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université de technologie
Troyes

ESRA
European Safety and
Reliability Association
www.esrahomepage.org

18-22 September 2011 - Troyes France

ESREL 2011

European Safety and Reliability Conference

Programme

Welcome

It is with great pleasure that I welcome you to Troyes and ESREL 2011.

ESREL is an annual conference series promoted by the European Safety and Reliability Association that takes place in various countries in Europe. The conference dates back to 1989, but the designation of ESREL, European Safety and Reliability Conferences was adopted in 1992. The ESREL Conferences have 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 in the fields of Safety and Reliability.

This year, the theme of the Conference is "Advances in Safety, Reliability and Risk Management". The Conference covers a number of topics within safety, reliability and risk, and provides a forum for presentation and discussion of scientific papers covering theory, techniques, methods and applications to a wide range of sectors and problem areas. Special focus has been placed on the bonds between safety, reliability assessment and risk management for improved decision making tools.

The programme of the Conference includes 393 papers from prestigious researchers coming from all over the world, selected from over 543 abstracts. In addition to the 393 papers presented in six parallel sessions, 3 invited keynote lectures will be given in plenary sessions.
This Conference Programme is the result of the enthusiasm and efforts of the many authors who have contributed with their papers, the special session organizers, the technical programme committee members, the technical area coordinators, the conference webmaster, the local organizing committee members and the conference secretariat and technical support at the Troyes University of Technology. All these initiatives and efforts are gratefully acknowledged.

I believe that we have brought together all the main ingredients for a successful and worthwhile Conference. I hope you all enjoy the programme and the Conference and wish you welcome to pleasant days during ESREL 2011.

Antoine Grall
ESREL 2011 Conference Chairman

Conference Chairman
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Carlos Guedes Soares, Technical University of Lisbon, Portugal

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Jin Wang, United Kingdom
Elena Zaitseva, Slovakia

Thematic Areas

- Bayesian methods
- Crisis and Emergency Management
- Decision Making under Risk
- Dynamic Reliability
- Fault Diagnosis, Prognosis and System Health Management
- Fault Tolerant Control and Systems
- Human Factors and Human Reliability
- Maintenance Modelling and Optimisation
- Mathematical Methods in Reliability and Safety
- Occupational Safety
- Quantitative Risk Assessment
- Reliability and Safety Data Collection and Analysis
- Risk and Hazard Analysis
- Risk Governance
- Risk Management
- Safety Culture and risk perception
- Structural Reliability and Design Codes
- System Reliability Analysis
- Uncertainty and Sensitivity Analysis

Industrial Sectors

- Aeronautics and Aerospace
- Chemical and Process Industry
- Civil Engineering
- Critical Infrastructures
- Energy
- Information Technology and Telecommunications
- Land Transportation
- Manufacturing
- Maritime Transportation
- Mechanical Engineering
- Natural Hazards
- Nuclear Industry
- Offshore Industry
- Policy Making and Public Planning

Technical Programme Committee

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with the support of the technical and administrative services of Troyes University of Technology

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Plenary Speakers
Erik Hollnagel, MINES Paris-Tech
Philippe Klein, EDF
Way Kuo, City University of Hong Kong

Website Administration
Alexandre Janeiro, Technical University of Lisbon, Portugal

Organized by
Troyes University of Technology - UTT, France
European Safety and Reliability Association - ESRA

Conference Programme

Plenary Lectures

Monday, September 19, Room A – Espace Argence (11h50-12h30)
Chair : Prof. Enrico Zio, ECP/Supelec, Politecnico Milano, ESRA Chairman

Importance Measures in Reliability
Speaker : Prof. Way Kuo, City University of Hong Kong

Wednesday, September 21, Room A – Espace Argence (11h50-12h30)
Chair : Jean-François Rafoux, IMdR *(to be confirmed)*

Risk Management R&D at EDF: a contribution to safety and performance management of EDF's industrial facilities
Speaker : Philippe Klein, EDF Research & Development

Thursday, September 22, Room A – Espace Argence (11h50-12h30)
Chair : *(to be confirmed)*

The Requisite Variety of Risk Assessment
Speaker : Prof. Erik Hollnagel, University of Southern Denmark, MINES ParisTech

Conference Social Programme

Welcome Reception, Sunday, September 18, 19h00 – 21h30
On Sunday evening, a Welcome Reception will be held at the Maison de l'outil et de la pensée ouvrière, Rue de la Trinité, Troyes. In the heart of the restored town center that has rediscovered all the charm of its old, renovated houses, the Tool and Trade Museum is a jewel of the cultural heritage of Troyes, as well as a window onto the trades of both the past and future, for all those interested in arts and crafts, as well as in industrial technologies, history and trades in general.

Reception at Troyes University of Technology, Monday, September 19, 19h30 – 22h30
On Monday, we will leave the Espace Argence by bus and go to the University of Technology for a traditional cocktail.
Busses Departure time from Espace Argence : 18h50

Conference Dinner, Wednesday 21, 20h00 – 24h00
On Wednesday, the Conference Dinner will be given in a transformed lunch room of Espace Argence.

Other Conference Events

ESRA General Assembly, Wednesday, September 21, 17h50 – 19h30
After the technical sessions, the ESRA GAM will take place in Room 2.

HRA Society Board Meeting, Tuesday, September 20, 18h00 – 20h00
After the technical sessions, the HRA Society meeting will take place in Room 1.

Workshop and Panel sessions
The panel "Human factors and HRA - A bridge over troubled water" organized by HRA Society will take place in Room A on Wednesday, September 21, 16h10 – 17h50.

The RESS Workshop organized for Reviewers will take place in Room 2 on Tuesday, September 20, 18h00 – 18h45.

The Cindynic Panel organized by french IMdR will take place in Room A on Wednesday, September 21, 10h30 – 11h50.

The Dynamic Reliability Panel organized by P.E. Labeau and T. Aldemir will take place in Room A on Thursday, September 22, 14h10 – 15h50.

Detailed Technical Programme

Sunday, 18 September 2011

19:00 - 21:30 - "Maison de l'Outil et de la Pensée Ouvrière"
Welcome Cocktail

Monday, 19 September 2011

8:30 - 10:30 Registration - Espace Argence

10:30 - 11:50 Opening Session

11:50 - 12:30 Room A
Plenary lecture 1: W. Kuo
Importance Measures in Reliability
Chairman: E. Zio

12:30 - 14:00 Lunch

Monday, 19 September 2011

Parallel Sessions 14:10 - 15:50

Room 1	Room 2	Room 3	Room 4	Room 5	Room 6
Quantitative Risk Assessment 1	**Maintenance Modelling and Optimization 1**	**System Reliability Analysis 1**	**Crisis and Emergency Management**	**Structural Reliability and Design Codes 1**	**Occupational Safety 1**
Chairman: M. Cepin	**Chairman: E. Zio**	**Chairman: M. Bouissou**	**Chairman: E. Châtelet**	**Chairman: R. Steenbergen**	**Chairman: B. Ale**
A methodology to quantitative ecological risk assessment for industrial accidents	**A framework for selection of test method for safety critical valves**	**A fast augmentation algorithm for optimizing the performance of repairable flow networks in real time**	**Functional safety requirements for active protection systems from individual and collective risk criteria**	**Beams on elastic foundation solved via probabilistic approach (SBRA Method)**	**An engineering and psycho-social integrated approach for work related stress (WRS) assessment and management**
O.H. Duarte & E.A. Droguett	E.B. Abrahamsen, W. Røed	M.T.Todinov	J. E. Kaufman, I. Häring	K. Frydrýšek	P. Citti, M. Delogu, A. Meneghin & F. Pagliai
A predicting method of system safety risk state transition time based on Markov process	**A maintenance strategy for systems subject to competing failure modes due to multiple internal defects and external shocks**	**A Monte Carlo simulation based dependability analysis of a non-Markovian grid computing environment with software rejuvenation**	**Learning decision making: some ideas on how novices better can learn from skilled response personnel**	**Deterioration Model for Large Reinforced Concrete Structures**	**Applying the safe place, safe person, safe systems framework to the healthcare industry**
H.T. Li, X.M. Liu, J.L. Zhou & G. Jin	I.T. Castro	V.P. Koutras, S. Malefaki & A.N. Platis	M. Sommer	M. Sykora & M. Holicky	O. Lasaki, A.-M. Makin, C. Winder
A research on simulation methods for system risk assessment	**A new modeling framework of component degradation**	**An adapted application of FMEA in the identification of critical dynamic failure modes of digital reactor protection systems**	**Performance evaluation of organizational crisis cell: methodological proposal at communal level**	**Development of representative reismic fragility function for bridge group by using results of safety factor**	**Applying the safe place, safe person, safe systems framework to the management of biohazards**
X.M. Liu, H.T. Li, J.L. Zhou & P.C. Luo	P. Baraldi, A. Balestrero, M. Compare, E. Zio, L. Benetrix, A. Despujols	G. Wang, S. Li	D. Lachtar & E. Garbolino	MK Kim, I-K Choi & DG, Hahm	A.Bamford, A.-M. Makin & C. Winder
Assessment of common cause failures and defensive measures for the representation of I&C in probabilistic models	**A simulation model for complex repairable systems with inter-component dependencies and three types of component failures**	**An approach for coupling single component failure event with different common cause groups**	**Quantitative approach of organizational resilience for a Dutch emergency response safety region**	**Fatigue loading estimation for road bridges using long term WIM monitoring**	**Cognitive, affective and behaviour outcomes of a safety training program**
G. Deleuze, N.Thuy, R.Quatrain, F.Jouanet	J. Malinowski	Duško Kančev & Marko Čepin	J.M.P. van Trijp, M. Ulieru & P.H.A.J.M. van Gelder	M.Treacy & E. Brühwiler	L.O. Duarte, S.A. Olea & S.A. Silva
Combining FMECA and Fault Trees for declining safety requirements of complex systems	**A study of the effect of imperfect inspection on the efficacy ofmaintenance for a non-repairable system with a defective state**	**Automated generation of a reliability model for a phased mission system.**	**Security incidents and subsequent adaptations of disaster response in complex humanitarian emergencies**	**Finite difference modeling of formation damage during underbalanced drilling in a tight gas reservoir**	**Manual handling operations risk assessment**
R. Guillerm, H. Demmou & N. Sadou	M.D. Berrade, P.A. Scarf, C.A.V. Cavalcante	S.J.Dunnett & K.S.Stockwell	B. I. Kruke	M. Naseri, S. R. Shadizadeh, E. Sahraei & S. S. Ghorashi	A.R. Burciaga-Ortega & J.R. Santos-Reyes

