Sociology', and 'Sociology of Health and Illness'. He is co-editor (with Paul Bellaby) of 'Risk and the Public Acceptance of New Technologies' (2007, Palgrave-Macmillan). Currently he is a co-investigator in the UK Sustainable Hydrogen Energy Consortium, funded by the EPSRC, 2007-2011.

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Dr. Christine Fourcaud studied linguistics in Aix-en-Provence, Paris IV-Sorbonne and Saarbrücken. She worked as a Maître de Conférences and researcher at the Université de Reims and the Research Center for Applied Linguistics at the Université Paris IV-Sorbonne, CELTA. She has longtime experience in German-French project and committee work and as a coordinator of a study program of the German-French university.

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#Peter FRIIS HANSEN is employed as Principal Researcher at DNV Research & Innovation, Energy program. Peter has a B.Sc. in civil engineering from the Engineering Academy of Denmark (1985), and a Ph.D. from the Technical University of Denmark in Reliability Analysis of Ships (1994). Peter was professor at the Technical University of Denmark within the field "Safety Assessment of Marine System". He developed and taught the course Risk and Decision Analysis. He has authored or co-authored more than 60 papers within the area of risk and reliability analysis. Peter has been a consultant as risk and reliability specialist on several high-end projects in Denmark; among others the Great Belt bridge, the Femarn Belt bridge, and on major navigational safety assessment studies in Denmark. Peter has extensive experience in modeling complex systems, and in particular in modeling using Bayesian Networks. Before returning to University in 1989, Peter was after his graduation in 1985 employed partly at the Danish Concrete and Structural Research Institute in Denmark and partly at the consultant company Ramboll Denmark.

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Born in 1979. In 2003, Bachelor of Engineering received from Department of Systems Innovation, The University of Tokyo. In 2005, Master of Environmental Studies received from Department of Human and Engineered Environmental Studies, The University of Tokyo. In 2009, Ph.D. received from Department of Human and Engineered Environmental Studies, The University of Tokyo. At present, Research Associate at Research into Artifacts, Center for Engineering, The University of Tokyo. Engaged in research on complex systems and traffic simulations. A member of Japan Society of Traffic Engineers.

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Born 27 March 1957, married, three children

1980: Diploma in Chemical Engineering, Technical University of Karlsruhe

1984: PhD, Engler-Bunte-Institut, Technical University of Karlsruhe

Professional Career

1984: BASF Aktiengesellschaft

1984 - 1989: Research Engineer, Ammonia Laboratory

1989 - 1990: Plant Manager of a Production Unit

1990 - 1996: Staff Manager, Ludwigshafen (1990 - 92) and in the United States (1992 - 1996)

1996 - 1998: Director of a Production Unit

1998 - 2003: Senior Vice President, Process Development

2003 - 2006: Senior Vice President, Energy Supply and Waste Management

2006 - 2008: Senior Vice President, Corporate & Governmental Relations

2008 until now Senior Vice President, Safety, Security and Emergency Response

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Chiara Giorgini graduated in Chemical Engineering at the Politecnico di Milano in 2000.
After a short experience as process engineer, she started her activity as safety engineer in Ambiente S.p.A: (ENI group - the National Hydrocarbon Authority of Italy) in Risk and Environment Department, her main activity was the development of Safety Report for the ENI chemical plant (according to Seveso II Directive). Then she move to the HSED Dept of Tecnimont S.p.A., an Italian Onshore Engineering and Construction Company, as Safety Discipline Leader. In this role she performed Hazid, Hazops, SIL classification, HEMP studies and QRA for various Projects, both in basic and detailed engineering phase. She had also the responsibility for the developed of the engineering of safety systems for EPCI projects. In 2006 he joined Saipem Energy Services, the Off-shore Engineering Company of Saipem group. She is actually the HSED leader in the EPCI Livorno FSRU Project, the first floating LNG regasification unit to be installed offshore Livorno (Tuscany).

HAILWOOD Mark

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Mark Hailwood graduated in 1989 with a Bachelor of Science degree in Applied Chemistry from Salford University, UK. He wrote his MPhil Thesis on the implementation of the Seveso Directive in the then EU 15 States based on research carried out part-time within the European Health & Safety Law Unit at Salford University. He is employed by the State Institute for Environment, Measurement and Nature Conservation Baden-Württemberg, where he has worked in the field of major chemical accident prevention for the past eighteen years. His role is to advise state authorities on the implementation of the Seveso II Directive as transposed into German Law and to train inspectors in the various fields associated with this. Particular interests here are in hazard identification and risk assessment – with a focus on safety reports, safety management systems and human factors. He has for a number of years represented Germany at the OECD Working Group on Chemical Accidents and currently chairs this group. He has been involved in a large number of EU, OECD and UNEP activities within the field of Chemical Accident prevention, preparedness and response. He is also a member of the IChemE Loss Prevention Panel, which has a keen interest in learning from accidents.

HAUG Uwe

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Uwe Haug, Dipl.-Ing.(FH) (*1964, Germany) holds a Dipl.-Ing.-degree in engineering from the Reutlingen University. During his studies he had a worked experience semester at Flender Corporation, Elgin (Chicago), USA. For three years he worked as a industrial researcher in corporate development at the Fraunhofer-Institute for Manufacturing Engineering and Automation (IPA, Stuttgart) and subsequently in the SME industry (Walter AG, Tübingen) as Project Manager in corporate development. From 1992 to 1993 he worked as a Project Manager in strategic consultancy at the headquarters of the StW. In 1993 he became the Executive Co-ordinator Marketing & International. In 1994 he became the Head International in the board area of the Steinbeis Foundation Headquarters. Since 2005 he is the Managing Director of the Steinbeis Transfer AG – Schweiz, Zürich, Switzerland and since 2006 he is also the Managing Director of the Steinbeis Forschungs- und Entwicklungszentren GmbH, Stuttgart, Germany.

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Dr Anna-Mari Heikkilä has worked at VTT since 1998. Her main research activities involve preparation and participation in research projects as a scientist and project leader, as well as counseling the Finnish process industry and authorities on safety, security and risk analysis, process safety, business continuity, quality of risk analysis and assessment, project risk assessment, and integration of safety into process plant design. Her recent projects include e.g.: preparation of EU framework 7 on the fields of security and industrial safety; preparation of projects for the FP7 Security call; Roadmap of risk management research at VTT; evaluation of the "REACH impacts" on end-users (e.g. non-chemical industry); quality assurance of safety and risk analysis in industry; business continuity management; VTT's internal coordinator in PASR2006 projects SENTRE and STACCATO, and in EU7 projects CRESCENDO and iNTeg-Risk; evaluation and appraisal of development projects for the Ministry for Foreign Affairs of Finland. In 2004-2005, she visited the EC/DG-JRC/IPSC carrying out research on vulnerability and integrated risk assessment of critical infrastructures in the EU-25. She is the board member of the Association of Finnish Chemical Societies' Section for NBC protection, rescue and civil defense. She is also lecturing in the industry and universities.

HOLMSTRÖM Stefan

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Mr. Stefan Holmström is the leader of the team on life management of high temperature components at VTT Technical Research Centre of Finland. His main professional interests are in modeling creep behavior such as strain and rupture response for life assessment of high temperature structures in power and process plant, and in designing and performing tailor-made tests for simulation of high temperature material-, mechanism- or component response. Mr. Holmström is actively participating in the activities of data validation, procedure development and data assessment within the European Creep Collaborative Committee (ECCC). He has also been the responsible manager or scientist in several national and European projects dealing with high temperature materials issues for power plants.

HUANG Chongfu

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Chongfu Huang is a full professor of Beijing Normal University. He received his B.A.Sc. in Mathematics from Yunnan University, Kunming, China; M.A.Sc. in Earthquake Engineering from Institute of Engineering Mechanics, Harbin, China; Ph.D. in Applied Mathematics from Beijing Normal University. From 1993 to 1995 he worked in Beijing University of Aeronautics and Astronautics as a postdoctoral research fellow. He is the president of Risk Analysis Council of China Association for Disaster Prevention, and the director of Research Center for System Simulation and Disaster Modeling, Academy of Disaster Reduction and Emergency Management Ministry of Civil Affairs & Ministry of Education. As a visiting professor, he worked in the Chinese University of Hong Kong, University of Ghent (Belgium), University Nebraska at Omaha (USA), University of Dortmund (Germany), and Tokyo University of Science (Japan), from two months to one year. His current research interests include risk analysis, natural disasters, fuzzy information processing, and computer simulation. He has published five research monographs and more than 160 papers, translated two books, and edited four books.

JOCHUM Christian

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Christian Jochum chairs the Commission on Process Safety, which advises the German Federal Government in process safety issues. Since 2007 he is Director of Centre for the European Process Safety Centre (EPSC) in Rugby/GB. He also chairs the ETPIS Executive Board. In 1969 Christian joined Hoechst AG, then a major international chemical and pharmaceutical corporation. After 10 years in pharmaceutical research and pilot plant operations he joined the safety department. 1988 - 1997 he was Corporate Safety Director for the international Hoechst group, including the responsibility for safety, process safety and industrial hygiene. Since 1997 Christian is working as a free-lance consultant, advising companies of different sizes and sectors as well as governmental agencies in safety, process safety, risk and crisis management issues. Christian holds a doctorate in chemistry and a honorary professorship at Goethe University, Frankfurt(Main). He has been awarded with the German Order of Merit for his contributions to process safety.

