Are special sessions in ESREL impacting the cross-sector learning?

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Many researchers, especially of the safety dimension of risk, advocate that lessons learned from accident investigations should be transferred between different industry sectors – a concept usually known as 'cross-sector learning'.
Expanding this idea to conferences, many attendees expect to experience a 'cross-discipline knowledge transfer'. This means that if you are, for example, an attendee interested in reliability modelling, you could benefit from seeing how different sectors such as aviation, maritime and nuclear are investing in new technology in the same session. However, in the last five years, there has been a significant increase in the number of special sessions in ESREL – the European Safety and Reliability Conference (ESREL). There might be benefits such as deeper exploration of an emerging topic, but there is also a risk that having the main risk disciplines being scattered in many special sessions, their most experienced specialists are not going to be present in the same room to contribute, criticise and compare how that discipline is being used in many domains.
This paper analyses how special sessions have been rising in ESREL conferences through the years, and if the papers presented could have another distribution within the most traditional disciplines and domains.

Keywords: ESREL conference, special sessions, cross-sector learning, organizational learning

1. Introduction

The custom attendees of the European Safety and Reliability Conference (ESREL) have been experiencing a significant increase in the number of special sessions in the last five years. The institutionalization of special sessions makes us assume that there are only benefits for their existence, such as deeper exploration of an emerging topic. However, there is also a risk that having the traditional risk disciplines being scattered in many special sessions might be hindering the cross-sector learning benefit.

2. Theoretical framework

2.1. Conference design

Selecting a conference design is more than deciding if it will have a face-to-face or online attendance (Seidenberg et al, 2024). The conference organisers have to decide if interactions will be solely based on the evaluation of each other's papers or based on alternative formats, such as conversational structures or other constructivist approaches (Sweeting et al, 2015). One of the reported shortcomings of traditional conferences formats is that "Papers are often presented in parallel sessions, meaning that each participant misses more than they attend, with little opportunity to communicate between sessions. some participants do little more than attend the session in which they present." (Sweeting et al, 2015, Ranulph Glanville, 2011, and Gordon Pask, 1979). Therefore, research have been presenting alternative formats, also known as 'constructivist', such as conversational structures, or any other setting that facilitates connecting ideas. Looking for ESREL past conferences, it seems that the addition of special sessions was an attempt to adopt those alternative structures. The discussion session will point a qualitative analysis of these structures.

2.2 Cross-learning benefit

In the safety dimension of risk science, the idea of learning lessons from accident investigations between different sectors is a

widespread assumption. This concept is usually known as 'cross-sector learning'.

Recommendations from Havtil, the Norwegian offshore safety regulator, states that 'the industry should make greater use of existing learning arenas to share, evaluate and discuss experience on how information can contribute to changes in practice (Havtil, 2018).

Hayes and Maslen's (2020) have empirically investigated the ways in which practitioners in one sector apply disaster lessons from another (gas pipeline engineers learned from the aviation industry). Their experiment showed that as participants worked through videos and presentations of the event, they readily drew connections to their own sector, focusing on lessons relevant to their professional practice, rather than addressing all causal factors. Finally, the experiment concluded that engaging directly with the accident narrative is sufficient, and the cross-learning process does not need to be mediated by prepared analyses of abstract causes.

To classify several accidents reports into a dataset with different industry sectors, Moura et al (2016) have selected a taxonomy of human factors free of sector specific jargons aiming to provide an effective translation of highly technical accident reports to a linguistic approach that could be understood by practitioners from any sector, facilitating cross-disciplinary communication.

3. Methodology

To understand if the growth of special sessions is only a perception or if it is a reality, data was collected from the conference programs across the years – with special focus on those available online. Programs and proceedings were available since 2016: https://esra.website/esrel, although ESREL conference first record is from 2001.

