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

A. Jovanovic
EU-VRi, Germany

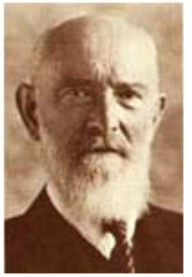
1st iNTeg-Risk Conference
June 2-4, 2009
Stuttgart, Germany

Welcome to iNTeg-Risk, EU-VRi, Stuttgart!


Friedrich Schiller

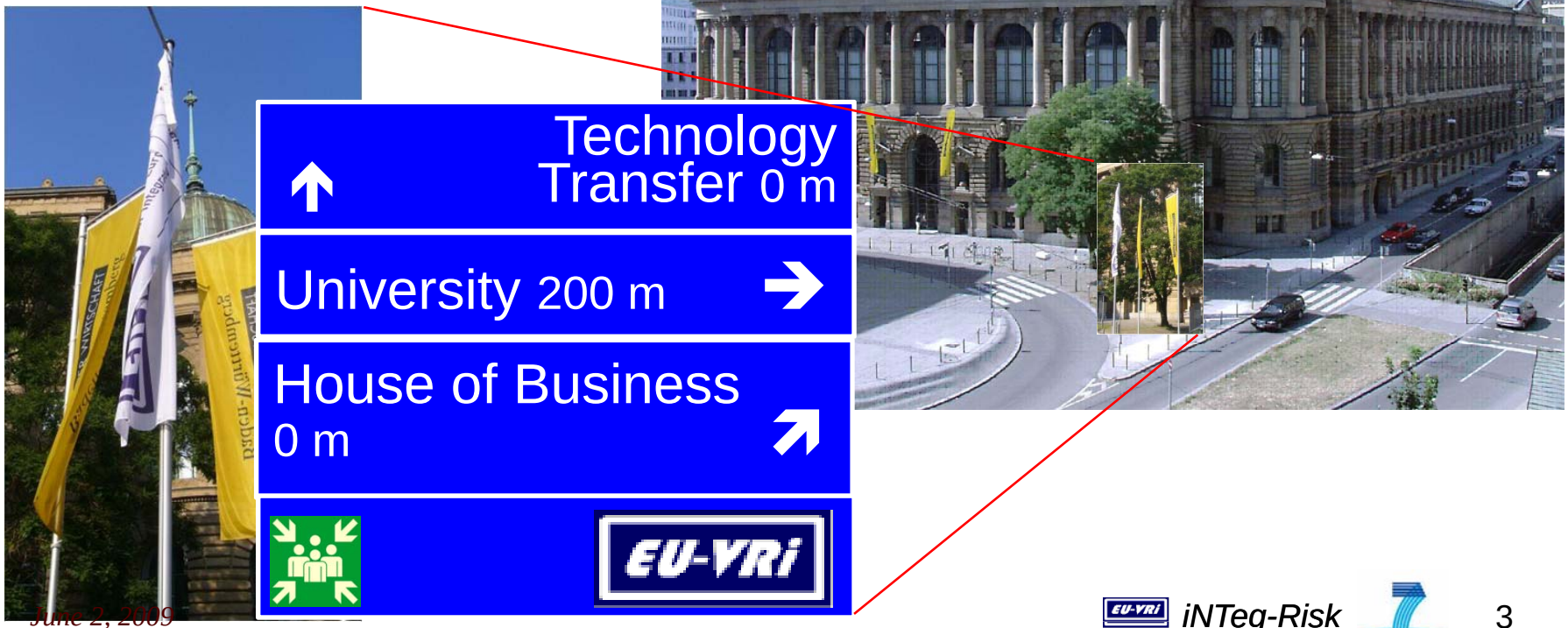

Georg Friedrich Wilhelm Hegel

Gottlieb Daimler


Robert Bosch

iNTeg-Risk Conference 2009!

Welcome to iNTeg-Risk, EU-VRi, Stuttgart, Haus der Wirtschaft!



iNTeg-Risk: The project …

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

2008 – 2013

19.3 M€ , 64 + 15 partners

THEME 4
NMP – Nanosciences, Nanotechnologies, Materials and new Production Technologies

iNTeg-Risk: The grandma's question…

- We need to do something about all these new things! How can we be sure that all these things (which we do not understand!) are not dangerous?

NOTE: You are supposed to prove that you are not guilty, but you do not know the allegation…

- And we (not only grandmas!) do not understand all the risk-related aspects of all the new technologies around us…

- Can we ask (risk) specialists? The iNTeg-Risk specialists?

We ask (risk) specialists…

Do you consider risk analysis and/or risk management to be a part of your professional interests and/or work?

YES, I consider risk analysis / management as a part of my professional interests / work (please raise the RED card)!

NO, I do not consider risk analysis / management as a part of my professional interests and/or work(please raise the BLUE card)!

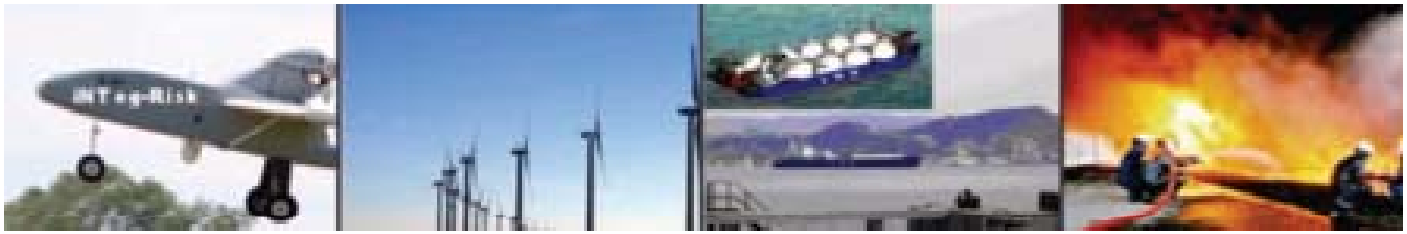
iNTeg-Risk: Main elements…

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

  In other words we talk about (new) technologies, but we concentrate on:

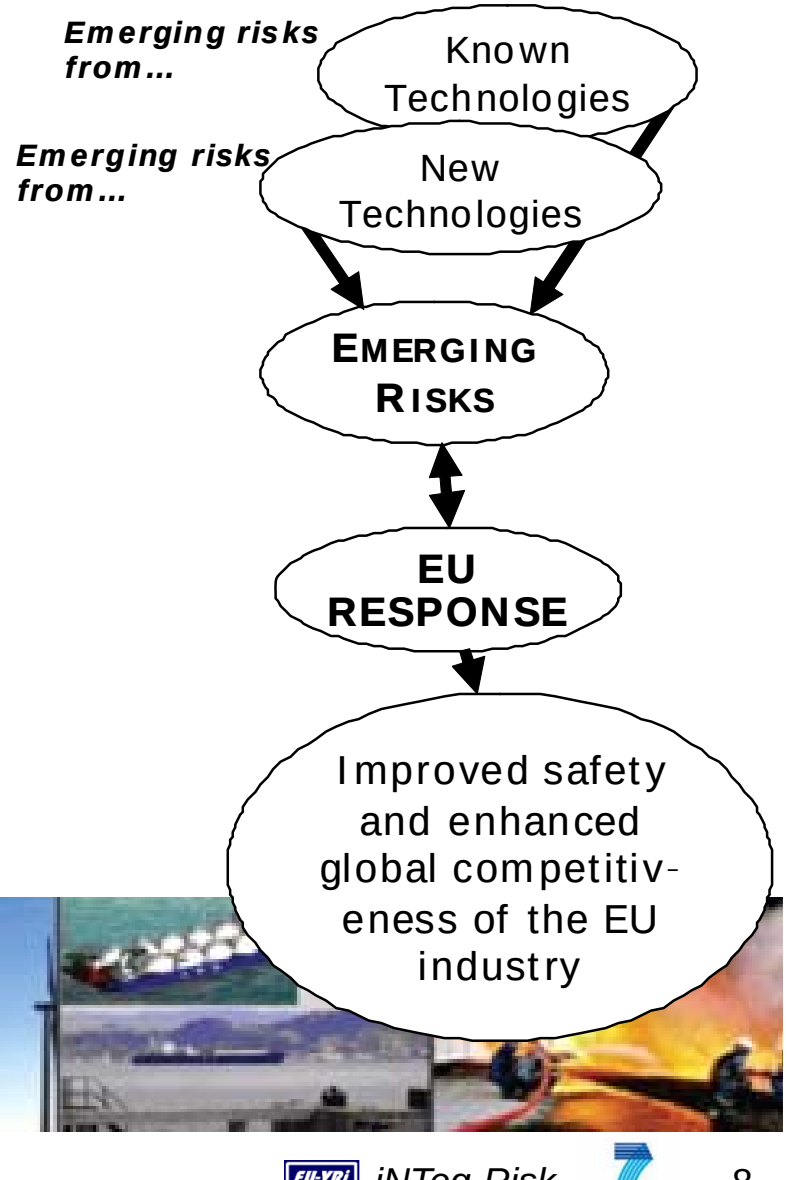
  – (new) Emerging risks and focus onto their

  - Early recognition
  - Monitoring (once recognized)
  - Integrated management



iNTeg-Risk: The (EU) response…

- Yes, the project is about
  - **RISKS**
  - **TECHNOLOGIES** and
  - **INTEGRATED SOLUTION** (integrating all interested parties – both technical and non-technical specialists, grandmas included!)



We ask iNTeg-Risk specialists…

Which of the two terms would describe your professional background better?

technical, my professional background is rather technical (please raise the RED card)!