JOVANOVIC Aleksandar

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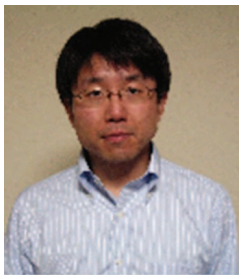
Prof. Dr. Aleksandar JOVANOVIC, (1953; mechanical engineering 1977): He has worked in industry (e.g. in USA), for The European Community (e.g. in Italy) and for the universities (e.g. the University of Stuttgart, Germany). He also acted as Seconded National Expert (Germany) with the EU in Brussels, Belgium, Directorate-General Research – Industrial Technologies and Materials. Since 2001 he is the director of the Steinbeis Transfer Center Advanced Risk Technologies in Stuttgart, Germany providing consultancy in the areas of risk assessment and management for industry and public sector. As from 2006 is also the CEO of European Virtual Institute for Integrated Risk Management (EU-VRi) and the EU Project Director at ZIRN (Interdisciplinary Research Unit on Risk Governance and Sustainable Technology Development, University of Stuttgart), teaching the courses in the area of CSR (Corporate Social Responsibility) and Risk. His previous teaching assignments were in France (Ecole Polytechnique), Japan (University of Tokyo), USA (La Jolla) and other countries. A. Jovanovic has a long-year professional experience as project manager of many (50+) large international/multinational projects in the area innovation management, new technologies, business risk management, structured project management, advanced data analysis and data mining, and related areas. Main clients in the projects have been from the EU, national governments (Norway, Belgium, Japan…), industry, utilities, insurances companies, R&D and academia. Main topics covered by the current projects deal with risk management in industry including HSSE (Health, Safety, Security, Environment), RCM (Reliability Centered Maintenance), RBI (Risk-Based Inspection), KPIs (Key Performance Indicators) and RCFA (Root Cause Failure analysis), applied, e.g., in systems developed for large industrial companies (e.g. 62 refinery units in Hungary). Some of the solutions have been pre-standardized (CEN-CWA 15740:2008) and/or are often used as de-facto standards. He is author of three books and over 200 scientific publications.



KISHIMOTO Atsuo

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Dr. Atsuo Kishimoto, a senior researcher at AIST, specialized in the risk assessment of chemical substances and economic analysis of environmental, safety and health policies. His current research focuses on the application of risk assessment and technology assessment methods to various emerging technologies, especially nanotechnologies.

PhD (Economics), in Kyoto University, 1998

Professional Activities:
1998-2001: Department of Safety Engineering, Agency of Industrial Science and Technology
2001-2008: Research Center for Chemical Risk Management (CRM), AIST
2008-present: Research Institute of Science for Safety and Sustainability (RISS), AIST

KLEIN Gerhard

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Mr. Klein studied Physics at the University Munich. Currently he is Head of the Department "Risk Management" at TÜV SÜD Industry Services In the group of Mr. Klein 'CENARIOS ®' was developed, the first certifiable Risk Management System, tailored especially for the purposes of nanotechnology.

Mr. Klein is member of the German group of ISO TC 229 (Nanotechnology) and member of the board of Nanonetz Bayern e. V., a network initiative within the Bavarian Cluster Nanotechnology. He is also member of the German technology platform of Industrial Safety (DETPIS) and lecturer at the University of Applied Science, Munich.

KLEIN Philippe

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Head of the Risk Management Department at EDF Research & Development,
This 90-people research unit develops risk management methods and tools and contributes to ensure and increase safety, performance and operation time of EDF installations. Our research studies address socio-technical systems, such as nuclear, thermal or hydro power plants operated by EDF or the power grid, and take into account all its characteristics: its components (SSCs), the technical system, human and organizational factors, its environment (natural, technological, organizational, regulatory, …). Skills and expertise:

- RAMS (Reliability, Availability, Maintainability and Safety): Probabilistic Safety Assessment; Systems Safety and Dependability; Statistical and Probabilistic Approaches of Physical Phenomena
- Decision making and Asset Management
- Human and Organizational Factors
- Maintenance Engineering and Processes using robotics

KON Espen

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Mr. Espen KON, (1963), graduated in software engineering, Bs.C in 1990, MBA (finance) in 2001 and MA Philosophy (of Science), Information & Digital Culture, Tel Aviv University in 2006. Mr. Kon is researching and develops theories on 'pragmatics' and ontological systems in intensive human-computer interaction high-risks environments. Mr. Kon has been working in software development and architecture in the field of Telecommunication Network Management System (NMS) and Home Land Security, Command & Control (C4I) for safety and security. Mr. Kon has vast and varied experience in development projects, marketing and management of software products and leading large scale security and enterprise projects. In the past Mr. Kon took a pivotal role in the establishment of a several software companies and lead developing for generic protocol mediations and generic Command and Control (C4I) application generators for the enterprise arena. Mr. Kon established EKON Modeling Software Systems Ltd.

EKON Modeling Software Systems Ltd. provides IT solution, focusing on long term projects, from requirements to implementation. EKON provides architectural services, requirements and gap analysis, modeling using UML, and implementation in .NET environment. EKON specialized in IT management applications, C4I management systems in the Home Land Security arena.

KONSTANTINIDOU Myrto

Ms Myrto Konstandinidou has a double degree in Chemical Engineering from both National Technical University of Athens (NTUA) and Politecnico di Milano, as well as a PhD in Industrial Safety and a MSc. in Computational Engineering from NTUA. She is a member of Systems Reliability and Industrial Safety Laboratory of National Center for Scientific Research "Demokritos" for the past 5 years and she has experience in Quantitative Risk Assessment for industrial installations, Human Factors Analysis, Accident analysis and sequences modeling, Occupational risk assessment and modeling with Fuzzy Logic and Petri Nets. She has participated in European and National research projects aiming at the development of integrated risk assessment methodologies and associated tools incorporating the effect of human factors in risk management as well as the integration of Health, Safety and Environmental aspects into the Safety Management Systems. She has assisted in the launching and coordination of the Greek Technology Platform in Industrial Safety. She has fluency in English, French and Italian and she is a member of the Permanent Committee of Greek Chemical Engineers for Health and Safety at work.

KRAUSE Ulrich

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born 1959 at Dresden, Germany

1980-1985: Fluid mechanics and thermody-namics, Technical University Dresden, Germany

1985: Diploma (equivalent to M.Sc.) in Fluid Mechanics

Professional experience

1985-1989: research assistant at the Chair of Thermodynamics, Dept. of Energy Conversion, Technical University Dresden

1989: Ph.D. in fluid mechanics and thermodynamics

1990-1991: scientist at the Academy of Agriculture, Research Centre Potsdam, Germany

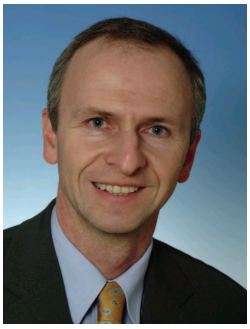
Since 1991: scientific researcher at the Bundesanstalt für Materialforschung und -prüfung (BAM) in Berlin, Germany Laboratory „Dust Fires and Dust Explosions",

2001: D.Sc. (in German:Habilitation) in Technical Thermodynamics/Heat and Mass Transfer

Since 2001: Part-time Assistant Professor in Process Safety at the Technical University Berlin

2005 - 2006: Head of Working group „Flammable bulk materials and dusts, solid fuels" at BAM

Since Aug. 2006: Head of division "Fire Engineering" at BAM



KUHN Gerhard

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- 1962: Born in Wald, Germany
- 1988: Mechanical engineering degree, University Stuttgart
- 1988-1992: E&I Planning, BASF Ludwigshafen, Germany
- 1992-1996: E&I Maintenance engineer, ROW Wesseling, Germany
- 1996-2002: Plant manager nitric acid plant, BASF Ludwigshafen, Germany
- 2002-2003: IT-Project (SAP), BASF Ludwigshafen, Germany
- 2003-today: Director Process Safety, BASF Ludwigshafen, Germany

LAFLECHE Vincent

Managing Director INERIS

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Vincent LAFLECHE, graduated from *Ecole Polytechnique* in 1984, the most prestigious of the engineering Grandes Ecoles in France and joined the *Corps National des Mines* in 1987. From 1987 to 1993, he worked for the French Ministry in charge of Environment and Technological Risks. The last four years, he was acting as deputy Director of the Department in charge of industrial risks and pollutions.

Then, he spent 9 years in Italy. From 1993 to 1998, he was Managing Director, then CEO of Ecobilan Italia (Dow Chemical Group), which is a consultancy and engineering consulting firm for the environment. Between 1998 and 2002, he worked for Euler Group, the World leader of credit insurance, as General Secretary of the Group and then he had several managing positions for subsidiary of Euler.

In 2003, he joined the *Institut National de l'Environnement Industriel et des Risques* , (INERIS, the French National Institute for Industrial Environment and Risks) as Deputy Managing Director and then became the Managing Director in November 2007. Since then, he has undertaken several initiatives contributing to the internationalisation of INERIS: He decided to involve INERIS as a founding member of EU-VRi (the European Virtual Institute for Integrated Risk Management, EEIG), and to join the European grouping L-surF Services, working on safety and security of underground infrastructures. He also created the bureau in charge of the evaluation of the risks related to chemicals falling under REACH (BERPC, Bureau d'Evaluation des Risques des Produits et agents Chimiques) and acts as Chairman.

LENKEY Gyöngyvér B.

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Dr. Gy. B. Lenkey – MSc in Mechanical Engineering, MSc in Physics and Material Sciences, PhD. She worked for University of Miskolc, Department for Mechanical Engineering from 1982 to 1997. Afterward she was deputy director of the Institute for Logistics and Production systems of Bay Zoltán Foundation for Applied Research (Miskolc, Hungary), as well as the head of the Department for Structural Integrity until 2008. She is now the institute director. She had got 22 years experience in higher education and university research. As for her professional activity, she has been dealing with welding, strength of materials, applied fracture mechanics, risk based inspection and maintenance in several national and international R&D and industrial projects. She has been involved in several European research projects (INCO, PECO, TEMPUS, NATO SfP, EU) in the scientific activity, as well as in the project management and co-ordination. She has extensive experience in managing R&D projects not only at national, but also at international level.

