Join us for an “Aperitivo at ESREL2020 PSAM15” during the originally scheduled conference week of June 22-24. It is a prelibate taster of the actual ESREL2020 PSAM15 Conference, which will be held in Venice next 1-6 November. Experts in the field of risk and reliability assessment will share their knowledge in three interesting webinars.

Register in advance for this webinar: https://zoom.us/webinar/register/WN_GMBzZt-qiuqNsJEunNXGQ
After registering, you will receive a confirmation email with the link for joining the webinar.

June 22, 16:30 – 17:30
**The importance of risk calculations in Co-Vid 19**
George Boustras  
*European University Cyprus, Cyprus*

June 23, 16:30 – 17:30
**How can we make quick and informed decisions despite uncertainty and complexity? – some ideas and an engineering problem**
Michael Beer  
*Institute for Risk and Reliability, Leibniz Universität Hannover, Germany*  
*Institute for Risk and Uncertainty, University of Liverpool, UK*  
*International Joint Research Center for Engineering Reliability and Stochastic Mechanics (ERSM), Tongji University, China*

June 24, 16:30 – 17:30
**A short introduction to the theory of Belief Reliability**
Rui Kang  
*School of Reliability and Systems Engineering, Beihang University, China*
The importance of risk calculations in Co-Vid 19

George Boustras
European University Cyprus, Cyprus

Abstract
I will talk about my experience on developing and using risk calculations for various CoVid-19 related decisions (e.g. travel restrictions). A difficult task, given the unpredictable, constantly developing nature of the virus and the limited information available. Parallels will be drawn from the apparent similarities of fire and covid19 development.

Short Bio
George Boustras is Professor in Risk Assessment at European University Cyprus and Director of the Centre of Risk and Decision Sciences (CERIDES). He is an Advisor for Natural Catastrophes to HE the President of the Republic of Cyprus. He was appointed by the Ministerial Council of the Republic of Cyprus to Head the Special Task Force that overlooked the modernization of the Fire Services. He was hired by World Bank to contribute to the modernisation of licensing services provided by the Fire Service of the Hellenic Republic. The President of the Republic of Cyprus appointed him, as Vice President in the Energy Strategy Council. George is Editor-in-Chief of Safety Science (Elsevier).
How can we make quick and informed decisions despite uncertainty and complexity? – some ideas and an engineering problem

Michael Beer

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Abstract

Engineering systems are key elements for the functionality of our economy and even of our daily life. Hence, they should provide their service in a very reliable and robust manner. They involve advanced technology to a large extent and are thus assets, which seek a thoughtful and economic care and maintenance. In order to address these requirements, we need a technology for a reliable but quick analysis that provides unambiguous and illustrative decision-support for operators and authorities. Simultaneously, our engineering systems are often quite complex so that a detailed modeling and analysis for reliability assessment and maintenance planning is very demanding. In addition, uncertainties arising from the complexity and also from, sometimes even unknown, operational, environmental and man-made excitations or hazards undermine the clarity of predictions about the systems behavior and its reliability. This conflict leads us to the question on how to make quick and informed decisions despite uncertainty and complexity. The webinar will feature some ideas and methods that could be helpful to address this problem. Specifically, the challenge of maintenance of an aircraft turbine at most reasonable economic and technical effort is considered. The technical ingredients include systems modeling, reliability analysis, and resilience-based decision-making.

Short Bio

Michael Beer is Professor and Head of the Institute for Risk and Reliability, Leibniz Universität Hannover, Germany, since 2015. He is also part time Professor at the Institute for Risk and Uncertainty, University of Liverpool and in the Shanghai Institute of Disaster Prevention and Relief, Tongji University, China. He obtained a doctoral degree from the Technische Universität Dresden and pursued research at Rice University, supported with a Feodor-Lynen Fellowship from the Alexander von Humboldt-Foundation. From 2007 to 2011 Dr. Beer worked as an Assistant Professor at National University of Singapore. In 2011 he joined the University of Liverpool as Chair in Uncertainty in Engineering and Founding Director of the Institute for Risk and Uncertainty. In 2014 he established the EPSRC and ESRC Centre for Doctoral Training in Quantification and Management of Risk & Uncertainty in Complex Systems & Environments. Among other activities Dr. Beer is Editor in Chief (jointly) of the Encyclopedia of Earthquake Engineering (Springer) as well as Associate Editor of the ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems and Associate Editor of the International Journal of Reliability and Safety. Dr. Beer’s research is focused on non-traditional uncertainty models in engineering with emphasis on reliability and risk analysis.
A short introduction to the theory of Belief Reliability

Rui Kang

School of Reliability and Systems Engineering, Beihang University, China

Abstract
Reliability is essentially an uncertainty problem. Reliability metric is a measurement for uncertainty during the life cycle of product. How to describe uncertainty in measuring reliability? Broadly speaking, uncertainty can be classified into aleatory uncertainty and epistemic uncertainty. Since the real systems are usually uncertain random systems which is affected by both aleatory and epistemic uncertainties, the existed reliability metrics may not work well. This lecture aims to develop a general reliability metric, called belief reliability metric, to cope with the problem. In this lecture, the belief reliability is defined as the chance that a system state is within a feasible domain. Mathematically, the metric can degenerate to either probability theory-based reliability, which mainly copes with aleatory uncertainty, or uncertainty theory-based reliability, which mainly considers the effect of epistemic uncertainty. Based on the proposed metric, some commonly used belief reliability indexes, such as belief reliability distribution, mean time to failure and belief reliable life, are introduced. We also develop some system belief reliability formulas for different systems configurations. To further illustrate the formulas, a real case study is finally performed in this lecture.

Short Bio
Rui Kang is a professor of School of Reliability and Systems Engineering of Beihang University. He is a distinguished professor of the Chang Jiang Scholars Program. He is also the director of Center for Resilience and Safety of Critical Infrastructure (CRESCI) and Sino-French Risk Science and Engineering Lab. He is the founder of Belief Reliability Theory. His main research interests include reliability and resilience for critical infrastructures, system prognosis and health management. He published eight books and more than 200 papers.