The relation of topics per year have been listed and are related on the appendix. Also, with the objective of analysing if the papers presented

in special sessions could be distributed differently within traditional disciplines and domains, two approaches were used:

(1) If the paper had been distributed differently in the program and e-proceedings by the technical committee, this opinion was used.
(2) If not, the key-words and abstracts of a sample of special session papers was compared to traditional session papers. For this, the method "bag-of-words" was used, which consists of breaking the text into words, and counting their frequency. The software used was Webtools - Online Text Analyzer. The output was the frequency of the first 10 more frequent words. The sample chosen was around the methodology topic of 'human factors & human reliability analysis', and the industrial application 'oil & gas' – those of expertise of the author.

4. Results

4.1. Data collection

Two types of data were collected: number of special sessions, number of traditional sessions, key-words for each paper presented on the special session and key-words from traditional papers. Table 1 shows the ESREL Conference year, organiser country, the number of sessions and the number of special sessions.

Table 1 – Number of sessions per conference

ESREL year	Country	Traditional sessions	Special sessions
2016	Glasgow, Scotland	27	5
2017	Portorož, Slovenia	28	6
2018	Trondheim, Norway	28	5
2019	Hannover, Germany	45	1
2020	online, Italy (COVID-19)	89	11
2021	Angers, France	68	8
2022	Dublin, Ireland	29	33
2023	Southampton, United Kingdom	26	37
2024	Krakow,	11	20

2025* (TBC)	Poland Stavanger, Norway	79	35

Figure 1 shows the increase of special sessions in the last 5 years, while Figure 2 compares the number of special sessions with the number of the most traditional themes (e.g. usually separated into mythologies and industrial applications). See Appendix for more details on the topics covered.
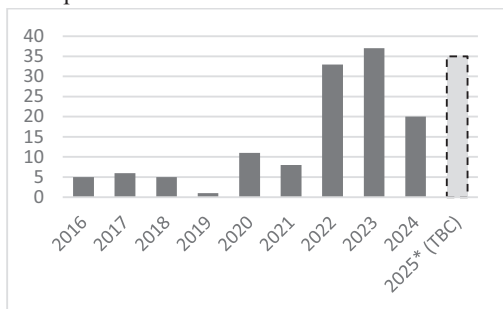

Figure 1 – number of special sessions in ESREL

Note that when this paper was finished it was not yet published the number of confirmed traditional sessions and special sessions – so the figures correlated to 2025 are yet to be confirmed. In other words, the figures are related to the options given, but not to the options chosen by the authors, which defines the program.
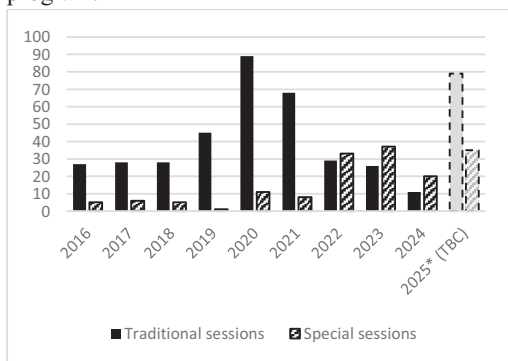

Figure 2 - Number of traditional sessions *x* number of special sessions

4.2 Data analysis

(Approach 1) It was analysed under which topic the technical committee have tagged each paper on special sessions: this was only possible in ESREL 2018 and 2024. In these two conferences, the papers had a special session time-slot in the conference program, however, under the e-proceedings they were organized differently: within a more traditional topic (and not with the name of the special session). It is unsure if this distribution was due to the organizers opinions/experience or if it was due to the authors first choice when submitting the paper.

Table 2 – ESREL 2018 special session distribution within traditional topics

Special session	Traditional topic	# papers under a traditional topic
Safety and risks in autonomy	Human factors and human reliability	4
	Risk assessment	3
	Risk management	2
	Simulation for safety and reliability analysis	1
	Security	1
	Uncertainty analysis	1
	Mathematical methods in reliability and safety	1
Arctic safety	Risk assessment	2
	Risk management	1
	Human factors and human reliability	1
Risk analysis and safety in standard	Occupational Safety	3
	Risk assessment	1

(Approach 2) The frequency of key-words under special sessions and key-words The ESREL chosen for sampling was ESREL 2022, the special session 1 (Advances in Well Engineering Reliability and Risk Management), which had 5 sessions with 15 full papers being presented, and the special session S10: Human-Robot collaboration: The New Scenario for a Safe Interaction, with 3 sessions and 13 full papers. The results are presented in Tables 2-4(for session 1) and Tables 5-7 (for session 10).