15:50 - 16:10 Coffee break

Monday, 19 September 2011

Parallel Sessions 16:10 - 17:50

Room 1	Room 2	Room 3	Room 4	Room 5	Room 6
Quantitative Risk Assessment 2	**Maintenance Modelling and Optimization 2**	**System Reliability Analysis 2**	**Risk Governance**	**Structural Reliability and Design Codes 2**	**Occupational Safety 2**
Chairman: M. Hibti	**Chairman: J. Vatn**	**Chairman: J.P. Signoret**	**Chairman: T. Aven**	**Chairman: E. Markova**	**Chairman: O. Aneziris**
Discussion of a mathematical model to simulate a fire ball from gaseous explosion (BLEVE)	**An optimal preventive maintenance policy of a deteriorating system subject to a bivariate state process**	**Issues of Reliability in Mobile Working Machines –inquiry study**	**How the use of modelled scenarios can improve risk awareness and risk control in complex environments**	**Laboratory simulation technique of non-stationary random vibration environment**	**Measurement of safety social norms at organizations: construct validation of a safety social norms survey**
A. N. Haddad & E. B. F. Galante	R. Ahmadi & M. Newby	Antti-Ville Itäsalo, Asko Ellman, Tero Välisalo	J.M. Hagen, B. O. Knutsen, T. Sandrup & M. Bjørnenak	C. Mao, Y. Jiang, J. Tao, X. Chen	C.S. Fugas, S. A. Silva & J. L. Melia
Enabling quantitative risk assessment of the real world transport system	**Application of RFMEA to risk analysis of field operations**	**Dependability analysis activities merged with system engineering, a real case study feedback**	**An evaluation of the risk governance of civil aviation during the 2010 volcanic ash cloud**	**Performance of passive fire protection for liquefied petroleum gas vessels: an experimental and numerical study**	**Organizing for quality and safety in health care – the Norwegian case**
M. Kowalski & J. Magott	M. Ko & T. Nishikawa	R. Cressent, V. Idasiak, F. Kratz & P. David	H. Veland & T. Aven	M. Gomez-Mares, S. Larcher, A. Tugnoli, V. Cozzani, F. Barontini & G.	S. Wiig , J. Quartz, C.v. Plessen , S. Harthug
Fault tree analysis of substations	**Combined representation of coupling effects in maintenance processes of complex engineering systems**	**Fast mission reliability prediction for unmanned aerial vehicles**	**Regulatory response to hazards. Case studies from the Norwegian petroleum industry**	**Probabilistic approaches used in the solution of design for biomechanics and mining**	**Safety design of high consequence systems based on first principles**
M. Čepin	V. Volovoi & R. Valenzuela Vega	J.D. Andrews, J Poole & WH. Chen	P.H. Lindoe, O.A. Engen & Anita Moen	K. Frydrýšek	S. Li, J. Li, B. Suo & L.Y. Xiao
Formalization of a quantitative risk analysis methodology for static explosive events	**Developments of time dependencies modelling concepts**	**How IEC 61508 can be used to design safe offshore wind turbines**	**The effect of the Deepwater Horizon accident on the Norwegian debate concerning future oil and gas development in Lofoten and Vesteralen**	**Probabilistic assessment of an aged highway bridge under traffic load**	**The contribution of balanced scorecards to the management of occupational health and safety**
R. G. Salhab, I. Häring & F. K. F. Radtke	T. Nowakowski, S. Werbińska-Wojciechowska	L. Dai & I. B. Utne, M. Rausand	I. L. Johansen	R.D.J.M. Steenbergen, J. Maljaars, O. Morales Nápoles & L. Abspoel	F. Juglaret, J.M. Rallo, R. Textoris, F. Guarnieri & E. Garbolino
High-pressure pipeline break risk assessment	**Dynamic maintenance requirements analysis in asset management**	**Impact of different minimal path set selection methods on the efficiency of fault tree decomposition**	**Major accidents and their consequences for risk regulation**	**Probabilistic modelling of hygro-thermal performance of building structure**	**The impact of framework conditions on HSE in subcontracting/outsourcing**
T. Saska, J. Novak, F. Kratochvil & R. Sousek	R.A. Dwight & P. Gordon, P.A. Scarf	V. Matuzas & S. Contini	I.B. Dahle, G. Dybvig, G. Ersdal, T. Guldbrandsen, B.A. Hanson, J.E.	Z. Sadovský, O. Koronthályová & P. Matiašovský	K. Skarholt, U. Forseth, M. Hermundsgård & R. Rosness

19:30 - 22:30 - Cocktail Troyes University of Technology

Tuesday, 20 September 2011

Parallel Sessions 8:30 - 10:10

Room 1	Room 2	Room 3	Room 4	Room 5	Room 6	Room A
Risk Management 1	**Maintenance Modelling and Optimization 3**	**System Reliability Analysis 3**	**Special Session: Risk and Reliability Importance Measures**	**Maritime Transportation 1**	**Safety Culture and Risk Perception 1**	**Accident and Incident Investigation**
Chairman: D. Vasseur	**Chairman: B. Castanier**	**Chairman: M.A. Lundteigen**	**Chairman: E. Borgonovo**	**Chairman: J. Wang**	**Chairman: H.B. Rasmussen**	**Chairman: S.O. Johnsen**
Benchmark study on international functional safety standards	**Failure risk analysis and maintenance effectiveness in a windturbine according to its history of unavailability and applied maintenance**	**Contribution to mission profile effect onto sequential system reliability**	**Differential Importance Measures estimation through MonteCarlo and Importance sampling techniques**	**A proposed Fuzzy Bayesian Network (FBN) model for measuring seafarers' reliability**	**Development of a Safety Management System for Small and Medium Enterprises (SME's)**	**A preliminary analysis of the 'News Divine' incident**
F. Massé, R. Tiennot, J.P. Signoret, P. Blancart, G. Dupin & L. Marle	M.A. Sanz-Bobi, R.J.A. Vieira & X. Montilla	M. Koucky, D. Valis	S. La Rovere, P. Vestrucci & M. Sperandii	R. Riahi, I. Jenkinson, S. Bonsall & J. Wang	Edgar McGuinness, Ingrid B. Utne, Martina Kelly	S. Olmos-Peña & J.R. Santos-Reyes
Correlating risk and innovation management in projects	**Robustness of maintenance decisions: uncertainty modelling and value of information**	**Management of factors that influence common cause failures of safety instrumented system in the operational phase**	**Importance Measures with Finite Changes: the Relationship between Fussell-Vesely and Total Order Reliability Importance**	**A Study of the Implementation of Maritime Safety Regulations by a Ship Operator**	**Relation between organizational culture styles and safety culture**	**Case study: do activities and outcomes of the process safety observations match?**
F. Marle, M. Jankovic & G. Turre	A. Zitrou & T. Bedford, A. Daneshkhah	M. Rahimi, M. Rausand & M. A. Lundteigen	E. Borgonovo & C.L. Smith	Karahalios H., Yang Z.L., Wang J.	M.A. Mariscal Saldaña & S. García Herrero , A. Toca Otero , J.M.	Marko Gerbec
Drilling consortia - new ways of organising exploration drilling in the oil and gas industry and the consequences for safety	**Maintenance effect modelling and optimization of a two-components system**	**Qualitative analysis of a BDMP by Finite Automaton**	**On imprecision in relation to uncertainty importance measures**	**An integrated life cycle assessment model to facilitate ship ecodesign**	**Risk perception in health care – A study of differences across organizational interfaces**	**Definition of an algorithm for accident identification**
L. Hansson, G. M. Lamvik & S. Antonsen	W. Lair & R. Ziani, S. Mercier, M. Roussignol	Pierre-Yves Chaux, Jean-Marc Roussel, Jean-Jacques Lesage,	R. Flage, T. Aven, P. Baraldi & E. Zio	E. Vanem, L.E. Mangset, G. Psarros & R. Skjong	S. Wiig	M. Nombela & E. Boix
Effectively mitigating and managing the risk to public assets	**Multicriteria Paradigm and Multi-objective Optimization on maintenance modeling**	**Reliability analysis of phased-mission systems with phase mission backup**	**Uncertainty in importance measures: developing the epistemic risk acievement Worth**	**Analysis of near collisions in the Gulf of Finland**	**Safety theoretical issues: scientific please, but keep it brief**	**Feasibility of railway suicide prevention strategies; a focus group study**
D. Prochazkova	C.A.V. Cavalcante & A.T de Almeida	Xiaoyue Wu, Qi Liu	E. Borgonovo, C.L. Smith	Floris Goerlandt, Jakub Montewka, Heikki Lammi &	Fred Størseth, Tor Olav Grøtan	H. Rådbo, B. Renck & R. Andersson
Empowered agents or empowered agencies? Assessing the risk regulatory regimes in the Norwegian and US offshore oil and gas industry	**Functional and economic obsolescence of assets in network utilities according to different environmental factors**	**Reliability analysis of the electronic protection systems with mixed m - branches reliability structure**	**Importance analysis in risk-informed decision-making of changes to Allowed Outage Times addressing uncertainties**	**How incomplete statistical accident data affects the validation of risk analysis models**	**The challenge of system change in aviation: the Masca project**	**Suicide and the Potential for Suicide Prevention on the Swedish Rail Network; a Qualitative Multiple Case Study**
P.H. Lindøe, M. Baram & G.S. Braut	J.F. Gómez, V. González, Luis Barberá , A. Crespo	A. Rosiński	S. Martorell, M. Villamizar, J.F. Villanueva, S. Carlos & A.I.	M. Hassel, B. E. Asbjørnslett & E. K. Ombler	M.C. Leva , N. McDonald, S. Corrigan & P. Ulfvengren	H. Rådbo, I. Svedung & R. Andersson