LERENA Pablo

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Post-doc: authoring and programming of a computer tutorial about Safety of Chemical Reactions (1993)
PhD in Chemical Engineering (1992)
Post-graduate course on computing applied to chemical industry (1989)
Chemical engineer (1986)

Professional Experience

Process Safety Consultant at the Swiss Safety Institute in Basel since 1999
Project Manager (Process Safety) Novartis Services, Basel (1997-1999)
Head of Laboratory of Process Safety, Ciba- Geigy, Basel (1993 - 1997)
Technical services (safety and optimization of chemical processes, operation of a pilot plant for synthesis of pharmaceutical active substances), Peinusa, Barcelona (1988- 1992)

Fields of professional activity: Process safety in the chemical and pharmaceutical industry (e.g., synthesis of active substances for the pharmaceutical industry, unit operations); Explosion protection (drying, grinding, conditioning, blending…); Risk analysis methodologies: application and development (Zurich Hazard Analysis, Hazop's…); Major accidents hazards: identification, consequence evaluation, measures.

Ms. Yan Liu, born in 1977, is an assistant professor working in the Beijing Municipal Institute of Labor Protection (BMILP). She is the Division Chief of Occupational Health Laboratory, BMILP. She got her Bachelor's Degree and Master of Science also from Capital University of Economics and Business, Beijing, China, majored in occupational & environment health. She is the vice director of the office of Risk Analysis Council of China Association for Disaster Prevention. As a main participant, she joined more than ten scientific research projects, some of which are supported by Beijing National Science Foundation and some of which are supported by Beijing Municipal Science & Technology Commission. Her current research interests include risk analysis and assessment, occupational exposure assessment and occupational safety and health.

LIU Yan

Professor Jie Lu is the director of Decision Systems and e-Service Intelligence Research Lab at the University of Technology Sydney (UTS), Australia. She received a PhD in Information Systems from Curtin University of Technology, Australia in 2000. Her main research interests lie in the area of multi-objective decision-making, bi-level decision-making, group decision-making, intelligent decision support system tools, early warning systems, e-government and e-service intelligence. She has published "Multi-objective group decision making: methods, software and applications with fuzzy set techniques (Imperial College Press)" and other five research books, 90 peer-reviewed journal articles, 10 book chapters, and over 100 papers in conference proceedings. She has won "Dynamic Decision Support in Warning Systems through Better Uncertain Information Management'" and other three Australian Research Council (ARC) discovery grants, and 15 other research grants. She served as a guest editor of five special issues for international journals and delivered four keynotes in international conferences.

LU Jie

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Jun Ma received his Master and Bachelor Degrees in Applied Mathematics from Southwest Jiaotong University, China in 1999 and 1996. He is a currently a PhD student and a senior research associate in Faculty of Engineering and Information Technology, University of Technology, Sydney (UTS), Australia. His research interests lie in automated and approximate reasoning with linguistic information and their application in decision making. He has about 50 publications in international journals (e.g., "Fuzzy Sets and Systems," "Information Sciences" and "International Journal of Approximate Reasoning") and conferences.

MA Jun

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1974: University of Stuttgart: Mechanical Engineer, Diplomingenieur
1982: PHD, University of Stuttgart
1999: Postdoctoral Lecture Qualification

Practical work:

1974 - 1977: MPA Stuttgart, Material testing, Engineer
1997 - 1981: Assistant, University of Stuttgart
1979: Head of the specialized group: "Low Cycle Fatigue", MPA Stuttgart, University of Stuttgart
1983: Head of the specialized group: "Creep rupture testing"
1984: Head of department „Materials behavior"
1998: Deputy Director MPA University of Stuttgart
1999: Head of Division „Material technology"
2000: Visiting Professor North China Electric Power University China
2004: Professor University of Stuttgart

MAILE Karl

Main research fields: Material science, testing and quality assurance, numerical calculation, integrity analysis, life assessment of industrial plants; surface technologies

Evaluator in National organizations (DFG, AiF, AVIF) and in International (BRITE EURAM)

Publications: More than 400; Patent (Europe, Germany): Siliconising of steel surface; Patents pending: Pressure Resistant Body

Industrial Engineer (Polytechnic school of Algiers), PhD in management science (Paris Dauphine University), Chabane Mazri began in 2007 as a researcher at INERIS in the field of decision support and risk governance within the accidental risk division. Since 2009, he is in charge of the animation of national and European programs related to decision support activities in risk governance.

MAZRI Chabane

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Jan Meulenbrugge was born in 1958 and finished his study in Chemical Engineering in 1984.

He started his professional career at TNO in Rijswijk as a scientist on solid rocket proplellants and their processing and safety aspects. After several years he became responsible for the research group on pyrotechnics and energetic materials. An important project at time was the development of pyrotechnic igniters for the new Ariane V rocket motor. In 1995 he left TNO for a position as R&D manager at Kodak Polychrome Graphics where he led the R&D department on photographical films and plates.

MEULENBRUGGE Jan

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When Kodak Polychrome closed its factory in the Netherlands, Jan returned to TNO in 1999, location Apeldoorn as knowledge manager and in 2002 as manager of the team on Industrial Safety.

Currently he coordinates the industrial safety activities within the TNO department of Industrial and External Safety in Utrecht. Jan frequently manages (inter)national projects for government or industry in the wide field of industrial safety, with a focus on consequence modeling of releases of hazardous materials. On behalf of TNO, Jan Meulenbrugge is a member of the executive board of ETPIS and member of the technical steering group of EPSC.

Present position: Senior Scientist at SINTEF Safety and Reliability, Trondheim Adjunct Professor at NTNU, Dept. of Prod. and Quality Eng., Trondheim

Degrees: PhD in Risk Control of Offshore Installations, NTNU, Trondheim M.Sc. Mechanical Engineering, NTH, Trondheim B. S. Mechanical Engineering, NIH, Narvik

ØIEN Knut

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Work Experience:

2001-	Senior Scientist at SINTEF Safety and Reliability, Trondheim
2002-2004	Post -doc fellow at NTNU, Dept. of Prod. and Quality Eng., Trondheim
1997-2001	PhD student at NTNU, Dept. of Production and Quality Eng., Trondheim
1992-2001	Scientist at SINTEF Safety and Reliability, Trondheim
1990-1992	Permanent Member of the NSB Accident Commission, Oslo
1990-1992	Senior Mechanical Engineer, NSB, Head Office, Oslo
1989-1990	Acting Senior Mechanical Engineer, NSB, Lodalen Depot, Oslo
1988-1989	Executive Engineer, NSB, Lodalen Depot/Workshop, Oslo
1987-1988	Executive Engineer, Norw. State Railway (NSB), Head Office, Oslo

Fields of interest: Risk Indicators and Risk Control Methods; Risk and Reliability Analysis; Human Reliability Analysis; Organizational Factors; Expert Judgment; Emergency Preparedness Analysis; Root Cause Analysis; Accident Investigation; Maintenance Management

PAPAZOGLOU Ioannis A.

Director of "DEMOKRITOS"

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Ioannis Agamemnon Papazoglou is Director of the Institute of Nuclear Technology and Radiation Protection at the National Center for Scientific Research "DEMOKRITOS" in Greece and Head of the System Reliability and Industrial Safety Laboratory (SRISL) of the same Institute. He holds a diploma in Electrical & Mechanical Engineering from National Technical university of Athens Greece (1972) and Ms and PhD. degrees from the Massachusetts Institute of Technology (MIT), USA (1974,1977). His research interests include Integrated Risk Assessment and Management of technological systems (emphasis on chemical and nuclear plants), Occupational Risk Assessment, land-use planning, quantification of uncertainties, expert judgment and decision analysis. He is member of editorial board of scientific journals and currently Chairman of the European Safety and Reliability Association.

PIRLET André

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André PIRLET is Engineer from Liège University (Belgium) and MSc from Oregon State University (USA). He is fostering in CEN the development of new domains for standardization, but is mainly involved in reinforcing the links and cooperation between Standardization and Research. Since 2002 he is CEN representative in several research projects.

PROSKE Dirk

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Dirk Proske was born in the GDR in 1967. First he learned Bricklayer. After serving in the army, from 1990 to 1996 he studied civil engineering at the University of Technology Dresden, Germany and the City University London, U.K. His diploma thesis was about the "Safety of concrete layers as second barrier against water-endangering fluids". He continued as scientific assistant at the University of Technology Dresden dealing with topics of safety and risk assessment, but also developing new structural materials. His PhD. work dealt with the topic of "Risk of historical bridges under ship impact". He holds a visiting professorship at the TU Delft and since 2006 he works at the University of Natural Resources and Applied Life Sciences, Vienna. Besides his academic carrier he has worked as consultant in Germany, South Africa, Lesotho, Indonesia and Austria. He is the founder of the annual International Probabilistic Workshop and co-organiser of the Dresden Bridge Symposium, the biggest conference in this field probably in Europe. He is the author of several books, such as the "Catalogue of risks", and reviewer for different journal.

REIMERINGER Mathieu

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Born in 1977, graduated as engineer in industrial risks from Ecole des Mines de Nancy. In 2001 he obtained a DEA in Protection and Development of the soil and sub-soil Environment and in 2005 a PhD on "Study of a process on a reinforced concrete building collapse". Since 2005, he has worked at Ineris as an engineer within the structure unit of the accidental risk division. He develops competencies of the unit on structure resistance to explosion. He also participates to national research project on structural safety. He is a member of the ETPIS (European Technology Platform on Industrial Safety) participating to the Structural Safety focus group.

RENN Ortwin

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Ortwin Renn serves as full professor and chair of environmental sociology at Stuttgart University. He directs the *Interdisciplinary Research Unit for Risk Governance and Sustainable Technology Development (ZIRN)* at the University of Stuttgart and the *non-profit company DIALOGIK* , a research institute for the investigation of communication and participation processes in environmental policy making. Since 2006 Renn has been elected Deputy Dean of the Economics- and Social Science Department and Acting Director of the Institute of Social Sciences at the University of Stuttgart.

