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Safety, Reliability and Risk Analysis: Beyond the Horizon

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Preface

Safety, Reliability and Risk Analysis have become key concepts over the last decades for the safe development and management of vital societal infrastructures such as traffic infrastructure, buildings, power systems, water defense and water distribution systems. Reliability is a great concern because failures may have significant financial consequences and may result in injuries and loss of lives. Design, manufacturing, execution, operations, maintenance, renovation and decommissioning decisions should be made in an optimal way considering all possible positive and negative consequences. The main objective from a societal perspective is to improve the quality of life of the individuals of society both for the present and the future generations. From the perspective of individual projects the objective may be to obtain a maximal positive economic return of investments. Decision making for the purpose of assessing and managing risks should be seen relative to the occurrence of hazards; i.e. risk management in the situations before, during and after the events of hazards. Risk in this context is a measure for the adverse effects of system malfunction in combination with the corresponding occurrence probability in the time span considered; the most commonly used risk measure is the integrated product of all consequences and probabilities.

From the perspective of assessing and quantifying risks we as a profession have achieved very substantial progress over the last decades. Based on this, the risk and reliability research community is looking beyond the horizon. The technology we deploy to fix today's problems is based on research that started more than two decades ago. What we are doing today should make a difference for tomorrow. Developing innovative new knowledge and applications helps engineers to better play the important role they have for society in establishing the basis for decision making.

During this ESREL 2013 conference we aim at learning from the past building the future in safety, reliability and risk analysis. ESREL is an annual conference series promoted by the European Safety and Reliability Association. The conference dates back to 1989, but was not referred to as an ESREL conference before 1992. 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 in the fields of Safety and Reliability. This is the 22nd edition of its annual conference that takes place in various countries in Europe. 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, methods and applications to a wide range of sectors and problem areas.

It is a great pleasure that we welcome you to Amsterdam and the ESREL 2013 Conference. The Conference has been growing with time and this year the program includes 400 papers from prestigious researchers coming from all over the world, selected from over 600 abstracts, which will be presented in eight parallel sessions.

The ESREL 2013 conference is a result of the enthusiasm and efforts of the many authors who have contributed with their papers, special session organizers, technical program committee members, technical area coordinators, conference webmaster, local organising committee, the conference secretariat CAOS and the support at TNO, Delft University of Technology, the European Safety and Reliability Association and the Dutch Society for Risk Analysis NVRB. All these initiatives and efforts are gratefully acknowledged.

It has been a great honour for us to lead the organization of ESREL 2013 and we hope you will appreciate the papers enclosed in this book as interesting as we did. We wish you a very enjoyable reading.

Raphaël Steenbergen
Pieter van Gelder
Simona Miraglia
Ton Vrouwenvelder

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