DYNAMIC RISK ASSESSMENT AND IMPLICATIONS FOR OSH

EU-OSHA | Nov 2021

Coen van Gulijk

THE DEVELOPMENT OF DYNAMIC RISK ASSESSMENT AND IMPLICATIONS FOR OSH

AN EU-OSHA DISCUSSION PAPER (EUOSHA/2020/NE/ NE/LV/0095/T13)

GREAT EXPECTATIONS
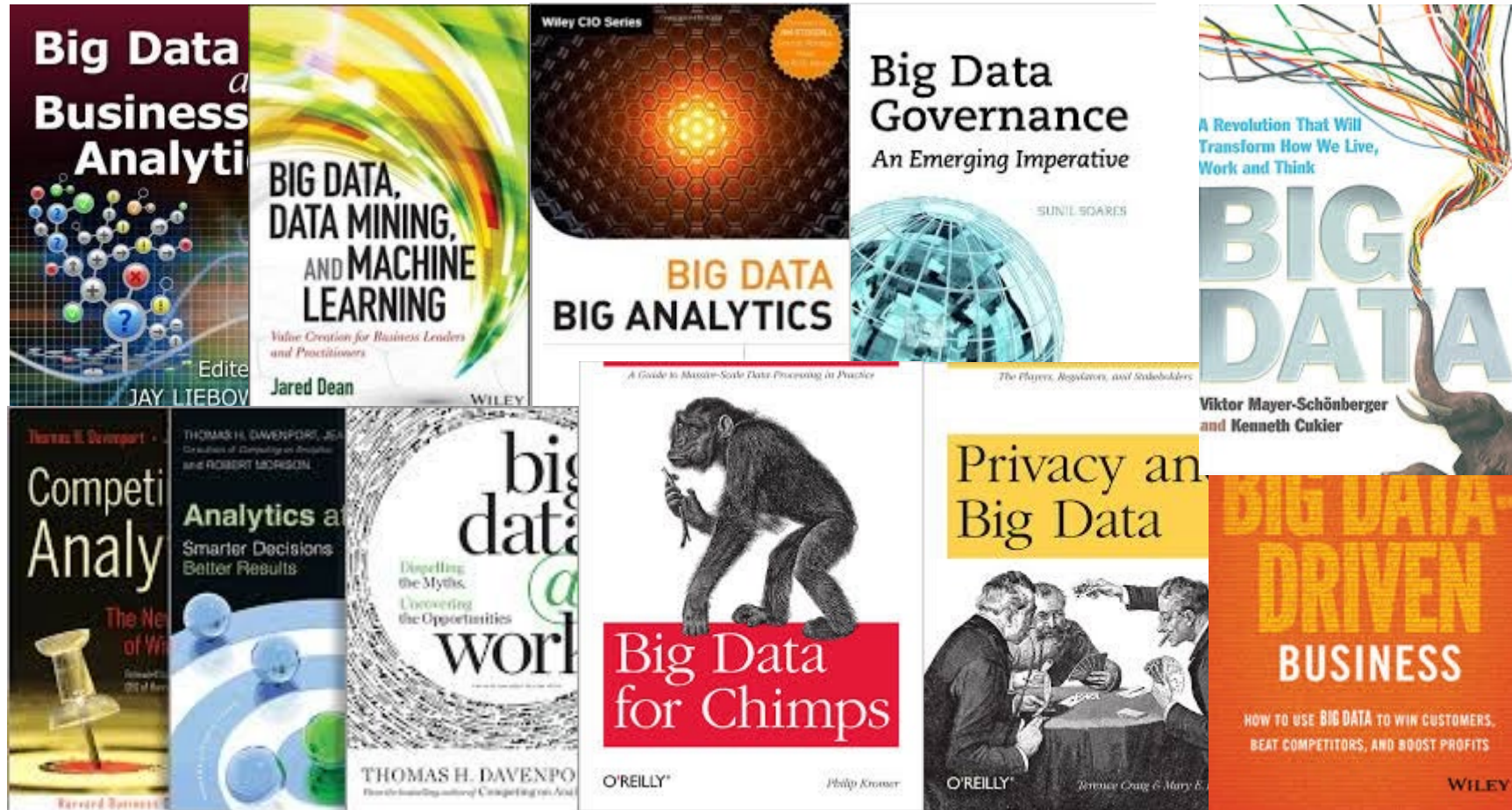
SOME DEFINITIONS

A CALL FOR CHANGE

THE FACE OF CHANGE

TRANSLATION INTO OSH

IMPLICATIONS FOR OSH

GETTING STARTED

TNO innovation for life

HAVE YOU READ ANYTHING LIKE THIS?

DIGITIZING RISK ASSESSMENT

- Risk Assessment is a demand for OSH (Framework directive)

- Digitalization can be used to improve it.

- In the world of OSH that unusually means making it more accessible:

- OiRA   (https://OiRAproject.eu/en)

- BeSmart.ie   (https://www.besmart.ie/)

- Rie.nl   (https://www.rie.nl/),

- Prevencion10.es   (https://www.prevencion10.es/)

But what is dynamic risk assessment and how change OSH delivery?

RESEARCH QUESTIONS

❯ 1.   What is dynamic risk assessment and how is it different from our current understanding of risk assessment?

❯ 2.   What are the benefits of dynamic risk assessment for OSH and what are sensible starting points for its development?

❯ 3.   What are unwanted effects of dynamic risk assessment for OSH and how could those effects be diminished?

❯ 4.   What would be the effects of dynamic risk assessment on employers, employees, OSH experts and policy makers?

LINKAGE OF KEY CONCEPTS
