



Forthcoming ESReDA SEMINARS

The 56th ESReDA Seminar



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The 56th ESReDA Seminar on Critical Services continuity, Resilience and Security 23-24 May 2019, Linz, Austria

The 56th ESReDA seminar will be held on 23-24 May 2019, hosted by [Johannes Kepler University \(Institute for Stochastics and Linz Center of Mechatronics\)](#) Linz, Austria.

The 56th ESReDA Seminar has attracted a large number of potential contributors and high quality draft papers have been submitted for review; each draft paper has been carefully reviewed by the Technical Program Committee members. As a result of the review process, we will now have the opportunity to listen to around 20 presentations concentrating on the seminar topic.

In addition, two invited lecturers are foreseen at the Seminar:

- *Towards an ecosystem of models - Common visions of automated engineering and critical infrastructure modelling* by Pr. Johann Hoffelner (Linz Center of Mechatronics GmbH);
- *Risk and Reliability Engineering for Crisis Management: Using Experience from Asset Management* by Cyp F.H. van Rijn (Utrecht University of Applied Sciences).

[Preliminary Programme](#) and [Registration](#) are already available at [ESReDA website](#).



The 57th ESReDA Seminar



Luís Andrade Ferreira
University of Porto,
Portugal



Bernardo Vicente
Tormos Martinez
Universitat Politècnica de
València,
Spain

The 57th ESReDA Seminar on Advances in Reliability, Risk and Safety Analysis with Big Data 23-24 October 2019, Valencia, Spain

Industry 4.0 is an industrial action that corresponds to the increasing integration of industrial production and information and communication technologies. It includes different aspects, among them cyber-physical systems, big data, internet of things, augmented reality, cloud computing and cognitive computing.

With recent improvements in sensor technologies, including miniaturization, performance, cost and energy consumption and in information systems resulting in increased functionality at lower costs, obtaining very important quantities of data from running industrial equipment in a cost-effective manner is now a standard practice.

To treat all the data gathered by the sensors and to transform it in useful information, industries seek to make a greater use of Artificial Intelligence (AI), which can be defined as the science and engineering of automated problem solving. There are several AI techniques, as are Machine Learning, Predictive Modelling and Deep Learning.

Among the most promising applications of these concepts can be found in Reliability, Risk and Safety Analysis. In seeking, opportunistically, the benefits from these new technological capabilities, it is important to remain critical and to address potential side or adverse effects as well especially for high-risk industries where errors can become dramatic. It is the role of the ESReDA association to organise an expert debate and further collaborative work on this topic.



For this 57th ESReDA Seminar we are concerned and invite to focus on Big Data challenges and applications. So the main topics will be the discussion of the following subjects:

- Retention and quality of data:

The production of data is dependent on the quality of the sensors and their reliability. The use of the predictive maintenance and the prescriptive maintenance actions, that influence reliability, risk and safety during the life cycle of equipment, are dependent on the quality and validity of the data and on the capacity to understand its meaning in terms of the degradation processes leading to equipment failures. Also, it is important to know what data is important to retain and to use for data analytics, being aware of its variability with time. How to deal with these challenges?

- Data analytics:

How data analytics can improve reliability, risk and safety analysis, leading to less uncertainty in the analysis and providing more sustainable results? What are the AI models that have already been used or models with good potential to be used for the purpose of reliability, risk and safety analysis?

- Feature selection and extraction:

In all the AI models the data of a real world system has to be collected before the feature engineering is able to transform the data into a representation that the model can process. With the possibility of gathering data from different sources, what features are of actual importance for reliability, risk and safety analysis? How to select them?

- Identifying potential biases:

AI introduces "black-box" concerns and competencies issues. Mathematical algorithms introduce new risks as possible biases on data processing. Biases can be of different types and can also be introduced by human actions and decisions. Others can be created by organisational policy and culture. How to be aware of all types of biases along the chain of data collection and treatment and deal with them?

- Data ownership and security:

As any cyber system, artificial intelligence (AI) systems can be subjected to hacker attacks and shall be protected. Also, problems can arise from miscellaneous communication patterns, proprietary information and automation systems, heterogeneous data structures and interfaces. How this can affect Reliability, Risk and Safety Analysis?

- Databases:

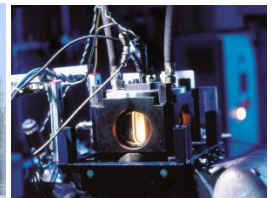
Feedback from the field (its collection and processing) is the first affected by these new technologies and will profoundly affect all other themes of reliability, risk and safety management. We go from static feedback to dynamic feedback. How does it change data collection and its validity? How can we have useful databases in this context? What are the comparative added value of big data and natural language processing techniques and can they be combined?

The main point is: what can be done to improve the management of reliability, risk and safety making good use of these new capabilities?

This Seminar will be a forum to explore and discuss these topics. Authors are invited to present their proposals, based on their knowledge and experience, bringing new ideas, concepts, theories and applications.

The Seminar is aimed at addressing issues met by different industries. Papers are welcome from industrialists, consultants, universities, R&D organisations, ...

The 57th ESReDA seminar will be held on 23-24 October 2019, hosted by the Technical University of Valencia and supported by the research and educational center [C-Motores Termicos](#). The **Call for Papers** is online at [ESReDA website](#). **Deadline for draft papers** is the **15th June 2019**.



New ESReDA PROJECT GROUPS

Planned meetings of new ESReDA PGs

In 2018, ESReDA launched some new project groups. They are PG on *Resilience Engineering and Modelling of Networked Infrastructure* (contact person: Dr Rasa Remenyte-Prescott ([email](#))) PG on *Creating Safe and Resilient Supply Chain* (contact person: Dr Sylwia Werbińska-Wojciechowska ([email](#))) and PG on *Big Data, Reliability, Risk and Safety Analysis*. (contact person: Dr Luís Andrade Ferreira ([email](#))).

New PG have planned their meetings on the 22nd May 2019 in Linz, Austria, a day before the 56th ESReDA seminar:

10:00-12:00 PG on *Big Data, Reliability, Risk and Safety Analysis*

13:00-15:00 joint meeting PG *CI-PR / MS&A-Data*
and PG on *Resilience Engineering and Modelling of Networked Infrastructure*

ESReDA members interested in PGs' topics are encouraged to join PGs and meetings. Please contact PGs leaders to express your interest in joining PGs' activities and meeting(s) in Linz.

Forthcoming Conferences & Seminars

Other Conferences and Seminars

CYSENI 2019 – the 16th Annual International Conference of Young Scientists on Energy Issues

23-24 May 2019, Kaunas, Lithuania. Call for papers at the [CYSENI website](#).

MMR2019 – the 11th International Conference on Mathematical Methods in Reliability

3-7 June 2019, Hong Kong SAR. Call for papers at the [MMR2019 website](#).

ESREL 2019 – the 29th Annual European Safety and Reliability Conference

22-26 September 2019, Hannover, Germany. Call for papers at the [ESREL 2019 website](#).

CRITIS 2019 – the 14th International Conference on Critical Information Infrastructures Security

23-25 September 2019; Linköping,, Sweden. Call for papers at the [CRITIS 2019 website](#).

ESReDA Members, you are kindly invited to contribute to the ESReDA newsletter sharing news, announcement of events, your experiences, ideas, etc. You are supposed to elaborate proposals to create new Project Groups, host ESReDA Seminars or initiate collaborative activities.

ESReDA: European Safety, Reliability & Data Association

Association internationale sans but lucratif, régis par la loi Belge du 27 Juin 1921-Titre III (Registration N°: 0452522618 - Siret:E00005802)

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