



European Safety and Reliability Association

Newsletter

<http://www.esrahomepage.org>

March 2012

Editorial



Enrico Zio
ESRA Chairman
Politecnico di Milano, Italy
École Centrale Paris,
Supelec, France

Dear ESRA member,

This is the first issue of our newsletter for 2012 and I want to start by thanking the Chairman (Professor Carlos Guedes Soares) and all the members of the ESRA Publication Committee for their efforts in keeping a timely flow of four issues per year filled of interesting technical facts and news related to our community.

I am pleased to confirm you that ESRA is healthy in terms of technical and scientific activities, and financial status. This year we are going to financially support three initiatives proposed by our members in response to our call for project proposals: congratulations to Piero Baraldi, Pierre-Etienne Labeau and Krzysztof Kolowrocki for their good proposals (of a course, a workshop and a seminar conference). ESRA was also involved, without funding, in an initiative of a one-week PhD course on Risk Assessment and Uncertainty Modelling held in Paris last February. These initiatives stimulates me to renew my invitation to all of you in sending in proposals in response to the end-of-the year call for funding of ESRA-participated initiatives and to consider the possibility of giving the opportune visibility of ESRA to initiatives that you might be involved in: your success stories are the pride of this

Association and we want to continue benefitting from them.

I also encourage you to take care of the necessary administrative steps for proceeding with the payment of the renewal of your membership to ESRA. It is important for us that all members have officially paid-registered for their involvement in the ESRA activities and decisions.

I would also like to inform you that the collaboration with ESReDA is continuing and tightening. Some of our Technical Committees have joined and contributed to the initiative of the first ESReDA workshop in 2012 and a special initiative is being planned within the upcoming ESREL-PSAM conference in Helsinki: a one-day post-conference of Courses offered by our Technical Committees and the ESReDA working groups to share the knowledge gained in the respective activities: for this, many thanks to Professors Terje Aven and Tim Bedford who are the enthusiastic heart and soul behind the initiative.

From the point of view of our Conferences, we are looking closely at a very promising ESREL-PSAM conference in Helsinki, and for this we need to thank all the people that are working on this project in different tasks and forms, starting from Dr. Reino Virolainen and Prof. Terje Aven. At the same time, we are already looking ahead at ESREL 2013 in Amsterdam: the “working site” is open and running. On the other hand, I take this opportunity to invite you to prepare good proposals for the next ESREL conference in 2014: a call for proposals will be launched soon, with the objective of taking a decision at the next General Assembly meeting in Helsinki.

Furthermore, I want to reassure you that the legal status of ESRA has been revised in a new version of the Statutes of the Association, for alignment with the current regulations. The outcome of the work, for which I want to thank Professors Radim Bris and

Pieter van Gelder, has been reviewed by a specialized law firm in Brussels which has released a declaration of conformity. The new Statutes will be brought for approval at the next General Assembly Meeting in Helsinki

Finally, I close by reminding you that this year all four positions in the ESRA management (Chairman, Vice-Chairman, General Secretary and Treasurer) are open for election. In this respect, I want to invite you to consider your active participation and at the same time I am pleased to inform you that the current Chairman, Vice-Chairman and Treasurer have already given their availability to continue serving ESRA for another term, and that a candidate for the General Secretariat has been identified in Coen Van Gulijk from Technical University of Delft, in replacement of “our” Prof. Pieter Van Gelder whom I want to publicly thank once again for his service to ESRA during all these years.

Cordially,

Enrico Zio
Chairman of ESRA

Feature Articles

Probability does not exist, but does risk exist?

*Terje Aven
University of Stavanger, Norway*

We remember de Finetti’s treatise on the theory of probability which begins with the provocative statement “probability does not exist”, meaning that probability does not exist in an objective sense. Rather, probability exists only subjectively within the minds of individuals, as personal judgments of uncertainty, given the current knowledge.

But what about the concept of risk? Does risk exist? The answer depends on what you mean by “risk” – your risk perspective – and what you mean by “exist”.