DEFINITIONS (1)

› OHS **risks** are the combination of the likelihood of occurrence of a work-related hazardous event or exposure, and the severity of injury or ill health that can be caused by the event or exposure

› **risk management** comprises of a collection of organizational tasks like communication, leadership, stakeholder engagement and analysis to control risks.

› **risk assessment** is an activity to clarify which risks are prevalent in a specific workspace, how serious those risks are in relation to other risks, often also assessing the expected effect of protective measures

TNO innovation for life

RISK ASSESSMENT IS DYNAMIC
DEFINITIONS (2)

> The Framework directive (89/391/EEC) recognizes dynamic processes:

> > article 6 point 1 shows that employers need to adjust health and safety measures when faced with changing circumstances and aim to improve health and safety.

> ISO 45,001 suggests the Plan-Do-Check-Act (Demming) cycle as a mechanism to control the dynamics.

Plan → Do → Check → Act → (cycle)

TNO innovation for life
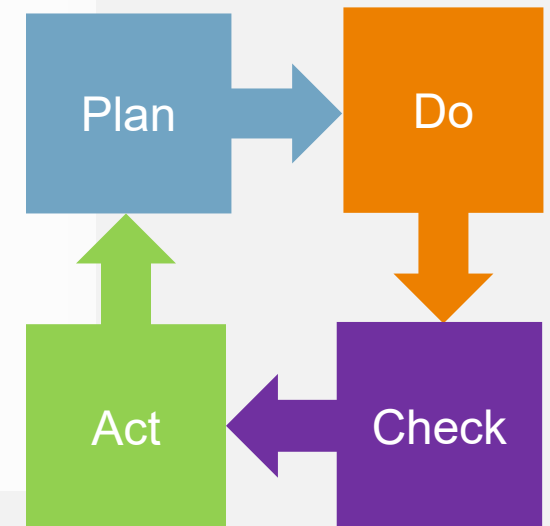
SOME THINK IT SHOULD BE MORE DYNAMIC
BUSINESS PERSPECTIVE (1)

› Hyperdynamic risk identification to keep in pace with the rapidly changing business environment,

› Dynamic risk assessment and decision making to deal with rapid changes in market demands, social responsibility and work, and

