Agenda

- What are emerging risks and why do we care?
- Why a different approach is needed
- Our emerging risk recipe
- Examples of emerging risks
  - Bioengineering / biotechnology
  - Climate change
  - Automation
  - Antibiotic resistance

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Introduction

What are emerging risks and why do we care?

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What are emerging risks?

"a risk that is new, or a familiar risk in a new or unfamiliar context or under new context conditions (re-emerging)"

IRGC

"newly developing or changing risks which are difficult to quantify"

Swiss Re

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Typical features

- Potentially significant but not well understood
  - Will the risk materialise?
  - From what direction, and in what form?
  - How will it unfold and interact with the business, and over what timeframe?
  - How and when will the business respond?
- Consequences and implications can be ambiguous
- Difficult to quantify due to lack of data
- Typically outside of a firm's control

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Why bother?

- Uncertainty is bad for business
- The implausible can happen
- Potential for high impact
- Early detection and response is key
- Potential time lag between risks and actions
- Opportunity to pivot from:
  - oversight to **insight**
  - hindsight to **foresight**

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Emerging risk management

Why a different approach is needed

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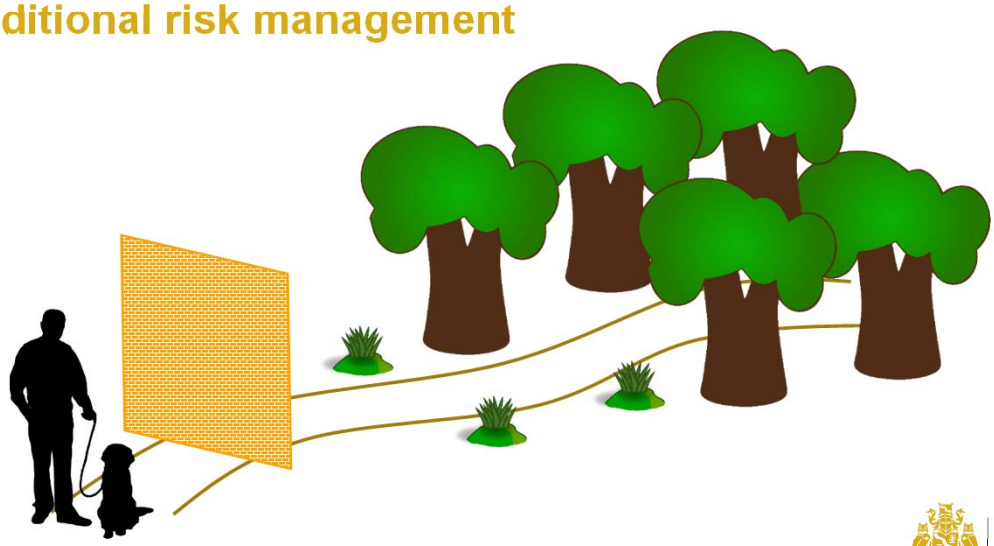
Traditional risk management



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Emerging risk management

- **Detection and response** are crucial ⇒ **RESILIENCE**
- Plan for potential future events
  - Rapid identification
  - Rapid response mobilisation
- Need to have a broad, diverse and robust risk dialogue
- But how to make sense of an uncertain future?