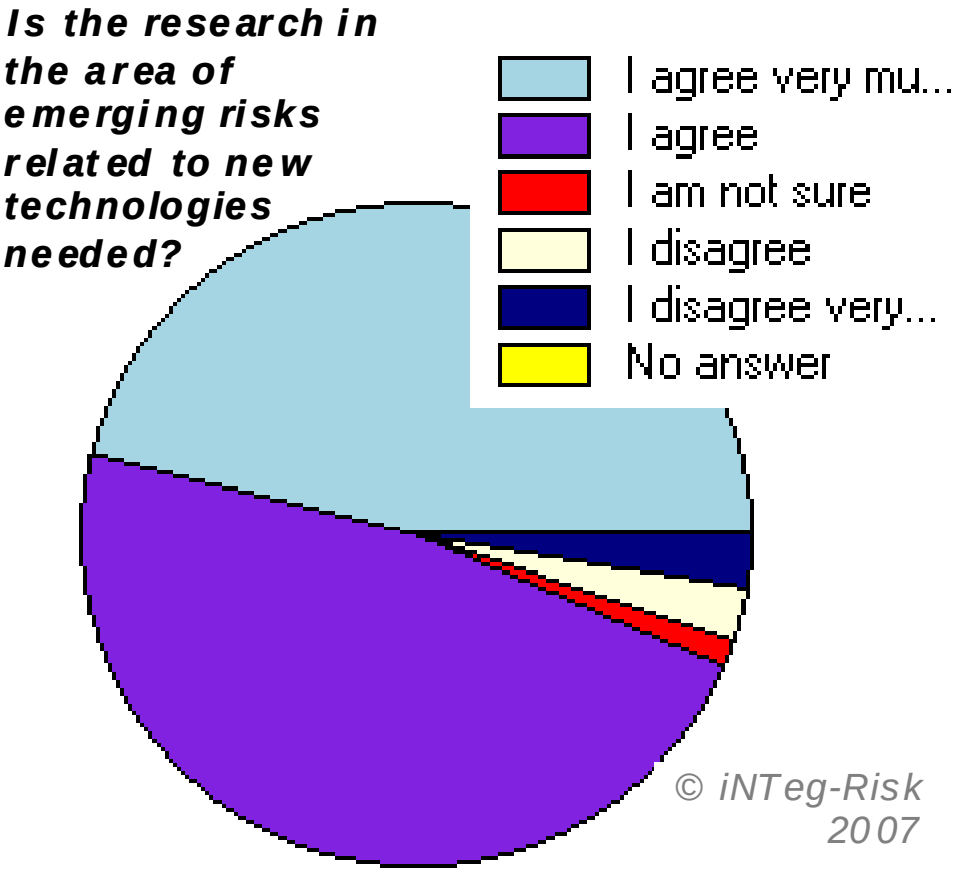
non-technical, my professional background is rather non-technical (please raise the BLUE card)!

Risks

iNTeg-Risk: RISKS…

- Is the research risks related to "New Technologies" needed?
  - … over 100 responses received
  - … 90+ % agreed or agreed "very much"

… the grandma was right … we have to do something about these risks!



iNTeg-Risk: Emerging RISKS…

New & emerging

- Not known / recognized previously
- Known previously, but now seen from a new perspective
- Known previously, but recognized as risk only recently due to new scientific or other evidence
- Increasing level or number of people exposed

New & emerging risks: The risk is considered new & emerging if:

(a) the risk was previously not recognized and is caused by new processes, new technologies, new ways of working, or social or organizational change (e.g. risks linked with nanotechnology, biotechnology, ICT technologies, new chemicals, effects of globalization etc); or,

(b) a long-standing issue is newly considered as a risk due to a change in social or public perceptions (e.g. stress, bullying); or,

(c) new scientific knowledge allows a long-standing issue to be identified as a new risk, e.g. in the situations where cases have existed for many years without being identified as risk because of, e.g., lack of scientific knowledge.

The risk is increasing if the number of hazards leading to the risk is growing, or the likelihood of exposure to the hazard leading to the risk is increasing, (exposure level and/or the number of people exposed), or effect of the hazard is getting worse (e.g. seriousness of health effects and/or the number of people affected).

see: European Agency for Safety and Health EU-OSHA 2005, Risks Observatory http://riskobservatory.osha.europa.eu/

iNTeg-Risk: Emerging RISKS…

Examples:

Examples of emerging risks in industry and society:

Area of industry	Emerging risks
Power generating plants, telecommunications	• The use of microchips and biochips creates uncontrollable situations with unpredictable consequences. • More and more vehement reactions to the EMF risk are observed when certain phenomena occur in areas with antenna installations, high voltage power lines, etc, regardless of whether the phenomena are real or alleged
Electronics and computer industry, machine and equipment manufacture	• Use of microchips and biochips creates uncontrollable situations with unpredictable consequences
Medical technology and medical sector	• Materials used to manufacture implants are contaminated or toxic. • Implants used have design or production defects (eg contamination during the manufacturing process). E.g. heart pacemakers, silicone prostheses, knee joints or hip joints.

The insurances count today list of approx.20 most important emerging risks in different branches of industry and society: about a half of them will be treated by iNTeg-Risk through its 17 ERRAs, its ERMF and its tools and data/info sources in the iNTeg-Risk “one-stop-shop”.

iNTeg-Risk: Emerging RISKS…

Example:

German army drone ("UAV") over Kabul in 2004 …

… as it almost hits the jet carrying more than 100 passengers.

Industry and government plan to use thousands of UAVs in the future – one of the "emerging risks due the new technology" treated in iNTeg-Risk.

(source: New Scientist, 2007)

iNTeg-Risk Box "drone crash"

Technologies

iNTeg-Risk: TECHNOLOGIES…

- What "New Technologies"?
  - … technologies possibly being source of real or perceived risks
  - … technologies of a broader public (e.g. EU or global) concern
  - … technologies not having the established and widely accepted risk management or governance system
  - … technologies needing an "integrated response"
  - … examples – authorities, insurances, companies, …

HEALTH & SAFETY LABORATORY

- Robotics
- Nanotechnology
- Pervasive Computing
- Rapid Manufacturing
- TeraHertz Technology
- CO_2 Capture & Storage
- Complex Working Practices
- Cyber Security
- Flexible Working Patterns
- Gene Therapy
- Technologies for Human Performance Enhancement
- Hydrogen Economy
- ….