Table 2 – 10 more frequent words - Special Session S01 of 2022 (Advances in Well Engineering Reliability and Risk Management)

Word	freq	%
reliability	10	6.21
well	5	3.11
oil	5	3.11
analysis	4	2.48
gas	4	2.48
test	3	1.86
industry	3	1.86
learning	3	1.86
risk	2	1.24
failure	2	1.24

Table 3 – 10 more frequent words using abstracts of session 1 of 2022

Word	freq	%
reliability	41	2.30
well (s)	28	1.56
data	21	1.18
failure	21	1.18
model	18	1.01
oil	14	0.78
production	13	0.73
analysis	13	0.73
equipment	12	0.67

Table 5 - 10 more frequent words - Special Session S10 (Human-Robot collaboration: The New Scenario for a Safe Interaction)

Word	freq	%
human	9	5.49
safety	8	4.88
0	7	4.27
4	7	4.27
risk	6	3.66
robot	6	3.66
industry	4	2.44
interaction	4	2.44
collaborative	4	2.44
reliability	3	1.83

Table 4 – 10 more frequent set of 2 sequential words

Phrase	freq
oil and gas	3
accelerated life	2
completion og	2
gas industry	2
digital twin	2
machine learning	2

Table 6 - 10 more frequent set of 2 sequential words of session 10

Phrase	freq
industry 4	4
safety reliability	2
humanrobot collaboration	2
risk assessment	2
humanrobot interaction	2
digital twin	2
learning from	2

Table 7 - 10 more frequent words using abstracts of session 10 of 2022

Word	freq	%
safety	27	1.66
human	23	1.41
digital	18	1.10
robot	17	1.04
robots	16	0.98
industry	13	0.80
risk	13	0.80
hazards	12	0.74
0	11	0.67
4	11	0.67

4.3 Discussion

By analysing the 2018 case (based on technical committee opinion) and 2022 (based on key-word frequency and abstract frequency) we could see that there are two possible methods to analyse if papers could fit to traditional sessions – one based on expert opinion and another based on frequency of words.

From the 2018 analysis, it could be seem that not all papers from the same section were re-distributed to the same traditional section. Some special sessions presented a more clear trend than the others - e.g. Safety and risks in autonomy was very related to Human factors/human reliability, and to risk assessment/risk management. Thus, one should consider if redirecting these speakers to these traditional topics would not give more insights and ideas to their authours if they were supported and exchanged ideas with the experts in these traditional areas.

From the 2022 analysis, supported by frequency of words in Tables 2 and 3, it is also possible to

detect a trend in the traditional topic methology 'reliability', and also a trend to the 'Application Area' Oil & Gas. Looking to Table 4 (the more frequent set of 2 sequential words), it is also possible to detect a possibility of aggregation to the topics 'machine learning' – very much related to 'digital twins'.

On the other hand, analysing the papers on the special session 'S10: Human-Robot collaboration: The New Scenario for a Safe Interaction', it could be noted very unique words, not really related to other traditional topics or other sessions. Although I as expert would suggest that this session could benefit from human reliability and human factors experts, the count of words suggests that this could be a session to be maintained as special and dedicated topic.

4.3.1 Other ESREL conference designs

Reading through all the last ESREL programs available, other types of qualitative analysis could be drawn, in relation to constructive/ conversational structures. By analysing 2016 ESREL conference program, it seems that adding special sessions was a way that organisers found to create spaces for more open conversations. This is because, in 2016, the majority of special sessions had no papers related – as the program describes only the names of experts involved. Also in 2016, the few special sessions had an effect of 'positive aggregation: on the special session "visualization of risk" (25) there was a session of Oil & Gas industries (25.5), but looking to the traditional sessions, there was a session named "Oil & Gas industry" (2.6). This same special session had subsections of sectors: nuclear, maritime and rail transportation. On that sense, this special session seems to make a positive impact regarding our objective-function: they have aggregated into one same room different sectors.