Ortwin Renn has a doctoral degree in sociology and social psychology from the University of Cologne. His career included teaching and research positions at the Juelich Nuclear Research Center, Clark University (Worcester, USA), the Swiss Institute of Technology (Zuerich) and the Center of Technology Assessment (Stuttgart). His scientific affiliations include memberships in the panel on "Public Participation in Environmental Assessment and Decision Making" of the U.S.-National Academy of Sciences in Washington, D.C., in the National Academy of Disaster Reduction and Emergency Management of the People's Republic of China, in the Scientific and Technical Council of the International Risk Governance Council (IRGC) in Geneva and in the European Academy of Science and Arts (Vienna and Salzburg). He serves on the senate of the Berlin-Brandenburg Academy of Sciences (Berlin) and on the Board of Directors of the German National Academy of Technology and Engineering. His honours include an honorary doctorate from the Swiss Institute of Technology (ETH Zurich), the "Distinguished Achievement Award" of the Society for Risk Analysis (SRA) and the Outstanding Publication Award from the Environment and Technology Section of the American Sociological Association for the book: „Risk, Uncertainty and Rational Action" co-authored by C. Jaeger, G. Rosa und Th. Webler. Among his many political advisory activities is his chairmanship of the State Commission for Sustainable Development (German State of Baden-Württemberg). Renn is primarily interested in risk governance, political participation and technology assessment. His has published more than 30 books and 250 articles, most recently the monograph "Risk Governance" (Earthscan: London 2008).

RENNI Elisabetta

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Master degree in Chemical Engineering from the University of Bologna (Italy), 2008. Ph.D. student in Chemical Engineering from the University of Bologna. Currently grant holder at the Institute for the Protection and Security of the Citizen (IPSC), European Commission Joint Research Centre.

Main research experience in the development of innovative risk analysis techniques and external hazard factors.

RESSEL Wolfram

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born 1960, Germany

1987	Graduation in Civil Engineering (Dipl.-Ing.), Technical University Munich
1987 – 1993	Research Associate at the Institute of Traffic Engineering and Road Infrastructure, Bundeswehr University Munich
April 1994	Doctoral Degree (Dr.-Ing.), Bundeswehr University Munich
1994 – 1998	Employee Associate and Managing Director of Engineer Consultants in Munich
since April 1998	Full Professor (C4) of Road Design and Construction, University of Stuttgart
since 1998	Chairman of the Institute of Road and Transportation Science, University of Stuttgart
since 2000	Dean of the Faculty of Civil and Environmental Engineering Sciences and member of the Academic Senate, University of Stuttgart
since 1999	Chairman of the DVWG Württemberg (Deutsche Verkehrswissenschaftliche Vereinigung)
since 2004	Chairmanship of the DHV (Deutscher Hochschulverband)
since Oct. 2006	Rector, University of Stuttgart, Germany
since Nov. 2008	Chairman of the Scientific Advisory Council of Federal Highway Research Institute (BASt)

RICCI Miriam

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Miriam Ricci is a Post Doctoral Research Fellow at the Institute for Social, Cultural & Policy Research at the University of Salford. Previously she was a Marie Curie Doctoral Fellow at the Manchester Institute of Innovation Research. Her main research interests are in social studies of science, technology and innovation, more specifically around sustainability, energy and climate change. Her work on hydrogen energy has included analysis of scientific risk assessment, stakeholders' representations and public perceptions of hydrogen. She is also interested in the theory and practice of public engagement with energy and environmental issues.

ROTA Renato

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Renato Rota was born in June, the 8th, 1961, and he is married with two sons. He took his degree in Chemical Engineering in 1986. From 1986 to 1988 he worked at the chemical engineering company Snamprogetti S.p.A. He got a position for a three-years "Corso di Perfezionamento" (that is, Ph.D.) at the Scuola Normale Superiore di Pisa in 1988. He was a visiting student at the Purdue University (USA) in 1988/99. From 1990 to 1998 he worked at the Politecnico di Milano as a researcher, doing research and teaching in several courses (e.g., Applied Physical Chemistry; Thermodynamics; Applied Chemical Kinetics; Fundamentals of Technologies). From 1998 he is a professor at the Politecnico di Milano. He won in 1986 the National Award "ENIChem - Piano giovani" reserved to Degree Thesis; in 1996 the VIII National Award "Federchimica - per un futuro intelligente", reserved to chemical researchers and professors. His scientific work is summarized in about 150 publications, mainly in international journals and books, in the fields of combustion, thermodynamics, chemical kinetics, unit operations, industrial safety and pollution. His previous experience as research group manager refers both to public and private companies funded projects.

SAETREN Thomas Grieg

http://inside.dnv.com/orgunit/dnvri/programmes/er/safety/index.asp

Initial four years of education through Junior Officers Scool and the Norwegian Army Academy.
Served as platoon commander and staff officer for various types of units inside and outside Norway. In later part of Army carrier I worked on competence management for one of the branches in the Norwegian Army. I also held a central position in a long term development project responsible for adapting new technologies and developing new units for the Norwegian Army.

After the service in the armed forces I studied political science and science, society and technology studies at the University of Oslo. I hold a masters degree in scince, society and technology studies.

Special interests: Organizations and performance, Management, Techno-social relations in organizations and companies, Management of technology in society, especially political processes regarding technology selection and implementation.

SALONEN Jorma

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Mr. Jorma Salonen works at VTT since late 1970's and his principal professional activities include materials engineering and failure assessment of engineering components and structures. Emphasis of his particular professional interest is in materials science, microstructural evolution by manufacturing and in-service exposure, and damage mechanisms in the applications of current and future engineering materials. Mr. Salonen has been the principal investigator of more than a thousand failure investigations on national, European and wider international level. These include a large number of cases from power plant components, particularly from boilers and turbines. Mr. Salonen has also been the principal investigator e.g. in the areas of heat treatments, failure mechanisms, microstructural degradation and damage assessment within several national projects on power plant materials at VTT.

SALVI Olivier

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Olivier SALVI, graduated in 1994 as Engineer in Environment and Industrial Riskq (Ecole des Mines d'Alès). He has been working at INERIS, the French National Institute in charge of Industrial risk and environment protection since 1995. Between 1995 and 2001, he was in charge of research programmes in the field of Risk Assessment and Management, and between 2001 and 2007, he worked as Scientific Manager and was in charge of the research programme portfolio in the Accidental Risks Division. In September 2005, he became the President of the Society for Risk Analysis Europe (SRA Europe, www.sraeurope.org) for 2 years. In December 2006, he was elected as Councillor of SRA (www.sra.org) and was nominated as Chair of the Committee of the Regions aiming at promoting interaction between the various parts of the World represented in SRA.

In 2006, he actively contributed to the creation of the European Virtual Institute for Integrated Risk Management EEIG (EU-VRi, www.eu-vri.eu) and is acting as General Manager, seconded by INERIS. For EU-VRi, he supervises the coordination of several European collaborative projects, such as ALFA-BIRD (for the development of alternative fuels for the future of aviation, www.alfa-bird.eu-vri.eu) or iNTeg-Risk (to develop a common framework to manage emerging risks related to new technologies, www.integrisk.eu-vri.eu). Strongly involved in the international activities of INERIS, he became in 2007 the International Business Development Manager with the aim to increase RTD activities and cooperation at international level through structuring initiatives such as L-surF Services (common offer of services in the field of safety and security of underground infrastructures, www.lsurf-services.com). With the same objective supported by INERIS to contribute to the creation of a European expertise in industrial safety, he is acting as Secretary General of the European Technology Platform on Industrial Safety (www.industrialsafety-tp.org).

SALZANO Ernesto

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Ernesto Salzano is a researcher of Istituto di Ricerche sulla Combustione of the Italian Research Council since 1993. Main research activities are in the field of gas and dust explosion and Natural-Technological risk assessment.

He leads an experimental lab for safety parameters of substances at high pressure and is the project leader of the Center of Competence of the Civil Protection for the control and analysis of the volcanic Na-Tech risks around Vesuvius.

He is authors of 30 papers on international specialist journals and books on safety.

SCHIEB Pierre/Alan

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Dr. Pierre-Alain Schieb is Counsellor in the Advisory Unit to the Secretary-General of the OECD, which manages the International Futures Programme. He is in charge of the International Futures Network, and is Head of OECD Futures Projects, such as the project on ***Risk Management Policies in Selected OECD Countries; The Bioeconomy in 2030: A Policy Agenda*** and follow-up work planned for ***Global Infrastructure Needs*** . Further to recommendations arising from a two year Futures Project, Dr. Schieb is also in charge of the OECD ***Forum on Space Economics*** and preparing the ground for new Projects on ***Future Global Shocks*** . The aim of the Futures Programme is to help decision-makers in government and business identify and evaluate the strategic challenges of a rapidly changing world economy within a long-term perspective.

Before joining the OECD in 1994, Dr. Schieb was formerly Executive Vice-President of International Business of one France's major retailing groups; Dean of a graduate school of business in France; and holds an Associate-Professorship at the University of Paris Dauphine. Co-founder of a high-tech start-up company in the early 1980s and involved in venture capital initiatives, Dr. Schieb was also a consultant to numerous French and US companies in the field of alliances, industrial cooperation, licensing, corporate and marketing strategies. He has also published many articles in the field of international management, risk management, marketing and corporate strategy. Dr. Schieb earned a PhD (Doctorat d'Etat) in management science from the University of Strasbourg (1981), a DBA in economics and business administration from the University of Aix-en-Provence (1974), and a MSc in quantitative marketing from the University of Sherbrooke (Canada). Dr. Schieb has received numerous distinctions such as: the Best Award in Economy (Aix-en-Provence, 1967), Best Dissertation Award (Quebec, Canada, 1974), Chevalier in the French Order of Palmes Académiques (1991).

Christina Schmidt, born in 1971, holds a degree in Biotechnology from the University of Applied Sciences Weihenstephan. After seven years of experience as an Application Specialist for lab automation and liquid handling in the area of molecular biology, she changed to Definiens AG in Munich in 2004.

