ESReDA
European Safety, Reliability & Data Association

Newsletter

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Forthcoming ESReDA SEMINARS

The 53rd ESReDA Seminar

14-15 November, 2017
Ispra, Italy

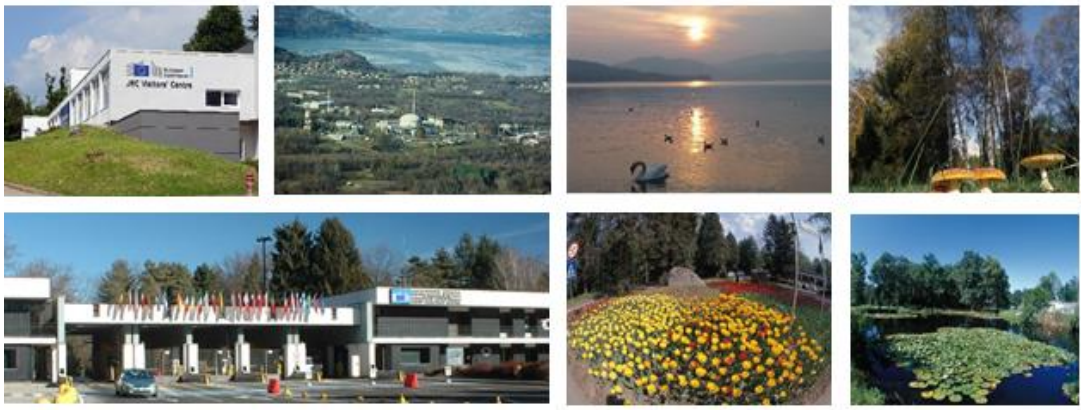
Ana Vetere
EC DG JRC Directorate E: Space, Security and Migration, Ispra, Italy

Zdenko Simic
EC DG JRC Directorate G: Nuclear Safety & Security, Petten, The Netherlands

Nicolas Dechy
IRSN, France

The 53rd ESReDA Seminar on Enhancing Safety: the Challenge of Foresight

be held on the 14th-15th November 2017 and will be hosted by **EC DG JRC Directorate E: Space, Security and Migration**, Ispra (Italy) with the support of **EC DG JRC Directorate G: Nuclear Safety & Security** (Petten, The Netherlands). This seminar is organised with the support of the ESReDA Project Group "*Foresight in Safety*" (more information about the PG FIS on ESReDA website).



The analysis of the major accidents and crises has shown that there were always early warning signs that could have been heeded and used as valuable information to design "relevant tools" and proactive strategies for preventing major events. Such missed opportunities point towards the need to improve foresight methods for enhancing safety & crises management. The shift from safety management approaches in which improvement is predominantly based on hindsight to include more foresight approaches has many hurdles to overcome, in theory as well as in practice. The seminar will address the question: How can foresight improve systems' resilience and accident prevention? This rises several topics such as: safety imagination with scenario approaches, foresight methods for short and long term, anticipation of new risks induced by new technology, the digital revolution, industry 4.0, the management of emerging risks, the detection and treatment of early warning signs (EWS), weak signals, accident precursors, the role of whistle blowers and of data mining with big data and linguistic tools, the social climate and reporting culture, the use of the past experiences and organizational learning… We aim to discuss theories, concepts, and experiences (successes and failures) of enhancing foresight in safety. All industrial sectors are concerned (energy, process, transport, space, health critical infrastructure, public sector, government …).

The 53rd ESReDA Seminar has attracted a large number of potential contributors and high quality abstracts have been submitted for review; each abstract has been carefully reviewed by the Technical Program Committee members. The review has been done according to the following main evaluation categories:

- relevance of the topic for the Seminar scope,
- scientific relevance.

As a result of the review process, the 25 most focused contributions have been retained for inclusion in the Seminar Draft Programme. The Draft **Programme** is already available at ESReDA website.

In addition, four **invited lecturers** are foreseen at the Seminar:

- *Fabiana Scapolo*, EC Joint Research Center, Belgium,
- *Ana Afonso*, European Food Safety Authority, Parma, Italy,
- *Antonio d'Agostino*, European Union Agency for Railways, Valenciennes, France,
- *Lorenzo Fiamma*, European Maritime Safety Agency, Lisbon, Portugal.