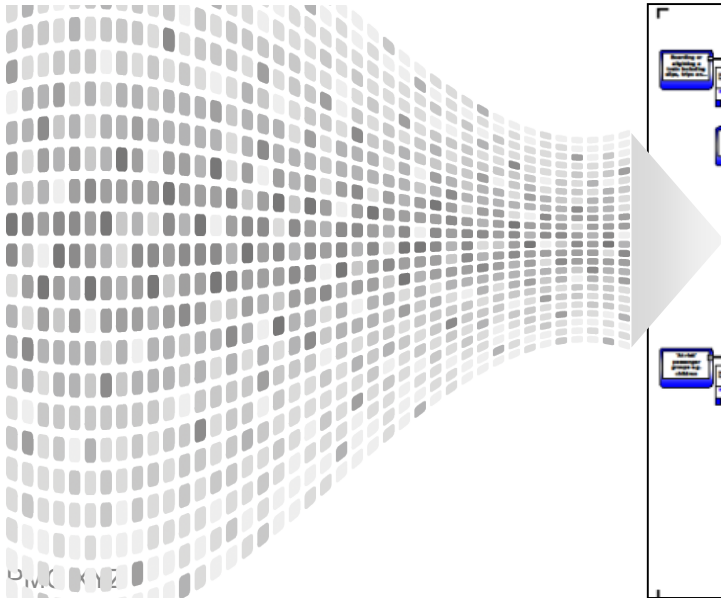› Dynamically deciding on the appropriate preventative measures

TNO innovation for life

AREAS OF ATTENTION
BUSINESS PERSPECTIVE (2)

❭ elevate risk management (& assessment) to a central instrument for decision making

❭ Work 'agile' to speed up the process

❭ Digitalize

❭ Prepare for faster business and future monitoring systems, IoT solutions, data fusions
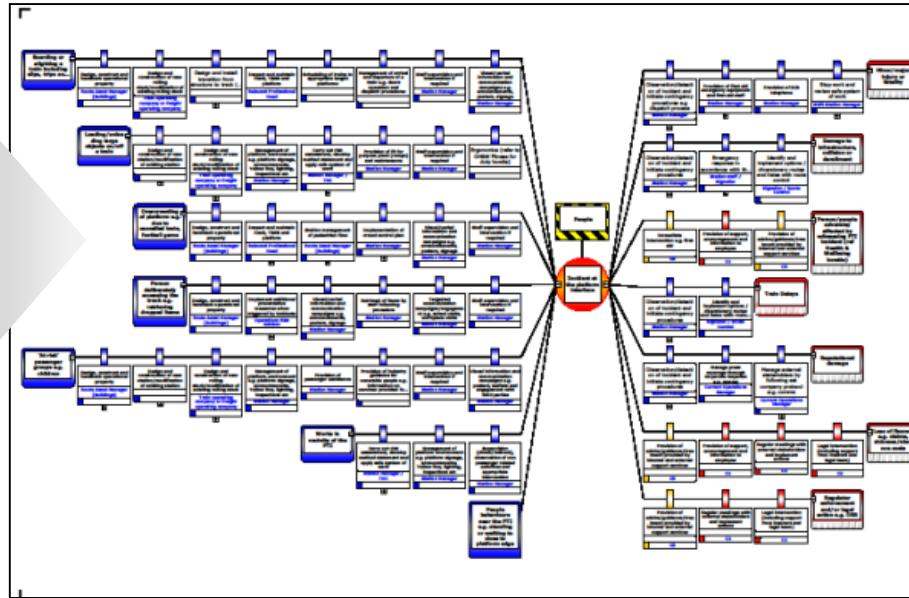
❭ Create a strong risk culture

DYNAMICALLY ASSESSING RISK:
AN IMAGE FOR THE MINDS-EYE

❯ Data in

❯ Smart safety assesment in the middle

❯ Provide real-time reports and interactions (management)