iNTeg-Risk: TECHNOLOGIES…

- What "New Technologies"?
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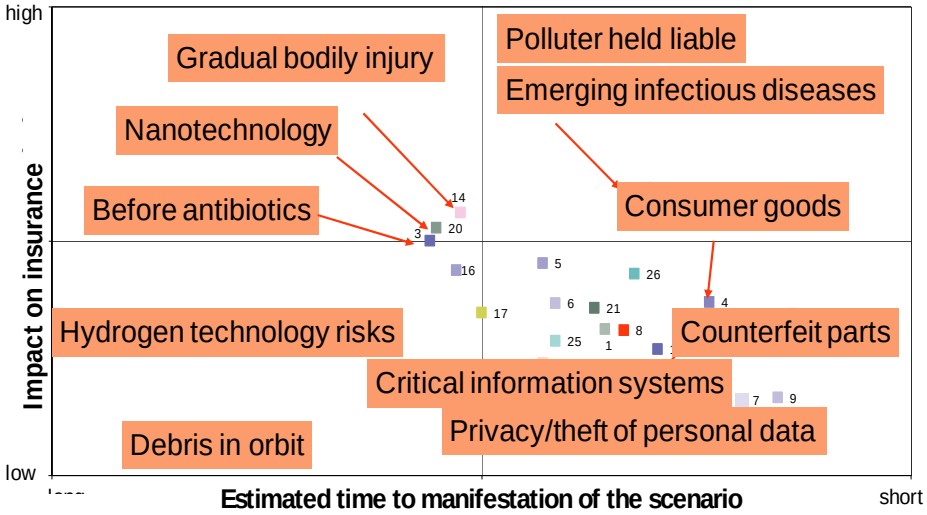
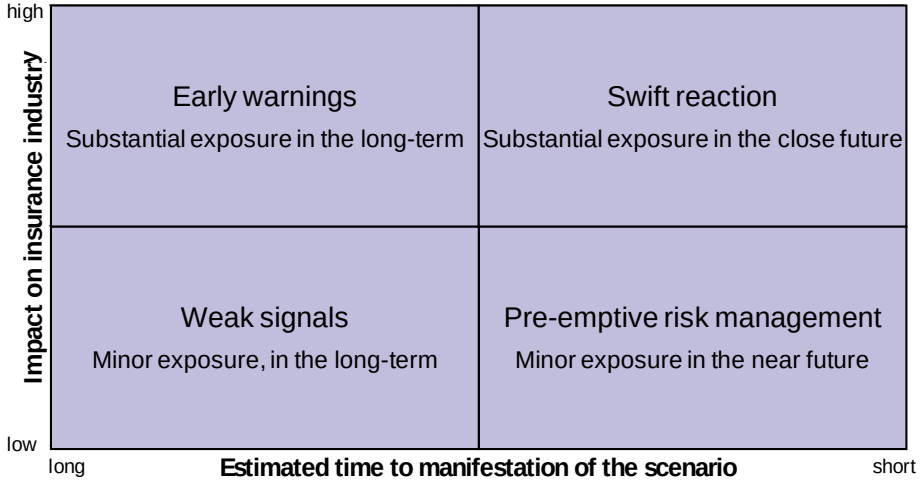
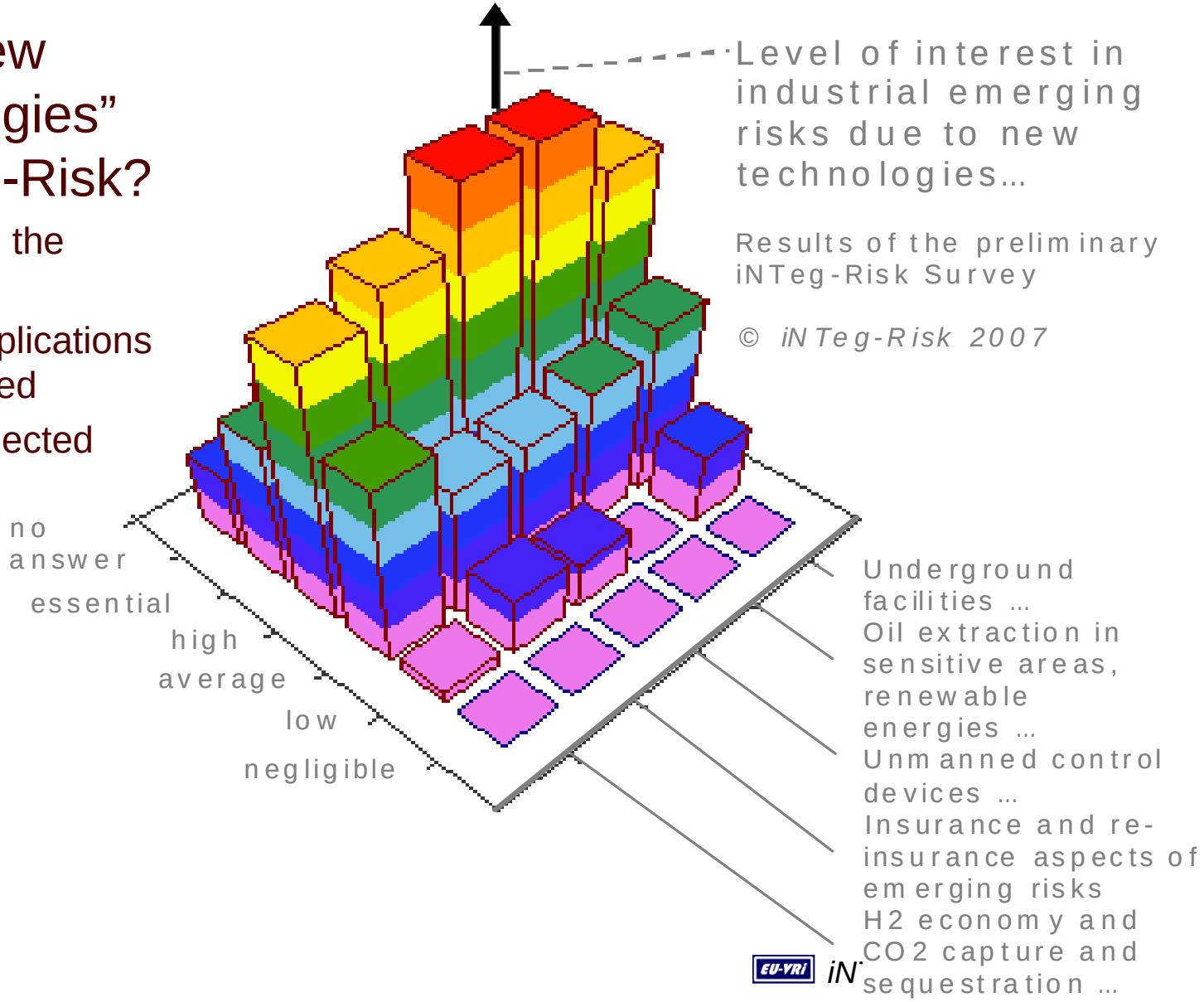




iNTeg-Risk: TECHNOLOGIES…

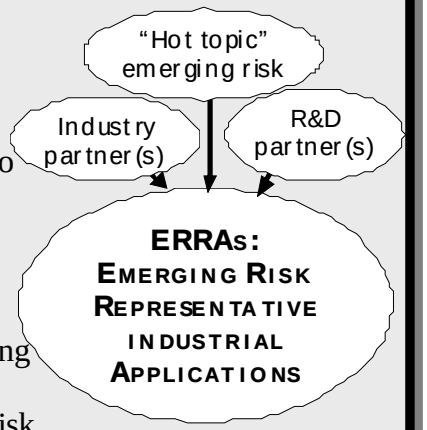
- What “New Technologies” for iNTeg-Risk?
  - … polled the opinions
  - … 50 applications considered
  - … 17 selected



iNTeg-Risk: TECHNOLOGIES…

- "New Technologies" in iNTeg-Risk used also as a synonym for "applications"
- Applications we looked for need to be "representative for emerging risks"
- Result:
  The 17 iNTeg-Risk ERRAs
  … in 4 groups
  A. New (production) technologies
  B. New materials and products
  C. New technologies & production networks
  D. New policies

ERRAs: Emerging Risks Representative (industrial) Applications are significant examples of applications related to industrial safety (emerging risks). Solutions for the these single, specific problems related to emerging risks should allow to capitalize upon and, by generalizing the solutions, build the common European approach to emerging risk.



Each ERRA is a triplet containing: (a) one significant emerging risk related issue/topic, (b) one or more industrial partners concerned by the above emerging risk(s), and (c) one or more R&D partners having proven excellence in providing solutions for the above emerging risk(s). They also provide the test-bed for the developed integrated methods, tools and the whole system..

iNTeg-Risk Box "ERRAs"

iNTeg-Risk: TECHNOLOGIES…

A. **New (production) technologies**
B. New materials and products
C. New technologies & production networks
D. New policies

Nr	Name	Responsible Partner
A	**EMERGING RISKS - NEW TECHNOLOGIES**	**UNIBO (CONPRICI)**
A1	CO_2 capture and sequestration, both technical risks and governance risk	HSE-HSL
A2	Insurance and re-insurance aspects of emerging risks including the security-related (HSSE) emerging risks of new technologies	Swiss Re
A3	Emerging risks related to the industrial use of automated and un-manned surveillance of industrial infrastructure	GDF
A4	Liquid Natural Gas (LNG) regasification in sensitive areas on-shore and offshore	D'Apollonia
A5	Safety and security of underground hubs with interconnected transportation services and shopping centers	VSH Hagerbach

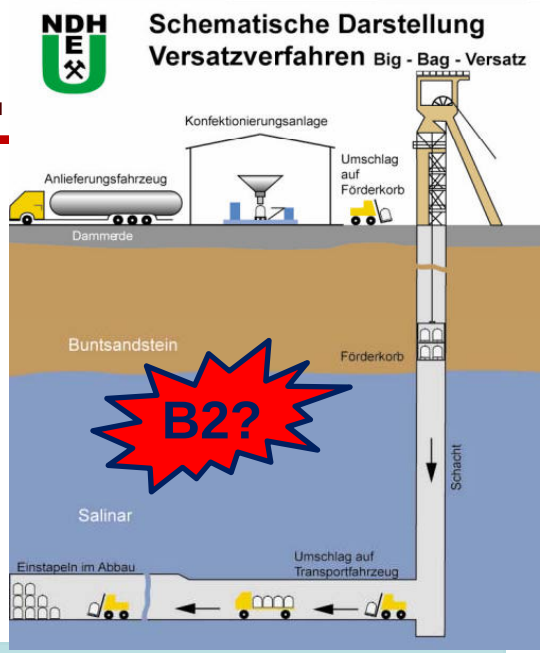
iNTeg-Risk: TECHNOLOGIES..

A. New (production) technologies

B. New materials and products

C. New technologies & production networks

D. New policies



Nr	Name	Responsible Partner
B	**EMERGING RISKS - NEW MATERIALS AND PRODUCTS**	**EU-VRi**
B1	Public health and medical issues related to monitoring of emerging risks in production, storage and transport of nano-materials on industrial scale in small and medium enterprises (SMEs)	Novineon
B2	Emerging risks related to advanced storage technologies for hazardous materials (including H_2)	BAM
B3	Emerging risks related to development and use of advanced engineering materials, composite materials	KMM-VIN

iNTeg-Risk: TECHNOLOGIES…

A. New (production) technologies
B. New materials and products
C. New technologies & production networks
D. New policies

Nr	Name	Responsible Partner
C	**New technologies & production networks**	**SINTEF**
C1	Challenges to safety posed by outsourcing of critical tasks – in oil, gas, petrochemical and construction industries	DTU
C2	Remote operation in environmentally sensitive areas	SINTEF
C3	On-line risk-monitoring and assessment of emerging risks in conventional industrial plants – monitoring of risks beyond the design/regulatory basis	BZF
C4	Atypical, one-of-the-kind major hazards/scenarios (post-Buncefield implications) and their inclusion in the normal HSSE practice	HSE-HSL
C5	Security of energy supply and related emerging risks	JRC