My view is that risk exists objectively. We face risk when we drive a car or run a business. The point is that the activity you consider could lead to some consequences in the future (and some of these could be undesirable), for example a crash and injuries/fatalities in the car case or bankruptcy in the business case, but we do not know now – there are uncertainties present – the consequences are unknown. As long as we do not specify the consequences or try to describe the uncertainties, these considerations are objective – we should all agree that the activity will lead to some consequences and they are now unknown. If the concept of risk just

reflects this idea – as I believe it should, risk exists objectively.

However, a risk description or measurement trying to express how large or small risk is, is not objective. Specifying the consequences and making judgments about the uncertainties depend on the assessor. The common tool for measuring the uncertainties is probability, and, following de Finetti, probability does not exist objectively. I agree. To measure or describe uncertainty we use probabilities and the probabilities are subjective (we refer to the probabilities as subjective probabilities, or as personal probabilities, judgmental probabilities or knowledge-based probabilities).

Consequently probability enters the scene when we would like to describe or measure the uncertainties and thus risk. Probability is not a part of the risk concept per se. I make a sharp distinction between risk as a concept (which is objective) and risk descriptions/measurements/ assessments which are subjective.

The risk descriptions are often based on modelling, for example using probability models and frequentist probabilities/chances expressing the fraction of times an event would occur when considering the situation analyzed over and over again infinitely under similar conditions. Probability models and frequentist probabilities/chances do not exist in general – they are model concepts that are meaningful only in some situations of repeatability. They can be viewed as inter-subjective judgments among experts at best.

It is common, in particular in engineering contexts, to consider probability a main component of risk, either using subjective probabilities or frequentist probabilities. However, a number of alternative approaches exist for representing and describing uncertainties in risk assessments, including possibility theory and evidence theory. For these approaches and theories a probability-based risk definition cannot in general serve as a conceptual framework for risk assessments.

If we search for a widespread agreement on the meaning of risk we have to exclude all those that are based on modelling or one specific measurement tool (for example probability). Risk should also exist as a concept without modelling and without a specific tool. A broader risk perspective is required.

The answer to this challenge I believe is found in the perspective described above and summarized by these two points (Aven 2011a):

1. risk exists objectively as a concept capturing two main components: consequences (of the activity considered) and associated uncertainties (not knowing what the consequences will be)
2. risk descriptions/measurements are subjective, obtained by specifying the consequences and using some adequate tool for expressing the epistemic uncertainties.

Subjective probability is the common tool for expressing the epistemic uncertainties, but there is a lively debate in the literature about the adequacy of this tool and the need for alternative representations of uncertainty; see e.g. Aven and Zio (2011). My view here is that subjective probability is the basic tool to be used, but there is a need for seeing beyond these probabilities as they are conditional on a background knowledge that could conceal important uncertainty factors. However, this discussion is beyond the scope of the present note. I refer to Aven (2011b) and Aven and Zio (2011).

Clarifying the ontological status of the risk concept is important for risk assessment, risk management and risk communication, as it provides a strengthening of the understanding of the foundational pillars of these domains of risk scholarship. To further enhance the risk field, such a strengthening is considered imperative as the present situation is characterized by many weakly justified and inconsistent concepts about risk (Aven et al. 2011, Aven 2011b, Aven 2012).

Literature/References

- Aven, T. 2011a. A broad risk concept also applicable for non-probabilistic perspectives. *Safety Science*, 49 (8-9), 1080-86.
- Aven, T. 2011b. Selective critique of risk assessments with recommendations for improving methodology and practice. *Reliability Engineering and System Safety*, 96, 509-514.
- Aven, T. 2012. Foundational issues in risk assessment and risk management. *Risk Analysis*. Accepted for publication.
- Aven, T., Renn, O. and Rosa, E. 2011. On the ontological status of the concept of risk. *Safety Science*, 49 (8-9), 1074-79.
- Aven, T. and Zio, E. 2011. Some considerations on the treatment of uncertainties in risk assessment for practical decision-making. *Reliability Engineering and System Safety*, 96, 64-74.