Within Definiens, she has held several positions within Customer Support and Licensing Management during the last couple of years. Since one year Christina has been working in the new Business Unit Earth Sciences, being responsible for License Management as well as working as a Project Manager for specific consulting projects.

SCHMIDT Christina

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Dr Reto Schneider is Head of Group Emerging Risk Management and joined Swiss Reinsurance Company in 1994. After two years of working as a non-proportional property treaty underwriter for the UK and US markets he moved to Risk Engineering Services and headed the casualty risk engineering team for more than 10 years. With his team he developed various methods and tools to conduct risk assessments and benchmarking for the oil, chemical and life sciences industry. In 2009 he was appointed Head Group Emerging Risk Management. In this function he is responsible for collecting early notions and horizon scanning and relating these findings to Swiss Re's business. He holds a diploma in cell biology and a PhD in natural sciences of the Swiss Federal Institute of Technology in Zurich.

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Pia-Johanna Schweizer (Dr. rer. pol.) has studied Sociology and English Studies at the University of Stuttgart and the University of Aberdeen, UK. In 2008 she gained a Ph.D. in Sociology summa cum laude from Stuttgart University. From 2002 until 2003 she was researcher at the Center of Technology Assessment in Baden-Wuerttemberg, Department of Technology, Society and Environmental Economics. Since 2003 Pia-Johanna Schweizer is researcher at the Interdisciplinary Research Unit on Risk Governance and Sustainable Technology Development of Stuttgart University and DIALOGIK, a non-profit corporation for communication and cooperation research. Pia-Johanna Schweizer's fields of research are Risk Governance and Sociology of Risk.

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Mikael Ström, M Sc Mech Eng, Swerea IVF AB (born 1959), project manager at Swerea IVF since 1988. Main working area recent years has been software systems and business processes for Product Data Management, Lean Product Development and similar systems and processes. This involves modeling of products, information and business processes by using different methods such as Object orientation, UML, STEP, Idef0, FLEX Map and similar methods. Mikael Ström has prior to this also been working with design of software systems, knowledge based systems and relational database systems for quality assurance of welded designs.

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THOMMESEN Jacob

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Scientist, Technical University of Denmark DTU. Formerly scientist at Risø National Laboratory.

Areas of work/research interests: Man-Machine Interaction. Knowledge Management. Organizational Communication. Organizational Learning. Cross-boundary organizational processes. Medical equipment and patient safety. Privacy and surveillance technologies. Developing and validating classifications / taxonomies of human and organizational causes of incidents and accidents. Integration of human, technical and organizational factors for risk assessment and safety management. Risk perception. Subcontracting and safety.

- 2008-13 Participant in EU project IntegRisk
- 2008-13 Participant in EU project FlyBag
- 2008-9 Participant in Halden-financed project 'Organizational learning from incidents and accidents'
- 2007-09 Participant in national project (Højteknologifonden) on Tracking Tecnhologies and Privacy in Airports
- 2007-09 Participant in DTU-financed project on 'Patient Safety Events related to medical equipment'

T eaching : 2002-7: Teaching at: Copenhagen Business School; Roskilde University (RUC); University of Southern Denmark (SDU)

TRASCH Heinz

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1968 - 1971 Study of Chemical Technology (Graduation: Ing. (grad.)), State Engineering School, Mannheim

1971 - 1972 Assistant, State Engineering School, Mannheim

1972 - 1976 Study of Chemistry (Graduation: Dipl.-Chemiker), University of Heidelberg, Heidelberg

1976- 1979 Senior Fellow, Max-Planck-Institute for Medical Research, Heidelberg

1979 Dissertation (Graduation: Dr. rer. nat.), Max-Planck-Institute for Medical Research, Heidelberg

1979- 1980 Post-Doc-Scholarship, Max-Planck-Institute for Medical Research, Heidelberg

1980- 1981 University teaching position "Chemical Reaction Technology" Mannheim University of Applied Sciences (MUAS), Mannheim

1980- 1988 Chemist "Diagnostics Research", Boehringer Mannheim GmbH, Mannheim

1984 Director, Department "Development of Rapid-Diagnostics", Boehringer Mannheim GmbH, Mannheim

since 1988 Professor for Biochemistry and Industrial Biochemistry, MUAS, Mannheim

1988- 2004 Director of the Institute for Biochemistry, MUAS, Mannheim

1992- 1998 Director of the Diploma study course "Biotechnology", MUAS, Mannheim

1997- 1998 Director of the study course "MSC Biotechnology", MUAS, Mannheim

1994- 1998 Deputy Dean, Faculty of Biotechnology and Chemical Engineering, MUAS, Mannheim

1994 -2004 Director of the Steinbeis Transfer Center "Technology Consultancy at the MUAS", Mannheim

2000- 2004 Member of the University Council, MUAS, Mannheim

since 2004 Chairman of the Board of Directors, Steinbeis Foundation, Stuttgart

TRĘBICKI Jerzy

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Degrees or Diplomas obtained: (1982) Msc Degree in Applied Mathematics at the Department of Applied Mathematics and Technical Physics of Warsaw University of Technology; (1997) PhD Degree in Mechanics (specialization – stochastic mechanics) at the Institute of Technological Research of the Polish Academy of Sciences, Warsaw. Scientific work in: stochastic mechanics, stochastic dynamical systems, fatigue crack propagation, systems with complex structure, analysis of stochastic systems with stiffness degradation. In years 1998-2002 responsible for numerical calculation and software development relating to the analysis of: updating reliability of offshore structures by measurements of the fatigue crack length. The aim of this project, commissioned by Health & Safety Executive UK, was to develop methodology for the analysis of a north-sea platform subject to random loading. Participation in industrial project on comparative evaluation of minimum offshore structures and Jacket. Participation in industrial project on transient analysis of the response of truss structures under the wall impact by the use of the finite element program MARC. Participation in International Project granted by Marie-Curie Foundation. Participation in two Project granted by State Committee for Scientific Research (KBN). Over twenty five papers in recognized international journals conference proceedings. Participation in the Network of Excellence KMM-NoE (2004-2008) and currently in Virtual Institute KMM-VIN.

TUGNOLI Alessandro

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Alessandro Tugnoli graduated in Chemical Engineering ("laurea (vecchio ordinamento)", 100/100 cum laude) from the Università di Bologna, Bologna, Italy, on October 26th, 2004. He completed the "Dottorato di Ricerca" in Chemical, Environmental and Safety Engineering, at Università di Bologna, Bologna, Italy, in 2007. Since 2008, he is "Assegnista di Ricerca" at the "Dipartimento di Ingegneria Chimica, Mineraria e delle tecnologie Ambientali (DICMA)", Università di Bologna, Bologna, Italy. He has been appointed for student tutoring in undergraduate, graduated and II level master courses on "Chemical Pant Design", "Plant Design for Off-Shore Oil Fields", "Design of Oil&Gas Plants" and "HSE&Q Systems Engineering and Management" from the Università di Bologna, Italy, and the Università di Pisa, Italy. In 2007, he was visiting PhD student at the Dalhousie University, Halifax, Canada and at the Memorial University, St. John's, Canada. His main research fields include: development of quantitative methods for hazard analysis and for design support of inherent safety application, research on runaway reactions and hazardous substances formation, development of integrated metrics for the assessment of process sustainability, analysis of production schemes by LCA approaches. He is co-author of several contributions to international peer-reviewed journals and technical conferences and he was member of the research team national (2) and European (1) research projects.

UGUCCIONI Giovanni

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Giovanni Uguccioni graduated in Nuclear Engineering at the University of Bologna (Italy) in 1980. After a period as Researcher at he National Italian Nuclear Committee (CNEN) working on seismic analysis of the Italian Fast Reactor Project, he joined Snamprogetti, the Engineering Company of Eni, the National Hydrocarbon Authority of Italy, as Safety specialist in charge of developing safety assessment for offshore projects.

He then move to the responsibility of managing HSE activities in both Offshore and Onshore Projects and then to the coordination of the Safety and Reliability activities of the HSE Department of Snamprogetti. In 2002 he joined D'Appolonia SpA, engineering and consultancy Company, as manager of the HSE Division. In this role he coordinates the HSE Consultancy and Engineering services of the Company. He has directly followed the activities related to the development of the Safety Report and the follow-up of authorisation process for many of the LNG terminals Projects in Italy, including both offshore and onshore terminals such as the Priolo, Brindisi, Rosignano, Veneto, Marche Projects. In his career he has participated in the development of models for the risk analysis of complex Industrial areas and transportation systems (ARIPAR Project), in the managing of experimental tests for the validation of pool fire models (FIREXP Project), in the development of tools for the reliability analysis of process plants.

VOIRIN Marc

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Marc VOIRIN graduated in 1994 from TEXAS A&M University (USA) with a Master of Sciences in Health Physics and in 1992 from Institut National Polytechnique de Grenoble (France) with a Engineer Diploma specialized in Nuclear Engineering. He works since 1995 for EDF. He worked during 9 years for the EDF Nuclear Design Division, on fast breeder reactors and then on pressurized water reactor. He worked also on the EPR design. He joined the EDF Research and Development Division in 2004, and more specifically the Risk Management Department as a Research Engineer in Systems Risk Analysis. As a result, he deals with the technocological and organizational issues of complex systems regarding risk analysis. He is also Project Leader for some internal projects. Regarding the INTEGRISK project, he is Deputy of the SP2 EDF co-Leader.

WENZEL Helmut

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VCE - Vienna Consulting Engineers is a high tech oriented consulting company. Dr. Wenzel is Coordinator of European Research Projects in FP5, FP6 and FP7. He is a founding member of the SAMCO Association and chairman of the Austrian National Group of IABSE. He is the Coordinator of the FP7 IRIS Project (www.vce.at/iris)

He teaches Bridge Engineering at the University of Vienna.