iNTeg-Risk: TECHNOLOGIES…

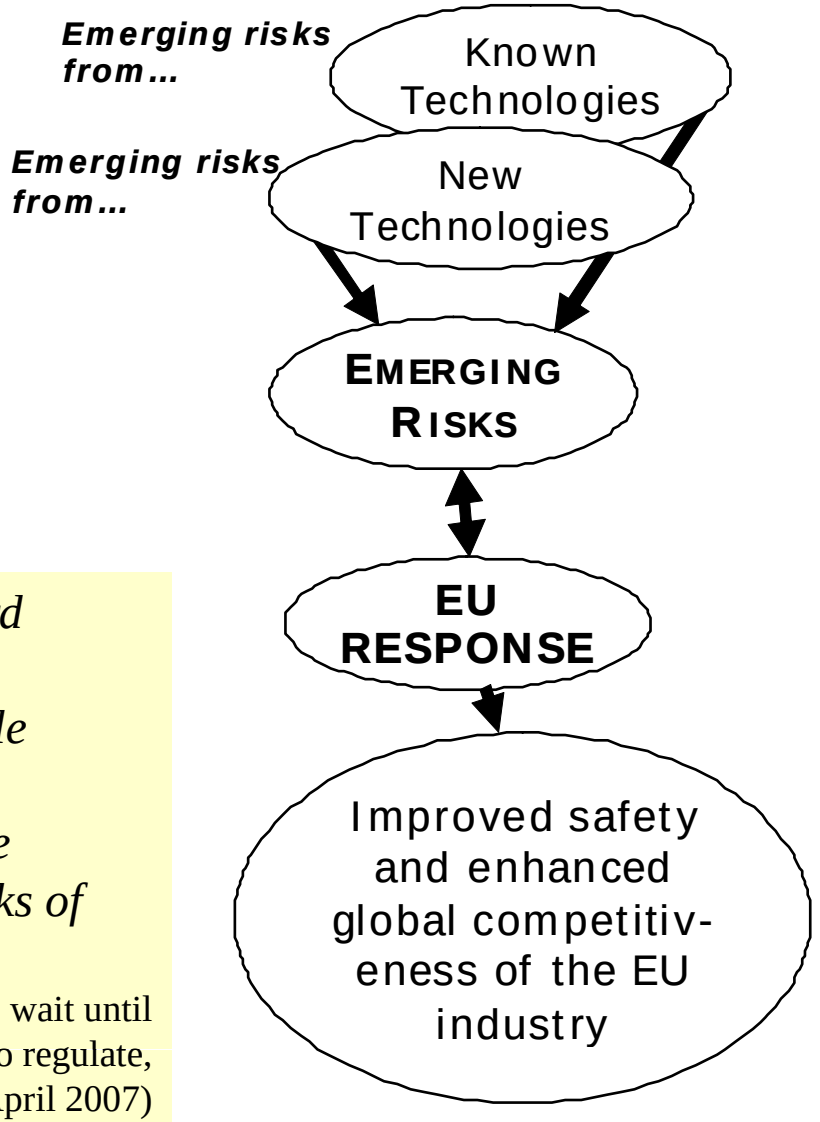
A. New (production) technologies
B. New materials and products
C. New technologies & production networks
D. New policies

Nr	Name	Responsible Partner
D	**EMERGING RISKS - RELATED POLICIES**	**R-Tech**
D1	Definition of KPIs for emerging risks for selected industry case studies, including CSR aspects of emerging risks	DNV
D2	Integrated approach on emerging risks related to the implementation of European safety legislation on SMEs and its application on companies working in Distributed Energy Resources (DER)	LEIA
D3	Emerging risks related to interaction between natural hazards and technologies at community level	INERIS
D4	Emerging risks related to hazardous substances, impact on public health and relations with REACH and GHS	RIVM

Solution / “The Common Response”

iNTeg-Risk: The (EU) response…

- iNTeg-Risk:
  - RISKS
  - TECHNOLOGIES and
  - INTEGRATED SOLUTION (integrating all interested parties – the grandmas included!)



- Avoid

"… the lesson … was a total lack of forward thinking …
the science was being developed and people weren't consulted on the issues that really mattered"… (Hugh Knowles, Forum for the Future, statement related to the use and risks of new bio-technologies)

(Worried, but about what? Regulations wait until Europe figures out what to regulate, Red Herring, 4/15 April 2007)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Industrial Safety
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Project Calendar
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Welcome to TP on Industrial Safety
Seminars, workshops and conferences ETPIS
General Assembly Meetings
Berlin Seminar 2008
Conference "Emerging Risks related to new industrial technologies"
The conference will take place on 2 & 3 June 2009 in Stuttgart (Germany). It is organized with the support of ETPIS and EU-OSHA, by EU-VRi and the iNTeg-Risk project. more
ETPIS General Assembly, 12 March 2009 in Brussels
This General Assembly is organized in collaboration with European associations and societies addressing risk and safety issues.
more
Meeting of the High Level Group, 5 March 2009 in Ludwigshafen
The 1st meeting of the High Level Group will be hosted by BASF, in Ludwigshafen.
more
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FG METHODOLOGIES F... MANAGEMENT (FG2)
FG STRUCTURAL SAFETY (FG6)
FG HUMAN AND ORGANISATIONAL FACTORS (FG3)
FG EMERGING RISK (FG5)
HUB EDUCATION AND TRAINING (FG4)
HUB NANOSAFETY (FG7)
HUB RESEARCH INFRASTRUCTURES FOR SAFETY AND SECURITY
HUB TRANSPORT
Strategic Research Agenda
Focus Group on EMERGING RISKS
Newsletters and reports
Newsletters
. Newsletter January 2009
. Newsletter September 2008
Activity reports
(reports submitted to the EC for annual reporting)
. Annual Report 2008 (September 2008)
Terms of Reference
You can find in this section the Terms of Reference for all management bodies.
. Terms of Reference ETPIS (including Mirror Group)
. Terms of Reference HLG
. Terms of Reference Operating Agent

Involve different specialists…

Which of the two terms would describe your professional background better?

technical, my professional background is rather technical (please raise the RED card)!

non-technical, my professional background is rather non-technical (please raise the BLUE card)!

Ask specialists… assess the likelihood

Please label the likelihood of the scenario: “Use of nano-technologies is banned in some areas of application in the EU, sometime in 2011”

likely, in some areas of applications, I consider such a ban possible (please raise the RED card)!

totally unlikely, such a ban would make no sense and I cannot image it (please raise the BLUE card)!

iNTeg-Risk project:

Lead partner:

EU-VRi - The European Virtual Institute for Integrated Risk Management (EEIG)

- Partners: 64 + 15 (Art.10)
- Start date: Dec. 1, 2008
- End date: May 31, 2013
- Duration: 54 months
- Budget: ~ 19.2 million Euro
- EC contribution: ~ 13.7 million Euro

iNTeg-Risk Partners

Participants (Legend: EU-VRi = EU-VRi members, (EU-VRi) = EU-VRi membership envisaged/processed, SME = SMEs)

No. (GPF)	Beneficiary Name	Beneficiary Short Name	Country
Main Beneficiaries (Partners): 60			
1	EU-VRi European Virtual Institute for Integrated Risk Management SME	**EU-VRi**	Germany
2	EU-VRi Electricité de France	**EDF**	France
3	(EU-VRi) Gaz de France	**GDF**	France
4	Definiens AG SME	**Definiens**	Germany
6	EU-VRi Materials Engineering Research Laboratory Ltd SME	**MERL**	UK
7	EU-VRi TÜV SÜD Industrie Service GmbH	**TÜV**	German
8	EU-VRi NoviNeon GmbH SME	**Novineon**	German
9	EU-VRi Steinbeis Advanced Risk Technologies GmbH SME	**R-Tech**	German
10	Iberdrola S.A.	**Iberdrola**	Spain
11	Atos Origin Sociedad Anónima Española	**Atos Origin**	Spain
12	Eni Group	**Eni Norge**	Norway
13	EU-VRi D'Appolonia S.p.A.	**D'Appolonia**	Italy
14	EU-VRi Management Intelligenter Technologien GmbH	**MIT GmbH**	German
15	EU-VRi Det Norske Veritas AS	**DNV**	Norway
16	COWI A/S	**COWI**	Denmar
17	Pöyry Forest Industry Oy	**Pöyry**	Finland
18	MOL Hungarian Oil and Gas Public Limited Company	**MOL Plc.**	Hungar
19	VSH Hagerbach Test Gallery Ltd	**VSH**	Switzerla
20	EU-VRi Swiss Reinsurance Company	**Swiss Re**	Switzerla
21	EU-VRi NIS Petroleum Industry of Serbia	**NIS**	Serbia

No. (GPF)	Beneficiary Name	Beneficiary Short Name	Country
22	Saipem Energy International SpA	**Saipem**	Italy
23	EU-VRi Technologica Group- European Technical Joint Venture c.v. SME	**Technologica**	Belgium
24	EuRogas – The European Association of the Natural gas Industry (GERG)	**GERG**	Belgium
25	British Telecommunications plc	**BT**	UK
26	Enagás S.A.	**Enagás**	Spain
27	EU-VRi INCDPM Alexandru Darabont, National Research and Development Institute on Occupational Safety	**INCDPM**	Romania
28	EU-VRi Swiss Institute for the Promotion of Safety and Security SME	**SWISSI**	Switzerland
29	EU-VRi European Virtual Institute on Knowledge-based Multifunctional Materials AISBL SME	**KMM-VIN**	Belgium
30	EU-VRi Institut National de l'Environnement Industriel et des Risques	**INERIS**	France
31	EU-VRi Commissariat à l'Energie Atomique	**CEA**	France
32	EU-VRi Bundesanstalt für Materialforschung und -prüfung	**BAM**	Germany
33	EU-VRi Universität Stuttgart (ZIRN)	**USTUTT**	Germany
34	EU-VRi Fundación LEIA Centro de Desarrollo Tecnologico	**LEIA**	Spain
35	EU-VRi Universitat Ramon Llull Fundació Privada	**URL**	Spain

iNTeg-Risk Partners (main beneficiaries)