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Typical approach

The good

Political

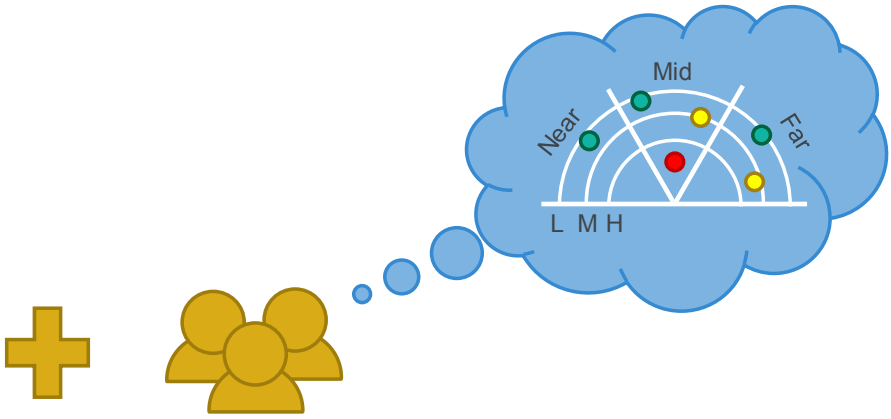
Economic

Social

Technology

Legal

Environment



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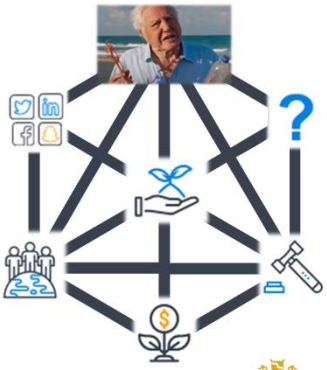
Typical approach
The bad

Silo view (6 scenarios)

RAG status	Risk	Scenario
	Political	Brexit
	Economic	Market crash
	Social	Increased use of price comparison sites
	Technology	Data breach
	Legal	Change to tax laws
	Environment	Office floods

Real world view (1 scenario)



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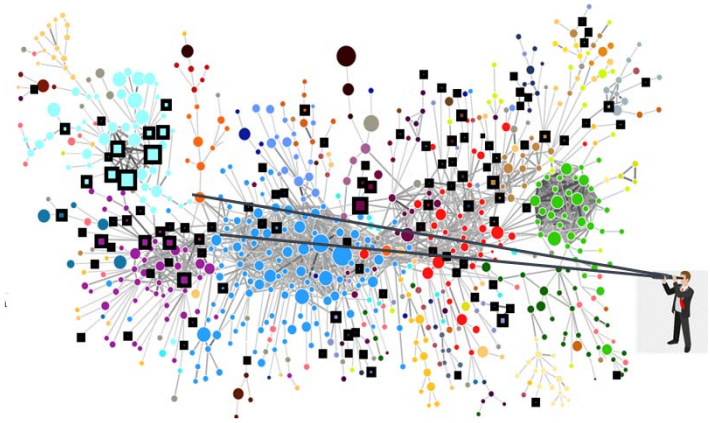
Typical approach
The ugly



"Here was a strange but true fact: The closer you were to the market, the harder it was to perceive its folly."

Michael Lewis, author of The Big Short

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Typical approach
The really ugly

- Difficult to get engagement
- Far-off fatigue
- Dismissal of low probability events
- Wilful blindness
- Focus on the current view
- Group think

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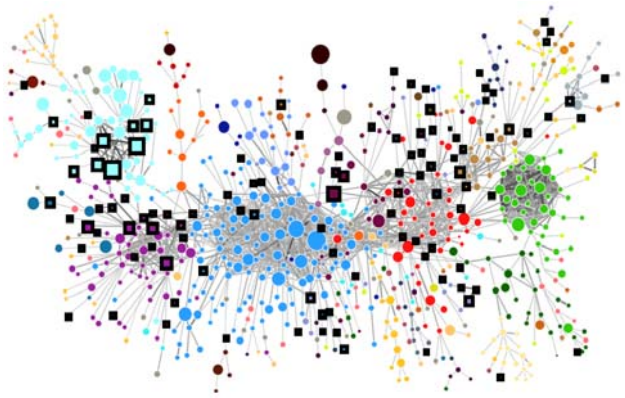
A better approach

Our emerging risk recipe



As complex as the future is, it builds one step at a time

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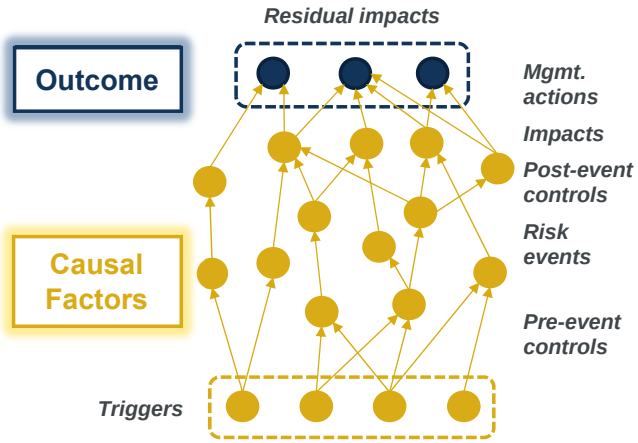
Emerging risk recipe

