



# Challenges for Future Safety Research

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# Overview

- Safety, time and future
- Methodological challenges
- Technology, Organisation and People related challenges
- Addressing unintended consequences of safety actions
- Reflections on the organisation of safety research



## Safety, time and future

Safety is always related to time.

It is safe, means also something for the time to come.  
Like future researchers, we think in scenario's

Is it 'the future' (determined), so  
we can confirm 'that it is safe' ?

In French: la future or l'avenir?



Time aspects led to dynamic definitions of safety



# Methodological challenges (I)

How to improve the predictive qualities of safety research?

Technological view: natural scientific laws

Organisational view: turbulent complex environments, and the changing world of work make predictions very difficult

People and behaviour: difficult to predict



## Methodological challenges (II)

Safety is a dynamic non-event' (Weick)

How to assess and evaluate a dynamic non-event?

And similarly:

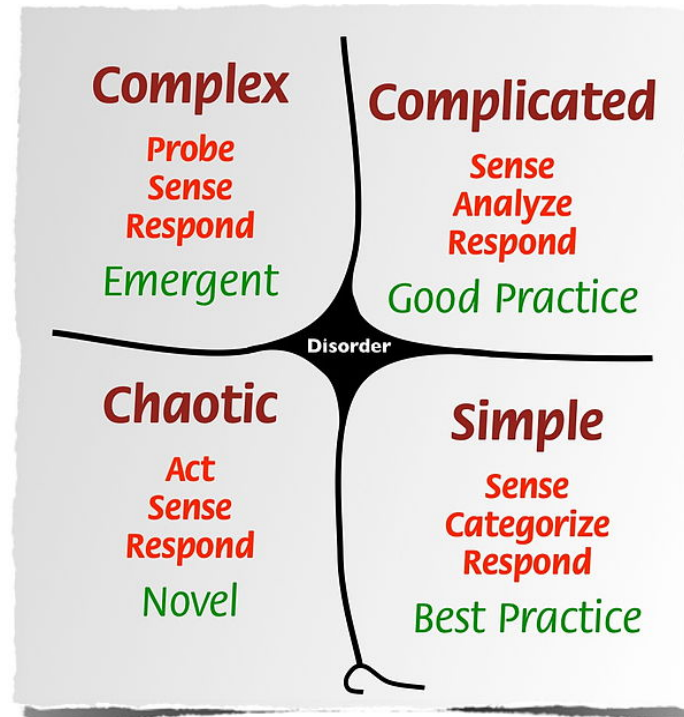
How to validate leading (or positive) performance indicators (if not via accidents and incidents)?

And how to validate 'Safety -2' (Hollnagel c.s) with its focus on positive events?



# Research and evidence in different contexts

Wicked Problems



Normal Problems

Source: Snowden 2000 , Cinefin

New paradigms for wicked problems:  
HRO, post-normal science, resilience engineering  
and risk governance



## Methodological challenges (III)

If contexts are important, a sole focus on the internal validity of research designs is not appropriate

From applied research we know the importance of:

- Actionable knowledge
- Implementation validity (!?)
- We also have to make good use of scientific developments in related areas and supportive disciplines





## Scientific and practical evidence

Scientific evidence	Practical evidence
Based on experimental research	Based on practical experimentation or learning from experiences
e.g. Randomised controlled trials	e. g. Case studies
Theory based	Practice based
Not always practically applicable	Not always theoretically sound
Universal knowledge	Local and context dependent knowledge
Can be the basis for practical implementation	Often precedes scientific knowledge
Simple and complicated contexts	Complex and chaotic contexts
High credibility for researchers	High credibility for practitioners





## Technology related challenges

Assessment of the risks of new emerging technologies (ICT, Nano, Wind energy, etc.)

Opportunities stemming from emerging technologies (e.g. ICT)

Hazard elimination or reduction (inherently safer production technologies)

Safety and (workplace) innovation





## Organisation related challenges

- From stand alone safety management systems towards integrated management (systems)
- Development of good sets of KPIs to link safety management with business management
- To mainstream safety into business management
- To address the economic dimensions of safety (including business cases, incentives)
- Development of strategies based on commitment, leadership and values



## People related challenges

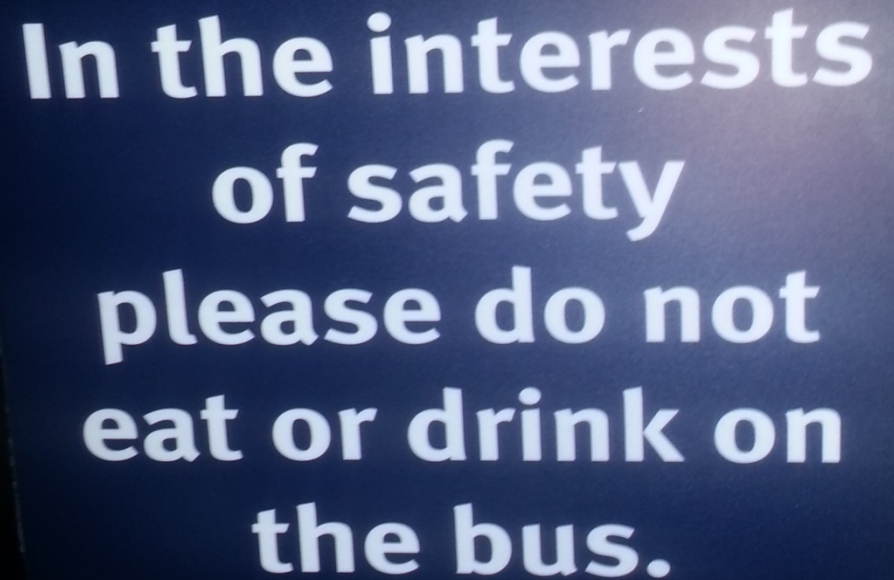
- Human behaviour as risk (error, failure, etc.) and as opportunity (unique human capabilities)
- Impact of psychosocial hazards in the workplace
- Competencies, leadership, empowerment, social capital, social marketing
- Interpersonal challenges (i.e. implying ambiguities)
- Safety (culture) and leadership e.g. during organisational change
- Beliefs and mind-sets, individually and collectively



## Addressing unintended consequences of safety actions

Too much procedures, bureaucracy and paper work  
(risk regulation reflex)

False safety and  
false unsafety



**In the interests  
of safety  
please do not  
eat or drink on  
the bus.**



## **SAFERA is a success .....**

But most of the research institutes face problems:

- They depend increasingly on external national funding resources which are being reduced
- How then to maintain their research capacities?
- It is not in their short term interests to share available resources for European cooperation
- Proposal: let each of the national funding organisations earmark say 20% of their funding as dedicated for European research projects.



## Thank you for your attention!

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