Society for Risk Analysis Annual Meeting 2019

Foundational Issues in Risk Analysis SG lunch meeting

Roger Flage, University of Stavanger, Norway
FRASG chair (2018-20)

Agenda

• 2019 FRASG student award winner
• Report on FRASG activities in 2019
• Suggested FRASG activities in 2020
• Examples of *Risk Analysis* publications on foundational issues
• Discussion
2019 FRASG student award winner

• **Elnaz Kabir**, University of Michigan, Industrial and Operations Engineering

• Title: Assessing ISA Tree Risk Assessment Approach Using Econometrics Analysis

• The submission shows how better risk assessment foundations can guide more effective risk management interventions on a very practical problem (falling trees).

• Congratulations!
Report on FRASG activities in 2019

- Input and comments to «Analysis Quality Test (AQT) Battery» developed by ARMSG (from FRASG: Terje Aven and Roger Flage)

https://www.sra.org/resources

https://sra.org/armsg
Report on FRASG activities in 2019

• Input and comments to «Analysis Quality Test (AQT) Battery» developed by ARMSG (from FRASG: Terje Aven and Roger Flage)

• Development of a template for and examples of «High quality risk analysis examples»
  • https://www.sra.org/frasg
Foundational Issues in Risk Analysis Specialty Group

The risk field needs concepts, principles, theories and methods that give some sort of unity to the field and provide guidance on how to think when assessing, managing and communicating risk. To this end, we need further developments of such concepts, principles, theories and methods, scrutiny/clarification of existing ones, and reflections and discussions. This entails a broad set of initiatives and measures. The Foundational Issues in Risk Analysis Specialty Group (FRASG) represents an arena for generating them. It provides a scientific and technical forum for dialogue on all these issues and will promote initiatives reaching the diverse communities of risk analysts and researchers. It will guide the organization of workshops, conferences, and committees to study and reflect on key issues. A special responsibility is fostering the involvement of talented young researchers.

Contact:

Roger Flage
Chair

Recent News

High quality risk analysis examples

A template for and some examples of "High quality risk analysis examples" have been developed and can be found [here](https://www.frasg.org). These will be introduced at the FRASG lunch meeting at the 2019 Annual Meeting.
## FRASG high quality risk analysis examples

<table>
<thead>
<tr>
<th>Risk analysis area and topics (based on core subjects document)</th>
<th>Example document</th>
<th>Supplementary resources (website, link to document, etc.)</th>
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<tr>
<td>Fundamentals</td>
<td>Basic concepts and principles</td>
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<td>The ISO 31000 definition of risk:</td>
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<td></td>
<td>What does the risk science say about it?</td>
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<td>(Aven 2019)</td>
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<tr>
<td>Risk assessment</td>
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<td>Risk assessment</td>
<td>Principles, approaches and methods for identifying risk sources, threats, hazards and opportunities; understanding how these can occur and what can be their consequences including adaptive behavior and recovery; representing and expressing uncertainties and risk; and determining the significance of the risk using relevant criteria.</td>
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<td>Risk perception and communication</td>
<td>Issues related to perception and communication of risk</td>
<td>...</td>
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<tr>
<td>Risk management and governance</td>
<td>Measures and activities carried out to manage and govern risk</td>
<td>...</td>
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<tr>
<td>Solving risk problems and issues</td>
<td>How to solve risk problems, challenges and issues in real practice, by integrating theories and methods from the other four categories of topics, and using concrete, practical cases.</td>
<td>Climate change assessments, communication and management. How can the risk science help? (Aven 2019)</td>
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The ISO 31000 definition of risk: What does the risk science say about it?
Tore Aven, University of Stavanger, Norway

The ISO 31000 standard (ISO 2018) is based on a definition of risk as the effect of uncertainties on objectives. This definition is the result of ISO – it has no foundation in risk science. This note argues that the definition should not be used. Better alternatives exist that provide clarity and have a scientific basis. The ISO 31000 standard has a strong influence on risk science, and it is important that risk analysts and managers are aware of the definition's shortcomings.

In contrast to many other definitions of risk, uncertainty has replaced the notion of events, as defined in the ISO standard. This change is new in an ISO context, but the idea goes back to the 1930s. Risk has two dimensions: consequences (e.g., death, injury, property damage, etc.) and probability (e.g., the chance of fatality). The recommendation of the Society for Risk Analysis (SRA) in its risk assessment guidelines (SRA 2005) is that risk should be defined as the potential for harm, uncertainty being considered a component of risk. This definition is used in the ISO 31000 standard, and it is based on the notion that risk is the potential for harm, uncertainty being considered a component of risk.

It is indeed problematic that the risk concept is so tied up with probability assessment, so that at least one assessment of risk must be made for each objective. It is possible to make such an assessment, but it is not possible to make it in the risk term, this is not possible. Some researchers would say that risk is a subjective measure, but it is more likely that risk is a subjective measure, but that it is not the same as a subjective measure.

Another important aspect of risk is that the ISO definition does not provide a basis to assess the probability of events, but it does provide a basis to assess the probability of events. It is not realistic that we all agree on one definition of risk, and it is not realistic that we all agree on one definition of risk. The risk assessment is based on basic ideas when it comes to understanding risk: risk has two aspects: something is at stake – the activity considered results in some outcome that has a value (including health and wealth, the environment, and other aspects) – and the deviation from the expected result. However, the important observation is that this lack of precision risks

The ISO 31000 standard does not include this type of discussion. It is founded on a traditional likelihood perspective on risk and uncertainty characterisation, which ignores important aspects of risk and uncertainties.

Literature
High quality risk analysis examples

- Risk science / research
- High quality risk analysis examples: Short Accessible
- Practice
Suggested FRASG activities in 2020

• Development of more «High quality risk analysis examples»
  • Contributions from FRASG members are welcome
  • Contributions should follow the template tested on the examples developed so far
    (e.g., max 3 pages, written in non-technical and accessible way)
  • Review by FRASG leadership
  • Email suggestions for topics that you would like to contribute to roger.flage@uis.no
    and receive the template

• Revitalize website, with more frequent updates of
  • New articles and books,
  • PhD positions and defenses,
  • meetings, seminars and conference events
  on the topic of foundational issues in risk analysis.
Email roger.flage@uis.no
Examples of *Risk Analysis* publications on foundational issues the past year

- **October:** *Risk and the Five Hard Problems of Cybersecurity.* Natalie M. Scala Allison C. Reilly Paul L. Goethals Michel Cukier
- **July:** *Exploring the Conceptual Foundation of Continuity Management in the Context of Societal Safety.* Henrik Hassel Alexander Cedergren
- **June:** *The Call for a Shift from Risk to Resilience: What Does it Mean?* Terje Aven
- **June:** *On the Limits of the Precautionary Principle.* H. Orri Stefánsson.
  - Comment: The Precautionary Principle and Judgment Aggregation. Thomas Boyer-Kassem
  - Reply. H. Orri Stefánsson
- **June:** *Risk and Quantification: A Linguistic Study.* Max Boholm
- **April:** *Making Sense of Risk—A Sociological Perspective on the Management of Risk.* Jacob Taarup-Esbensen
- **March:** *From Ideal to Real Risk: Philosophy of Causation Meets Risk Analysis.* Rani Lill Anjum Elena Rocca
- **January:** *Advances in Spatial Risk Analysis.* Nikolaos Argyris Valentina Ferretti Simon French Seth Guikema Gilberto Montibeller
- **December 2018:** *Sequential Refined Partitioning for Probabilistic Dependence Assessment.* Christoph Werner Tim Bedford John Quigley
Discussion

• Comments, suggestions, etc. from meeting participants