

Comprehensive analysis of available tools and methodologies for Horizon Scanning

The rapid growth in information and data related to nanotechnologies, particularly in digital format, poses not only a technological challenge, but it also the challenge of data relevance.

Horizon scanning (HS) technique can aid in identifying information and data sources that are likely to have the greatest future impact. It collates data (usually web-based) and use text analytics to evaluate and rank topics relevant to a given issue.

Different analytics are performed on collected data in order to visualize the huge amount of data and to draw the useful conclusions from it. Thus, it enables stakeholders to discuss early on, what the intended and unintended effects of the identified developments might be. The outputs from HS are being increasingly used to support

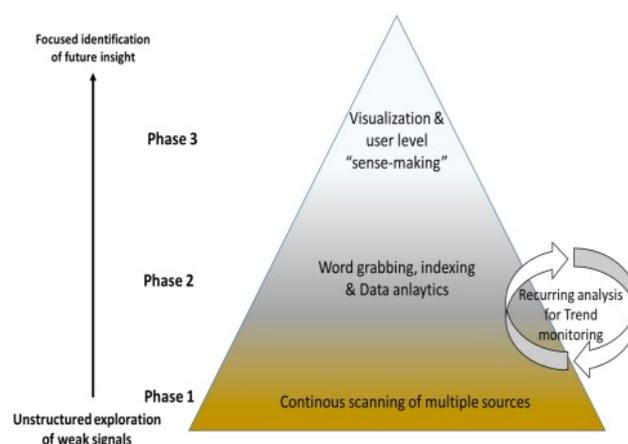
policy-making and interventions by governments and private entities over a wide range of risk related issues.

caLIBRAte identified and reviewed the gaps and overlaps of the existing HS tools based on their methodology, general and technical features, need for human intervention and their relevance regarding the caLIBRAte Nano Risk Governance Framework.

The project discussed need for HS in risk governance and suggests methods on improving the existing methods in existing HS tools. Adding in the stakeholder needs and perspectives the project has developed the caLIBRAte Nano Risk Radar, complementing the caLIBRAte risk governance framework.

Horizon scanning and implementation of Nano-risk governance framework

- HS is a pro-active risk management methodology: it identifies issues that may have significant impact in the medium to long term future.
- Before initiating the RA (Risk Assessment) process, Horizon Scanning can help answer key questions, such as:
 - ⇒ Who might be at risk?
 - ⇒ What is the priority of a particular risk?
 - ⇒ Potential impacts of the particular risk?
- Steps involved in HS— progressing from unstructured exploration of weak signals to focused identification of future insight.
 - ⇒ Phase 1: Continuous scanning of multiple sources
 - ⇒ Phase 2: Word grabbing, indexing and data analytics
 - ⇒ Phase 3: User level “sense-making”



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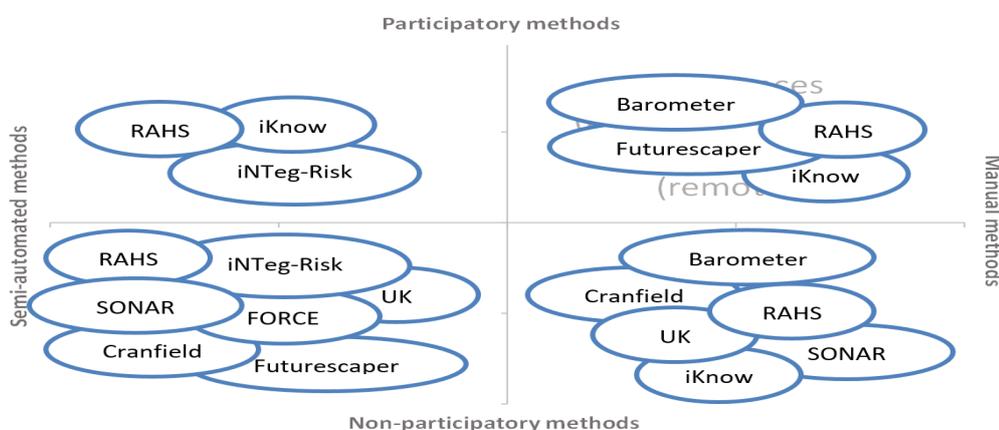
Gaps

- Scarce and scattered evidence to support the collection of data and their assessment.
- Lack of a standard methodology for sifting and analysing data
- The results depend on the sources and thus may contain bias based on source selection.
- Most tools are targeted towards policy-makers; may not be relevant to other stakeholders.

Existing HS tools

- Most tools are web-based and developed and part of a research/industrial project or initiative.
- Most tools suffer from lack of updates and up keep after the end of the development.
- The tools can be mapped based on: level of automation (use of software for data analysis) and participation of stakeholders and policymakers (Amanatidou *et al.*, 2011)

Overlaps



Mapping of existing HS tool based on their automation and participation of stakeholders

Recommendations for the caLIBRAtE Nano Risk Radar

Key features of the Radar include:

- 1) User-defined search for key terms allowing flexibility for different stakeholders to initiate user-specific scans.
- 2) Semi-automated scan, update of results based on user defined time-period and frequency of search.
- 3) Selection of sources by user from a pre-approved list and the ability of crowdsourcing other sources to reduce bias.
- 4) Integrated to the Nano Risk Governance Portal (NRGP) and the caLIBRAtE risk governance framework based on ERMF/ISO 31000.

This fact sheet is based on caLIBRAtE D1.2: *Comprehensive analysis of available tools and methodologies for Horizon Scanning* produced as a result of collaboration between Steinbeis Advanced Risk Technologies GmbH (DE), Associazione Italiana per la Ricerca Industriale (IT), and Universita Ca' Foscari Venezia (IT).

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