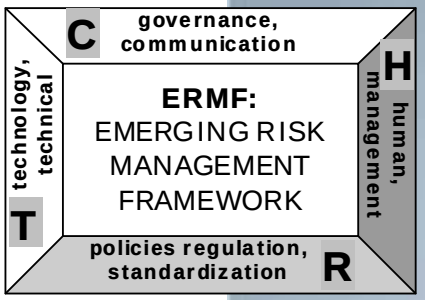
36	Imperial College London, Technology and Medicine	**Imperial**	UK
37	EU-YRI Technical University of Crete	**TU Crete**	Greece
38	EU-YRI Consorzio Interuniversitario per la Prevenzione e la Protezione dai Rischi Chimico-Industriali	**CONPRICI**	Italy
39	EU-YRI Stiftelsen SINTEF	**SINTEF**	Norway
40	EU-YRI Danish Technical University (Risoe)	**DTU-MAN**	Denmark
41	EU-YRI Technical Research Centre of Finland	**VTT**	Finland
42	EU-YRI Bay Zoltan Foundation for Applied Research, Institute for Logistics and Production Systems SME	**BZF**	Hung
43	EU-YRI National Center for Scientific Research - Demokritos	**Demokritos**	Gree
44	EU-YRI Swerea IVF AB	**IVF**	Swed
45	EU-YRI Vysoka Skola Banska - Technicka Univerzita Ostrava	**VSB-TUO**	Czech
46	EU-YRI Jozef Stefan Institute	**JSI**	Slove
47	Health and Safety Executive	**HSE-HSL**	UK
48	EU-YRI Commission of The European Communities - Directorate General Joint Research Centre (Ispra)	**JRC**	Belgi
49	EU-YRI European committee for standardization	**CEN**	Belgi
50	EU-YRI Rijksinstituut voor Volksgezondheid en Milieu	**RIVM**	Nether
51	~~Regione Lombardia~~	~~**RegLomb**~~	Ital
52	EU-YRI German Fire Protection Association SME	**vfdb**	Germ

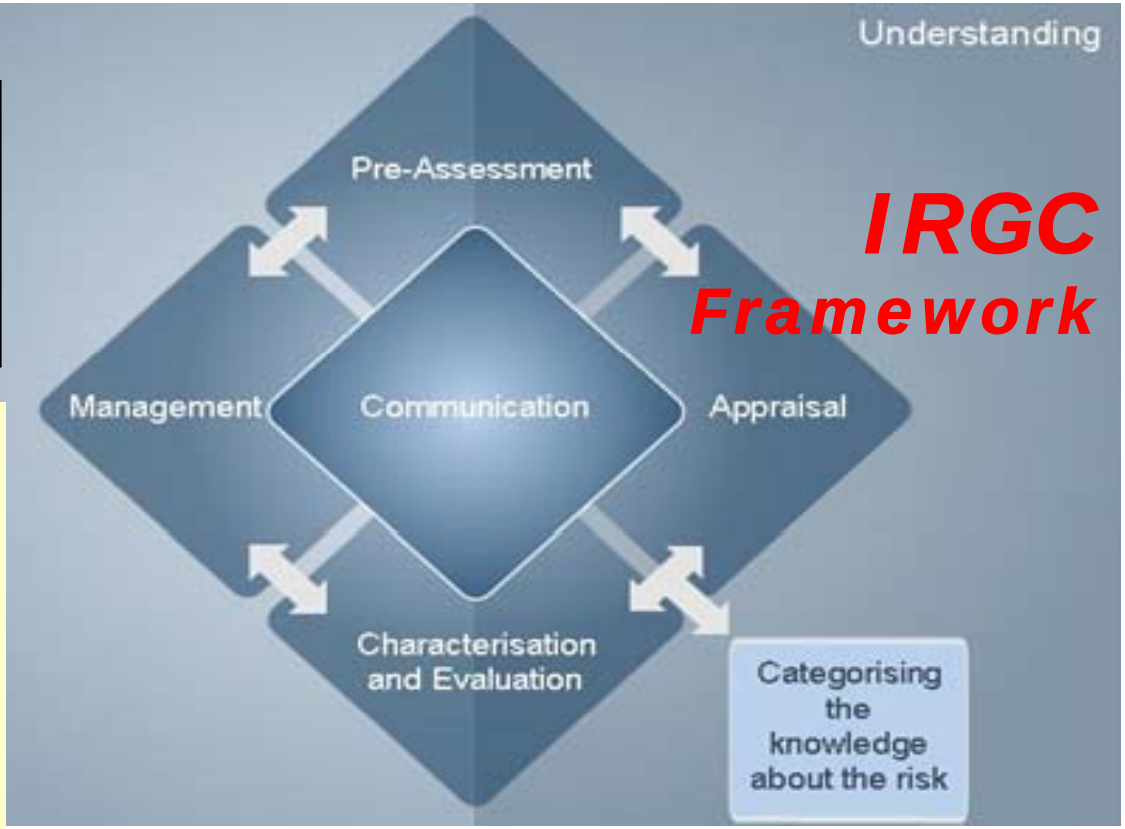
53	Agenzia Regionale Protenzione Civile - Emilia Romagna	ARPC	Italy
54	Mavionics GmbH SME	Mavionics	Germany
55	Association pour la Recherche et le Développement des Méthodes et Processus Industriels	ARMINES	France
56	H.G. Geo Data Solutions GmbH (GDS) SME	GDS	Germany
57	EU-YRI Technical University of Kosice	TUKE	Slovakia
58	EU-YRI University of Novi Sad - Faculty of Technical Sciences	FTN	Serbia
59	EU-YRI EKON Modeling Software Systems Ltd. SME	EKON	Israel
62	SP Technical Research Institute of Sweden	SP	Sweden
63	Studiengesellschaft für unterirdische Verkehrsanlagen e. V. SME	STUVA	Germany
64	Alma Mater Studiorum Università di Bologna	UNIBO	Italy
65	University of Padua	UNIPD	Italy
66	Politecnico di Milano - CMIC Dpt	POLIMI	Italy
67	Dipartimento Ingegneria Chimica Materiali e Ambiente - Sapienza Universitá di Roma	UNIRM	Italy
68	CNR Istituto di Ricerche sulla Combustione	CNR-IRC	Italy
69	University of Pisa	UNIPI	Italy
70	EU-YRI Institut Químic de Sarrià	IQS	Spain

iNTeg-Risk Partners (Art. 10)

Article 10 partners: 24			
101	2B Consulenza Ambientale SME	**2B**	Italy
102	VTT Technical Research Centre of Finland (Espoo)	**VTT (Espoo)**	Finland
103	Steinbeis-Hochschule Berlin	**SHB**	Germany
104	Erasmus University Rotterdam	**EUR**	Netherlands
105	Otto-von-Guericke-Universität Magdeburg, Institut für Mechanik	**OttoUN**	
106	University of Bristol, Artificial Intelligence Group	**BristolUNI**	UK
107	Steinbeis Technologietransfer GmbH, & Co. KG	**STC**	Germany
108	ELITE Foundation SME	**ELITE**	Germany
109	German Institute for Standardization e. V.	**DIN**	Germany
110	CrisisTox Consult SME	**CrisisTox**	Netherlands
121	Institute of Metallurgy and Materials of Polish Academy of Sciences	**IMIM**	Poland
122	Instytut Podstawowych Problemow Techniki Polskiej Akademii Nauk	**IPPT**	Poland
123	Institute of materials research, Slovak Academy of Sciences	**IMR SAS**	Slovakia
124	Materials Centre Leoben Forschung GmbH	**MCL**	Austria
131	Alma Mater Studiorum Università di Bologna	**BolognaUNI**	Italy
132	University of Pisa	**PisaUNI**	Italy
133	University of Padua	**PaduaUNI**	Italy
134	Dipartimento Ingegneria Chimica Materiali e Ambiente - Sapienza Università di Roma	**La Sapienza**	Italy
135	CNR Istituto di Ricerche sulla Combustione SME	**CNR-IRC**	Italy
136	Politecnico di Milano - CMIC Dpt	**POLIMI**	Italy
141	UK Health Protection Agency	**UK HPA**	UK
142	Swedish Defense Research Agency	**FOI**	Sweden
143	Finnish Institute of Occupational Health	**FIOH**	Finland
144	Bundesinstitut für Risikobewertung	**BfR**	Germany

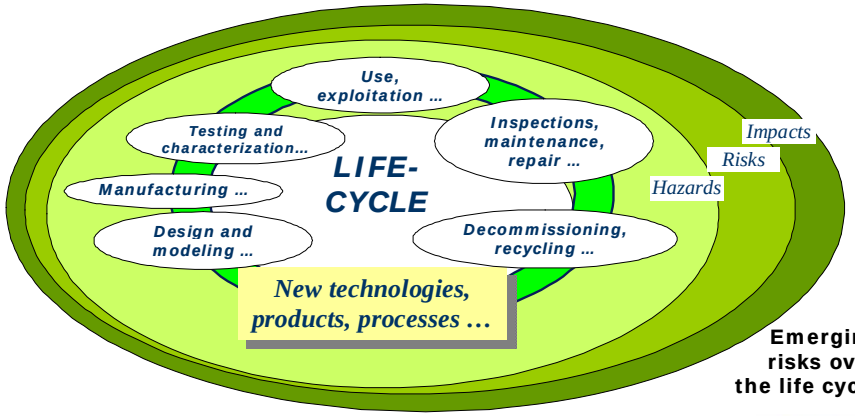
Cornerstones of the technical solutions





iNTeg-Risk solution *based on:*

- ***common framework*** *based on*
  - *IRGC and*
  - *Shape-Risk solutions*
- ***common language*** *(UML of emerging Risks, UML - Unified Model Language)*
- ***CMMI*** *(Capability Maturity Model Integration)*
- ***Life Cycle Analysis*** *(LCA)*
- ***common metrics*** *(based on KPIs) – Key Performance Indicators*
- ***common tools***



Emerging risks over the life cycle

Ask specialists… assess the likelihood

Please label the likelihood of the scenario: “Use of nano-technologies is banned in some areas of application in the EU, sometime in 2011”

likely, in some areas of applications, I consider such a ban possible (please raise the RED card)!

totally unlikely, such a ban would make no sense and I cannot image it (please raise the BLUE card)!