❯ Better safety out

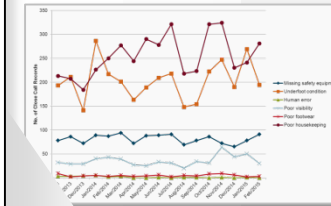**Multiple real-time input data**   **Established safety model**   **Real-time reports & interaction**

SUMMARIZING SO FAR…

❯ Business and industry are telling us:

   › risk assessment should be much more dynamic

   › risk assessment should be based on more data

❯ That could be quite a fundamental change…

❯ But it may not be very difficult to achieve in OSH

ACTUALLY, WE HAVE ALREADY STARTED
TRANSLATION INTO OSH (1)

> There are various HSE products on the market (and people ARE using them)

> And we are already gathering data….

OiRA Fhttps://osha.europa.eu/en/publications/oira-flyer/viewlyer - Safety and health at work - EU-OSHA (europa.eu)

IMPLICATIONS FOR OSH (2) - EXAMPLE
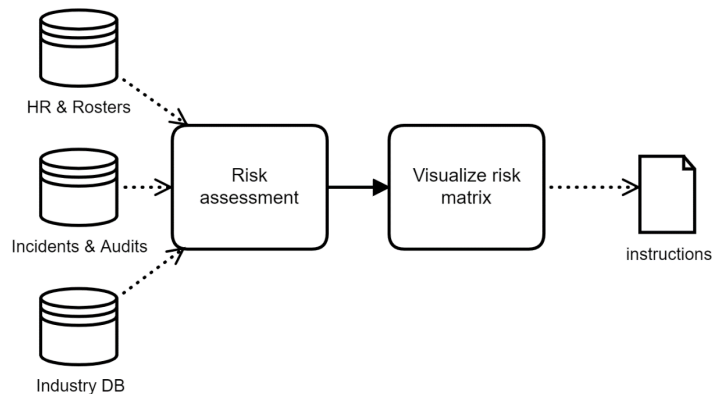
› Using management data (mostly based on text?)

Figure 1: Hypothetical risk matrix for a warehouse.

	Catastrophic	Critical	Marginal		Negligible
Frequent	🟥	🟥	🟧	🟧	🟧
Probable	🟥	🟥	🟧	🟩	🟩
Occasional	🟥	fork-lift collision	🟩	🟩	🟩
Infrequent	🟧	🟧	wet floor-STF	🟩	🟩
Rare	fire	🟩	🟩	🟩	🟩