10:10 - 10:30 Coffee break

Tuesday, 20 September 2011

Parallel Sessions 10:30 - 12:30

Room 1	Room 2	Room 3	Room 4	Room 5	Room 6
Risk Management 2	**Maintenance Modelling and Optimization 4**	**System Reliability Analysis 4**	**Uncertainty and Sensitivity Analysis 1**	**Maritime Transportation 2**	**Safety Culture and Risk Perception 2**
Chairman: R. Bris	**Chairman: T. Bedford**	**Chairman: D. Valis**	**Chair: S. Tarantola**	**Chairman: C. Guedes**	**Chairman: O.A. Engen**
Experience from chemical industry for controlling patient safety	**Optimal preventive maintenance schedules using specific genetic algorithms and probabilistic graphical model**	**Reliability analysis of the vacuum sewerage system with use of the total probability theorem**	**A methodology to study complex biophysical systems with global sensitivity analysis**	**Integrated risk management at an industrial port**	**The impact of safety climate on risk perception on Norwegian and Danish production platforms**
C. van Gulijk, B.J.M. Ale, D. Dongelmans & M. Vroom	I. Ayadi, L. Bouillaut, P. Aknin & P. Siarry	K. Miszta-Kruk	Q-L.Wu, P-H.Cournède & J.Bertheloot	P.A. Bragatto & A. Pirone	H.B. Rasmussen & J.E. Tharaldsen
Integrated safety management based on organizational resilience	**Optimal prognostic maintenance planning for multi-component systems**	**Requirements for dependability management and ICT tools in early stages of the system design**	**A study of uncertainties in active load carrying systems due to scatter in specifications of piezoelectric actuators**	**Optimal redundancy strategy for an automatic docking system between two ships**	**Training for compliance and beyond; enabling high performance deliveries in the work permit process**
T.O.Grøtan & F. Størseth	A. Van Horenbeek & L. Pintelon	P. Valkokari, T. Ahonen, O. Venho-Ahonen, H. Franssila & A. Ellman	S. Ondoua & H. Hanselka, R. Platz & J. Nuffer	J. Ahn, J. Kwak & D. Chang	H. von Hirsch Eriksen, S. Mjelstad, O.H. Utvik & H. Smaamo
Principles for setting risk acceptance criteria for safety critical activities	**Predicting rail geometry deterioration by regression models**	**Safety and Reliability Decision Support System**	**An environmental risk assessment of a contaminated site based on extended uncertainty analyses**	**The possible impact of different watch keeping regimes at sea on sleep, fatigue, and safety**	**Accidents in the gas distribution industry. Some consequences of the in-troduction of new analysis criteria**
E. Vanem	F.P. Westgeest, R. Dekker & R.H Fischer	K. Kolowrocki, J. Soszynska-Budny	M.F. Milazzo, T. Aven	T. Kongsvik & K. Størkersen, J.H. Hansen	G. Desmorat, P. Desideri, F. Loth, F. Guarnieri & D. Besnard
Quality aspects in planning of maintenance and modification on offshore oil and gas installations	**Probability distribution of maintenance cost of a repairable system modeled as an alternating renewal process**	**The model of reusability of multi-component product**	**Uncertainty analysis in probabilistic risk assessment: Comparison of probabilistic and non probabilistic approaches**	**The significance of regulatory framework on safety climate**	**Integration of human factors in project uncertainty management, a decision support system based on fuzzy logic**
S. Sarshar, A. B. Skjerve & G. Rindahl, T. Sand & B. Hermansen	T. Cheng, M.D. Pandey & J.A.M.van der Weide	A. Jodejko-Pietruczuk, M. Plewa	Dominique Vasseur, Tu Duong Le Duy, Anne Dutfoy, Laurence Dieulle,	R.J. Bye, J. Røyrvik & G.M. Lamvik	S. Hassanzadeh, F. Marmier, D. Gourc & S. Bougaret
Reducing the risks faced by small businesses: the lifecycle concept	**Impact of maintenance on the replacement investment under technological improvement**	**Lazy forward-chaining methods for probabilistic model-checking**	**Generalized expressions of reliability of series-parallel and parallel-series systems using the Transferable Belief Model**	**Integrated risk assessment for LNG terminals**	**The impact of human and organisational factors on risk perception on Danish production platforms**
S. Clusel, F. Guarnieri, C. Martin & D. Lagarde	T.P.K. Nguyen, T. G. Yeung & B. Castanier	F. Teichteil-Königsbuch, G. Infantes & C. Seguin	Felipe Aguirre & Mohamed Sallak & Walter Schön	O. N. Aneziris, I. A. Papazoglou, Myrto Konstantinidou	H.B. Rasmussen

12:30 - 14:00 Lunch

Tuesday, 20 September 2011

Parallel Sessions 14:10 - 15:50

Room 1	Room 2	Room 3	Room 4	Room 5	Room 6
Quantitative Risk Assessment 3	**Fault Diagnosis, Prognosis and System Health Management 1**	**Mathematical Methods in Reliability and Safety 1**	**Uncertainty and Sensitivity Analysis 2**	**Nuclear Industry 1**	**Chemical and Process Industry 1**
Chairman: I. Papazoglou	**Chairman: P. Baraldi**	**Chairman: S. Mercier**	**Chair: C. Smith**	**Chairman: S. Martorell**	**Chairman: M. Christou**
Bayesian network modelling for fire safety assessment: Part I – a study of human reaction during the initial stages of a dwelling fire	**A comparison of distribution estimators used to determine a degradation decision threshold for very low first order error**	**A Monte Carlo approach for evaluation of availability and failure intensity under g-renewal process model**	**Importance analysis of multi-state system based on structural function methods**	**A review of different approaches for developing process safety indicators**	**Consequence analysis of SI cycle hydrogen production plant coupled to a nuclear reactor**
D.B. Matellini, A.D. Wall, I.D. Jenkinson, J. Wang & R. Pritchard	O. Hmad, A. Mathevet, P. Beauseroy, E. Grall-Maës & J.R. Masse	O. Yevkin	E. Zaitseva & V. Levashenko	G.P. Monteiro & P.F.Frutuoso e Melo	T. Ruiz-Sánchez, J. L. Francois, P. F. Nelson & M. J. Cruz-Gómez
ITRA:GUST – The Guttman scaling tool for supporting IT risk assessment audits	**A first step toward a model driven diagnosis algorithm design methodology**	**A new criterion for design of brittle components and for assessing their vulnerability to brittle fracture**	**Monte Carlo and fuzzy interval propagation of hybrid uncertainties on a risk model for the design of a flood protection dike**	**Are organizational audits of safety that different from organizational investigation of accidents?**	**Evaluation of CO2 liquefaction processes with production availability**
R. Mock & Ph. Aeschlimann	J.-M. Flaus, O. Adrot & Q. D. Ngo	M.T.Todinov	P. Baraldi, N. Pedroni, E. Zio, E. Ferrario, A. Pasanisi & M. Couplet	N. Dechy, J.-M. Rousseau & M. Llory	Youngkyun Seo, Kihong Kim, Daejun Chang
Literate PSA modeling for a modular PSA	**A generic adaptive prognostic function for heterogeneous multi-component systems : application to helicopters**	**Application of competing risks and generalized renewal processes in reliability analysis**	**Procedures for aggregating experts' knowledge and group decision model approaches**	**Integrated approach to optimize CAREM 25 nuclear power plant**	**Evaporation rate of acetone. Overview of correlations and sensitivity analysis**
M. Hibti	P. Ribot and E. Bensana	R.J. Ferreira, M.C. Moura, E.L. Droguett & P.R.A. Firmino	T. V. Garcez, A.T. de Almeida-Filho & A.T. de Almeida	J.E. Núñez Mc Leod & S.S. Rivera	S. Forestier, F. Heymes, G. Dusserre, L. Munier, E. Lapébie
Managing the risks to personnel within occupied buildings	**Advanced text mining algorithms for aerospace anomaly identification**	**Early detection of change-point in occurrence rate with small sample size**	**Sensitivity analysis of repetitive shock machine's vibration energy**	**Reliability analysis of Residual Heat Removal System (RHRS) in nuclear power plant by the GO-FLOW methodology**	**Numerical simulation of pool fires in oil pipeline system**
N.J. Cavanagh	Z. Bluvband & S. Porotsky	Laurent Bordes, Christian Paroissin, Jean-Christophe Turlot	J. Wan, B. Chen & Q.T. Wang	CHU Yongyue & YANG Ming	V.E. Seleznev & V.V. Aleshin
Method for quantitative assessment of domino effect caused by overpressure	**ANN based Bayesian hierarchical model for crack detection and localization over helicopter fuselage panels**	**Fine exact methods of safety, security and risk engineering**	**Comparing Ordered Weighted Averaging (OWA) and Copeland score for composite indicators in the field of security of energy supply**	**Semi-quantitative methods in railway signaling – a viable model for nuclear applications?**	**A BBN risk model of maintenance work on major process equipment on offshore petroleum installations**
F. Kadri, E. Châtelet & G. Chen	C. Sbarufatti, A. Manes & M. Giglio	D. Prochazkova	Claudio M. Rocco S. , Stefano Tarantola, Anca Costescu Badea,	H.-P. Berg, S. Griebel	B.A. Gran, O.M. Nyheim, J. Seljelid & J.E. Vinnem

