

**58<sup>th</sup> ESReDA Seminar:**  
**Using Knowledge to Manage Risks and Threats:**  
**Practices and Challenges**

Tuesday and Wednesday 15-16 June 2021,  
EC JRC, virtual (online)

*Submission of papers  
is opened till 15 May 2021*

**Call for papers submission and registration**

**Scope of the Seminar**

High-risk industries, critical infrastructures, and urban settlements benefit from many decades of experience from risk management and regulation in different domains. Best practices have been formalised, research and development programs have been completed, and workers have been trained to acquire the available knowledge and transfer know-how. Risk analysis helped actors to better know and foresee the systemic risks, while the analysis of events, accidents and crisis have generated hindsight knowledge that remains useful to face the emerging risks and unexpected events.

Both risk management and knowledge management are still developing and maturing theoretically and in practice. While it is easy to see connection between knowledge and risk, they seem to be studied and practiced almost independently by different communities. This seminar is also about exploring existing and potential relations and complementarity between knowledge and risk management.

Exponentially developing knowledge is helping to better face with emerging risks from continuous innovation and increasing complexity. However, even for old systems, the question is "how difficult is it to apply existing knowledge to manage and regulate related risks". Knowledge is mostly applied by people and a large proportion resides in them rather than in disembodied sources; individual and collective skills and practices to produce and use knowledge are seldom highlighted. Knowledge remains a broad term that covers many distributed phenomena with various sources (from data and information to expertise), forms (from tacit to explicit), different types (from generalized principles to specific cases), multiple dimensions (from individual to social) and is addressed by various scientific disciplines (engineering, ergonomics, management, sociology,...).

This likely raises numerous important questions, among them, e.g.:

- What knowledge is required to manage and regulate risks for old and new technologies?
- How to combine knowledge and imagination for foresight in risk assessment and management?
- How to manage knowledge needs in engineering design and optimization for both derivative and disruptive technologies?
- How to best use past knowledge? Could it become obsolete for present and future situations?
- What kind of knowledge is useful to identify and interpret early warning signs?
- How to integrate reported accident/incident investigation data into the knowledge base required to manage and regulate risks for old and new technologies?
- How to use big data and machine learning to complement experts and improve existing knowledge?
- What about real practices at work? -How is knowledge different from knowing? How knowledge is best embedded in professional practice?
- Is using knowledge automatic? What artefacts and boundary objects help to establish the links between knowledge, risk and safety and practices?

- Are the characteristics of skills and know-how acquisition and transmission really integrated in the engineering processes and knowledge management processes? How do they integrate memorization issues?
- What is the role of case based learning and how does this vary from the teaching of general principles and theories for risk management and regulation?
- How is knowledge influenced or disturbed by different pressures (production, political, economic, and managerial)? Is there a pressure for knowledge when we speak about risk rationale? How can these pressures be managed?

The 58<sup>th</sup> ESReDA seminar will be a forum for exploring these and other related questions. We aim to discuss theories, concepts, and experiences of enhancing the use of knowledge for better risk management and governance. Authors are invited to present their research and operational proposals and raise challenges, but also to discuss as well successes and failures in enhancing risk management through better use of risk knowledge. We want to encourage new ideas, scientific papers, conceptual papers, case studies and cross-sectoral and inter-disciplinary research on the theme of challenges and practices for using knowledge in risk management and governance. This seminar will bring together researchers, practitioners, specialists and decision-makers to discuss strategies and practical experiences.

Papers for contributions to the seminar are invited; please see instructions in the next paragraphs.

### **Target groups and domains of application**

Papers for the seminar are invited from various stakeholders, from practitioners to researchers (industrialists, regulators, safety boards, universities, R&D organisations, engineering contractors and consultants, training specialists) and could address different sectors:

- Energy sector: nuclear and non-nuclear (e.g. fossil, renewables) power plants and networks.
- Process industry: oil and gas, chemical and petrochemical facilities, industry 4.0.
- Transport (rail, road, air and maritime): supply and distribution network, operations, emerging such as driverless cars.
- Aerospace industry.
- Critical infrastructure: electricity, water, telecommunications, information systems.
- Public sector and government
- Urban planning and management.

This seminar is aimed at addressing issues, risks (industrial, natural, na-tech...) and threats (malicious, cyber-security, terrorism) met by different industries, critical infrastructures and urban settlements.

Other topics may be included if they fit well within the theme of the seminar and are related to using knowledge to manage risks and threats, such as product safety, food safety, biotechnology, sanitary crisis.

### **Seminar organisation**

The Seminar is jointly organised by ESReDA and EC JRC.

*Location:* Virtual (online), European Commission Joint Research Centre (EC JRC)

*Agenda:* [Tentative agenda](#).