Implementation

iNTeg-Risk Implementation

(Select good examples)

SP1: Analyze and compare the examples

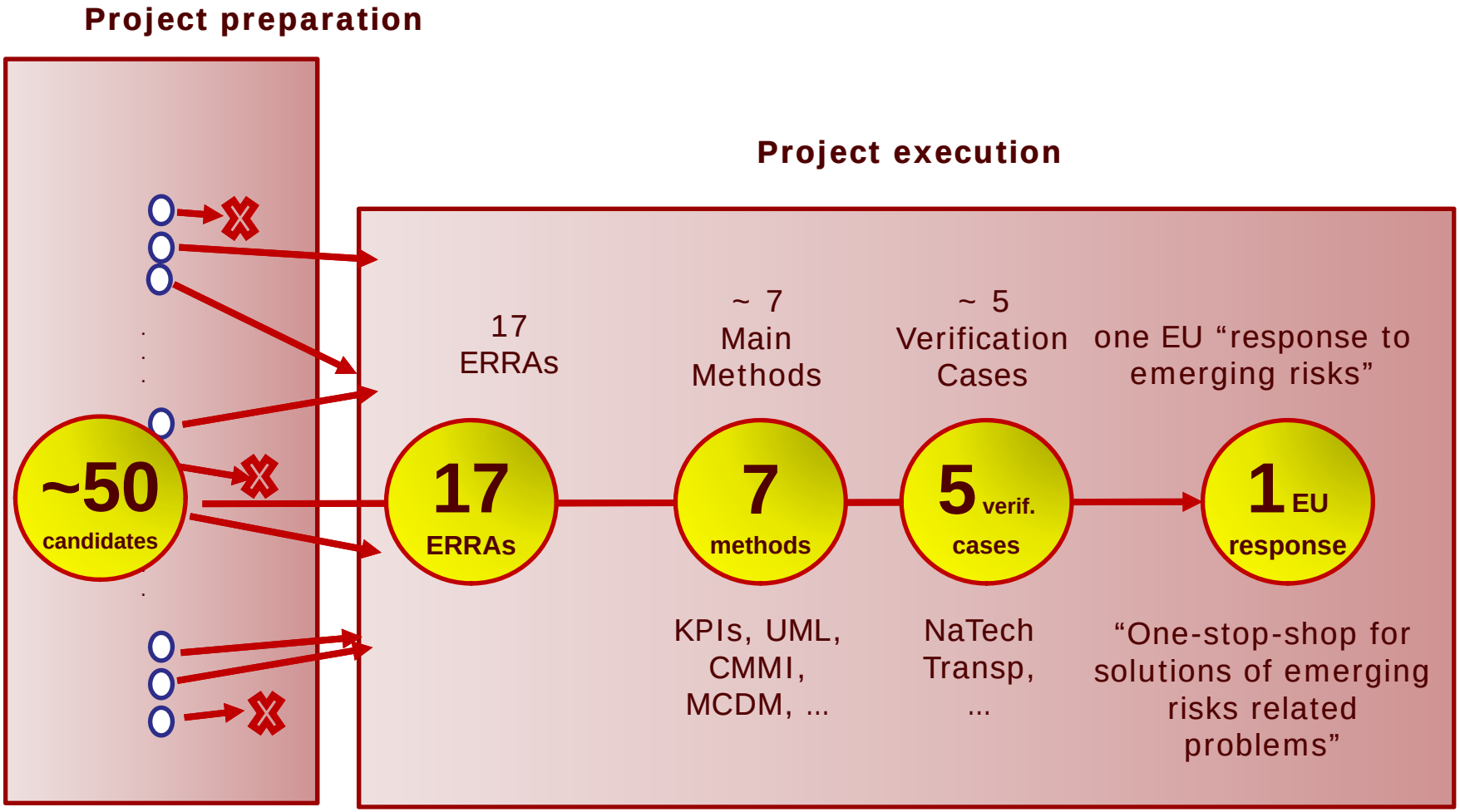
SP2: Draw conclusions, define common methods

SP3: Verify the conclusions/methods

SP4: Create the tools/"vehicles" needed for the application and living of the above solutions
(Spread the solutions)

SP5: Manage steps 1-4

From 50 sample cases to one “EU response”



~ 50 “Emerging Risk”
Candidate applications

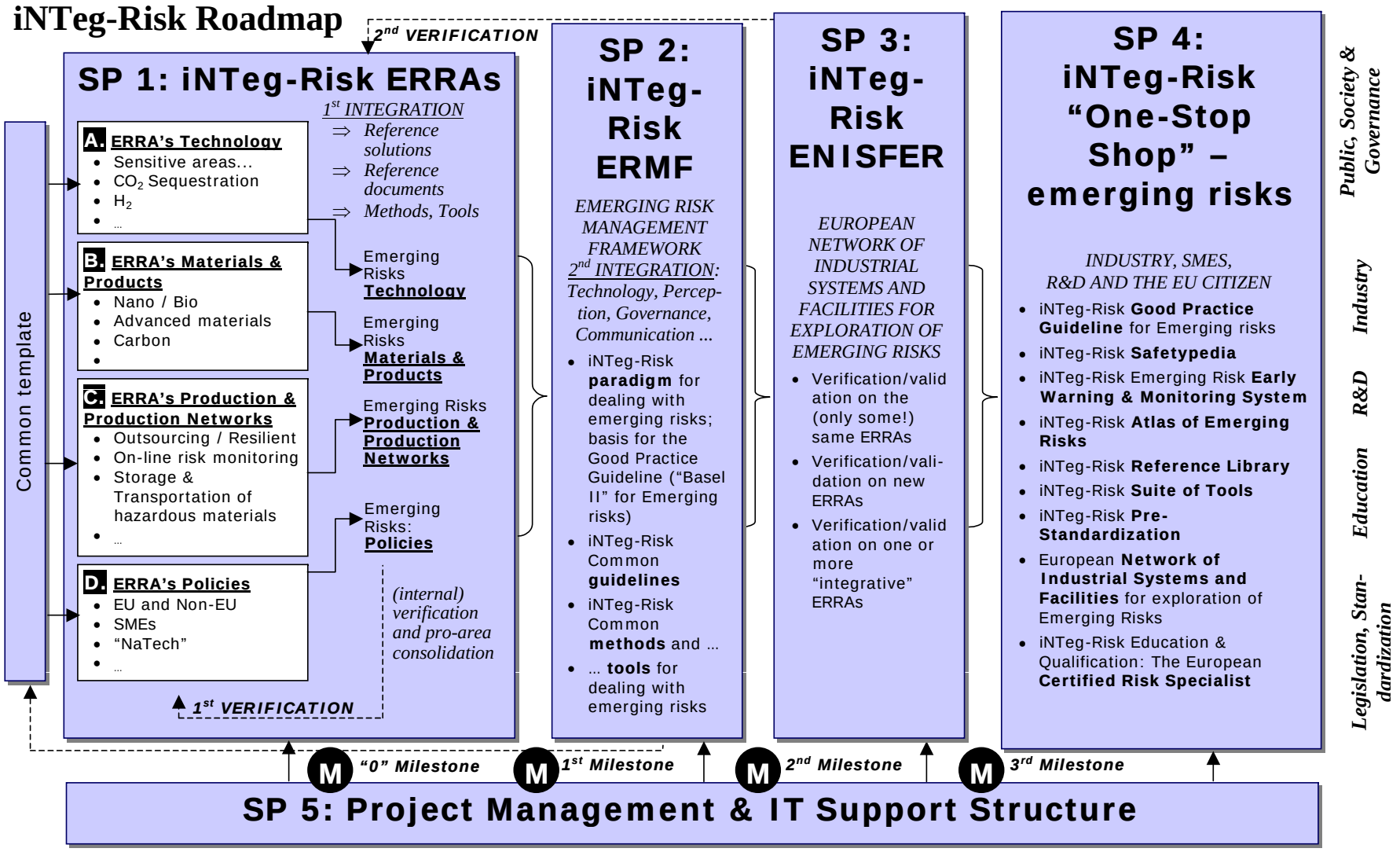
Ask specialists… assess the likelihood

Please label the likelihood of the scenario: “An accident involving “nano” happens in 2011 and use of nanotechno-logies is banned in some areas of application, in 2011 in the EU”

likely, in some areas of applications, I consider this can happen (please raise the RED card)!