HR & Rosters

Incidents & Audits → Risk assessment → Visualize risk matrix ⋯→ instructions

Industry DB

IMPLICATIONS FOR OSH (3) - EXAMPLE

Figure 2: Part of a BowTie for exposure to hazardous materials.
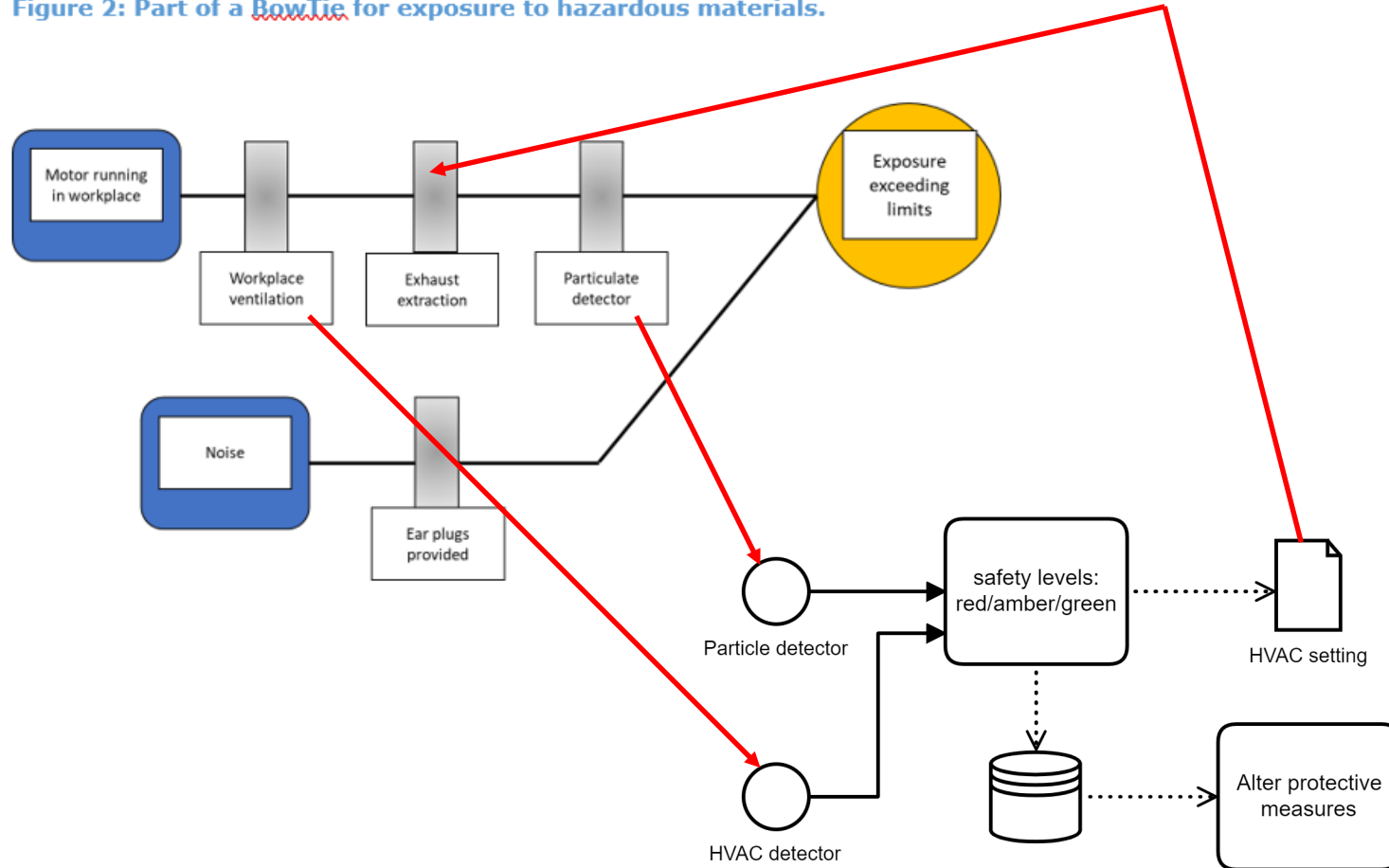
› BENEFITS
IMPLICATIONS FOR OSH (1)

❯ making risk assessment more accessible to employers

❯ (better) able to adapt to fast-changing dynamics in business or technology

❯ digital system offers rigidity to the risk assessment and risk management

❯ increases the speed of the process whilst minimizing human effort

❯ force consistent methods for collecting data

❯ when large amounts of data are collated, it may be possible to perform some risk-forecasting

❯ link directly to other digital systems that may contain relevant information

DRAWBACKS
IMPLICATIONS FOR OSH (2)

❯ Some processes that are key for OSH cannot be readily digitalized

  ❯ (safety culture, leadership…)

❯ maybe cost can be high

❯ OSH legislation tends to change slowly

❯ Not all OSH experts welcome the digitalization

❯ Skills?

TNO innovation for life

IMPLICATIONS FOR OSH (3)

› For **policy makers**, allowing digital systems and developing digital registration systems (or standards) would help.