1. **Bound the problem**
   - Only consider things that affect the outcomes you care about
2. **Explore**
   - Investigate how underlying dynamics lead to outcomes



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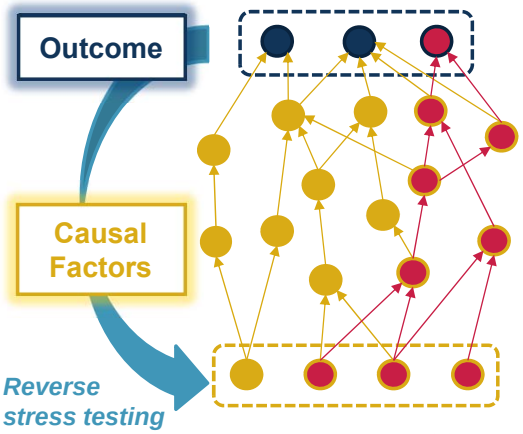

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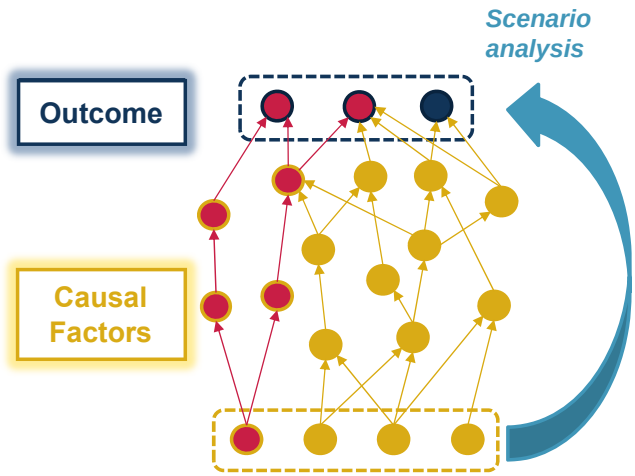

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Emerging risk recipe

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4. **Test and refine**
   - Challenge theories by observation
   - Actual vs. expected

- What is going on now?
- Is it as we expected?
- What was the journey to where we are now?
- Did we get here the way we thought we would?
- What do we think will happen next?
- Is there any action we should be taking?
- Is our story still appropriate?

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Advanced analytics

Application to emerging risk management

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What do we mean by advanced analytics?

Big Data

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Using AI

Good use of AI

- Reading large volumes of information
- Reading frequent flows of information
- Helping to identify persistent features
- Revealing ‘hard to spot’ relationships

Bad use of AI

- Machine learning approaches for emerging risk
- Using black box models without thinking through the implications
- Substitute for thinking

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AI and emerging risk management

- Supplement SME imagination
- Investigate themes of interest
- Outputs can be used in further analysis, models, etc.
- Helps to identify emerging topics
  - How do they interact?
  - Which are likely to persist and be most influential?
  - Do we need to change our assumptions?

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What does this mean in practice?

Tying this back to what you do now

Political

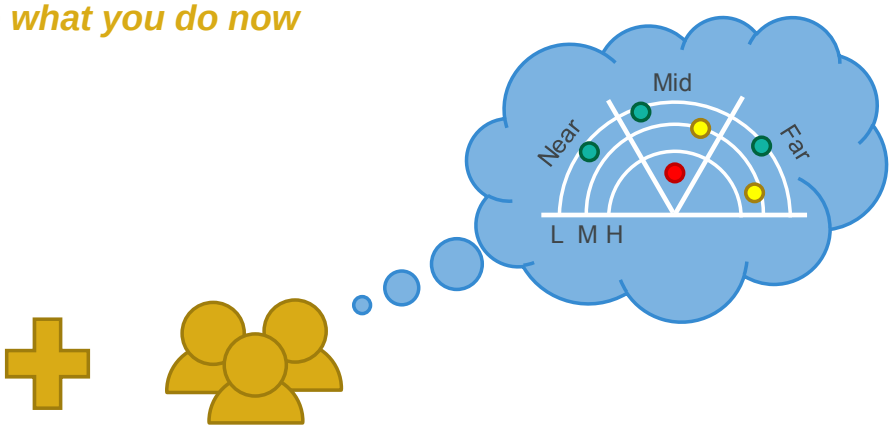
Economic

Social

Technology

Legal

Environment



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Examples of emerging risks

Bioengineering / biotechnology

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Bioengineering / biotechnology