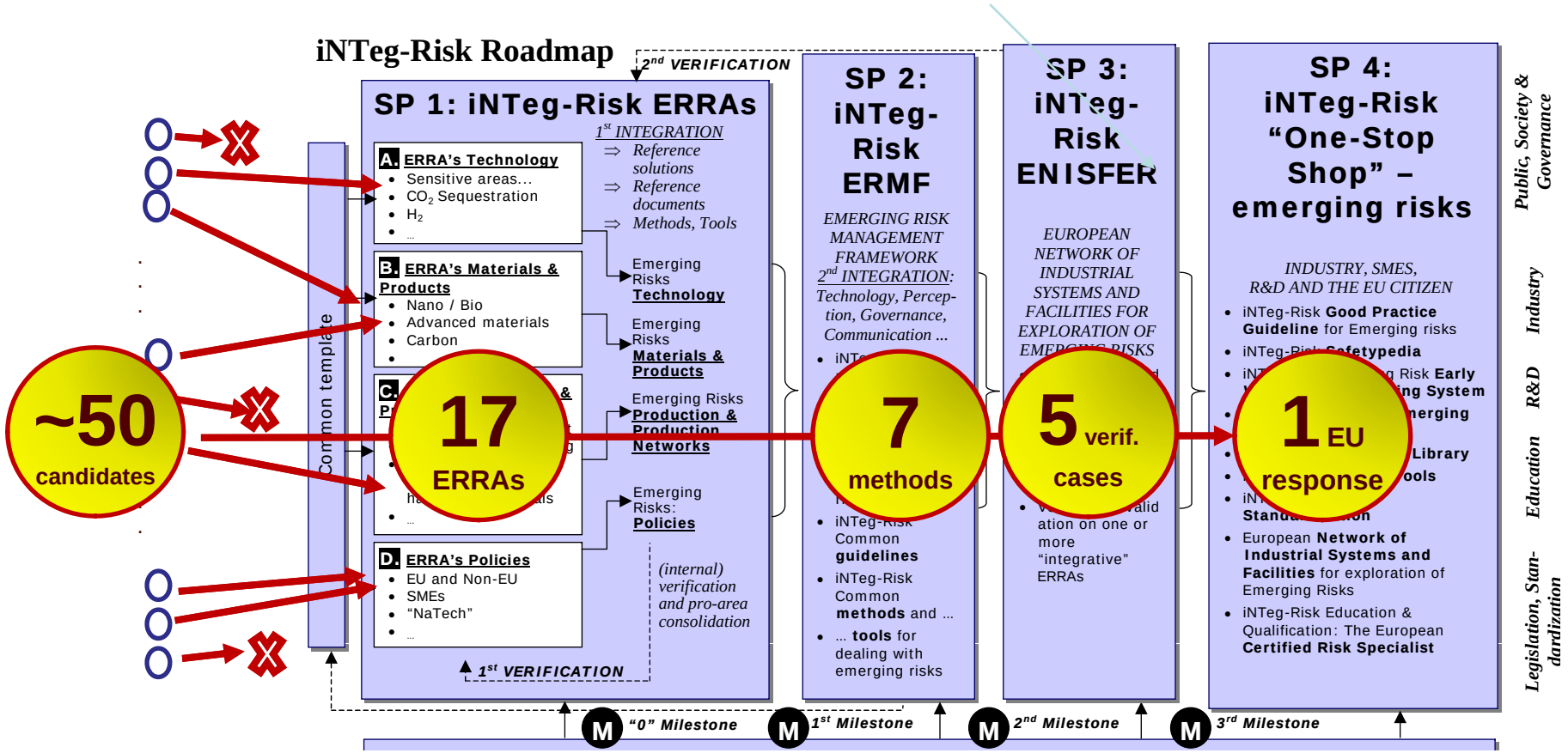
totally unlikely, such a ban would make no sense and I cannot image it (please raise the BLUE card)!

Subprojects (SPs) in the project plan



From 50 sample cases to one “EU response”

Project preparation **Project execution**



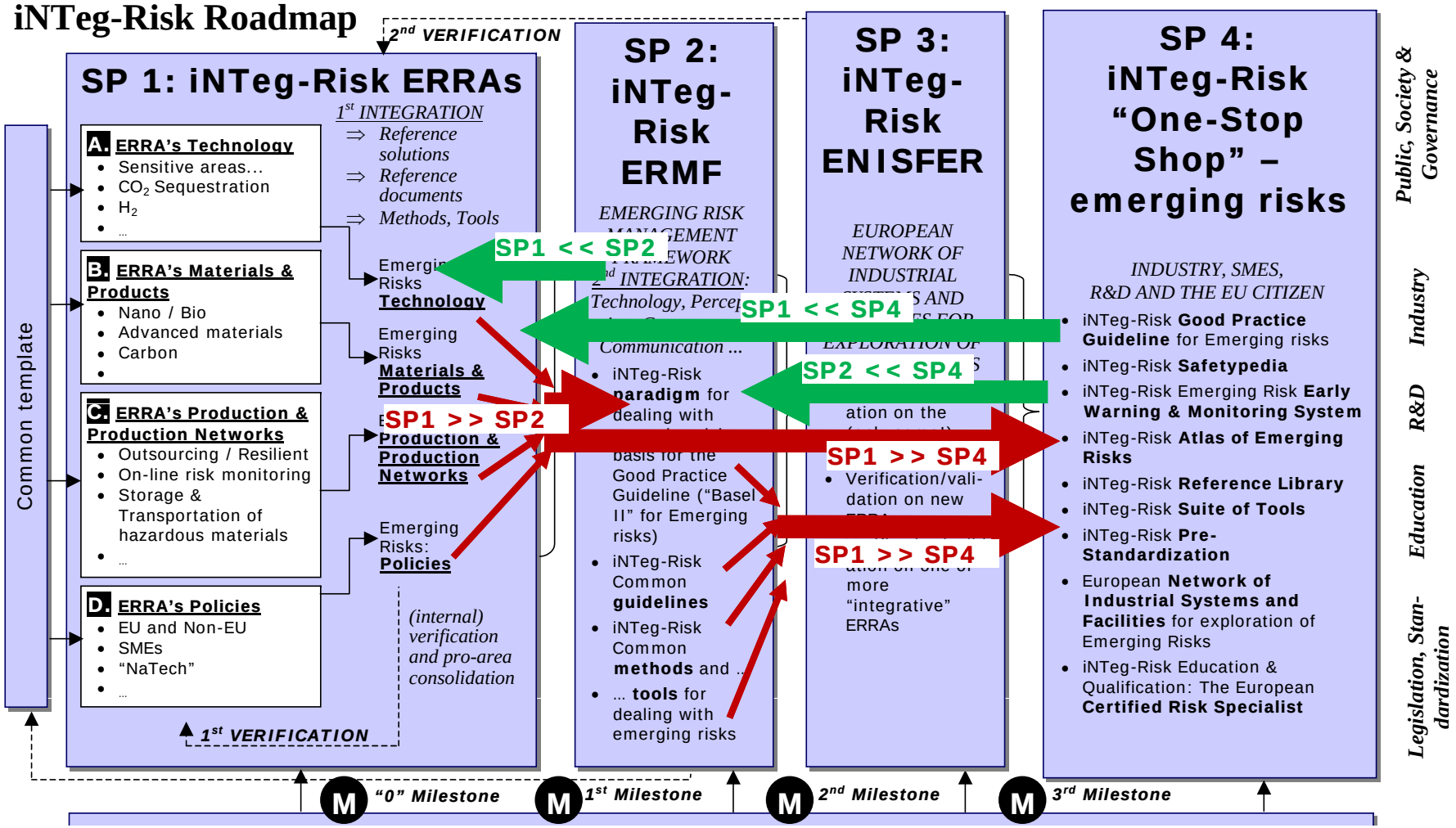
~ 50 “Emerging Risk” Candidate applications

17 ERRAs

~ 7 Main Methods

~ 1 EU “response to emerging risks”

Bottom-up vs. Top-down in iNTeg-Risk



Delivery of data, facts, commonalities …

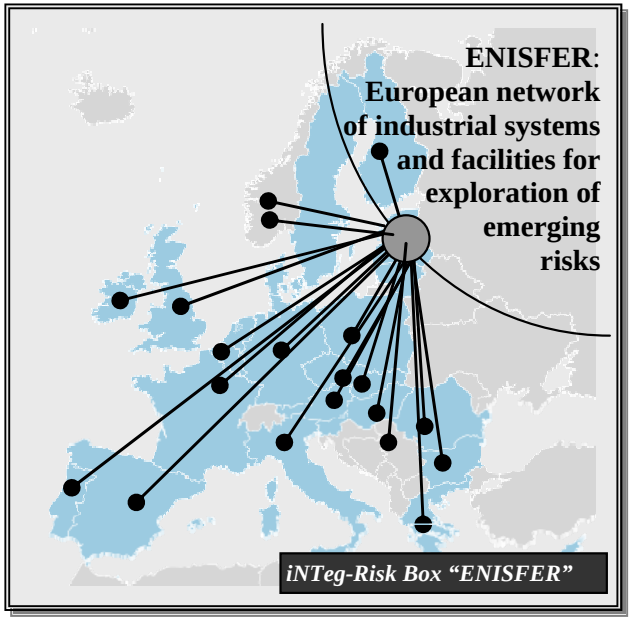
Requirements, formats, queries …

iNTeg-Risk: TECHNOLOGIES…

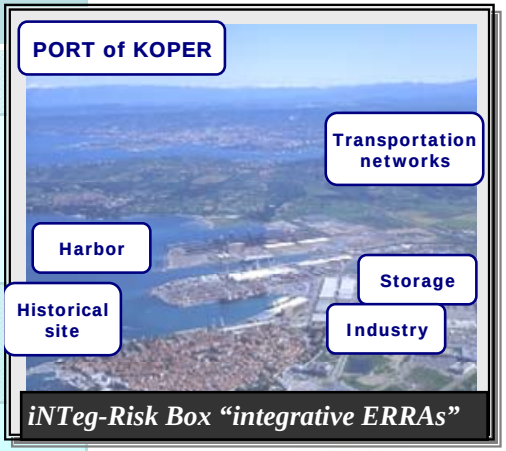
A. New (production) technologies
B. New materials and products
C. New technologies & production networks
D. New policies