› **Employees**, as end-users need to be involved to develop user requirements, privacy issues and other concerns that they may have

› **Employers** will be affected because should take a leading role the transformation project, the skills gap and control costs

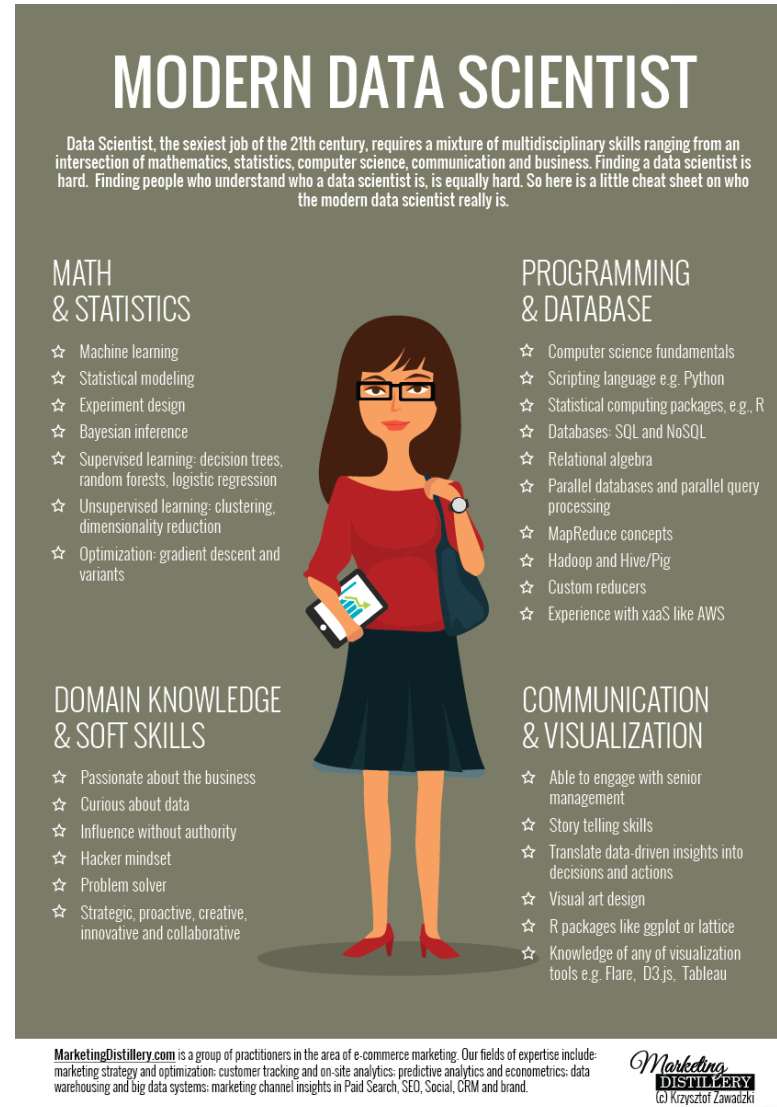› **The OSH expert** is affected most because they will have to add some digital skills to their repertoire.

IMPLICATIONS FOR OSH (4)

❯ Safety-data scientist

❯ Risk math

❯ Deep knowledge of safety

❯ Communication/soft skills

❯ Programming/database

http://www.marketingdistillery.com/2014/11/29/
is-data-science-a-buzzword-modern-data-scientist-defined/

PMC XYZ

THANK YOU FOR YOUR ATTENTION

coen.vangulijk@tno.nl

TNO innovation for life

GETTING STARTED (1)

› What are the systematic reference frameworks and tools that we use for OSH policy targets and risk assessment methods and what is the formal process to decide and record formal decisions about controlling OSH hazards?

› What tasks do we have in place to control OSH risks, how do we formally monitor the execution and performance of those tasks and how do we collate data in reference frameworks as evidence for meeting OSH policy targets?

› What is the nature and format of the data that provides the required evidence that we are meeting our OSH policy targets. Is it available through our own information systems, from other parts of my organization, or do we also require data and information from external sources?

› What KPI's do I need have in place to demarcate levels of performance and progress in OSH management? And if some KPI's need to be developed, how do I create a consistent set of mutually exclusive and complete KPI's to monitor against (the most important) OSH policy targets?

› What software can be used to support our OSH activities, either from within my own organization from external (commercial) organizations? Is it available to me, would it have to be tailored our local use or is it easy to program?

TNO innovation for life