15:50 - 16:10 Coffee break

Tuesday, 20 September 2011

Parallel Sessions 16:10 - 17:50

Room 1	Room 2	Room 3	Room 4	Room 5	Room 6
Quantitative Risk Assessment 4	**Fault Diagnosis, Prognosis and System Health Management 2**	**Mathematical Methods in Reliability and Safety 2**	**Information Technology and Telecommunications 1**	**Energy 1**	**Aeronautics and Aerospace**
Chairman: N.J. Cavanagh	**Chairman: E. Grall-Maës**	**Chairman: L. Berrade**	**Chairman: E. Zaitseva**	**Chairman: K. Petersen**	**Chairman: D. Prescott**
Organizational Interface Failures: A Historical Perspective and Risk Analysis Framework	**Contribution to specific determination of system state and condition**	**Importance measures and common-cause failures in network reliability**	**Backup path calculation in diverse routing considering Shared Risk Link Groups**	**Aligning Natural Gas Industry in an Efficient and Effective way towards Greenhouse Gases Emissions**	**A model to assess lifetime of selected structural components using time distribution of exceeding a boundary condition – an outline**
T.T. Pires & A. Mosleh	D. Valis, L. Zak	C. Tanguy	José Silva, Teresa Gomes & Carlos Simões	T. V. Alvarenga	J. Żurek, H. Tomaszek & M. Zieja
Probabilistic risk analysis procedure for aircraft overruns	**Decision support with a markovian approach for maintenance context activities**	**A block replacement policy for a bivariate wear subordinator**	**Bottleneck detection and forecasting in Message-Oriented-Middleware**	**Hazards and accident risks of fossil, nuclear and renewable energy technologies**	**Automatic derivation of qualitative and quantitative safety requirements for aircraft systems**
M.G. Gratton, M. De Ambroggi & P. Trucco	P. Vrignat, M. Avila, F. Duculty, B. Robles & F. Kratz	Sophie Mercier, Michel Roussignol	B. Chew & J. Bigham	P. Burgherr, P. Eckle & S. Hirschberg	P. Bieber, R. Delmas, C. Seguin & M. Bretschneider
Probabilistic safety assessment of a UF6 production process	**Diagnostic of discrete event systems using timed automata in MATLAB SIMULINK**	**Nonparametric predictive inference for reliability of a series of subsystems with multiple component types**	**Communications reliability analysis in networked embedded systems**	**Modelling and maintenance optimisation for the next generation of power plant**	**Method of analysis of the relation between serious incident and accident in air traffic**
Behrooz Ebrahimi	Z. Simeu-Abazi , E. Gascard , F. Chalagiraud	A.M. Aboalkhair, F.P.A. Coolen & I.M. MacPhee	Damien Aza-Vallina, Bruno Denis & Jean-Marc Faure	U. Aha, A. Manig, H.J. Krautz	J. Skorupski
Safety factors in fire safety engineering	**Differential evolution for optimal grouping of condition monitoring signals of nuclear components**	**Numerical method for the distribution of a service time of a structure subject to corrosion**	**Designing a reliable protocol for web services based robots interconnection**	**Numerical monitoring of natural gas delivery discrepancy for cities energy preparedness**	**Towards Model-Based Functional Hazard Assessment at Aircraft Level**
H. Bjelland & O. Njå	P. Baraldi, E. Zio, F. Di Maio & L. Pappaglione, R. Chevalier and R.	Adrien Brandejsky, Benoîte de Saporta, François Dufour, Charles	Henrik MADSEN, Răzvan-Daniel ALBU, Florin POPENŢIU-VLĂDICESCU & Radu	V.E. Seleznev & V.V. Kiselev	S. Maitrehenry & S. Metge, Y. Ait-Ameur, P. Bieber
Setting rational safety goals for human spaceflight	**Ensemble of Unsupervised Fuzzy C-Means classifiers for clustering health status of oil sand pumps**	**On generalized shot noise-type stochastic failure model**	**How to assess telecom service availability risks for crisis organisations?**	**Reliability and availability estimation of a photovoltaic system using Petri networks**	**A Petri net model of aircraft maintenance scheduling**
J.R. Fragola & E L. Morse	F. Di Maio,E. Zio, M. Pecht, P. Tse & K. Tsui	J.H. Cha & M. Finkelstein	E. Vriezekolk , R. Wieringa , S. Etalle	R. Laronde, A. Charki, D. Bigaud, E.A. Elsayed, P. Excoffier	D.R. Prescott

18:00 - 20:00
HRA Society Board Meeting

18:00 - 18:45
RESS Workshop

Wednesday, 21 September 2011

Parallel Sessions 8:30 - 10:10

Room 1	Room 2	Room 3	Room 4	Room 5	Room 6	Room A
Risk Management 3	**Maintenance Modelling and Optimization 5**	**Human Factors and Human Reliability 1**	**Uncertainty and Sensitivity Analysis 3**	**Manufacturing 1**	**Fault Tolerant Control and Systems 1**	**Special Session - Multiple Criteria Decision Aid (MCDA) and Risk Analysis**
Chairman: T. Aven	**Chairman: P. Scarf**	**Chairman: H. Blackman**	**Chairman: B. Leira**	**Chairman: B. Iung**	**Chairman: V. Cocquempot**	**Chairman: V. Mousseau**
Risk assessment method for shopping centres	**Semi-Markov coverage modeling and optimal maintenance policies of an automated restoration mechanism**	**Participant motivation in experiment of emergency operating procedures**	**Uncertainty analysis of nanoparticles for cancer photothermal therapy**	**Logistic support for the improvement of the warranty management**	**Control allocation of k-out-of-n systems based on Bayesian Network Reliability model: Application to a drinking water network**	**Assessing sustainability and risks: about using a multi-criteria decision aid methodology within an organization**
S. Nenonen & K. Tytykoski	H.C. Grigoriadou, V.P. Koutras & A.N. Platis	F. Song, S. Xu, Z.Z. Li	D. Barchiesi, S. Kessentini & T. Grosges	V. González Díaz, A. Crespo Márquez, F. Pérès, M. De Minicis,	P. Weber, C. Simon, D. Theilliol, V. Puig	M. Merad, N. Dechy & F. Marcel
Security Risk Management in Norwegian Aviation meets Nordic traditions of risk management	**Simple Non-Markovian Models for Complex Repair and Maintenance Strategies with LARES+**	**The right HRA model for the right HRA application**	**Uncertainty analysis via failure domain characterization: unrestricted requirement functions**	**Integrated model of control chart and maintenance management with costs of production losses**	**Design of fault tolerant control for nonlinear systems subject to time varying faults**	**Expertise and decision-aiding in safety and environment domains: what are the risks?**
Engen, O.A.	Max Walter	V. Fauchille	L. G. Crespo, S. P. Kenny & D. P. Giesy	F. Costantino, M. De Minicis & G. Di Gravio	T. Bouarar, B. Marx, D. Maquin & J. Ragot	Myriam Merad, Wassila Ouerdane & Nicolas Dechy
The collective risk, the individual risk and their dependence on exposition time	**SIS-design automation by use of Abstract Safety Markup Language**	**Developing and Evaluating the Bayesian Belief Network as a Human Reliability Model Using Artificial Data**	**Uncertainty assessment of reliability estimates for safety instrumented systems**	**Audit to a specific study scenario according to a reference framework for the improvement of the warranty management**	**Prognosis applied to an electromechanical system : a nonlinear approach based on sliding mode observer**	**MCDA tools and risk analysis: the decision deck project**
J. Braband, H. Schäbe	K. Machleidt, L. Litz & T. Gabriel	Y. Stempfel & V.N. Dang	H. Jin, M. A. Lundteigen & M. Rausand	V. González Díaz, C. Parra Márquez, J.F. Gómez Fernández &	D. Gucik-Derigny, R. Outbib & M. Ouladsine	B. Mayag, O. Cailloux & V. Mousseau
Integrated approach to assessment of risks from VCE's using Phast Risk and FLACS	**SPAMUF: A behaviour-based maintenance prediction system**	**Towards a unified human reliability model**	**Uncertainty propagation methods in dioxin/furans emission estimation models**	**Exact formulation of (R,S) and (s-1,1) inventory policies with Poisson demand. Application to spare parts stock optimisation**	**Guaranteed localization using reliability of measurements in imperfect mobile sensor networks**	**Parameterize a territorial risk evaluation scale using multiple experts knowledge through risk assessment examples**
Dr. N.J. Cavanagh & G. Morale	Pedro Bastos, Isabel Lopes, Luís Pires	P. A. Baziuk, S. Rivera & J. Nuñez Mc Leod	G. Ripamonti & G. Lonati , P. Baraldi, F. Cadini, E. Zio	J. Lonchampt	F. Mourad, H. Snoussi, F. Abdallah, C. Richard	Olivier Cailloux & Vincent Mousseau
Prevention of atypical accident scenarios through the use of resilience based early warning indicators	**Spare parts provision for a maintained system with a heterogeneous lifetime**	**Information Foraging in Nuclear Power Plant Control Rooms**	**Variance based sensitivity analysis of interactive buckling**	**ICT application on the warranty management process. The "e-Warranty" concept**	**Leak detection in the lubrication system of an aircraft turbine engine**	**Experimental Evidence on Relative Performance of Liability Rules**
N. Paltrinieri, V. Cozzani, K. Øien & T. O. Grøtan	P.A. Scarf & C.A.V. Cavalcante	R.L. Boring	Z. Kala	V. González Díaz, L. Barberá Martínez, J. F. Gómez Fernández &	L. Rakoto, M. Kinnaert, M. Strengnart & N. Raimarckers	Y. Hiriart

10:10 - 10:30 Coffee break

Wednesday, 21 September 2011

Parallel Sessions 10:30 - 11:50

Room 1	Room 2	Room 3	Room 4	Room 5	Room 6	Room A
Land Transportation 1	**Fault Diagnosis, Prognosis and System Health Management 3**	**Human Factors and Human Reliability 2**	**Information Technology and Telecommunications 2**	**Manufacturing 2**	**Fault Tolerant Control and Systems 2**	
Chairman: V. Cozzani	**Chairman: H. P-.J. Thunem**	**Chairman: H. Pesme**	**Chairman: G. Deleuze**	**Chairman: A. Crespo**	**Chairman: M. Kinnaert**	
A modal choice approach for freight transportation considering accident risks and eco-efficiency	**Evaluation of relevance of stochastic parameters on Hidden Markov Models**	**Tailoring the HEART technique for application in the rail industry**	**Reliability evaluation of tactical internet based on cloud-mobility model**	**Institutional design of product recall based on multi-agent simulation**	**Fault-Tolerant System Design in Multiple Operating Modes using a Structural Model**	
Leal Jr , I. C., Garcia, P. A. A. & D'Agosto, M. A.	B. Roblès & M. Avila & F. Duculty & P. Vrignat, F. Kratz	W.H. Gibson, C. Dennis, K. Thompson, A. Mills, B. Kirwan	X. Wang & R. Kang	K. Mitsudo, T. Kanno & K. Furuta	B. Conrard, V. Cocquempot & S. Mili	
Adapting the air traffic management safety screening technique for railways	**Exploitation of built in test for diagnosis by using Dynamic Fault Treeimplementation in Matlab Simulink**	**Assessing the impact of domain-specific cognitive profiles on the reliability of human operators in the railway domain**	**Resilience at interfaces – Improvement of safety and security in distributed control systems by establishing guidelines in collaboration**	**Intelligent supervisory system for availability estimation of automated material handling system**	**R2wAC: Recursive Redundancy with Active Comparison**	**Cindynic Panel Organizers: IMdR**
B. Milius & N. Petrek	Eric Gascard, Zineb Simeu-Abazi, Joseph Younes	M. Arenius, O. Sträter, M. Hammerl, M. Talg, K. Lemmer, H.	S.O.Johnsen	J. Smoczek & J.Szpytko	J.G. de Chavarri, J. Mendizabal Samper, A. Villaro, S. Urcelayeta,	
Improving the reliability/availability of a complex system by an active monitoring based onto "augmentation concept": application onto a railway system	**Fault detection through physical modelling in an axial flow compressor of a combined-cycle power plant**	**Implementing of new methods for assessing human risk in maintenance**	**Safety aspects of generic real-time embedded software model checking in the fuzing domain**	**Key performance indicators – a necessary tool for managing improvement processes?**	**Sensor and actuator faults estimation for Takagi-Sugeno models using descriptor approach: application to fault tolerant control**	
J. Gandibleux, L. Cauffriez, G. Branger	J.A. García-Matos, M.A. Sanz-Bobi, A. Muñoz & A. Sola	R. Doležal	M. Larisch, U. Siebold & I. Häring	O. Meland	M. Bouattour, M. Chadli, A. El Hajjaji & M. Chaabane	
Measures of reliability and safety of rail transportation system	**Fault propagation in systems operating phased missions**	**An approach to predict human reliability in manual assembly**	**Web server's reliability improvements using recurrent neural networks**	**Near-miss management system design in a Lean manufacturing process**	**Supervision of switching systems based on dynamical classification approach**	
F. J. Restel	R. Remenyte-Prescott & J.D. Andrews	B. Günnel, M. Schlummer, A. Meyna, M. Schick, F. Heumeni &	H. MADSEN, R.-D. ALBU, I. FELEA, G. ALBEANU, F. POPENŢIU-	S. Andriulo, M.G. Gnoni, P. Nardone & G. Maggio	A. Chammas, M. Traoré E. Duviella & S. Lecoeuche	