Safety and Reliability Books

Emerging Technological Risk: Underpinning the Risk of Technology Innovation

Stuart Anderson & Massimo Felici, University of Edinburgh, Scotland

This book:

- * Complements and extends classical approaches to risk

- * Includes an annotated bibliography, which forms a comprehensive multidisciplinary account of technology risk
- * Identifies and explains socio-technical hazards by means of different case studies. Classes of socio-technical hazards allow a characterization of the risk in technology innovation and clarify the mechanisms underpinning emergent technological risk.

Emerging Technological Risk provides an interdisciplinary account of risk in socio-technical systems including hazards which highlight:

- * How technological risk crosses organizational boundaries,
- * How technological trajectories and evolution develop from resolving tensions emerging between social aspects of organisations and technologies and
- * How social behaviour shapes, and is shaped by, technology.

Addressing an audience from a range of academic and professional backgrounds, Emerging Technological Risk is a key source for those who wish to benefit from a detail and methodical exposure to multiple perspectives on technological risk. By providing a synthesis of recent work on risk that captures the complex mechanisms that characterize the emergence of risk in technology innovation, Emerging Technological Risk bridges contributions from many disciplines in order to sustain a fruitful debate.

Emerging Technological Risk is one of a series of books developed by the Dependability Interdisciplinary Research Collaboration funded by the UK Engineering and Physical Sciences Research Council.

Springer 2012 - <http://www.springer.com/978-1-4471-2142-8>

Recent Advances in System Reliability: Signatures, Multi-state Systems and Statistical Inference

Anatoly Lisnianski, Ilia Frenkel (Eds)

Recent Advances in System Reliability discusses developments in modern reliability theory such as signatures, multi-state systems and statistical inference. It describes the latest achievements in these fields, and covers the application of these achievements to reliability engineering practice.

The chapters cover a wide range of new theoretical subjects and have been written by leading experts in reliability theory and its applications. The topics include:

- concepts and different definitions of signatures (D-spectra), their properties and applications to

reliability of coherent systems and network-type structures;

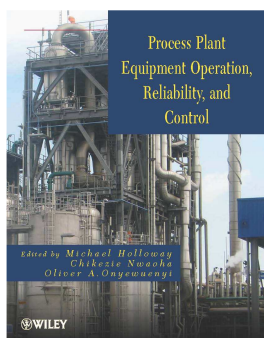
- Lz-transform of Markov stochastic process and its application to multi-state system reliability analysis;
- methods for cost-reliability and cost-availability analysis of multi-state systems;
- optimal replacement and protection strategy; and
- statistical inference.

Recent Advances in System Reliability presents many examples to illustrate the theoretical results. Real world multi-state systems, such as power generation and transmission, refrigeration, and production systems, are considered in the form of case studies, making the book a useful resource for researchers and postgraduate students.

Springer 2012 - <http://www.springer.com/engineering/production+eng/book/978-1-4471-2206-7>

Process Plant Equipment: Operation, Reliability and Control

Michael Holloway,
Chikezie Nwaoha
Oliver, A.
Onyewuenyi (Editors)



John Wiley and Sons, Hoboken, NJ, 768 pages, \$149.95, ISBN-13:978-1-118-02264-1

This book provides information and serves as a technical reference for the maintenance, operation, reliability, trouble shooting and control of major equipment used in any aspect of the process plant industry. This information is vital for reducing downtime and unscheduled shutdowns, improving operational excellence, and prolonging the service life of equipment. The coverage provides the reader with technical support and expertise in order for them to gain operational excellence, learn maintenance strategies, troubleshoot problems, monitor issues, and properly select process plant equipment.

This book contains a SECTION 1 (Process Equipment Operation) covering chapters on various equipments used in the process industry, like Introduction (Michael Holloway), Valves (M.A.A. Shoukat Choudhury, Chikezie Nwaoha and Sharad Vishwasrao), Pumps (Craig Redmond), Pipes (Shaohui JIA), Cooling Towers (Zaki Yamani Zakaria and Chikezie Nwaoha), Filters and

Membranes (Flora (F) Tong and Chikezie Nwaoha), Sealing Devices (Matt Tones and Jim Drago), Steam Traps (Jacob E. Uche and Chikezie Nwaoha), Process Compressors (Dr. N. Sitaram and Chikezie Nwaoha), Conveyors (Okenna Obi-Njoku), Storage Tanks (Marcelo Ferrara and Chikezie Nwaoha), Industrial Mixing Technology (Jayesh Ramesh Tekchandaney), Boiler (Celestine C. G. Nwankwo).