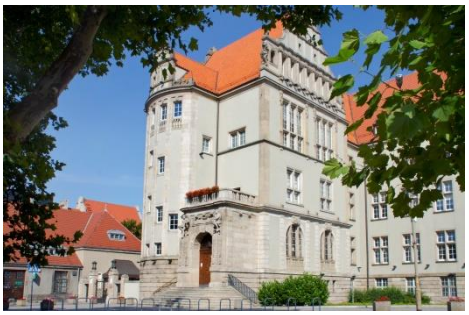
Registration and details for venue and accommodation are available at ESReDA website.

New ESReDA MEMBERS

In 2016

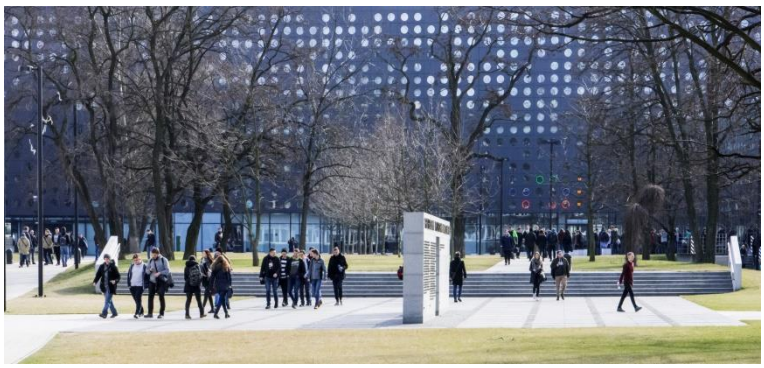
ESReDA warmly welcomes ***Wroclaw University of Science and Technology*** who joined us as ESReDA Effective Members.

Wroclaw University of Science and Technology (WUST) is a technical university and a research institution. The University primarily carries out its mission through the highest standards in scientific research, internationalization and also through the high quality of education which is adapted to labour market requirements. Our education process is in line with international standards of the so-called Bologna Process.



WUST was founded in 1945, mainly thanks to the commitment of the academic staff of Lviv Polytechnic and Jan Kazimierz University of Lviv, who adapted the destroyed buildings of the Technology School – Technische Hochschule. The first Polish lecture at Wrocław University of Science and Technology was delivered by Professor Kazimierz Idaszewski on November 15th 1945. This date is celebrated as the tertiary institute's feast day as well as a feast of Wrocław's academic life.

Today it is one of the biggest and best technical universities in the country with 34,000 students being educated by 2000 academic teachers in 16 faculties: Architecture; Civil Engineering; Chemistry; Electronics; Electrical Engineering; Geoengineering, Mining and Geology; Environmental Engineering; Computer Science and Management; Mechanical and Power Engineering; Mechanical Engineering; Fundamental Problems of Technology; Microsystem Electronics and Photonics; Pure and Applied Mathematics; Technology and Computer Science; Technology and Engineering; Technology and Natural Sciences.



WUST stands out with its educational offer that allows students to study according to standard programmes, as well as according to their individual educational paths. Moreover, the University maintains contacts with many educational and research institutions in the world and also follows the double diploma procedure. It currently has a cooperation agreement with 205 partners from 49 countries. Students and researchers of WUST have an opportunity in both education and participation in joint projects such as: Erasmus+, Student Exchange Programmes, the Double Degree Master Programme T.I.M.E., the Polish and American Fulbright Commission and also DAAD. Some research results:

- 12 195 publications in journals on the ISI Master Journal List,
- 11 345 publications in JCRI indexed journals,
- 5 495 registered inventions, including utility models.

Also, science and research centres belong to the structure of the University: Wroclaw Centre for Networking and Supercomputing, Wroclaw Centre for Technology Transfer, Hugo Steinhaus Centre for Stochastic Methods, Centre of Advanced Materials and Nanotechnology, Biomedical Engineering Centre, Centre for Advanced Manufacturing Technologies, EMC Centre of Excellence - Electromagnetic Compatibility of Devices, Systems and Installations, Materials Recycling Centre of Excellence.

The campus of the University was placed among the 15 most beautiful in the world according to a statement published by the prestigious online journal "The Huffington Post" and the American record company Disney (Pixar). Numerous buildings in a modernist style, located mainly by Odra River bank, were especially admired.

HR EXCELLENCE IN RESEARCH

In June 2016 European Commission granted our University the logo “Human Resources Excellence in Research”. It is given to those institutions that apply the principles of the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers.