WIMALASIRI Varuni

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Varuni Wimalasiri (BSc MSc, PhD) is a researcher currently working on EP/D04863X/1. Varuni has an MSc in Occupational Psychology and a PhD in Applied Psychology. Her Masters and PhD theses have been concerned with knowledge-sharing, and she has acquired expertise in qualitative methods for exploring the social contexts of knowledge-sharing and the representation of knowledge.

YOSHIMURA Shinobu

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Born in 1959. In 1987, received Doctor of Engineering from Department of Nuclear Engineering, The University of Tokyo. He was Lecturer of The University of Tokyo during 1987-1989, Associate Professor during 1989-1999, Professor at Institute of Environmental Studies, The University of Tokyo during 1999-2005, Professor of Quantum Engineering and Systems Science during 2005-2008. Since 2008, he has been Professor of Systems Innovation, The University of Tokyo. His research interests are High Performance and Intelligent Computational Mechanics and Its application to engineering, environmental and social systems. Since 1997, he has been a leader of the ADVENTURE Project in which has been developing an advanced general-purpose high-performance finite element analysis software named ADVENTURE, which is open source CAE software and enables to analyze an ultra-large scale 3D model of very complex shape over 100 million DOF mesh on various parallel and distributed computing environments (see http://adventure.sys.t.u-tokyo.ac.jp).He has also been developing an advanced traffic simulator named MATES (Multi-Agent based Traffic and Environment Simulator) since 1999. Currently he serves as a Vice-Chairman of Japan Association for Computational Mechanics (JACM), a General Council member of International Association of Computational Mechanics (IACM). He has received numerous Awards including The K. Washizu Medal in 2008 from International Conference on Computational & Experimental Engineering and Sciences (ICCES'08) and IEEE/ACM Supercomputing 2006 Gordon Bell Award finalist.

ZAREA Murès

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Dr. Murès Zaréa is Gas Facilities Development Manager for GDF SUEZ where his responsibilities include developing new research partnerships and new business for the GDFSuez Research & Innovation Department, and is involved in research programs in the areas of pipeline integrity, industrial safety, human factors and energy related subjects. He joined the Gaz de France R&D Division in 1989 following an academic career at the Simon Bolivar University in Caracas, Venezuela and the Ecole Centrale de Paris Engineering School, France, where he earned his doctorate in mechanical engineering.

Prior to his current position, Dr. Zaréa managed a variety of projects and teams in Gaz de France's R&D Division, related directly to pipeline operations, including gas transmission flow simulation and optimization, quantitative risk assessment, pipeline surveillance, in-line inspection, defect assessment and repairs, pipeline resistance to third-party damage, and to secondary loads, including seismic loading. He has authored & co-authored more than 40 papers in these areas. In addition to his responsibilities at GDF SUEZ, Dr. Zaréa is Chairman of the Design Committee of EPRG (European Pipeline Research Group), and Chairman of the Operations and Integrity Committee of PRCI (Pipeline Research Council International).

ZHANG Bin

Mr. Bin Zhang, born in 1963, is a professor working in the Beijing Municipal Institute of Labor Protection (BMILP). He is the general director of BMILP and State Environmental Protection Engineering Center for City Noise & Vibration Control. He is the standing director of China Occupational Safety and Health Association, the high-level associator of The Acoustical Society of China, the vice director of Noise council of National Standardization Association, the secretary-general of The Acoustical Society of Beijing, the committeeman of Environmental Physics council of Chinese Society for Environmental Sciences, the standing director of Beijing Society for Environmental Sciences. As a visiting professor, he worked in the University of Kentucky (USA) for one year. As a principal, he has finished more than ten provincial and ministerial level scientific research projects, and got several Beijing Municipal Science and Technology Awards, a national invention patent and two gold awards of international invention.

ZHANG Guangquan

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Dr. Guangquan Zhang is an Australian Queen Elizabeth II Fellow in the Faculty of Engineering and Information Technology at University of Technology, Sydney(UTS), Australia. He received a PhD in Applied Mathematics and Computing from Curtin University of Technology, Australia in 2001. His research interests include fuzzy logic and fuzzy optimization, multi-objective decision-making, multi-level decision-making, multi-criterion and group decision-making, non-additive measure and integral, uncertain information processing and early warning systems. He has published "Fuzzy Number-valued Mearsure Theory" and other two monographs, four reference books, 12 book chapters, 106 journal papers and over 90 conference papers. He served as a member of editorial board of three international journals and co-chair for several international conferences and workshops.

Information about the Exhibitors

Steinbeis-Stiftung für Wirtschaftsförderung (StW)

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Anja Reinhardt

Today's challenge is providing interdisciplinary, yet well-founded expertise from a single source. Steinbeis accelerates and supports the specific transfer of knowledge and technology with accomplished technology and management experts. Regardless of which service area customers select, each one provides them with access to a rich store of contemporary knowledge, expertise and made-to-measure solutions.

Steinbeis is an international service provider in technology and knowledge transfer. Geared to decentralized operations, the Steinbeis Transfer Network is made up of more than 750 legally dependent as well as independent Steinbeis Enterprises and project partners in 50 countries. Specialized in chosen areas, Steinbeis Enterprises cover every sector of technology and management, ranging from information and telecommunications technology to microsystems technology and microelectronics, manufacturing technology, automation, Life Sciences and new materials, logistics, human resources, quality assurance, financing and regional economic development. Depending on the services it offers, an enterprise can be set up as a Steinbeis Transfer, Research or Consulting Center or a Steinbeis Transfer Institute. Enterprises are frequently attached to research establishments, universities, universities of applied sciences and universities of cooperative education. The Steinbeis portfolio of services covers: research and development; consulting; evaluation and expert reports; training and employee development. The Steinbeis network partners with customers of every size, from sole proprietors to large corporations. Steinbeis aims to help businesses access innovative technologies and methods, access the know-how available through Steinbeis network, thus uncovering solutions which meet their needs and achieving successful transfer.

The Steinbeis-Stiftung für Wirtschaftsförderung (StW) is the umbrella organization of the Steinbeis Transfer Network. The non-profit foundation and the Steinbeis GmbH & Co. KG für Technologietransfer (StC), responsible for all commercial activities involved in knowledge and technology transfer, are headquartered in Stuttgart, Germany.

The Steinbeis-Stiftung deals with more than 15,000 projects per year including research and development projects, evaluation reports, further education and consultancy services. These tasks occupy more than 5,500 (permanent and project based) staff members with 800 Professors.

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Steinbeis
Advanced Risk Technologies GmbH

Steinbeis Advanced Risk Technologies GmbH (R-Tech) (www.risk-technologies.com) is a private company, active in the area of risk technologies and risk management, providing related services, R&D and products. R-Tech leads or participates in a large number of national, international and EU projects. R-Tech is an SME (i.e. it belongs to the class of "small and medium enterprises" as defined by the EU) and it was established in 2007. R-Tech is an independent member of Steinbeis Advanced Risk technologies Group, an independent member of Steinbeis Group (www.stw.de, established in 1971, offering, with its 700+ Transfer Centers in 50+ countries global services in technology and knowledge transfer), an independent founding member of the EU-VRi (European Virtual Institute for Integrated Risk Management EEIG, www.eu-vri.eu) and an independent member of KMM-VIN (European Virtual Institute on Knowledge-based Multifunctional Materials AISBL, www.kmmvin.eu-vri.eu).

Main application areas of R-Tech competencies are in the areas of assessment, analyi and management of technical risks, integrating these aspects other aspects, such as business, financial, organizational, IT and human behavior related ones. Examples of industrial applications are projects dealing with risk-based inspection (RBI), reliability-centered maintenance (RCM), root-cause failure analysis (RCFA) and health, safety/security and environment (HAZOP/HSE/HSSE), primarily for petrochemical, process and power industries, material technologies and new/alternative technologies (e.g. nano-technologies, CO_2 storage and sequestration, advanced coating technologies, etc.). The above applications are supported by a series of respective dedicated IT tools (RBI, RCM, HSE…) and a number of generic ones, e.g. for asset data management, multi-criteria decision making (MCDM), on-line surveys, modeling/simulation, monitoring, or data mining. All the tools and supporting databases are web-based.

Practical examples of risks dealt with are:

- risks in/of innovation (e.g. risks of unexpected side-effects)
- risk of non-performance or performance below expectations (e.g. risks of system or component failures)
- risk of adverse/unexpected effects and impacts (e.g. on public health and/or environment)
- risks over the life-cycle of products and technologies (e.g. unexpected problems in decommissioning or recycling phase)
- project risks, especially in innovation, R&D and new technologies oriented projects.

In addition R-Tech actively supports organizing European and national stakeholders, promoting and supporting technology transfer, introducing new approaches to the risks and their management, development of specific methods and tools. Examples of these activities are those in the European Technology Platform Industrial Safety ETPIS (www.industrialsafety-tp.org, supporting the complete IT infrastructure for EU-VRi and ETPIS, and being in charge of the issue of Emerging Risks and Integrated Risk Management – see www.integrisk.eu-vri.eu), or those in the European Technology Platform for Advanced Engineering Materials and Technologies (EuMaT, www.eumat.eu-vri.eu).
All the above activities are complemented by activities and efforts in the areas of standardization and education. R-Tech has, e.g., coordinated the work on producing the CEN document on Risk-based inspection and Maintenance CWA 15740:2008 and has lead the educational projects in the area of industrial safety (www.esprit.risk-technologies.com).

EU-VRi - European Virtual Institute for Integrated Risk Management EEIG

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www.eu-vri.eu

The European Virtual Institute for Integrated Risk Management (EU-VRi), is the European organization which provides professional service, consulting, information and education needed in the broad area of modern integrated risk management and, in particular, management of emerging risks. EU-VRi has been legally established in Nov. 2006 by BZF, Hungary; INERIS, France; Steinbeis Advanced Risk Technologies, Gemany; Technologica, Belgium; and University of Stuttgart, and started its operation in 2007.

EU-VRi is organized as a European Economic Interest Grouping (EEIG) and its purpose is to facilitate or develop the economic activities of its members by a pooling of resources, activities or skills. The activities of the EEIG are related to the economic activities of its members and its main goal is to promote, enhance and add value to the businesses of EU-VRi members.