This book contains a SECTION 2 (Process Plant Reliability) covering chapters on Engineering economics for chemical processes: Profitability analysis and Cost estimation (Alberto R. Betancourt-Torcat, L. A. Ricardez-Sandoval and A. Elkamel), Process Component Function and Performance Criteria (Robert Free), Failure Analysis/Interpretation of Components (Michael Holloway), Mechanical Integrity Fitness for Service of Process Vessels and Piping (Oliver A. Onyewuenyi), Design of Pressure Vessels and Piping (Maher Y. A. Younan), Process Safety (Prof. Jelenka Stefanovic Savkovic, University of Belgrade Serbia)

This book contains a SECTION 3 (Process Measurement and Control System) covering chapters on Flow Meters/Measurement (Greg Livelli, Chikezie Nwaoha), Process Control (John A. Shaw), Introduction to Process Modeling & Simulation (Matthew Chidiebere Aneke)

More information about the book should be followed via the link:

http://eu.wiley.com/WileyCDA/WileyTitle/productCd-1118022645_descCd-tableOfContents.html.

Past Safety and Reliability Events

Transportation of Hazardous Substances: Perspectives and State-of-the-Art Two-years after the Viareggio Accident

Bologna, 1 December 2011

Valerio Cozzani, Dipartimento di Ingegneria Chimica, Mineraria e delle Tecnologie Ambientali, Alma Mater Studiorum - Università di Bologna, Bologna, Italy

and

Michael A. Birk, Department of Mechanical and Materials Engineering, Queen's University, Kingston, Ontario, Canada

ESRA Technical Committee on Land Transportation and University of Bologna, with the support of ETPIS and AIDIC (the Italian Association of Chemical Engineering), have organized on December 1st 2011 in Bologna (Italy) an international workshop on the transportation of hazardous materials in Europe. The motivation of the workshop started from the perspective of the Viareggio accident. More than two years ago, on June 29th 2009, a freight train carrying 14 LPG Railtankers derailed near to the Viareggio railway station, causing the more severe railway accident involving hazardous materials transportation recorded in Europe in the last 40 years.

The lessons learnt from the Viareggio accident call for a discussion of the research needs concerning safety in the land transportation of hazardous substances in Europe. In recent years, several breakthroughs were obtained in methods for routing, in risk management strategies, and in models for hazard and consequence assessment of hazardous materials transportation. The workshop aimed at tracing the state of the art in the field, identifying research needs and opportunities. The workshop presented an interesting collection of research work associated with quantifying and mitigating the consequences of various types of releases of dangerous goods.

The application and validation of powerful and sophisticated models that can predict consequences of specific events with amazing resolution was presented. In particular, the application of CFD codes was shown to have a capability to accurately predict outcomes of some specific incidents.

However, even if we are now prone to step to these powerful and complex tools to do the most basic calculations, evident gaps emerged in our fundamental knowledge, where basic applied research needs to be done to better understand the fundamentals of certain phenomena. Stratified combustion of dense clouds, two-phase jets, and other scenarios still need to be understood in detail.

Thus, the need of a twofold research action emerged. On one hand, the further development, validation and integration of CFD and finite element models is needed, to issue detailed techniques able to provide detailed in-depth analysis of single scenarios.

On the other hand, important research efforts should be coupled to new and detailed experimental data to improve the understanding and the modeling of source terms and final scenarios involved in accidents related to the transportation of hazardous materials.

A final issue emerged is that an important effort is needed to communicate and exploit research results to the regulators and safety managers. Regulators should be able to identify and select appropriate and up-to-date models and methods to prevent and mitigate the most important risks. More should be done to make sure that research findings are applied so that the next major accident never happens.

The ESRA Technical Committee on Land Transportation will be promoting further initiatives, workshops and research cooperation in the above framework. If interested, you are warmly invited to join the Committee!