11:50 - 12:30 Room A
Plenary lecture 2: P. Klein
Risk Management R&D at EDF: a contribution to safety and performance management of EDF's industrial facilities
Chairman: J.F. Raffoux

12:30 - 14:00 Lunch

Wednesday, 21 September 2011

Parallel Sessions 14:10 - 15:50

Room 1	Room 2	Room 3	Room 4	Room 5	Room 6	Room A
Critical Infrastructure 1	**Fault Diagnosis, Prognosis and System Health Management 4**	**Mathematical Methods in Reliability and Safety 3**	**Reliability and Safety Data Collection and Analysis 1**	**Risk and Hazard Analysis 1**	**Decision Making under Risk 1**	**Special Session "Human Reliability: Models & Data"**
Chairman: C. Rocco	**Chairman: F. Di Maio**	**Chairman: J. Andrews**	**Chair: T. Nowakovsky**	**Chairman: L. Oliveira**	**Chairman: M. Merad**	**Chairman: L. Podofillini**
A modelling language for the resilience assessment of networked systemsof systems	**Guaranteeing high availability of wind turbines**	**Reliability of the power electronic components by their dynamical simulation in real working conditions**	**A discussion on expert judgments in national risk analyses**	**A Framework for Model Driven Risk Analysis**	**A guidance for implementing decision-aiding in risk management**	**The development and application of CARA – a HRA tool for Air Traffic Management systems**
Roberto Filippini, Andrés Silva	G. Haddad, P.A. Sandborn, T. Jazouli, M.G. Pecht, B. Foucher,	Jérôme de Reffye	K. Russell Vastveit, O. Njå, G. S. Braut & M. Ruge Holte	J.M. Flaus	F. Beaudouin, M. Merad	B. Kirwan, A. Kilner, H. Gibson, D. Piccione & M. Sawyer
An All-Hazard Approach for the Vulnerability Analysis of Critical Infrastructures	**Method of fault detection and isolation in nonlinear electrical circuits**	**Scenario Analysis and PRA: Overview and Lessons Learned**	**A simple polynomial regression to estimate the parameters of the Weibull distribution with γ > 0**	**A linear programming approach to risk prioritization in FMEA**	**Dealing with uncertainties in long term investment planning of electricity distribution systems with distributed generation**	**A model-based approach for the collection of Human Reliability data**
E.Zio, R.Piccinelli & G.Sansavini	A. Zhirabok & D. Tkachev	Diego Mandelli, Tunc Aldemir, Alper Yilmaz	I.B. Sidibe & K. H. Adjallah	Garcia, Pauli A. A.; Leal Jr., Ilton C. & Oliveira, M. A.	M.D. Catrinu, M. Istad, D.E. Nordgård	S. Massaiu
Analytical model of low-rise building vulnerability curves	**Modeling and fleet effect for the diagnosis of a system behavior**	**Small failure probabilities and copula functions: preliminary studies on structural reliability analysis**	**Accelerated Test Model in Fatigue Life Reliability Evaluation of Stub Axle**	**Ageing and life extension for safety systems on offshore facilities**	**Forming risk clusters in projects to improve coordination between risk owners**	**Pendulum shifts, context, error, and personal accountability**
G.L. Pita & J.-P. Pinelli	F. Ankoud, G. Mourot, J. Ragot, R. Chevalier & N. Paul	E.A. Tamparopoulos, P. Spyridis & K. Bergmeister	E.A. Azrulhisham, Y.M. Asri, A.W. Dzuraidah, A.H. Hairul Fahmi	S. Håbrekke & P. Hokstad	F. Marle & LA. Vidal	H. S Blackman & O. V. Hester
Comparison of vulnerability and reliability analysis of technical infrastructures	**One-Class SVM in Multi-Task Learning**	**The Inverse Gamma process for modeling state-dependent deterioration processes**	**Analysis of wave energy parameters based on copula functions**	**Hydraulic modelling of the flood prone area in a basin with a historical report of urban inundation: the Arunca River case (Central Portugal)**	**On the use of value of information measure in decision making – A drilling jar case**	**The meaning of human performance data observed from simulator studies on human reliability analysis**
J. Johansson & H. Hassel	Xiyan He, Gilles Mourot, Didier Maquin & José Ragot, Pierre	M. Guida & G. Pulcini	C. Ejoh & S. Sriramula	P.P. Santos, A.O. Tavares & A.I.A.S.S. Andrade	J.T. Selvik, H.P. Lohne & T. Aven	Jinkyun Park and Wondea Jung
Organized Method for Secured Infrastructure Specifications	**Periodical inspection frequency of safety related control systems in machinery – practical recommendations for the determination**	**The method of safe 4D flight trajectory prediction in controlled airspace**	**Database concept in early stage of operation**	**Assessment of loss results by means of multi – criteria analysis**	**Parameter estimation in a reservoir engineering application**	**Three human reliability analyses under the MERMOS light**
T. Derode, C. Elegbede, E. Garcia & P. Gilibert	M. Dzwiarek, O. Hryniewicz	M. Piatek & A. Stelmach	I. Dziaduch & M. Mlynczak	P. Suchardova , A. Bernatik, O. Sucharda	A. M. Hanea & M. Gheorghe	P. Le Bot & H. Pesme

15:50 - 16:10 Coffee break

Wednesday, 21 September 2011

Parallel Sessions 16:10 - 17:50

Room 1	Room 2	Room 3	Room 4	Room 5	Room 6	Room A
Critical Infrastructure 2	**Fault Diagnosis, Prognosis and System Health Management 5**	**Mathematical Methods in Reliability and Safety 4**	**Reliability and Safety Data Collection and Analysis 2**	**Risk and Hazard Analysis 2**	**Decision Making under Risk 2**	
Chairman: G. Sansavini	**Chairman: P. Beauseroy**	**Chairman: K. Kolowrocki**	**Chair: E. Remy**	**Chairman: C. Guedes**	**Chairman: N. Dechy**	
Exploring Critical Infrastructure Interdependency by Hybrid Simulation Approach	**Predictive maintenance policy for oil well equipment in case of scaling through support vector machines**	**The process oriented simulation framework for common-cause failure assessment**	**Estimation of an aging failure process taking into account change in trend and local perturbation**	**Evaluation of regional risk analyses in Norway**	**Sequential optimization of oil production under uncertainty**	
Cen Nan, Wolfgang Kröger & Patrick Probst	M.C. Moura, I.D. Lins, R.J. Ferreira, E.L. Droguett & C.M.C.	E. Bejdakic, M. Krauß & H.-P. Berg	E. Idée, P. Briand, C. Labart, V. Verrier, P. Bertrand	O. Njå, G. S. Braut & K. Russell Vastveit	Arne B. Huseby & Nikita Moratchevski	
Failure scenarios in water supply system by means of fault tree analysis	**Scope and potential of applying artificial neural networks in reliability prediction with a focus on railway rolling stock**	**The unique signal applied to weapon system safety design**	**Improved estimation of failure frequencies for offshore pipelines and risers**	**Fragment launching conditions for risk analysis of explosion and impact scenarios**	**Shared collaboration surfaces to support adequate team decision processes in an integrated operations setting**	
B. Tchorzewska-Cieslak, K. Boryczko, M. Eid	Olga Fink and Ulrich Weidmann	L.Y. Xiao, J. Li, B. Suo & S. Li	Pavel Praks, Sava Medonos	R. G. Salhab, I. Häring & F. K. F. Radtke	M. Kaarstad & G. Rindahl	**Panel Session: "Human factors and HRA - A bridge over troubled water" Organizers: HRA Society**
From pre-crisis to post-crisis going through the peak	**State estimation for nonlinear system diagnosis using multiple models. Application to wastewater treatment plants**	**Uncertainty analysis via failure domain characterization: polynomial requirement functions**	**Links between reliability Cox model for MV electrical component and the reliability target defined for the global MV electrical network**	**Improving Reliability Allocation in a Complex Repairable System Using STRR Allocation Technique**	**Visualization and verification of dependable work processes for stakeholder-driven organizations**	
A. Laugé, J. Hernantes, L. Labaka & J.M. Sarriegi	Anca Maria Kiss, Benoît Marx, Gilles Mourot, José Ragot	L. G. Crespo, C. A. Munõz, A. J. Narkawicz, S. P. Kenny & D. P.	P. Carer, R. Lattes, L. Guerineau, B. Puluhen, L. Pierrat	W. Baun	Atoosa P-J Thunem, Harald P-J Thunem	
Interdependency analysis of CIs in real scenarios	**Gamma process classification according to relevant variables: problem statement and first study**	**Uncertainty assessment in semi Markov methods for Weibull functions distributions**	**Reliability Prediction Model of a Multi-State System subject to General Repair and Maintenance with Limited Failure Data**	**Managing inconsistency in safety analysis: an initial exploration**	**A Fokker-Planck model of pitting corrosion in underground pipelines to support risk-informed decision making**	
E. Cagno, P. Trucco & M. De Ambroggi	Xuan Zhou Wang, Edith Grall-Maës & Pierre Beauseroy	M.Zajac & A. Kierzkowski	Masdi Muhammad, Ainul Akmar Mokhtar, Mohd Amin Abdul	L. Sun & T. Kelly	E. N. Camacho, P. F. Frutuoso e Melo, P. L. C. Saldanha & E. P. da	
Optimization of electrical grid protection by a differential evolution algorithm	**On a goodness of fit test for gamma process : comparison of an observed process with a reference**	**Modelling of dynamical dependability by using stochastic processes**	**Reliability prediction of oil wells by support vector machine with particle swarm optimization for variable selection and hyperparameter tuning**	**Risk assessment of dropped and dragged anchors to offshore pipelines**	**Performance-based fire safety - risk associated with different designs**	
E. Zio, L. R. Golea, G. Sansavini	Edith Grall-Maës	J. Chudoba	I.D. Lins, M.C. Moura, E.L. Droguett, E. Zio & C.M. Jacinto	Luiz Fernando Oliveira & Darío Gusovsky	H. Bjelland & O. Njå	