Verification:

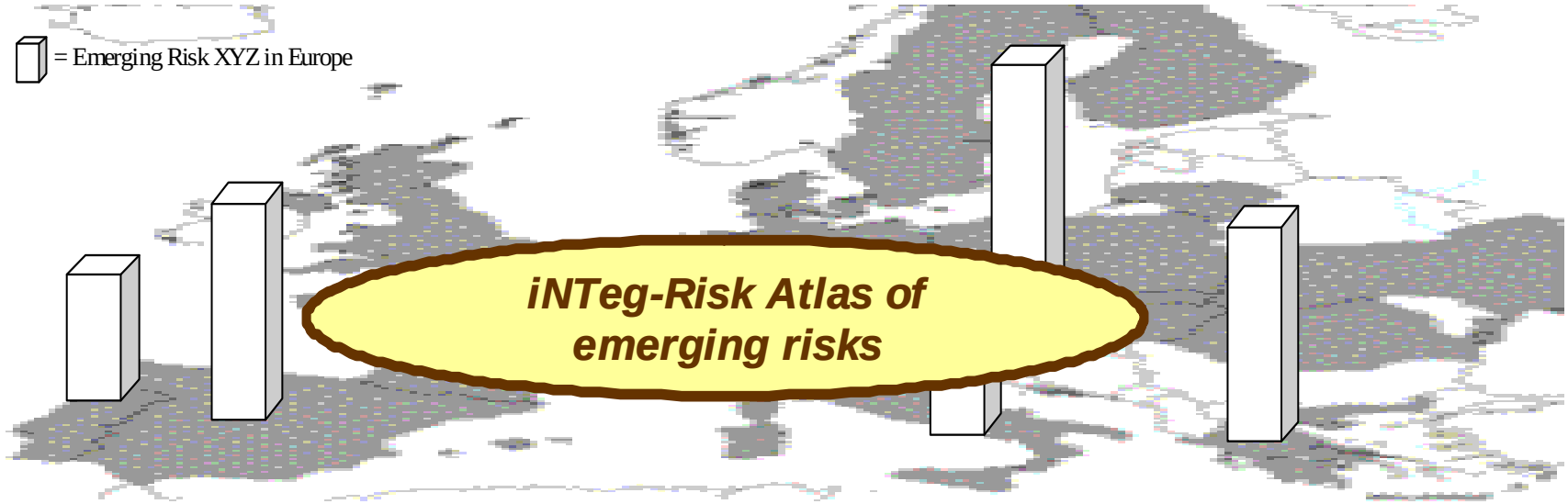
- Integrative ERRAs
- Catalogue of installations (ENISFER)
- A “yet-to-be-defined” additional verification case (competition)



Nr	Name
SP3	**Verification ERRAs**
I1	Integrative ERRA #1 for the validation of emerging risk assessment and management tools in the Industrial zone (NaTech – Nature-Technology interaction) of area of Mantova
I2	Integrative ERRA #2: Harbor zone (industry + transport networks) of Luka Koper
I3	Integrative ERRA #3: Industrial zone (mixed industry) of Pančevo-South



Examples of a planned iNTeg-Risk solutions: iNTeg-Risk Atlas of Emerging Risks



- **Early Warning & Monitoring System** (the network of approved iNTeg-Risk sentinels in charge of signaling the emerging risks and providing advice on them Europe-wide)
- **iNTeg-Risk Atlas of Emerging Risks** (providing on-line maps with current level of emerging risks in different European countries/regions – relaying on the Safetypedia and the Monitoring System);
- **Catalogue of European Industrial Systems and Facil**ities for exploration of Emerging Risks
- **iNTeg-Risk Suite of Tools** (providing access and recommendations to both the tools developed in INTeg-Risk and the relevant validated tools from other sources)

iNTeg-Risk Atlas of Emerging Risks

Incidents/problems in CO2 plants…

Risk perception problems related nanotechnologies…

Conclusions & outlook

iNTeg-Risk: The idea behind the response…

- NEW RISK MANAGEMENT FOR NEW RISKS: Why classical risk management approaches cannot work for emerging risks?
- The project promotes the position that new ways and concepts are needed in the management of new risks – in the particular case of iNTeg-Risk, risks accompanying development and application of “new technologies”.
- New realities – new needs!
  - Serving higher goals
  - Profiting from synergies, new forms of organization and collaboration, using multidisciplinarity >> new risk technologies for dealing with risks of new technologies
  - Avoid pitfalls

iNTeg-Risk: Serving higher goals !…

I. Serving higher goals >> society, environment, future!

1. Involve all stakeholders, reshuffle old hierarchies and priorities
2. Ensure fairness, transparency, confidence, responsibility
3. New controls
4. New leaderships & shared responsibility
5. Democratic treatment of information & technologies
6. Accepting only the sustainable strategies
7. Put the humans into focus of risks management and its language

iNTeg-Risk: Multidiciplinarity !…

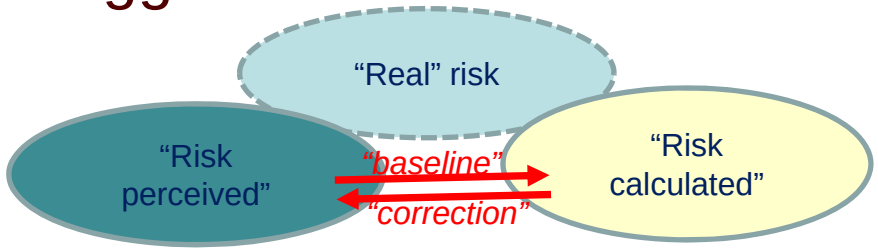
II. Profiting from synergies, new forms of organization and collaboration, using multidisciplinarity >> new risk technologies for dealing with risks of new technologies

1. Forget the past: it has little to say and can be misleading
2. Develop “global” and reliable indicators – make them accepted, develop other new tools: frameworks, UML, CMMI, …
3. Make motivation to deal with risks responsibly inherent and sustainable part of the system
4. Encourage change, rebellion & creativity, put controversies together
5. Create internal markets for ideas, talent and resources
6. Network people, institutions, ideas …
7. Make the management thinking “global” and integrated

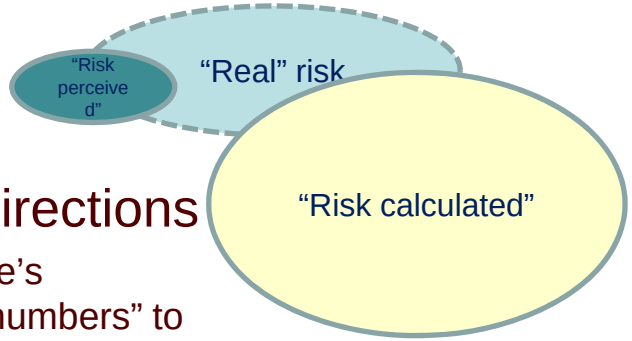
iNTeg-Risk: Avoid pitfalls !...

III. Avoid pitfalls – old pitfalls get bigger in ERs!

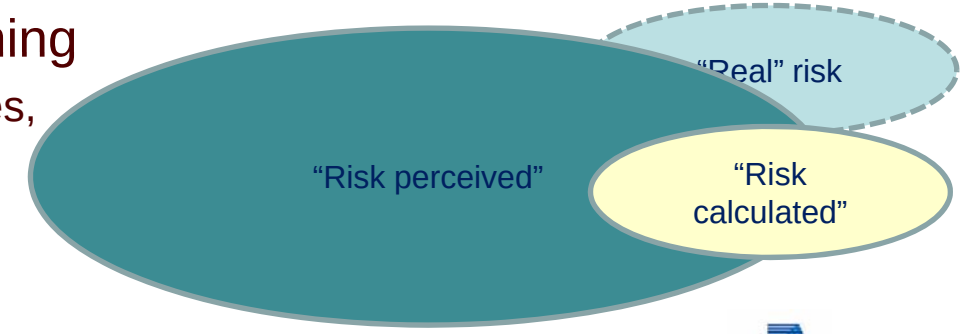
1. The differences between
   - "risk calculated" ("numbers") "real risk" and "risk perceived" ("feelings")



2. Importance of the "feelings"
   - "feelings" define the baseline, "numbers" can only correct – if they ever get a chance for that!



3. Interactivity & communication in BOTH directions
   - from "feelings" to "numbers": e.g. include people's fears into the analysis of scenarios, and from "numbers" to "feelings": e.g. present numbers in such a way that the "feelings" can understand it (grandma?)
4. Communication & reasoning
   - rules & "rules", stances, precise language



Interested to see the answers?

We ask (risk) specialists..

Do you consider risk analysis and/or risk management to be a part of your professional interests and/or work?

YES, I consider risk analysis / management as a part of my professional interests / work (please raise the RED card)!

NO, I do not consider risk analysis / management as a part of my professional interests and/or work(please raise the BLUE card)!

We ask iNTeg-Risk specialists…

Which of the two terms would describe your professional background better?

technical, my professional background is rather technical (please raise the RED card)!

non-technical, my professional background is rather non-technical (please raise the BLUE card)!

Ask specialists… assess the likelihood

Please label the likelihood of the scenario: “Use of nano-technologies is banned in some areas of application in the EU, sometime in 2011”

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