Also, in 2021, the 'special sessions' were called 'panels'. These sessions were panels for discussion: it was provided an abstract and the names of the moderator and panellists. All occurred on the same time, and have not clashed the time with traditional sessions.

In 2023 program, it could be perceived that many special sessions had created space for new

topics that would otherwise be out of the conference (for example: Climate Change and Extreme Weather Events Impacts on Critical Infrastructures Risk and Resilience I). On the other hand, this was not valid for all special sessions: the session 'S.10: Advances in Reliability Engineering and Risk Management in Oil and Gas Industries I" has covered topics already covered in traditional sessions in ESREL for years.

5. Conclusions

Although the perception that the number of special sessions are increasing rapidly is proven, and that indeed some sessions could be aggregated to more traditional topics by using the methodologies suggested in this paper, it is not certain that this means that the special sessions should be terminated.

As stated by Fischer & Richards (2015) "organisers should not strive to create the ideal conference but, rather, continually experiment within a framework of creating nonhierarchical structures that support dialog, foster compatibility and opposing ideas among thinking and caring people and encourage the taking of responsibility and the creation of opportunities for learning, understanding and developing new ideas".

Thus, there are few suggestions based on the analysis made for this paper: if assuming that conferences were made for presenters to receive feedback from the audience (both academics and industry experts), so they can improve their research – it is suggested that papers are better aggregated. In other words, a special session should always split the time, the room and the audience if its proven that taking us apart is more important than keeping us together. If this conference design is chosen, it is suggested that special sessions should be kept together, at the same time, without competing time-wise with the other traditional sessions (e.g. 2021 ESREL conference).

In some years, the conference design might also have the objective of attracting different attendees than those that usually enroll in the risk and reliability community (e.g. 2023 ESREL).

When authors register a paper in a conference they do so not only to present their ideas, but also to collect other peoples' feedback in order to improve their research. If the experts they need to listen are not in the room, one of the objectives of a conference is lost. There will always be other ways to exchange ideas during the conference, but the conference design should facilitate and not hinder.

Appendix

2016 Special sessions:
- Dynamic Risk Assessment in Oil, Gas, Chemical
- Foundational Issues in Risk
- Roundtable on Weaknesses in Safety and Reliability Practices
- Critical Infrastructures - Operationalisation of Resilience for Crisis Management
- Visualisation of Risk
- New Strains of Society: Hidden, Dynamic and Emergent Vulnerabilities

2017 special sessions:
- Critical infrastructure safety
- Truss, a Marie Skłodowska-Curie innovative training network in structural safety
- ASAMPSA_e advanced safety assessment methodologies: Extended PSA
- Rams in railways: theory & practice
- Big data risk analysis and management
- Model-based reliability and safety engineering

2018 Special sessions:
- Safety and risks in autonomy I
- Safety and risks in autonomy II
- Arctic safety
- Safety and risks in autonomy III
- Risk analysis and safety in standard

2019 special session:
- Geotechnical risk, reliability, and data analytics

2020 special sessions:
- Reliability of Passive Systems in Nuclear Power Plants - Perspectives and Challenges
- Life Cycle-Based Resilience Assessment and Management of Structural and Infrastructural Assets
- Human Reliability Analysis today: data and other challenges
- Artificial Intelligence for Maintenance Decision Support
- Text Mining applied to Risk Analysis, Maintenance and Safety

- Bayesian Network Modelling for Risk Assessment in the Oil and Gas Industry
- Fault-Tolerant and Attack-Resilient Cyber-Physical Systems (CPS)
- Advanced Diagnosis and Prognosis in Bio-medical Engineering
- NLP, knowledge graphs and ontologies
- Human Performance in Resilience, Risk and Safety Assessments
- Reinforcement Learning for Industry 4.0