In addition, EU-VRi facilitates the mobility of researchers between research and industry, and acts as a vehicle to create efficient consortia to address the R&D needs and other needs of industry.
After a significant expansion of membership and acquiring significant contracts in 2007, in 2008 EU-VRi started to "walk the talk" – making, thus, the 2008 its "year of action" The year has been characterized by further and development of the EU-VRi activities (e.g. becoming the "Operating Agent" of the European Technology Platform Industrial Safety ETPIS – www.industrialsafety-tp.org).

Already in its starting years of operation EU-VRi has largely achieved its main goal of providing better business opportunities for its members through integrating the members' resources in the area of risk management at European and global level, and by grouping the research potentials at the EU level. This enables EU-VRi members also to better interact with the EU policies in the area of integrated risk management.

European Technology Platform on Industrial Safety
Safety for Sustainable European Industry Growth
http://www.industrialsafety-tp.org/

ETPIS Executive Committee acknowledges the importance of the iNTeg-Risk project for the improvement of the effectiveness of risk management in the European innovative industry and is proud that this project was initiated by the work of the platform, some years ago. Therefore, it is natural that ETPIS remains a supportive partner for the 1st International Conference organised by the iNTeg-Risk consortium.

ETPIS Secretary General

ETPIS Vision

By 2020, industrial safety performance shall have progressively improved by 25% (baseline year 2006) in terms of reduction of reportable accidents at work and occupational diseases, environmental incidents and accident related production losses. It will have developed an "incident elimination" culture where safety is embedded in design, maintenance, operation and management at all levels in enterprises.

- By 2020 there will be structured self regulated programmes in all major industry sectors which have firm, measurable performance targets for accident elimination equating to an annual reduction rate of 5%
- Accident free mind set workplaces will become the norm by 2020
- This will contribute in a major way to sustainable growth for all industry in Europe and improvement of social welfare.

ETPIS Missions

The overall policy objectives of the Technology Platform Industrial Safety are:

- To gain 'Safety for the Sustainable Growth of all European Industry' by reducing the number of accidents & by supporting safe technological innovation. This has a major impact on cost of manpower, availability of production systems and therefore on the competitiveness of the Industry.
- To bridge the different aspects of "industrial safety" (Occupational health & safety of the workers plus environmental safety including prevention of major accidents & protection of the environment).
- To facilitate and accelerate the breakthrough for progress in industrial environmental, health & safety (EH&S) via a co-ordinated, integrated research & implementation process.
- To valorise, exploit and implement results of research and innovative methods within Industry.

Members of the High Level Group

BASF, Germany
Wolfgang Gerhardt
Vice President, Director HSE

EDF, France
Philippe Klein
Head of Risk Management Department in EDF R&D

EXXON Mobil, The Netherlands
Theo van der Smeede
Safety and OIMS Advisor

IBERDROLA, Spain
Antonio Moreno
Director HSE

SEAT SA, Spain
Ramon Paredes Sanchez-Collado
Human Resources Executive Vice President

SWISS RE, Switzerland
Reto Schneider
Director and Head of Risk Engineering Services Casualty

The European Agency For Safety & Health at Work, located in Spain
Terry Taylor
Head of Working Environment Information Unit

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The University of Stuttgart stands for "technology, knowledge and education for the people". For the University of Stuttgart, a sustained pursuit of this objective, requires a strict orientation to the following highest principles

- The commitment of all sciences to truth (beyond interest and functionalization) and
- The adequacy of technical solutions (referring to the context of utilization by considering ecological and social risks)

These requirements were met by

- An integration of natural sciences, engineering, social sciences and humanities in one common profile
- Innovative solutions at the highest level and on the basis of intercultural competence according to the global challenges.
- Productive collaboration with industry and political institutions and an effective knowledge and technology transfer, by taking the diversity of demands and cultural premises into account.

In cooperation with EU-VRi members, the Institute for Social Sciences at University of Stuttgart gives lectures dedicated to the academic education in new important fields of integrated Corporate Social Responsibility (www.icsr.risk-technologies.com).

The University of Stuttgart, represented by ZIRN, the "Interdisciplinary Research Unit on Risk Governance and Sustainable Technology Development", is member of the iNTeg-Risk consortium and is, inter alia, responsible for the development of an Emerging Risk Management Framework. ZIRN is part of IZKT, the "International Center for Cultural and Technological Studies" of the University of Stuttgart and founding member of the European Virtual Institute of Integrated Risk Management - EU-VRi (www.eu-vri.eu).

ZIRN represents a cross-disciplinary, horizontal organization serving several departments of the University of Stuttgart. Its main goal is to generate, collect and promote better knowledge on how different actors in economics, politics and society cope with the opportunities and risks of new technological advances. In addition, the Institute deals with novel approaches to assess, evaluate and manage systemic risks that are typical for today's global economy. A team of investigators primarily from the social sciences pursues research projects aimed at assessing and evaluating the opportunities and risks of specific technologies within a broader subject area such as energy, food, chemicals or sustainable development. The main task of this research center is to suggest, to coordinate and to realize research projects in three major research areas:

- Development and design of technologies according to the requirements of sustainability
- Risk governance in the context of globalization and interdependencies
- Knowledge economy and its importance for societal modernization

European Solvents Industry Group

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The European Solvents Industry Group (ESIG) represents the major producers of oxygenated and hydrocarbon solvents. By building alliances, sharing information and sponsoring dialogue with industry partners and downstream users, ESIG actively promotes a sustainable, safe and responsible use of solvents.

ESIG is a joint activity of the Oxygenated Solvents Producers Association (OSPA) and the Hydrocarbon Solvents Producers Association (HSPA)."

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Pursuing its mission BAM ensures *Safety in technology and chemistry*

Objectives

The Federal Institute (BAM Bundesanstalt für Materialforschung und -prüfung) has its responsibility in the interacting fields of Materials - Chemistry - Environment Safety, in particular:

- Statutory functions for technical safety in the public domain, especially relating to dangerous goods and substances
- Collaboration in developing legal regulations like on safety standards and threshold values
- Consulting on safety aspects of materials technology and chemistry for the Federal Government and industry
- Development and supply of reference materials and reference methods, especially for chemical analysis and materials testing
- Assistance in developing standards and technical rules for the evaluation of substances materials, structures and processes with reference to damage prevention, life time prediction, protection of the environment and conservation of economical values.

Activities

BAM is engaged in the interdependent and complementary activities:

- Research and development
- Testing, analysis, approvals
- Consultation and information.

National and International Cooperation

The tasks of BAM for technology, science, economy and society require interdisciplinary cooperation. BAM collaborates closely with technological institutions in Germany and abroad, especially with national institutes. It gives advice to Federal Ministries, economy associations, industrial enterprises and consumer organizations. It provides expertise to administrative authorities and law-courts. In the area of measurement, standardization, testing and quality assurance BAM is the competent national authority for testing techniques. BAM is cooperating with numerous technical, legislative and standardization bodies in order to develop technical rules and safety regulations and represents the Federal Republic of Germany both on the national and international level.

Status

BAM is a senior scientific and technical Federal Institute with responsibility to the Federal Ministry of Economics and Technology. It is the successor of the Public Materials Testing Office ("Staatliches Materialprüfungsamt") founded in 1871 and of the Chemical Technical State Institute ("Chemisch Technische Reichsanstalt") set up in 1920. BAM has a staff of about 1800, including over 1000 scientists and engineers working at the main grounds of Berlin-Lichterfelde and at the extensions at Berlin-Adlershof.

Otto-von-Guericke-Universität Magdeburg

Universitätsplatz 2
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Germany

Prof. Dr.-Ing. Jens Strackeljan, Dipl.-Ing. Stefan Goreczka

The Institute of Applied Mechanics is working in the field of Condition Monitoring since 15 years.

The related research topics are:
Adaptive monitoring systems, classification algorithms for vibration signals, feature selection and generation, signal processing, fault detecting in roller bearing, simulation of faults using multi-body-systems.

Each automatic monitoring system has to be adapted if it is installed in a new environment. Characteristic of solving the monitoring task, the number of fault classes and free parameters in the internal classier are potential switchers to adjust the system. We demonstrate general problems in the field, such as fault simulation, provide the necessary definitions of different levels of adaptivity, describe the state of the art and give some hints about how the implementation of intelligent data pre-processing can improve the transfer of data from an existing system to a new one. As an application we use the detection of faults in a roller bearing using the higher derivatives as an example for an advanced signal processing technique. The basic ideas behind this simple demonstrate should show the potential in other applications of condition and health monitoring.

SPANISH TECHNOLOGY PLATFORM ON INDUSTRIAL SAFETY (PESI)

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PESI, the Spanish Technology Platform on Industrial Safety, is a non-profit organization formed by almost 200 companies, SME, research organizations, universities and public institutions related to industrial safety. The staff offers technical support to prepare project proposals, to define consortiums and to keep in contact with the European Commission and Spanish Administrations Officers.

The working agenda is focused in four main areas: Industrial Safety, Occupational Safety and Health, Environmental Safety and Enterprise Security. In order to improve the quality and quantity of the research projects, seven Working Groups have been defined: Advanced risk reduction technologies, Risk assessment and management methods, Safety in dangerous goods transportation, Human and organizational factors, Emerging risks and nanotechnologies, Enterprise security and Education & training.

Nowadays, PESI is working in different research fields like technologies for risk reduction, new materials and technologies for Personal Protective Equipment, evaluation of dangerous events & hazards, intelligent systems for handicap people, nanotechnologies or education tools.

The Platform is highly interested in collaborating with emergency services to launch proposals in any target where safety could be considered as an added value. That way we could join proposals in nearly all the thematic areas at FP7 and in many calls of the Spanish National Research Programmes.