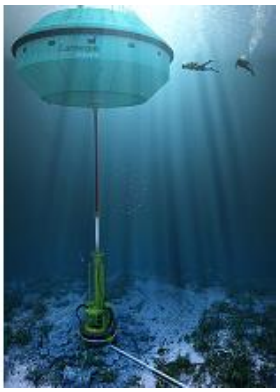
The 54th ESReDA Seminar

Franck Schoefs
Université de Nantes, France

Alaa Chateauneuf
Blaise Pascal University, France

54th ESReDA Seminar on Risk, Reliability and Safety of Energy Systems in Coastal and Marine Environments

25-26 April, 2018, Nantes, France



Nowadays, sustainable energy production becomes a very challenging issue and most of the economically developed and underdeveloped countries plan rapid evolution in the 15 coming years. The climate changes can be already felt in most of them. Meanwhile, when the UNESCO revealed that 16% of the population lived by the seaside (less than 100km from the coast) in 1990, this percentage reached 50% in 2010 and is planned to jump to 75% in 2035. Energy production from the sea or from the littoral is herein not only an opportunity with the ocean covering approximately 71% of the Earth surface, but also a chance with only few installed industrial systems in comparison with the potential and the existing scientific and technological knowledge (environmental resources, controlled energy systems, grid optimization and materials in sea environment.

Since the early 2010's, the European Community promotes researches and innovations in the field of Marine Renewable Energy, with the improvement of existing wind offshore industry based on fixed structures, the promising development of floating wind energy with increasing turbine capacities, the related increase of blade length and of the total height of the structure and the potential offered by ocean energy (wave, tidal, thermal). Recently, in 2016, the European Strategic Energy Technology Plan (SET-plan) wrote in its roadmap that the key goal is to reduce the LCOE (Levelized Cost Of Electricity) and set the target of 7 ct€/kWh to be reached by 2035. To reach this ambitious target, the European Platform of Universities in Energy Research & Education (EUA-EPUE) recommends to develop system reliability, maintenance and structural health monitoring optimization and to increase service lifetime from 25 years now to 35 years. There are many technical issues and human challenges where risk, reliability and safety are involved: evaluation of uncertain resources (wind, wave, currents), material reliability, complex system reliability, electrical grid optimization, collision with ships, governance of risk in a multi-usage area (fishing, tourism, maritime transport, European defence).

The aim of the 54th ESReDA seminar is to bring together scientists, engineers and decision makers in the field of complex engineering system safety, structural health monitoring, cost/benefit assessment and risk management, in order to present and discuss innovative methodologies and practical applications related to complex system reliability, economical risk and human risk in complex environment. Scientific methodologies, theoretical issues and practical case studies are expected to cover all the range from academic to industrial applications, including electro-mechanical and civil engineering.

Topics include (but are not limited to):

- Reliability-based design and optimization (including structural, material and electro-mechanical issues);
- Service lifetime extension;
- Risks during sea operations and during service lifetime in a multi-usage area;
- Robustness quantification of complex systems;
- Electrical grid optimization and asset management;
- Life-cycle assessment and optimization;
- Structural and mechanical reliability, including electro-mechanical systems
- Probabilistic degradation models;
- Added value of structural health monitoring and Inspection, Maintenance and Repair optimization;
- Risk assessment and decision theory;
- Computation procedures in analysis and optimization;
- Failure consequences on human lives, activities and environmental damage ;
- Organisational and societal modelling;
- Industrial case studies in Coastal Structures and Marine Renewable Energy.

More information and the first **Call for Papers** are available at ESReDA website.

Olivier Gaudoin
Conference Chair, Université Grenoble Alpes, France

10th International Conference on Mathematical Methods in Reliability (MMR 2017)
3-6 July 2017, Grenoble, France

The 10th international MMR conference was organized this year by Grenoble INP and Université Grenoble Alpes. MMR celebrated its 20th anniversary. The conference was very successful in view of the presentation of 235 conferences from 38 participating countries, with 5 plenary sessions, 1 panel session, 46 invited sessions and 30 contributed sessions, i.e. 77 sessions (with 3 conferences / session).

About 259 people attended the conference: the largest contingent (63) is represented by France, followed by China (44), the USA (21), Japan (17), India (10) and many European countries (Spain (11), Germany (8), United Kingdom (8), Norway (6), Poland (6), …). The public was essentially an academic audience with some industry participants.