2021 special sessions:
- Session Panel I: RAM and PHM Synergy
- Session Panel III: Autonomous system safety, risk, and security
- Session Panel IV: Digital twins to improve decision making in the built environment
- Session Panel IX: Confiance.ai
- Session Panel V: TC12 on risk analysis and safety of large structures and component
- Session Panel VI: Reliability & Safety, State of the Art and evolution, incl. Urban Air Mobility and newest Aerospace disruptive challenges
- Session Panel VII: Model-Based Safety Assessment approach: Increase trust in models
- Session Panel VIII: COVID-19 pandemic: Risk analytics

2022 special sessions:
- S01: Advances in Well Engineering Reliability and Risk Management"
- S02: Artificial Inteligence and Machine Learning for Reliability Analysis and Operational Reliability Monitoring of Large-scale Systems"
- S03: Transdisciplinary Infrastructure Asset Management for Sustainable and Resilient Infrastructure"
- S04: Statistical approaches and novel methodologies for Accelerated Life Testing & Degradation Testing"
- S05: Exploring new trends in Machine Learning approaches"
- S06: Safety and Reliability in Road and Rail Transportation"
- S07: Risk, Security and Research in the Area of Customs and Border Control"
- S08: Resilience-informed decision-making to improve complex infrastructure systems"
- S09: Novel strategies for the safety assessment of dynamic and dependent systems"
- S10: Human-Robot collaboration: The New Scenario for a Safe Interaction
- S11: Standardization in Risk Analysis and Safety"
- S12: Dynamic risk assessment and emergency techniques for energy system"
- S13: Modelling complexity in complex systems and systems of systems (prelim.)"
- S14: Digit twin: recent advancements and challenges for dealing with uncertainty and bad data"
- S15: Reliability, Durability, Sustainability of Consumer Electronic Devices"
- S16: Risk and resilience analysis for the low-carbon energy transition"
- S17: Living near natural hazards in the age of climate change"

- S18: Advanced tools and methods for occupation health and safety"
- S20: Reliability and Resilience of Interdependent Cyber-Physical Systems"
- S21: Joint ESReDA - ESRA Session on Advancements in Resilience Engineering of Critical Infrastructures"
- S22: Reinforcement Learning for RAMS Applications"
- S23: Fault-Tolerant and Attack-Resilient Cyber-Physical Systems (CPSs)"
- S24: Artificial Intelligence, Meta-Modeling and Advanced Simulation for the Analysis of the Computer Models of Nuclear Systems"
- S25: Climate Change and Extreme Weather Events Impacts on Critical Infrastructures Risk and Resilience"
- S26: Bayesian Networks for Oil&Gas Risk Assessment"
- S27: Transfer Learning methods for Prognostics and Health Management"
- S28: Reliability and Maintenance for Internet of Things and 5G+ Networks"
- S29: Natural Language Processing, Knowledge Graphs and Ontologies for RAMS"
- S30: Synergies between Machine Learning, Reliability Engineering and Predictive Maintenance"
- S31: Advancing Human Factors Integration in Aviation and Maritime Domains: the SAFEMODE Project"
- S32: In memory of Ioannis A. Papazoglou: new methods and applications on quantified risk assessment for process and energy systems"
- S33: Collaborative Intelligence in Manufacturing and Safety Critical Systems. The CISC and Teaming-aI EU projects"

2023 special sessions:
- S.01: Climate Change and Extreme Weather Events Impacts on Critical Infrastructures Risk and Resilience
- S.02: Reliability and Resilience of Interdependent Cyber-Physical Systems
- S.03: Fault-Tolerant and Attack-Resilient Cyber-Physical Systems (CPSs)
- S.04: Bayesian Networks for Oil & Gas Risk Assessment
- S.05: Artificial Intelligence, Meta-Modelling and Advanced Simulation for the Analysis of the Computer Models of Nuclear Systems
- S.06: Impact of climate change on workers' health and safety in the indoor and outdoor worksites
- S.07: Computational and Simulation-based Risk Assessment
- S.08: Assistive Robots in Healthcare
- S.09: Reinforcing Safety, Reliability, and Cyber Security through Digital Twins
- S.10: Advances in Reliability Engineering and Risk Management in Oil and Gas Industries
- S.11: Dynamic risk assessment and emergency management for complex human-machine systems
- S.12: Digital Twins for hybrid Prognostics & Health Management
- S.13: Coping with Imprecision in Reliability Analysis
- S.14: Next Generation Methodologies for System Safety Analysis
- S.15: Digital twin: recent advancements, challenges and real-case applications