17:50 - 19:30 ESRA General Assembly Meeting (Room 2)

20:00 - Espace Argence - Conference Gala Dinner

Thursday, 22 September 2011

Parallel Sessions 8:30 - 10:10

Room 1	Room 2	Room 3	Room 4	Room 5	Room 6
Critical Infrastructure 3	**Special Session "Maintenance and Deterioration Modelling with Covariates"**	**Human Factors and Human Reliability 3**	**Dynamic Reliability 1**	**Bayesian Methods 1**	**Natural Hazards 1**
Chairman: C. Tanguy	**Chairman: L. Dieulle**	**Chairman: B. Kirwan**	**Chairman: P.E. Labeau**	**Chairman: A. Pasanisi**	**Chairman: P. van Gelder**
Power grid reliability and vulnerability analysis	**An adaptive sequential maintenance decision for a deteriorating system with covariates and maintenance constraints**	**Offshore supply vessel design and operation: a human factors exploration**	**A Comparison of Scenario Binning Methods for Dynamic Probabilistic Risk Assessment**	**An AHP-based approach of risk analysis in Bayesian belief networks**	**Applying a systemic model of accident within a system for treatment of contaminated materials**
Andrija Volkanovski Wolfgang Kröger	Elias Khoury, Estelle Deloux, Antoine Grall & Christophe Bérenguer	V. Rumawas & B.E. Asbjørnslet	K. Metzroth, D. Mandelli, A. Yilmaz, R. Denning, T. Aldemir	Bin Xie & Jørn Vatn	K. Hardy & F.Guarnieri
Reliability issues related to the usage of Cloud Computing in Critical Infrastructures	**Condition-based maintenance strategies for a partially observable deteriorating system**	**Teamwork competencies required by members of integrated operations teams in the petroleum industry**	**A Dynamic Level 2 PRA Using ADAPT-MELCOR**	**An optimizational resource allocation method for series system reliability life test**	**Active environment as a potential source of risk of major accident**
Oscar Diez, Andres Silva	E. Deloux, M. Fouladirad, C. Bérenguer	A.B. Skjerve & G. Rindahl	D.M Osborn, D. Mandelli, K. Metzroth, T. Aldemir, & R. Denning,	Qi Liu , Xiaoyue Wu & Jianrong Ding	K. Sikorova & A. Bernatik
Service dependability and performance of SCADA systems intercon-necting Power grids and Telco networks	**On the gamma process modulated by a Markov jump process**	**Quantitative Retrospective Analysis of CREAM in Maritime Operations**	**A probabilistic model for online scenario labeling in dynamic event tree generation**	**Assessing risk based on Bayesian networks and FMECA: a case study**	**A probabilistic framework for managing blowout risk during access to subglacial Antarctic Lakes**
E. Ciancamerla, M. Minichino, D. Lefevre & L. Lev	Christian Paroissin, Landy Rabehasaina	Z.L. Yang & J. Wang	D. Zamalieva, A. Yilmaz & T. Aldemir	L.M. Pedersen & M.H. Saltnes	M.P. Brito, G. Griffiths & M. Mowlem
Some metrics for assessing the vulnerability of complex networks: an application to an electric power system	**Preventive maintenance optimization for a degrading system subject to shocks with degradation-dependent maintenance costs**	**Concept of Operations for Data Fusion Visualization**	**Application of the dynamic hazop to an air separation distillation column**	**Bayesian network for decision making on ageing facilities**	**Industrial hazards associated with the eruption of Etna**
C. M. Rocco S., J.E. Ramirez-Marquez & D. E. Salazar A.	M. C. Segovia & P. E. Labeau	T.R. McJunkin, R.L. Boring, M.A. McQueen, L.P. Shunn, J.L. Wright, D.I.	J. S. G. C. Matos, P. F. Frutuoso e Melo & M. Nele	P.A.P. Ramírez & I.B. Utne	M.F. Milazzo & G. Ancione, A. Basco & E. Salzano, G. Maschio
Complexity and vulnerability of Smartgrid systems	**Statistical modelling of aeronautical turboshaft engines ageing from fieldand repair data feedback including preventive maintenance**	**Task analysis and modelling based on Human-Centred Design approach in ATC work**	**Capability of the MCDET method in the field of dynamic PSA**	**Comparison of fault tree and Bayesian networks for modeling safety critical components in railway systems**	**Interdependent fragility of complex urban infrastructure systems subjected to probabilistic earthquake hazards**
E. Kuznetsova & K. Culver, E. Zio	A. Billon & P. Darfeuil & S. Humbert, L. Bordes & C. Paroissin	S. Inoue & H. Aoyama, K. Yamazaki, K. Nakata, K. Furuta	M. Kloos	Q. Mahboob, D. Straub	Isaac Hernandez-Fajardo & Leonardo Dueñas-Osorio

10:10 - 10:30 Coffee break

Thursday, 22 September 2011

Parallel Sessions 10:30 - 11:50

Room 1	Room 2	Room 3	Room 4	Room 5	Room 6
Critical Infrastructure 4	**Maintenance Modelling and Optimization 6**	**Special Session "Function Oriented Monitoring"**	**Dynamic Reliability 2**	**Bayesian Methods 2**	**Natural Hazards 2**
Chairman: E. Zio	**Chairman: J.A.M van der Weide**	**Chairman: A. P.-J. Thunem**	**Chair: T. Aldemir**	**Chairman: C. Paroissin**	**Chairman: P. van Gelder**
The need for a new approach to road tunnels risk analysis	**State based models applied to offshore wind turbine maintenance and renewal**	**Generating Quantitative Cause-Consequence Explanation for Operator Support Systems**	**Development of a Simulator Independent Cognitive Human Reliability Model for Nuclear Accident Conditions**	**Establishing prior probability distributions for probabilities that pairs of software components fail simultaneously**	**Management of Hurricane Risk in Florida**
K. Kirytopoulos & K. Kazaras	Z. Hameed & J. Vatn	Akio Gofuku & Masahiro Yonemura	R. Sundaramurthi & C. Smidts	M. Kristiansen, R. Winther & B. Natvig	J.-P. Pinelli, T. Johnson, G. Pita, K. Gurley & S. Hamid
Towards an integrated risk analysis framework for CO2 capture, transport and storage	**The analysis and conversion of warranty maintenance tasks for a power plant**	**Multilevel flow modeling for nuclear power plant diagnostics**	**Dynamic reliability and uncertainty analysis of severe accident with randomly delayed events**	**Reliability Based Design of Engineering Systems with Monotonic Models**	**Multivariate Gumbel distributions for Reliability Assessment**
J. Samadi & E. Garbolino	B.M. Alkali & P. McGibney	G. Gola, M. Lind, H. P-J Thunem, A. P-J Thunem, E. Wingstedt & D. Roverso	R. Alzbutas, P.E. Labeau	M. Rajabalinejad & C. Spitas	B.J. Leira & D. Myrhaug
Unreliability of water supply networks in the Polish towns based on the field reliability tests.	**Probabilistic prognosis of a system : application to a pneumatic valve**	**Reasoning about Causes and Consequences in Multilevel Flow Models**	**Reliability assessment for complex systems operating in dynamic environment**	**Towards a Bayesian Network methodology to improve maintenance of complex semiconductor systems**	**The use of risk and vulnerability analysis in climate change adaptation**
M. Kwietniewski & K. Miszta-Kruk	A. Lorton, M.Fouladirad & A. Grall	M. Lind	G. Babykina, N. Brinzei & J.-F. Aubry G. A. Pérez Castaneda	M. F. Bouaziz & E. Zamaï, S. Monot & F. Duvivier , S. Hubac	Jens Laugesen, Bodil Aamnes Mostue, Ingrid Bouwer Utne & Jørn Vatn
Interdependency-based approach of complex events in critical infrastructure under crisis: a first step toward a global framework	**An analysis of applying RCM methodology in a Brazilian thermal power plant**	**Using an agent-oriented framework for supervision, diagnosis and prognosis applications in advanced automation environments**	**Using dynamic bayesian networks to solve a dynamic reliability problem**	**Work time loss prediction by exploiting occupational accident data**	**Total Suspended Particulate from mobile sources in an Italian opencast quarry: a proposal to improve US EPA ISC3 model.**
Babiga Birregah, Anne Muller, Eric Châtelet	P. H. C. Lins, T. V. Garcez, M. H. Alencar & A.T. de Almeida	Harald P-J Thunem, Atoosa P-J Thunem, Morten Lind	Perrine Broy, Hassane Chraibi & Roland Donat	E.C. Marcoulaki, I.A. Papazoglou & M. Konstandinidou	Guido Alfaro Degan, Dario Lippiello & Mario Pinzari.