The slides of presentations given at the workshop may be downloaded at the following address:

[Consult further information on website:](http://www.dicma.unibo.it/DICMA/Bacheca/Eventi/2011/12/seminar.htm)

<http://www.dicma.unibo.it/DICMA/Bacheca/Eventi/2011/12/seminar.htm>

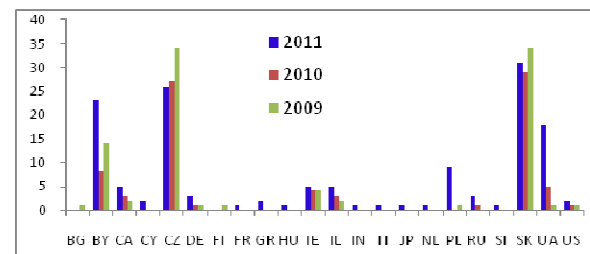
The 8th International Conference on Digital Technologies 2011

Zilina, Slovakia, 10-11 November 2011

Elena Zaitseva, University of Zilina, Slovakia

The “Digital Technology” is traditional International conference that is held in Slovakia and is organized by University of Zilina. This Conference was held for the eighth time on November 10-11, 2011 (<http://kt.uniza.sk/dt/>). Zilina is a city located in the centre of Northwest Slovakia. The beauty of nature, the richness of cultural and historical monuments is typical for the region of Zilina. The mountain ranges are perfect.

The Conference covers a number of topics within digital signal processing, communication and control systems and networks, hardware and software solutions, reliability, risk and safety, testing and fault-tolerant systems, pattern recognition and image processing, etc. The aim of the Conference is to bring together researches, teachers from academy as well as industry working in all areas of digital technologies. The Conference DT'2011 involves about 100 participants from 21 countries. This is much more than previous years. The selection of papers for publication has been improved through a strong peer review.



The Conference has become well established in the international community, attracting a good mix of academics and industry participants that present and discuss subjects of interest and application across various industries. Beside the scientific field, several

cultural and social events were during the Conference. One of them is visit to the Strecno Castle. The Castle is majestic and romantic ruins.

In different from previous events the 8th International Conference “Digital Technology” (DT’2011) was supported by European Safety and Reliability Association. It was very important and useful for development of the Conference. The topic within reliability engineering has been one of principal part of the Conference. One of plenary lectures covered the reliability engineering problem “Multi-Version Digital Technologies for Critical Application”. This lecture was given by Prof. V.Kharchenko (Ukraine). The special section “Reliability analysis and risk estimation” was organized in framework of the Conference. Over 10 papers were presented in this section. Scientists from Belarus, Cyprus, Czech Republic, Germany, Greece, Israel, Russia, Slovakia, and Ukraine took part in work of this special section. Four PhD student presented papers in reliability engineering at the Conference. They got grants of ESRA that support participation of PhD students and young researches in special section of DT’2011 “Reliability analysis and risk estimation”. One of the Conference specificity is to involve scientists from EU-countries and post-Soviet countries. Researchers from Belarus, Russia and Ukraine presented result of investigation in reliability engineering at DT’2011. It is caused by traditional cooperation of Slovak universities with not only universities form EU.



All papers presented at section “Reliability analysis and risk estimation” were published in the Conference Proceedings. These paper and other submitted papers in proceedings were reviewed at least three reviewers from Conference Scientific Program Committee. The work and effort of the peers involved in the Program Committee in helping the authors to improve their papers are greatly appreciated. The review process was conducted electronically. I thank all member of the Scientific Program Committee for work and help in reviewing process. Special thanks go to General Chair of the Conference Dr. D.Ticha and members of the Scientific Program Committee: Prof. R.Briř (Czech Republic), Dr. I.Frenkel (Israel), Prof. A. Karagrigoriu (Cyprus), Prof. V. Kharchenko (Ukraine), Dr. A. Lisnianski (Israel), Dr.