- S.16: Digitalisation and AI for managing risk in construction projects
- S.17: Human Factors in Natural Hazard Preparedness
- S.18: Security Risk Assessment of Civil Aviation in Conflict Zones
- S.19: Reinforcement Learning for RAMS applications
- S.20: Natural Language Processing, Knowledge Graphs and Ontologies for RAMS
- S.21: Transfer Learning methods for Prognostics and Health Management
- S.22: Development and application of methods for enhancing the reliability of electronic devices
- S.23: Dependent failure behaviour in risk/reliability modelling, maintenance and Prognostics and Health Management (PHM)
- S.24: Mitigating and adapting to climate change disasters in the Arctic
- S.25: Human Dependability & Automation for Robotic, Intelligent and Autonomous systems
- S.26: Collaborative Intelligence in Safety Critical Systems
- S.27: Advances in Maritime Autonomous Surface Ships (MASS)
- S.28: Approaches to generate and use digital twins for the optimized lifecycle of critical infrastructure systems to enhance reliability and safety in the operation phase
- S.29: Quantification of the multi-dimensional effects of construction safety risks
- S.30: Overcoming data and label scarcity for machine learning-based risk and reliability assessment
- S.31: Case Studies on Modern Predictive Reliability: Industrial Perspective
- S.32: Predictive Maintenance in the era of Digital Twins
- S.33: Challenges and Opportunities for Risk and Resilience of Industrial Plants in the Management of Socio-Technological Systems
- S.34: Risk Analysis and Safety in Standardization
- S.35: Scenario Analysis for Decision-Support
- S.36: Artificial intelligence-based reliability and maintenance solutions for complex systems
- S.37: Reliability and Durability Aspects of Circular Economy

2024 Special sessions
- SS 1: Recent Ontological, Methodological, And Operational Advances In Resilience"
- SS 2: Towards Resilience Assessment Of Power Systems"
- SS 3: Human AI Teaming & Collaborative Intelligence For Safety Critical Systems"
- SS 4: Advances In Reliability Engineering And Risk Management In Oil And Gas Industries"
- SS 5: New Strategy Challenges From Risk To Safety And Security In New Perspectives"
- SS 6: Safe And Sustainable Hydrogen Technologies"
- SS 7: Next Generation Risk Assessment Modelling Methods (Dynamic and Dependent Tree Theory, D2T2)"
- SS 8: Advances In Maintenance Modelling And Its Applications"
- SS 9: Survival Signature For System Reliability"
- SS 10: Case Studies On Industrial Predictive Reliability: Focus On Numerical Validation"

- SS 11: Reliability And Resilience Of Complex Systems, And Systems Of Systems"
- SS 12: Quantum-Based Optimization And Inference For Risk And Reliability Applications"
- SS 13: Quantum Machine Learning For Risk And Reliability Applications"
- SS 14: Hidden Markov Models In Reliability And Maintenance"
- SS 15: Cost-Benefit Decisions Under Uncertainty"
- SS 16: Assessment Of Physical Protection Systems
- SS 17: Safe And Sustainable Hydrogen Technologies"
- SS 18: Advances In Structure Expert Judgements
- SS19: Topic: LIFE SECURDOMINO. Real-time risk assessment of industrial facilities based on the integration of safety and security,"
- SS 20: Resilience and Sustainability Of Multi-Modal Transportation Networks"

2025 Special sessions provisioned

On the moment this paper was written the program has not yet been issued, so chances are that there will be no one subscribing to one or more of these sessions). On this year each special session had a file stating its organizers, motivation, and objectives.