11:50 - 12:30 Room A
Plenary lecture 3: E. Hollnagel
The Requisite Variety of Risk Assessment
Chairman: (to be confirmed)

12:30 - 14:00 Lunch

Thursday, 22 September 2011

Parallel Sessions 14:10 - 15:50

Room 1	Room 2	Room 3	Room 4	Room 5	Room 6	Room A
Land Transportation 2	**Maintenance Modelling and Optimization 7**	**Manufacturing 3**	**Reliability and Safety Data Collection and Analysis 3**	**Structural Reliability and Design Codes 3**	**Risk and Hazard Analysis 3**	
Chairman:	**Chairman: A. Barros**	**Chairman: E. Levrat**	**Chairman: R. Bris**	**Chairman: J. Markova**	**Chairman: F. Brissaud**	
Optimization of preventive maintenance policy based on operational reliability analysis (Application to tramway access doors)	**Optimization of redundancy and imperfect preventive maintenance for series-parallel multi-state systems**	**A complete probabilistic spare parts stock model under uncertainty**	**Reliability prognosis for mobile phones: a case study**	**Updating partial factors for material properties of existing structures in a Eurocode framework using Bayesian statistics**	**On software interoperability in accident consequence assessment**	
B. Bonnet & P. Dersin	M. Nourelfath & E. Châtelet	J. Lonchampt & K. Fessart	A. Braasch, F. Plinke, D. Althaus & A. Meyna	R. Caspeele & L. Taerwe	S. Contini, L. Fabbri & V. Matuzas, M. Binda	
RAMS processes in railway-substructure engineering for improved project quality	**Semi-parametric estimation and condition-based maintenance**	**The management of a warranty assistances program: A suggestion as reference Framework**	**Risk of postoperative complications after surgeries: laparoscopic versus open surgery**	**Reliability based design in tunnelling**	**New approach to analysis of falling objects in the offshore petroleum industry – operational categorization of events**	
E. Okstad	M. Fouladirad, A. Grall & C. Paroissin	V. González Díaz, L. Barberá Martínez, J.F. Gómez Fernández &	P. Jahoda, R. Bris & L. Martinek	M. Huber, P. A. Vermeer, C. Moormann & M. A. Hicks	J. Seljelid, S. A. Kvalheim & O. M. Nyheim, J. E. Vinnem	**Dynamic Reliability Panel Organizers: P.E. Labeau & T. Aldemir**
Risk analysis applied to discrete transportation systems	**Dynamic grouping maintenance strategy with time limited opportunities**	**The reverse logistics model of single-component product recovery**	**The RAW concept: Early identification and analysis of product failure behaviour in the use phase**	**Small failure probability assessment based on subset simulations: application to a launcher structure**	**Safety assessment methodology for a UAV development program**	
D. Caban & T. Walkowiak	Phuc Do Van, Florent Brissaud, Anne Barros, Christophe	M. Plewa, A. Jodejko-Pietruczuk	S. Bracke & S. Haller	C. Elegbede, F. Normand	Celik, Sirma	
Risk assessment and improvement of resilience of critical communication infrastructure	**Adaptive condition-based maintenance models for deteriorating systems operating under variable environment and indirect condition monitoring**	**Optimal controller for manufacturing systems by decentralized approach**	**Trialling the use of safety performance indicators within Great Britain's railway industry**	**Uncertainty analysis of ultimate limit state of steel bar structures**	**Towards an integrated risk model for hydrocarbon industry operation**	
S.O.Johnsen, M.Veen	K.T. Huynh, A. Barros & C. Bérenguer	A. Philippot, V. Carré-Ménétrier & A. Tajer	K. Thompson, J. Heavisides, G. Bearfield & D. Griffin	Z. Kala	B.J.M. Ale, D. Hanea, C. van Gulijk, P-H. Lin, S. Sillem, P. Hudson	
Statistical analysis of railway safety performance in the European Union	**Adaptive residual-based maintenance policy for a deteriorating system in dynamic environment**	**Integrating production and maintenance planning for a parallel system with dependent components**	**Warranty data analysis for service demand forecasting: a case study in household appliances**	**Probabilistic Models of Thermal Actions for Bridges**	**Towards CFD fire modelling applied to quantitative risk analysis**	
J. Braband, H. Schäbe	X. ZHAO, M. Fouladirad, C. Bérenguer	M. Nourelfath & E. Châtelet	O. Borgia, F. De Carlo, M. Tucci	J. Marková	S. Vianna, K. Shaba, J. Pujol, A. Garcia-Sagrado & L.F. Oliveira	

15:50 - 16:15 Coffee break & Conference closing

General Information

Conference Location
The Conference takes place in Espace Argence, 20 bis boulevard Gambetta, Troyes – France. Espace Argence is located to the north-west of the historic town center, close to most of the hotels and to the station.

Registration Desk and Secretariat
Registration for the Conference takes place at the Conference location from 08H30 on Monday, 19 September 2011. The Conference staff is here to help you during the whole Conference, and to assure you have a nice stay in Troyes. Please do not hesitate to ask any question or to bring forward any problem on your mind. The secretariat is located at the main entrance of Espace Argence.
Opening hours : 08h15 to 18H15 from Monday to Thursday.

Conference Badges
Delegates and accompanying persons are kindly requested to wear their Conference name badge at all meetings and official functions.

Proceedings
The papers presented at ESREL 2011 Conference are included in the Proceedings of the Conference to be published by the Taylor & Francis Group, in abstract book and CD-ROM, and distributed upon registration at the Conference in each Delegate's pack according to the category of registration.

Exhibition
An exhibition takes place during the Conference in the ground floor, next to the registration desk and in the first floor (exhibition areas I and II), both where coffee is served during the breaks. The exhibitors highlight companies' achievements, products, and services, display books and journals relevant to the Conference topics and give demonstrations of e.g. reliability and risk assessment software and equipment.
Conference exhibitors : BQR, DNV, ELSEVIER, ISOGRAPH, ITEMSOFT, SAGE, PRO-ACTIMA, TOTAL, ALD group.

Language
The official language of the Conference is English. No simultaneous translation is available.

Internet Access – Computer Area
Delegates have access to a WIFI Network available at the Conference Venue. For those who do not use this option, some computers are available in the computer area where delegates are able to check presentations and have access to the internet.

Changes to the Technical and Social Programme
The organizers reserve the right to adjust or change the Technical Programme and/or the Social Programme as, if and when necessary.

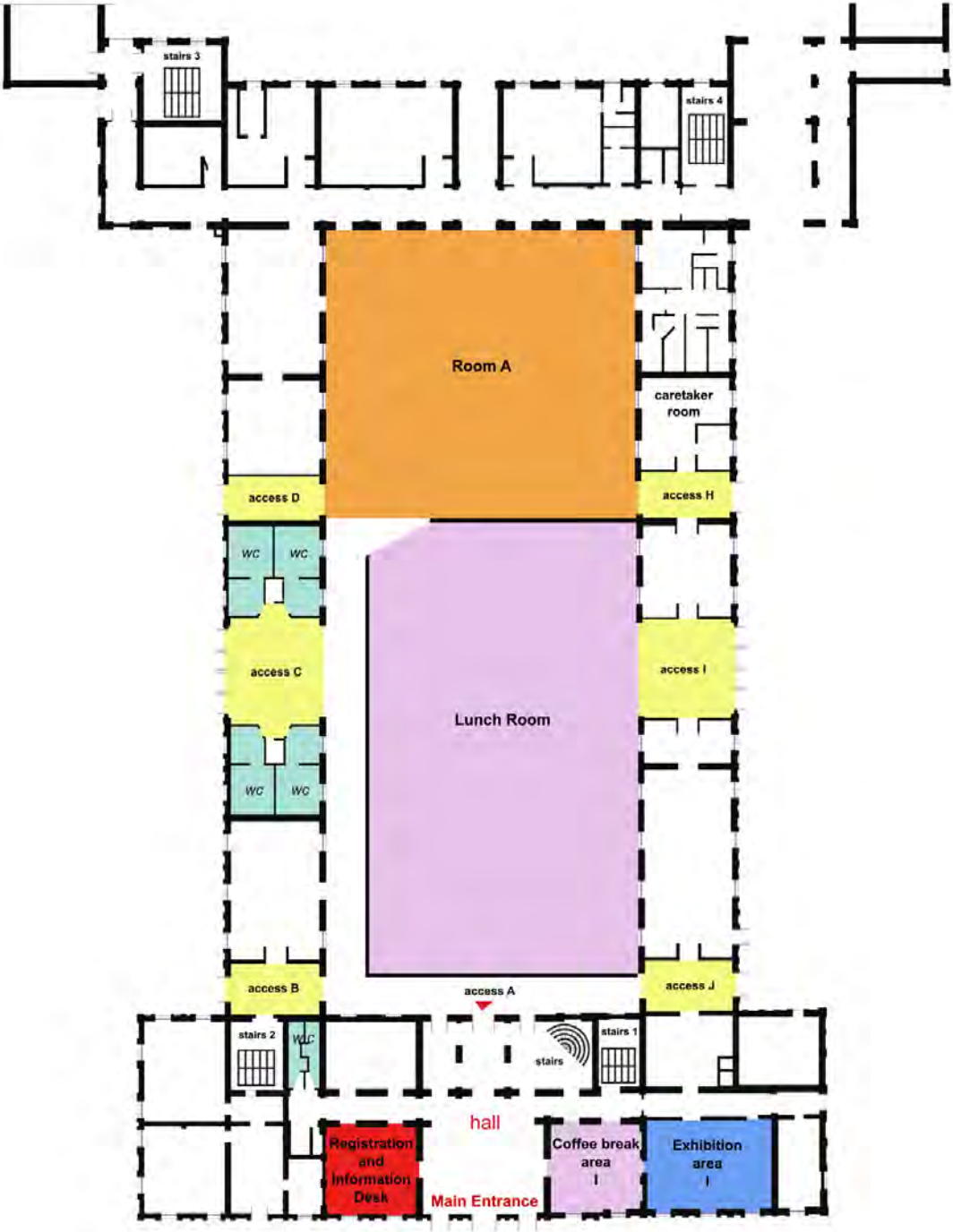
Guidelines to Authors and Session Chairs

Presentation and Discussion of Papers
Each presentation has been allocated 15 minutes with 5 additional minutes for discussion. Authors should upload their presentation to the stationary computer at least 15 minutes before the session starts.
Authors may give short bios to the session Chair in advance. Please try to meet the session Chair at least 15 minutes before session starts.

Time keeping
Chairmen have the responsibility to introduce speakers from the bibliographic notes available, to lead the discussion and to ensure that the time schedule is observed.