V.Levashenko (Slovakia), Dr. G. Levitin (Israel), Prof. O.Pomorova (Ukraine), Prof. Z. Sadovsky (Slovakia), Prof.Singh Suraj B (India) and Prof. I. Vonta (Greece). All of them significantly contributed to the paper review process and to forming of the special section. I am especially grateful to Prof. R.Briř for his encouragement and help in the Conference development by preparing of the special section on reliability engineering. I would also like to acknowledge the local organizing committee, and in particular the team of Ph.D students from the University of Zilina (the firstly, to Miroslav Rusin and Juraj Paleček for technical and administrative help during the Conference).



I hope that next International Conference DT’2013 involves a lot of participants active in reliability engineering and we will have possibility to prepare in framework on the Conference special workshop that will cover many topics in reliability, risk and safety.

Calendar of Safety and Reliability Events

PLIM & PLEX Europe 2012 Brussels, 17-19 April 2012

Exploring the most effective PLIM strategies and technologies of Nuclear Power Plants in order to ensure their efficiency and long term operation.

Uncovering how best to implement changes after the stress tests. Through in-depth assessment of all NPP systems, structures and components (SSC) alongside analysis of plant specific PLIM and LTO strategies, the third annual PLIM Europe Summit promises to equip you with key industry knowledge required for the most effective approach towards maintaining and managing NPPs.

Through in depth exploration of the very latest regulatory developments, implementation strategies and innovative technologies across Europe, PLIM 2012 will uncover the most effective ways to implement PLIM, as well as PLEX.

Key features:

- * Reviewing the stress tests: uncovering how different utilities are reacting and implementing changes in this uncertain climate
- * Addressing adverse publicity throughout political uncertainty to strive towards rebuilding public acceptance
- * Achieving harmonised requirements for PLIM & PLEX to enable effective benchmarking across Europe
- * Exploring ageing management for a range of structures, systems and components (SSC) to pinpoint crucial upgrades and key long-term strategies
- * Uncovering plant specific long-term operation plans for a better understanding plant life extension strategies
- * Assessing I&C upgrades to ensure longevity for your NPP
- * Evaluating nuclear obsolescence to determine what must be done for continual NPP life extension in Europe
- * Dramatically enhancing plant safety and reliability

Website: <http://www.arena-international.com/plipeu/programme>

4th National Conference on Risk, Safety and Reliability (4 ENRSF 2012)

Lisbon, 15-17 May 2012

The fourth edition of the National Conference on Risk, Safety and Reliability (4 ENRSF 2012) will be held on May 14-17, 2012 at the Instituto Superior Técnico (IST) in Lisbon, Portugal.

This biennial event organized by the Portuguese ESRA Chapter has become well established in the Portuguese community, gathering in average 200 participants in the previous editions from which about 40% were from academia and 50% from industry.

The conference covers several topics within risk, safety and reliability, organized in technical sessions, such as: Sustainability, Public Risks, Transportation Safety, Safety at Work, Industrial Risks and Safety, Risk Management, Human Factors and Safety

ESRA Newsletter March 2012

Culture, Accident Analysis, Reliability and Maintenance and Natural Risks.

This year about 120 abstracts have been received and the papers are now under the review process. In addition to the technical presentations organized in 3 parallel sessions, nine plenary keynote sessions will be included in the technical program of the conference.

More information regarding the conference can be found on the 4th ENRSF 2012 home page at: www.esrahomepage.org/enrsf/.

General Chair

C. Guedes Soares (guedess@mar.ist.utl.pt)

ESReDA Seminar on Risk and Reliability for Wind Energy and other Renewable Sources Glasgow, UK, 15-16 May 2012

ESReDA is organising its 42nd Seminar in Glasgow, 15-16 May 2012 on this topic. The Seminar is hosted by the University of Strathclyde.

The coming decade should see a huge expansion of renewable energy systems, in particular of offshore wind systems. Many risk and reliability related problems for such systems are open and many may still be unarticulated. The ESReDA seminar brings together system operators, manufacturers, insurers, maintainers, government, regulators and university researchers from a variety of relevant disciplines, in order to gain a holistic view of the state of knowledge around wind energy and other renewable systems risk and reliability issues. In addition to considering renewable systems themselves, the scope of the seminar includes the embedding of such systems within the network, and the risk and reliability issues that arise as a consequence.