André Lannoy
ESReDA Honorary Member, IMdR, France

The conference was very interesting, innovative on many aspects, very well organized in a very beautiful "intelligent" building. Plenary sessions are all of great interest, on important topics or on "in fashion" topics. They correspond to state of the art or to retrospectives, to syntheses of works. They allow us to see the evolution of ideas and methods and contain any information, any useful reference to go further. Several of them also offer perspectives. We particularly noted:

- "Reliability Importance Factors: A Mathematical Point of View" (Bocconi University, Milan) which is didactic and very well documented,
- "Probabilistic Construction and Properties of Gamma Processes and Extensions" (University of Pau and Pays de l'Adour); this conference is a preparation for the future that should no longer be focused on reliability analysis but on the analysis of degradation,
- "System Signatures: A 30-Year Retrospective", University of California, Davis): this little known subject seems to us to deepen.

We have identified 14 sessions on system reliability, 11 sessions on maintenance, 10 sessions on lifetime data, 7 sessions on degradation analysis. It is clear that maintenance remains (and must remain) a major topic of R&D. It was not possible to participate in all the invited and contributed sessions (6 sessions in parallel). Only one-fifth of the presentations could be attended. We noticed the following conferences:

- "A logistic perspective for threshold of degradation - failure model" (University of Hong-Kong) which proposes a logistic model for modelling a degradation threshold,
- "Multivariate Extreme Value Theory – A Tutorial with Applications to Hydrology and Meteorology" (EDF R&D) is related to the estimation of the probability of occurrence of simultaneous rare events,
- "Trading off vulnerability and recoverability in network resilience" (University of Oklahoma), defines vulnerability, adaptability and restoration, and proposes a multi-objective optimization method for quantifying resilience,
- "Reliability of Structures with Mechanical Evaluation and Sensitivity Analysis by a Probabilistic Model with Polynomial Chaos" (Phiméca) describes a structural reliability approach in design phase,
- "A noisy gamma degradation process with degradation dependent non-Gaussian measurement error" (University of Campania Luigi Vanvitelli) presents an industrial application using uncertain field data,
- "A condition – based dynamic maintenance policy for an extended gamma process" (University of Angers) recommends the use of extended gamma process.

The MMR congress is very rich and deserves an in-depth analysis within the framework of research-industry collaborations. Congratulations to the organizers!

Forthcoming Conferences and Seminars

André Lannoy
ESReDA Honorary Member,
IMdR, France

The λμ 21st Risk Management, System Dependability & Safety Symposium
16-18 October, 2018, Reims, France

RISK MANAGEMENT AND DIGITAL TRANSFORMATION: OPPORTUNITIES AND THREATS

New challenges go along with the digital transformation initiated by technology: what will be the role of man in this environment? What remaining share will be left to human expertise? What will be the impacts on work, work organization, competence management, dependability modelling and to a greater extent on risk management? How to go along with this transformation to get benefits and profits without enduring the threats?

This topical thematic represents an important challenge for our working experience in risk management and dependability. During the 21st issue of the λμ Conference in Reims, approaches, methods and tools will be considered to take up this challenge. Through industrial applications and research works, problems presented and answers brought will be explored depending on the various activity fields.

Main technical areas concerned are: digital revolution, opportunities and threats, big data, artificial intelligence and natural language processing, digital and collaborative economy, model-driven engineering, experience feedback, maintenance and durability, project management, human and social sciences for risk management, dependability methods, reliability, complex systems, natural and environmental risks, health risks, decision process, laws and standardization.

A day of tutorials will be organized on the 15th October, 2018.

For more information: click to download the Call for Papers.

Forthcoming Conferences and Seminars

Other Conferences and Seminars

CRITIS 2017 – the 12th International Conference on Critical Information Infrastructures Security
9-11 October 2017, Lucca, Italy.
Information and a preliminary program are already available at CRITIS 2017 website.

International Conference on INFRASTRUCTURE RESILIENCE
14-16 February 2018, Zurich, Switzerland. More information at conference website.

Conference "Maintenance in Power Plants 2018" with Technical Exhibition
28 February - 1 March 2018, Bonn, Germany Call for Papers.

CYSENI 2018 – the 15th Annual International Conference of Young Scientists on Energy Issues
23-25 May 2018, Kaunas, Lithuania. Call for papers at CYSENI website.

ESREL 2018 – the 28th Annual European Safety and Reliability Conference
17-21 June 2018, Trondheim, Norway. Call for papers at ESREL 2018 website.