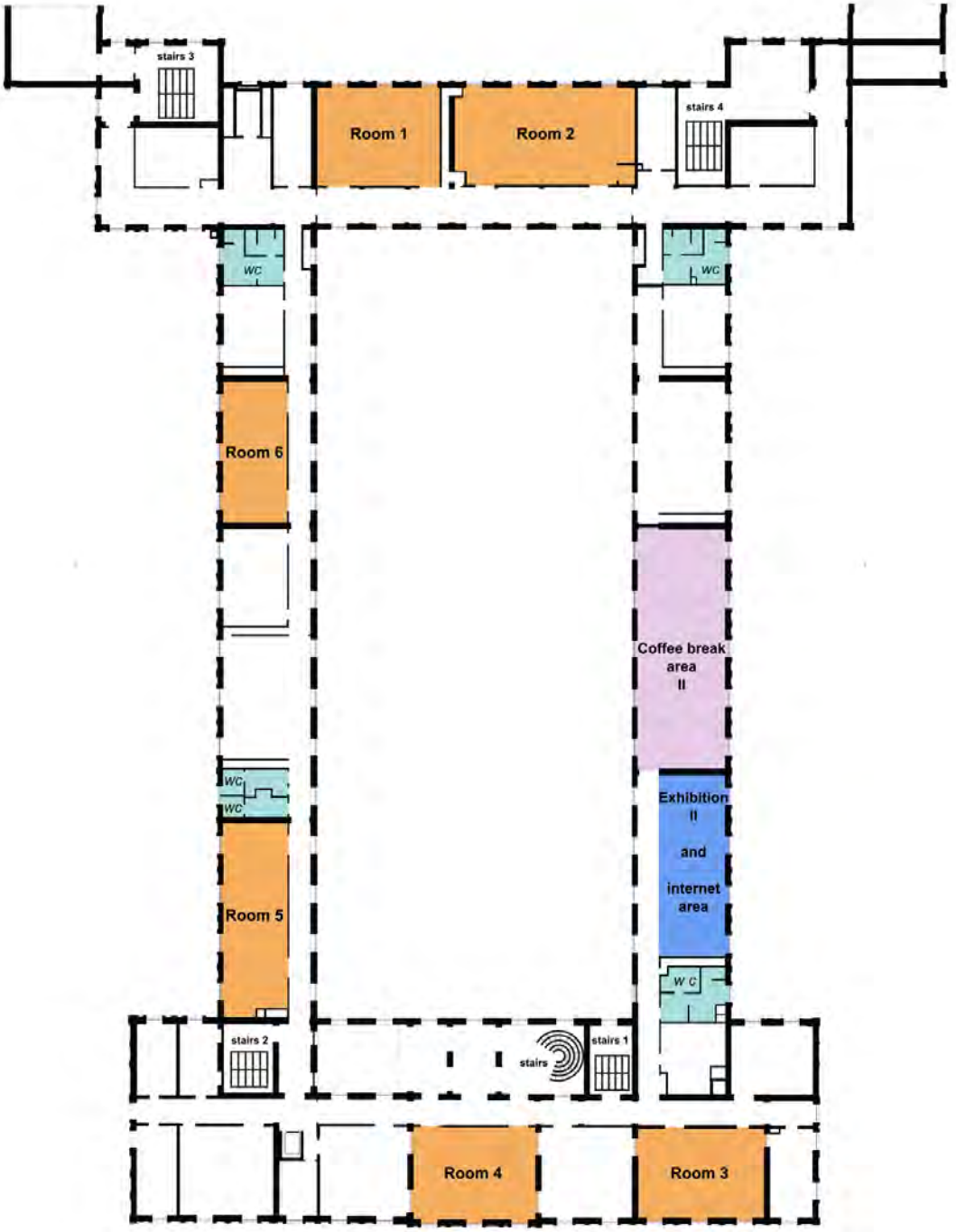
It is suggested that Chairmen should show some tolerance for minor delays with the presentation and/or discussions but on the other hand they should be strict in not allowing major changes from the basis time schedule. As a rough guideline, a 5-minutes drift in one presentation can be accomodated but more than that should be absolutely avoided in order not to penalise authors and/or presentations.

Audio-Visual Equipment
Each room is equipped with a laptop computer and media projector for presentations. Overhead projectors are not available. To avoid last minute problems of compatibility, authors cannot use their own laptop computers and need to deliver their presentation as indicated above.
A staff member is on hand to assist with any difficulty that may arise.



Espace Argence

ground floor



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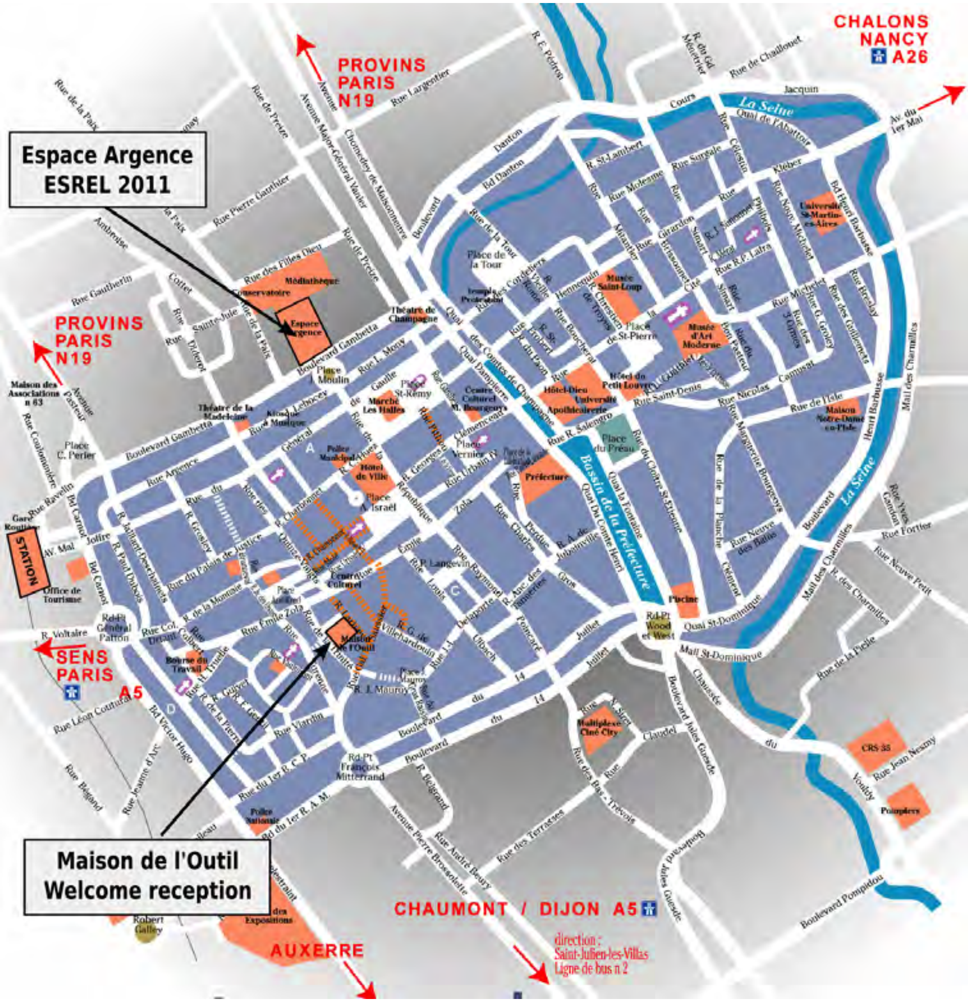
first floor



Espace Argence
ESREL 2011
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PARIS
A5
CHAUMONT / DIJON A5
AUXERRE
STATION
La Seine
Bassin de la Préfecture
direction :
Saint-Julien-les-Villas
Ligne de bus n 2

Technical Programme at a Glance ESREL 2011

	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6	Room A
Monday, 19 September 2011							
08:30	***Registration***						
10:30 - 12:30	Opening and Plenary Session - Room A						
14:10 - 15:50	Quantitative Risk Assessment I	Maintenance Modelling & Opt I	System Reliability Analysis I	Crisis & Emergency Management	Structural Reliability & Design Codes I	Occupational Safety I	
16:10 - 17:50	Quantitative Risk Assessment II	Maintenance Modelling & Opt II	System Reliability Analysis II	Risk Governance	Structural Reliability & Design Codes II	Occupational Safety II	
Tuesday, 20 September 2011							
8:30 - 10:10	Risk Management I	Maintenance Modelling & Opt III	System Reliability Analysis III	Risk & Reliability Importance Measures	Maritime Transpotation I	Safety Culture & Risk Perception I	Accident & Incident Investigation
10:30 - 12:30	Risk Management II	Maintenance Modelling & Opt IV	System Reliability Analysis IV	Uncertainty & Sensitivity Analysis I	Maritime Transportation II	Safety Culture & Risk Perception II	
14:10 - 15:50	Quantitative Risk Assessment III	Fault Diagnosis, Prognosis and System Health Management I	Mathematical Methods in Reliability and Safety I	Uncertainty & Sensitivity Analysis II	Nuclear Industry I	Chemical and Process Industry I	
16:10 - 17:50	Quantitative Risk Assessment IV	Fault Diagnosis, Prognosis and System Health Management II	Mathematical Methods in Reliability and Safety II	Information Technology and Telecommunications I	Energy I	Aeronautics and Aerospace	
Wednesday, 21 September 2011							
8:30 - 10:10	Risk Management III	Maintenance Modelling & Opt V	Human Factors and Human Reliability I	Uncertainty & Sensitivity Analysis III	Manufacturing I	Fault Tolerant Control and Systems I	Multiple Criteria Decision Aid (MCDA) and Risk Analysis
10:30 - 11:50	Land Transportation I	Fault Diagnosis, Prognosis and System Health Management III	Human Factors and Human Reliability II	Information Technology and Telecommunications II	Manufacturing II	Fault Tolerant Control and Systems II	Cindynic Panel organized by IMdR
11:50 - 12:30	Plenary Session - Room A						
14:10 - 15:50	Critical Infrastructure I	Fault Diagnosis, Prognosis and System Health Management IV	Mathematical Methods in Reliability and Safety III	Reliability and Safety Data Collection and Analysis I	Risk & Hazard Analysis I	Decision Making under Risk I	Human Reliability : Models & Data
16:10 - 17:50	Critical Infrastructure II	Fault Diagnosis, Prognosis and System Health Management V	Mathematical Methods in Reliability and Safety IV	Reliability and Safety Data Collection and Analysis II	Risk & Hazard Analysis II	Decision Making under Risk II	Panel Session HRA Society : Human Factors & HRA - A bridge over troubled water
Thursday, 22 September 2011							
8:30 - 10:10	Critical Infrastructure III	Maintenance & Deterioration Modelling with Covariates	Human Factors and Human Reliability III	Dynamic Reliability I	Bayesian Methods I	Natural Hazards I	
10:30 - 11:50	Critical Infrastructure IV	Maintenance Modelling & Opt VI	Function Oriented Monitoring	Dynamic Reliability II	Bayesian Methods II	Natural Hazards II	
11:50 - 12:30	Plenary Session - Room A						
14:10 - 15:50	Land Transportation II	Maintenance Modelling & Opt VII	Manufacturing III	Reliability and Safety Data Collection and Analysis III	Structural Reliability & Design Codes III	Risk & Hazard Analysis III	Dynamic Reliability Panel P.E. Labeau & T. Aldemir



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