Human reliability assessment - state of the art for task- and goal-related behaviour

Prof. Dr. Oliver Straeter
Chair for Human Engineering, Organisational Psychology and Safety
Faculty of Mechanical Engineering
University Kassel (Germany)

About the Author:

Prof. Oliver Sträter, born 2nd Mai 1964, studied engineering psychology in Munster, Aachen and Bochum and accomplished his Ph.D. and Habilitation at the University of Technology Munich. Since 2008 he has the Full Professorship for Human Engineering, Organizational Psychology and Safety at the Faculty of Mechanical Engineering of the University Kassel (Germany) with an annual turnover of 750.000,- Euro. Since 2015 he also is Dean of the Faculty of Mechanical Engineering, coordinating 23 departments with an annual turnover of 12 million Euro.

The analysis of events in terms of human behavior, the effectiveness of organizations and management systems and the robust design of organizations are major research themes of his chair. Main Research areas are:

- Psychological aspects of Health and safety
- Human Workload and Stress
- Psychological Aspects of healthy leadership
- Modeling the cognitive and emotional aspects of work

From 1992 until 2002 he worked for GRS (Gesellschaft für Anlagen- und Reaktorsicherheit), part of the German Nuclear Regulatory Body. At GRS he developed methods for incident investigation and reliability assessment regarding the human impact on the safety of nuclear installations. During this work he conducted his Ph.D. on the evaluation of operational experience regarding human reliability together with the Institute of Ergonomics of the University of Technology Munich.

1999 he moved to the Institute of Ergonomics of the University of Technology Munich and extended the research into the fields of human factors in automobile, aviation and occupational safety. Main topics of research and development were human automation issues, human reliability, errors of commission, cognitive errors, organizational safety and incident evaluations. He headed the System Ergonomics Group of the Institute and supervised several Ph.D. Studies in that field and conducted his Habilitation (German Qualification for full Professorships).

From 2001 he moved to EUROCONTROL, the European Organization for the Safety of Air Navigation in Brussels, where he developed methods and tools for dealing with Human automation issues in European Air Traffic Management within the SHAPE project (Solutions for Human Automation Partnership in European ATM).

Since 2004 he was responsible for the long term safety strategy of Air Traffic Management and headed the Safety Regulation workpackage in the definition phase of the Single European Sky, SESAR.

2005 he published the book on the relation of cognition and safety as an integrated approach to systems design and performance assessment (Ashgate).

Working Together

In the course of his work he advised a number of institutions on Human Reliability, Safety Management and Safety Analysis and Assessment like:

- German Lufthansa (DLH)
- German Rail (DB)
- European Aviation Safety Agency (EASA)
- Gesellschaft für Anlagen und Reaktorsicherheit (GRS)
- Swiss Nuclear Regulatory Body (ENSI)
- Federal Minister for environmental affairs in Germany (BMU)
- German Lloyd (GL)
- TuiFly, Hannover
- Dedale, Paris
- Centre for Nuclear Safety (CENS)
- EUROCONTROL
- United States Nuclear Federal Aviation Administration (FAA)
- SIEMENS, Munich
- National Aeronautics and Space Administration (NASA)
- International Atomic Energy Agency (IAEA)
- United States Nuclear Regulatory Commission (US-NRC)
- OECD Halden Reactor Project (Norway)
- OECD Nuclear Energy Agency (Paris)

German Working Groups

- Since 2012 Member of the German Association for the Psychology of occupational health and safety (PASIG - Psychologie der Arbeitssicherheit und Gesundheit)
- From 2003 to 2013 Member of the German Nuclear Safety Commission (RSK - Reaktor Sicherheitskommission) for Human Factor and Organizational Issues.
- From 2000 to 2001 Member of the „Human Factor“ Working Group of the ILK (Internationalen Länderkommission) for Reactor Safety.
- From 2000 to 2003 DIN/ISO on mental workload (ISO 10075).
- Since 1996 Member of the German Human Factors Society (Gesellschaft für Arbeitswissenschaften - GfA).
- Since 1991 Member of the Working Group on Human Reliability of the German Association of Engineers (VDI - Verein Deutscher Ingenieure)

International Working Groups

- From 2011 member of the ENSI Expert Commission for the safety of Nuclear Power Plants in Switzerland
- From 2010 to 2012 member of the EASA Safety Assessment Task Force for the development of an Implementing Rule for the Safety of Air Traffic Management in the Single European Sky
- From 1993 to 1999 Advisory Group on Human Error for the OECD Halden Reactor Project in Norway (Experimental studies on Human error, Evaluation of Human Reliability Assessment methods).
- Since 2004 member of the resilience engineering network
- From 2003 to 2008 member of the EAAP (European Association for Aviation Psychology).
- From 1994 to 2002 member of the OECD NEA Working Group Risk / Human Reliability Assessment (Harmonization of human error assessment throughout the OECD member states).