Papers for the seminar are invited from all stakeholders. Relevant topics for papers are:

- Reliability, availability and maintainability of renewable energy systems
- Network stability risk analysis
- Investment risk and economic uncertainties for renewable systems

The keynote speaker will be Andrew Donaldson of SSE Renewables, one of the key companies involved in offshore wind.

More details are available on the ESReDA website, www.esreda.org. ESRA is supporting this seminar through the involvement of the ESRA Technical

Committee on Energy. The first call for abstracts is now out, with a deadline of 16 January 2012.

PHM 2012 **IEEE Reliability Society**

Prognostics & System Health Management Conference

Beijing, China, 23-25 May 2012

Further information on website:
<http://www.icphm.org>

10th International Conference on Ordered Statistical Data and Its Applications (OSDA 2012) **Murcia, Spain, 23–25 May, 2012**

Continuing the series of Conferences in India (2000), Poland (2002-04), Turkey (2005), Iran (2006), Jordan (2007), Germany (2008), Egypt (2010), the Department of Statistics and Operations Research of the University of Murcia will host the 10th International Conference on *Ordered Statistical Data and Its Applications OSDA 2012*.

The meeting will be held at the Faculty of Mathematics, Espinardo Campus, University of Murcia, Murcia, Spain, on 23-25 May, 2012. The closing plenary conference will be held at the CIM Assembly Hall, at the Technical University of Cartagena.

In the spirit of the previous conferences, OSDA 2012 will provide an international forum for presentation and discussion of new results on ordered statistical data as well as to review and consolidate existing literature. It will be dedicated to all aspects of ordered statistical data, including (but not exclusively on):

- * Approximations
- * Bounds
- * Characterizations
- * Distribution Theory and Probability Models
- * Stochastic Orders
- * Reliability Theory and Survival Analysis
- * Censoring
- * Statistical Inference
- * Applications of Ordered Data
- * Information and Entropies
- * Nonparametric Methods
- * Ranked Set Sampling
- * Asymptotic Theory

On behalf of the organizing committee, we would like to invite you to submit abstracts in the topics listed

above. Please forward this announcement to your colleagues who might be interested in attending the Congress.

Please visit the congress website at <https://www.um.es/symposium/go/OSDA2012> for the registration procedures and to receive up-to-date information about the Congress. If you have any question, please contact osda2012@um.es.

CISAP-5: An Arena for New Research Trends in Safety, Reliability and Risk Assessment **Milan, 3-6 June 2012**

The Italian Committee for Safety and Reliability in the Process Industry is organizing **CISAP-5**, the fifth edition of the International Conference on Safety and Environment in the Process Industry that will be held in Milan on June 3rd to 6th, 2012 (www.aidic.it/cisap5). The initiative is strongly supported by the members of the Italian Chapter of ESRA, that are contributing both to the organization and the scientific success of the initiative. The high number of abstracts received warrants that **CISAP-5** will be successful forum on process safety, risk assessment and HSE management. The conference will provide a unique opportunity to share and gain experience on open research topics in safety assessment, risk management and reliability. **CISAP** aims to become a prominent biennial forum on safety and sustainability, contributing to the consolidation of a safety culture aiming at a sustainable growth of the enterprise value based on the safeguard of the health of employees and population, the safety of operations and the environmental protection.

However, the main ambition of **CISAP** is to become an arena mainly devoted to the discussion of new and emerging research topics in safety, reliability and risk assessment. Besides the main conference, dedicated workshops will be organized on “hot” topics in emerging risk assessment and management, as the assessment of accident scenarios caused by natural hazards and the safety of energy systems and infrastructures. The experience of ESRA members is welcome both to join the conference and to propose and participate to the dedicated workshops.

2012 International Conference on Quality, Reliability, Risk, Maintenance, and Safety Engineering (QR2MSE 2012)

**Chengdu, Sichuan, China, 15-18 June,
2012**

The 2012 International Conference on Quality, Reliability, Risk, Maintenance, and Safety Engineering (QR2MSE 2012) is organized by the University of Electronic Science and Technology of China (UESTC) and the Maintenance Professional Committee, China Ordnance Society, and aims to provide an international forum for exchange of innovative ideas, research results, and applications of reliability and quality tools in design, manufacturing, and operation and maintenance of engineering systems.