- Reliability, Risk and Resilience of Cyber-Physical Systems
- Climate Change and Extreme Weather Events: Impacts on Critical Infrastructure Risk and Resilience
- Resilience of Cyber-Physical Systems (CPSs) to security attacks
- Artificial Intelligence, Meta-Modelling, and Advanced Simulation for the Safety Analysis of Nuclear Systems
- Data-driven Predictive Maintenance- – from sensor measurements to diagnostics/prognostics to maintenance planning
- Human- Machine Interaction in Industry 4.0: Ergonomics, Security, and Regulatory Challenges
- Challenges and Advancements Towards Trustful Digital Twins: Uncertainty, Automation, and AI
- Recent Advancements in Expert Judgment
- Safety, Reliability, and Security (SRS) of Autonomous Systems
- Advances in Test Planning and Design for Lifetime Testing in Reliability Engineering
- Climate Risk Governance in the Arctic
- Safety and Health in the Offshore Wind Industry
- Incremental Rollout of New Technologies in Railway Systems Engineering
- Balancing Complexity and Efficiency: Optimal Model Resolution and Network Granularity in Risk Analysis
- Bayesian Networks Modelling for Reliability and Risk Assessment
- Domain Adaptation Methods for Prognostics and Health Management (PHM) and Predictive Maintenance
- Physics-Informed Machine Learning for RAMS
- Anticipatory Behavior for Safety in Human-Autonomous Agent Interactions
- Advances in Well Engineering Reliability, Integrity and Risk Management
- Risk Analysis and Safety in Machinery
- Methodology, tools, and software for dealing with imprecision in risk analysis
- Natural Language Processing for RAMS applications

- Infrastructure and Community Resilience: Preparation, Absorption, Response, and Recovery
- Reinforcement learning for RAMS
- Explainable Artificial Intelligence (XAI) for Reliability, Availability, Maintainability and Safety (RAM) Application
- Professional Practice for Improved Safety Decision Making
- Impact Assessment in Resilience Analysis of Energy Systems
- Adapting to Extreme Risks: Safety Strategies for Space and Aviation
- Quantum Methods in Risk and Reliability
- Underground hydrogen storage: Understanding risks and ensuring safe and sustainable operations
- Case Studies on Predictive Reliability: an Industrial Perspective
- Hybrid Threats and Risk Governance Between Safety and Security
- Collaborative Intelligence and Safety Critical Systems Applications
- Exploring the role of AI in developing and implementing a risk management framework

References

Argyris C and Schön DA (1974) Theory in Practice: Increasing Professional Effectiveness. San Francisco, CA: Jossey-Bass.

Havtil, 2018. Learning from incidents – Summary of the tripartite committee. Available at https://www.havtil.no/contentassets/da0253135ceb41de9b48c44d38cc1de4/summary---rapport-laring-godtatt-endringer.pdf, accessed on 15 Jan 2025.

Hayes, Jan, and Sarah Maslen. "Finding the parallels: Practitioner learning from cross sector disaster cases." *Safety science* 131 (2020): 104948.

Fischer, Thomas, and Laurence D. Richards. "From goal-oriented to constraint-oriented design: The cybernetic intersection of design theory and systems theory." *Leonardo* 50, no. 1 (2017): 36-41.

Moura, Raphael, Michael Beer, Edoardo Patelli, John Lewis, and Franz Knoll. "Learning from major accidents to improve system design." *Safety science* 84 (2016): 37-45.

Tosey, Paul, Max Visser, and Mark NK Saunders. "The origins and conceptualizations of 'triple-loop'learning: A critical review." Management learning 43, no. 3 (2012): 291-307.

Seidenberg, Nina, Ioana Jivet, Maren Scheffel, Vitomir Kovanović, Grace Lynch, and Hendrik Drachsler. "Learning at and from a virtual conference: A comparison of conference formats and value contributing factors." *Journal of Learning Analytics* 11, no. 2 (2024): 281-296.

Sweeting, Ben, and Michael Hohl. "Exploring alternatives to the traditional conference format: Introduction to the special issue on composing conferences." (2015).