### *Chairperson of the Seminar*

Mohamed Eid (ESReDA President, RiskLyse, FRANCE)

Kaisa Simola (EC JRC, THE NETHERLANDS)

### *Technical Programme Committee (TPC)*

Zdenko Šimić\* (EC JRC, The NETHERLANDS)

Ludwig Benner (Honorary Member, USA)

Nicolas Dechy (IRSN, FRANCE)

Yves Dien (CHAOS, FRANCE)

Antonio Felicio (ESReDA, PORTUGAL)

Milos Ferjencik (University of Pardubice, CZECH REPUBLIC)

John Kingston (NRI Foundation, The NETHERLANDS)

Paulo Maia (EDP, PORTUGAL)

\*Technical Programme Committee chairperson

Eric Marsden (FonCSI, FRANCE)

Sever Paul (AGIFER, ROMANIA)

Sverre Røed-Larsen (SRL HSE, NORWAY)

Kaisa Simola (EC JRC, The NETHERLANDS)

John Stoop (Kindunos, The NETHERLANDS)

Miodrag Stručić (EC JRC, The NETHERLANDS)

Tuuli Tulonen (Tukes, FINLAND)

Frank Verschueren (Ministry of Labor, BELGIUM)

Ana Lisa Vetere Arellano (EC JRC, ITALY)

### *Opening of the Seminar:*

Kaisa Simola (EC JRC, THE NETHERLANDS)

### *Closing of the Seminar:*

*To be defined* (EC JRC)

### *Local Organization Committee:*

Zdenko Simic (EC JRC, THE NETHERLANDS) – Local Organizing Committee chairperson

Kaisa Simola (EC JRC, THE NETHERLANDS)

### *Logistics:*

Ariane Liessens, (EC JRC, The NETHERLANDS) [Ariane.LIESENS@ec.europa.eu](mailto:Ariane.LIESENS@ec.europa.eu), +31-22456-5444

### **Relevant dates and deadlines** (all in 2021):

- Submission of final papers: May 15  
(MS Word file, from 2 to 12 pages long and formatted with [this template](#)).
- [Online registration](#) for participation: by May 15.
- SEMINAR: Tuesday and Wednesday 15-16 June 2021.

### **Procedure to submit paper and to register**

The language of the seminar is English.

Authors wishing to present a paper are invited to submit paper online at [easychair.org/conferences/?conf=esreda58seminar](https://easychair.org/conferences/?conf=esreda58seminar)

If there is any question or difficulty with submission, please do not hesitate to contact us ([JRC-ESReDA58Seminar@ec.europa.eu](mailto:JRC-ESReDA58Seminar@ec.europa.eu)).

Guidance for authors and speakers about the paper format is available [here](#).

### **Registration and Seminar Fee**

[Online registration](#) will be accepted until 15<sup>th</sup> of May 2021.

There is no registration fees for this virtual seminar.

If there is any question, participants could use e-mail [JRC-ESReDA58Seminar@ec.europa.eu](mailto:JRC-ESReDA58Seminar@ec.europa.eu).

## About the European Commission Joint Research Centre

The Joint Research Centre (JRC) is the European Commission's (EC) science and knowledge service which employs scientists to carry out research in order to provide independent scientific advice and support to EU policy. As the EC's science and knowledge service, the JRC supports EU policies with independent scientific evidence throughout the whole policy cycle.

JRC as independent scientific evidence for EU policies: Create, manage and make sense of knowledge and develop innovative tools and make them available to policy makers; Anticipate emerging issues that need to be addressed at EU level and understand policy environments; Collaborate with over a thousand organisations worldwide whose scientists have access to many JRC facilities through various collaboration agreements; Has a direct impact on the lives of citizens by contributing with its research outcomes to a healthy and safe environment, secure energy supplies, sustainable mobility and consumer health and safety; Draw on over 50 years of scientific experience and continually build our expertise in knowledge production and knowledge management; Host specialist laboratories and unique research facilities and is home to thousands of scientists.

The JRC has six sites (Brussels, Geel, Ispra, Karlsruhe, Petten, Seville) in five EU countries, [ec.europa.eu/jrc/en/about/jrc-in-brief](http://ec.europa.eu/jrc/en/about/jrc-in-brief).

### **JRC Directorate G – Nuclear Safety and Security**

"The mission of the JRC Directorate G for Nuclear Safety and Security is the implementation of the JRC Euratom Research and Training Programme, the maintenance and dissemination of nuclear competences in Europe to serve both "nuclear" and "non-nuclear" Member States.

A strong cooperation and complementarity with their national organisations is of key relevance.

JRC Directorate G supports the relevant policy DGs with independent, technical and scientific evidence in the areas of nuclear safety, security and safeguards.

Directorate G is also an active key partner in international networks and collaborates with international organisations and prominent Academia and Research Institutes."

### **About Alkmaar and Petten**

In the Netherlands EC JRC is located the Province of North Holland near small town Petten with about two thousands inhabitants. The seminar will be hosted in the nearby city Alkmaar 40 km north from Amsterdam. For more information about area, here are two links: [ec.europa.eu/jrc/en/about/jrc-site/petten](http://ec.europa.eu/jrc/en/about/jrc-site/petten) and [en.wikipedia.org/wiki/Alkmaar](http://en.wikipedia.org/wiki/Alkmaar). There are many hotels in Alkmaar. More information will be provided in early 2020 regarding the suggested hotels where you can book your stay.