Presenters may address any aspect of quality, reliability, risk, maintenance, and safety. Participation from academia, industry, and government are all welcome. Papers dealing with case studies, reliability data generation, experimental results, best design practice, or effective maintenance solutions are of particular interest. All papers accepted will be included in the conference proceedings and IEEE Xplore. Every effort will be made to ensure that the conference proceedings be indexed by EI and ISTP. Selected papers will be published in special issues/sections of international journals.

Submit abstracts and papers via the conference website. Please check the conference website at www.qr2mse.org for more information and updates, or contact us at secretariat@qr2mse.org.

IMPORTANT DATES

Full Paper Submission Deadline Feb. 29th, 2012
Full Paper Acceptance Notification Mar. 31st, 2012
Camera Ready Papers Due Apr. 30th, 2012

Website: <http://www.qr2mse.org>

ESREL 2012- PSAM 11 European Safety and Reliability Conference International Probabilistic Safety Assessment and Management Conference

Helsinki, Finland, 25-29 June 2012

ESREL 2012 & PSAM 11 will be the major international event in the safety, reliability and risk fields in 2012. The Conference brings together experts from various industries, research organisations, regulatory authorities and universities. It offers a platform for contacts between different fields from nuclear, process and chemical industries, offshore and marine, space and aviation, IT and telecommunications, bio and medical technology, civil engineering and financial management. The multi-disciplinary Conference

ESRA Newsletter March 2012

is aimed to ensure the cross-fertilization of methods, technologies and ideas.

The program will be a blend of ESREL - PSAM traditions and *Nordic Footprints* in the safety, reliability and risk areas.

About 1000 abstracts from about 50 countries have been received. A number of special sessions are planned covering topics like uncertainty treatment, vulnerability of critical infrastructures, safety systems, maintenance modeling, PSA in aviation, assessment of radioactive waste repositories, and system health monitoring, fault diagnosis and prognosis.

Abstracts/papers are being organized into relevant areas and sessions. Track leaders for the main topics and application areas have been appointed.

Important Dates:

Submission of full-length papers: 31 January 2012

Reino Virolainen, *Conference General Chair*
Terje Aven, *Program Committee Chair*

Website: www.psam11.org

7th Summer School on Sensitivity Analysis of Model Output

The seventh Summer School on Sensitivity analysis of model output will be organised by the JRC in Ispra from 3 to 6 of July 2012. The school illustrates the motivations to conduct sensitivity analysis and offers an accessible treatment to the techniques used in global sensitivity analysis. The program begins with the first principles of sensitivity analysis and guides the student through the full range of recommended practices with exercises and application examples.

<http://ipsc.jrc.ec.europa.eu/events.php?idx=41>

The slides of the lectures given at the summer school held in Florence in September 2010 are available for download at the sensitivity analysis web site: <http://sensitivity-analysis.jrc.ec.europa.eu/>

10th International Probabilistic Workshop

Stuttgart, Germany, 15-16 Nov., 2012

The conference is intended for civil and structural engineers and other professionals concerned with structures, systems or facilities that require the assessment of safety, risk and reliability. Participants

could therefore be consultants, contractors, suppliers, owners, operators, insurance experts, authorities and those involved in research and teaching.

The event is organized by the Institute of Geotechnical Engineering, University of Stuttgart, Stuttgart, and the Institute for Mountain Risk Engineering, University of Natural Resources and Applied Life Sciences, Vienna.

Submission deadlines

Submission of abstract: 1st May 2012
Submission of final paper: 17th August 2012

Website

http://www.uni-stuttgart.de/igs/igs_verschiedenes/Veranstaltungen/Probabilistic_Workshop

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- Italian Chapter
- Polish Chapter
- Portuguese Chapter
- Spanish Chapter
- UK Chapter

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- SRE Scandinavia Reliability Engineers, Denmark
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For more information about ESRA, visit our web page at <http://www.esrahomepage.org>.

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