PESI plays a key role in the coordination of the European National Technology Platforms on Industrial Safety that offers a unique opportunity to help companies and emergency services to improve the quality of their consortiums by helping them to find the right partners from Spain and the rest of Europe. The Platform's International Innovation Unit has also the support of the Spanish National Contact for FP7 Programme, CDTI, and the scientific advice and technical support of LEIA Foundation, a research centre that holds the Technical Secretariat of PESI.

Definiens AG

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Definiens provides the most advanced image analysis software available for geo-spatial applications. It enables expert knowledge to be codified and combined with scalable computing capacity to vastly accelerate the extraction geo-information from remote sensing data. Intelligent feature extraction accelerates mapping, change detection and object recognition – delivering standardized and reproducible results. This assists data collectors, service providers and end users in integrating earth observation and remote sensing data to generate accurate GIS-ready information.

Definiens software is comprised of a suite of products: Definiens Developer is the most sophisticated image analysis solution development environment available today. In the hands of an experienced user, it produces impressive solutions to even the most complex image analysis problems. With the help of Definiens eCognition® Server software, solution throughput can be scaled to even the largest production requirements. And with Definiens Architect, finished solutions can be packaged within a graphical user interface for ease of reuse and adaptation by production teams. Definiens also offers software and professional services in combination to train image analysts, to deliver a completely outsourced solution, or as a hybrid thereof to meet specific project requirements.

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The Mavionics GmbH was founded in 2003 and is a spin-off company of the Technical University of Braunschweig. Located at Braunschweig Research Airport, one of Europe's most active research areas in the field of aviation, Mavionics develops avionics and autopilot systems for miniature Unmanned Aerial Vehicles (Mini-UAV), as well as complete UAV systems comprising of the fully automatically operating aircraft, a telemetry link and a special ground control software for mission planning and supervision. This technology offers completely new, cost-efficient applications in many areas, e.g. in the field surveillance and reconnaissance.

Within the iNTeg-Risk project Mavionics will develop and demonstrate a fully automatic UAV system for the purpose of pipeline monitoring. This work will comprise of an automatically operating aircraft (6kg to 10kg take-off weight) with a camera as payload. By synchronizing the camera with the autopilot and its attitude determination system, the UAV will deliver single aerial images with all information necessary for automatic geo-rectification. These images are automatically combined to form a single, consistent aerial image of the complete pipeline segment without gaps. The length of one segment depends on the flight time to be realized and will be in the range of 50km to 100km for the demonstrator.

Mavionics has a 5-year experience in the field of Mini-UAV and the related core knowledges, like flight control, flight guidance, real-time data processing and miniaturization. Despite its short company history, Mavionics is based on over 25 man-years of experience related to Mini-UAVs.

Besides off-the-shelf autopilot systems, Mavionics has realized several Mini-UAV systems. Example applications are

- Monitoring of the active Volcanoes Cotopaxi and El Reventador in the Ecuadorian Andes in 2005 with the UAV system Carolo P330
  (5kg take-off weight, 3.3m wing span)
- Meteorological measurements of temperature, humidity and 3D wind vector with high spatial and temporal resolution with the Meteorological Mini-UAV Carolo T200 (6kg take-off weight, 2.0m wing span) in 2005 (Lindenberg near Berlin) and 2006/2007 (British Halley Research Station, Antarctica)

INERIS

Parc Technologique Alata – BP 2
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INERIS' remit is to carry out, or to have carried out, studies and research that make it possible to prevent the risks that economic activities can present to the health and safety of persons and property and to the environment, and to provide a full range of services aimed at helping companies to attain this objective.

Activities

- Research is focused on the acquisition of knowledge, the development of methodological tools and taking risks into account from the outset of the design of new technologies. This research is conducted on the basis of public funding or on behalf of industrial concerns (partnership research programmes).
- Public authority support is based on the certification of methods for assessing risks or pollution, elucidating and evaluating prevention means and providing expertise and surveillance on behalf of public authorities.
- Regulatory expertise on behalf of companies consists in appraising the compliance of equipment or systems with regulations, standards or frames of reference, particularly through certification, or providing, at the request of the authorities, an independent expert opinion (third party expert appraisals) on the validity of regulatory dossiers.
- Expertise, consultancy and training aim to transfer know how to those concerned by risk management (companies, local authorities, stakeholders, etc.) through a comprehensive and narrowly targeted range of services.

TÜV SÜD Industrie Service GmbH

Westendstraße 199
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Contact: Gerhard Klein

TÜV SÜD Industrie Service has positioned itself as a leading provider of engineering services at international level. Its experts are the people to contact in all matters relating to the safe and reliable operation and optimization of industrial plants and installations, buildings and infrastructural facilities. TÜV SÜD industry experts assist manufacturers and operators throughout the world. Their expertise and knowledge of national and international codes and standards are recognized and esteemed by official authorities and institutions. Services performed by TÜV SÜD Industrie Service span the entire life cycle of plants and installations, including lifts, office buildings, refineries, power stations, trams and underground trains, from design, construction and operation to decommissioning, dismantling and disposal. TÜV SÜD Industrie Service continuously develops new and innovative products such as integrated building safety, complex energy consulting and "energy-efficient enterprise" certification, and thus grows in accordance with changing market and customer requirements. Further examples of its innovative products include the development of risk-oriented maintenance schemes and the first risk management and monitoring system for nanomaterials production. TÜV SÜD industry experts are worldwide leaders in acceptance testing of roller coasters and other "amusement rides and structures" and in the validation of climate-change projects based on the Kyoto Protocol. The virtual logbook netDocX and the netinform information platform are further 'add-value' services which TÜV SÜD Industrie Service offers its clients.

Relying on its clear customer focus and innovative services, TÜV SÜD Industrie Service aims to strengthen and further expand its position as one of the leading providers of engineering services in Europe. In 2007, the service company and its 3,700 staff generated sales of EUR 409 million.

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Our motto "DIN - Published by Beuth" says it all: Beuth Verlag is a subsidiary - and the publishing house - of DIN, the German Institute for Standardization.

Founded in 1924 by DIN together with the Association of German Engineers (VDI). Beuth Verlag takes its name from the Prussian industrial pioneer and founder of Berlin's Technical University, Christian Peter Wilhelm Beuth.

In 1993 the standards bodies of Austria (ON) and Switzerland (SNV) became shareholders of Beuth Verlag GmbH, making it one of the largest technical publishers in Europe. With numerous publications in English and other languages, Beuth has become well-known beyond the German-speaking area. Over 150,000 customers worldwide profit from the synergy between DIN and Beuth.

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Beuth's technical publishing programme is as colourful and diverse as the worlds of technology and business themselves.
There is no better indication of this than the colour scheme introduced to help customers find their sector(s) of interest (see the "Categories" in the left navigation bar).

Beuth - diverse, competent, innovative

Beuth's core competence is, of course, anything to do with technical standards and standardization. Over the last few years this sector has undergone a rapid media shift - today more than half of all DIN Standards are bought and used as PDF files.

Beuth is international

Over 17,000 DIN Standards are available in English translation, and money-saving standards compilations - the "DIN Handbooks" - are also available. Many of the 54 document collections published by 47 German organizations that are downloadable at beuth.de are also available in English, often as bilingual editions. The Foreign Sales department can help you find the German technical rule you need. Finally, Beuth's Foreign Standards Service can help you obtain technical rules published outside Germany - in any language!

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Over 80,000 customers have used our webshop during the seven years since its inception. As this online service is regularly expanded to include technical rules from around the world, standards users are recognizing that beuth.de can be used as a one-stop-shop for standards and technical literature.

MiT GmbH

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Mr. Karl Lieven

MIT - Management Intelligenter Technologien GmbH has been working in the area of intelligent technologies since its foundation in 1991. With 35 employees we focus on the application of fuzzy technologies, neural networks and decision trees. Intelligent technologies are applied in many diverse areas, for instance: optimizing manufacturing processes, data analysis and data mining. They foster the extraction of information from data and therefore lead to better informed decision making and analysis.

DataEngine is the software tool for intelligent data analysis which unites statistical methods with neural networks and fuzzy technologies. It is essential for the success of your data mining projects that you do not spend more time than absolutely necessary to complete the individual steps. As well as having expert knowledge of the procedures to be applied, it is also vital to choose the correct data mining software. By equipping your software toolset with professional tools you can be sure of efficient procedures and reliable results. The versatility and upgradability of these tools enables you to adapt to the specific task in hand.

Today customers in more than 35 countries use DataEngine to analyze various data sets.

European Virtual Institute on Knowledge-based Multifunctional Materials (KMM-VIN AISBL)

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KMM-VIN is an international, non-profit association (AISBL) head-quartered in Brussels and incorporated under Belgian law (No d'entreprise 889 462 185). KMM-VIN is a single legal entity with a supranational character offering integrated basic and applied commercial research, educational, innovation and managerial activities in the field of knowledge-based multifunctional materials. It is currently composed of 40+ members from 14 European States (universities, research institutes, large industry, SMEs, technology platforms, individual persons). KMM-VIN has emerged from the FP6 (NMP) project: Network of Excellence 'Knowledge-based Multicomponent Materials for Durable and Safe Performance' (KMM-NoE) devoted to the study, understanding, design and development of new advanced materials (ceramic, metallic, metal-ceramic, intermetallic, or functionally graded) with a view to enhance their functional properties

Exhibited materials:

1. Wear resistant MMC (Fe- and Ni-based alloys with oxide ceramics); processed by pressureless infiltration. Manufacturer: EMPA Zürich (KMM-VIN member)
2. NiTi micro tensile test specimens and demonstrators. Manufacturer: Fraunhofer-IFAM Bremen (KMM-VIN member).

Preliminary List of Participants
Main Conference

(as on May 20, 2009, the updated list will be distributed to the participants at the Conference)

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149	Bulgarkontrola S.A. - Conformity Assessment Directorate	Bulgaria

Preliminary List of Participants KPIs/SPIs Workshop

(as on May 20, 2009, the updated list will be distributed to the participants at the Workshop)

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