### **About European Safety, Reliability & Data Association (ESReDA)**

European Safety, Reliability & Data Association (ESReDA) is a European Association established in 1992 to promote research, application and training in Reliability, Availability, Maintainability and Safety (RAMS). The Association provides a forum for the exchange of information, data and current research in Safety and Reliability.

ESReDA membership is open to organisations, privates or governmental institutes, industry researchers and consultants, who are active in the field of Safety and Reliability. Membership fees are currently 1000 EURO for organisations and 500 EURO for universities and individual members. Special sponsoring or associate membership is also available.

For more information on ESReDA, contact: ESReDA General Secretary, Dr. Inga Šarūnienė, Senior Researcher at Lithuanian Energy Institute, [Inga.Saruniene@lei.lt](mailto:Inga.Saruniene@lei.lt)

ESReDA address: European Safety, Reliability & Data Association, an International Non-Profit Scientific Association under the Belgium law (June 27, 1921, Title III). Headquarter: ESReDA, rue Gachard 88 Bte 14, B-1050 Bruxelles, Belgium, Siret:E00005802.

Any interested party is welcome to contribute to ESReDA project groups.

## ESReDA new Project Group on Risks, Knowledge and Management

ESReDA launched in November 2020 a new project group to address the relationships between Risks, Knowledge and Management. The scope defined will be of interest to system designers, operators, managers, maintenance, lawyers, insurers, regulators, and many others working on safety and security including natural hazard management. The scope covers the safety, reliability and security related to multiple hazards (natural, industrial,...) and threats (malicious, terrorism, cyber) of systems (high-risk industry, a critical infrastructure, a communication and transport system over different territories etc.) involving all stakeholders (public, operators, regulators and government). Risk management integrates any activities and disciplines related to assessment, identification of early warning signs and emerging risks, foresight, investigation of events and lessons learning, management of barriers and lines of defence, reliability, and change of policies and culture. In this context, the keyword knowledge defines the main topic of the project: the endeavour to use knowledge to promote management and governance of risks (from design to operation and dismantling).

### Related Former ESReDA Project Groups on Foresight in Safety, Dynamic Learning and Accident Investigation

In the autumn of 2015 a project group was launched for 3 years to address Foresight in Safety related aspects. In the end, the PG's results and conclusions on the state-of-the-art and new ideas on the subject will be published. The project group meets twice a year. It gathers industry experts, researchers and consultants from: EDF-R&D (France), EDP-Gestão da Produção de Energia, S.A. (Portugal), IRSN (France), EC JRC (Italy and The Netherlands), Kindunos (the Netherlands), Tukes (Finland), FonCSI (France), SRL HSE (Norway), University of Pardubice (Czech Republic), Labor Ministry of Belgium, and AGIFER (Romania). It organized two seminars and will issue its deliverables in early 2021:

- The 55th ESReDA Seminar on “Accident Investigation and Learning to Improve Safety Management in Complex System: Remaining Challenges”, AGIFER, Bucharest, Romania, 2018, [www.esreda.org/event/55th-esreda-seminar/](http://www.esreda.org/event/55th-esreda-seminar/)
- The 53rd ESReDA Seminar on “Enhancing Safety: the Challenge of Foresight”, EC JRC, Ispra, Italy, 2017, [www.esreda.org/event/53rd-esreda-seminar/](http://www.esreda.org/event/53rd-esreda-seminar/)

The ESReDA project Group “Dynamic Learning as a follow-up from accident investigation” was in operation from 2009 to 2015. It worked on how lessons from events and accidents are learned. The PG organized 2 seminars and issued four deliverables *all available for free download* on the ESReDA website.

- The 45th ESReDA Seminar on “Dynamic Learning from Incidents and Accidents, Bridging the Gap between Safety Recommendations and Learning”, EDP, Porto – Portugal, 2013
- The 36th ESReDA Seminar on “Lessons learned from accident investigations”, EDP, Coimbra, Portugal, 2009.
- “Case study analysis on dynamic learning from accidents” ESReDA report,
- “Barriers to learning from incidents and accidents” ESReDA report,
- “Guidelines for preparing a training toolkit on event investigation and dynamic learning”, report
- “Challenges to the investigation of occurrences. Concepts and confusion, metaphors, models and methods”. Essay by Pr. Stoop.

The ESReDA project group “Accident Investigation” was operational from 2000 to 2008 to address accident investigation methods, practices, organizational conditions, institutional and regulations context. The PG organized two seminars and issued three deliverables:

- “Guidelines for safety investigation of accidents” (2008) *available for free download* from ESReDA.
- the 33rd ESReDA Seminar on “Future challenges of accident investigation”; in JRC, Ispra, 2007
- “Shaping Public Safety Investigations of Accidents in Europe” (2005 - ESReDA Safety Series – book edited by DNV);
- the 24th ESReDA Seminar on “Safety Investigation of Accidents” in JRC, Petten, 2003
- “Accident Investigation Practices - Results from a European Study” (2003 – report published by DNV).