Definitions

- **Bioengineering**: the application of engineering principles to the fields of biology and health care
- **Biotechnology**: any technological application that uses biological systems to make or modify products or processes for particular use

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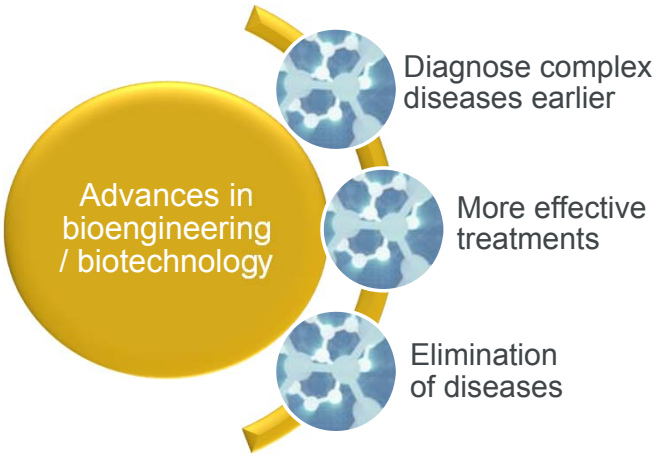
Bioengineering / biotechnology
Developments



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Bioengineering
Application

Genetic mapping – DNA sequencing

- Identify those at risk of a particular disease
- Develop improved treatments
- Resulting improvements in mortality and morbidity rates

Risks:

- Change to shape of book
- Regulation

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Biotechnology
Application

Health monitoring and alerts

- Stimulus for improved lifestyles
- Highlight development of a condition earlier

Risks:

- Overreliance on devices and short term data
- Cyber and data related risks

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Bioengineering / biotechnology
Monitoring

- Innovation
- Affordability
- Take up by NHS etc.

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Examples of emerging risks

Climate change

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Climate change

What are the risks?

Transition risks

- Transfer to a low carbon economy
- Key risk to life insurers is changing asset values
- Rising interest in ESG and ESG-related disclosures
- Changes in regulation
- Litigation
- Disruptive technology

Physical risks

- Studies on 4 degrees warmer have shown:
  - Large uninhabitable areas of world
  - Rises in sea level
  - Loss biodiversity e.g. 85%+ Amazon

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Climate change
Potential impacts

Business interruption

Mortality and morbidity

Operational issues

Increased costs

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Examples of emerging risks

Automation

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Automation
Opportunities

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Automation
Risks

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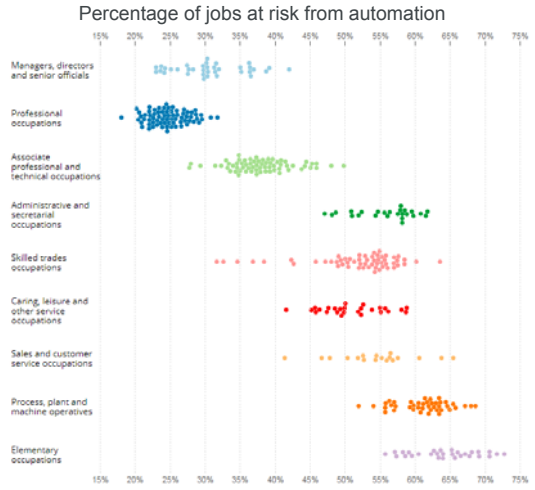
Job automation
ONS analysis



Source:
Office of National Statistics

The probability of automation in England: 2011 and 2017

Which occupations are at highest risk of being automated? March 2019

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Automation
Risks

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Job automation
Approach

- Monitor developments in AI and technology
- Adopt new techniques to achieve efficiencies

→

- Ensure risk management framework is robust and evolving to deal with new risk types

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Examples of emerging risks

Antibiotic resistance

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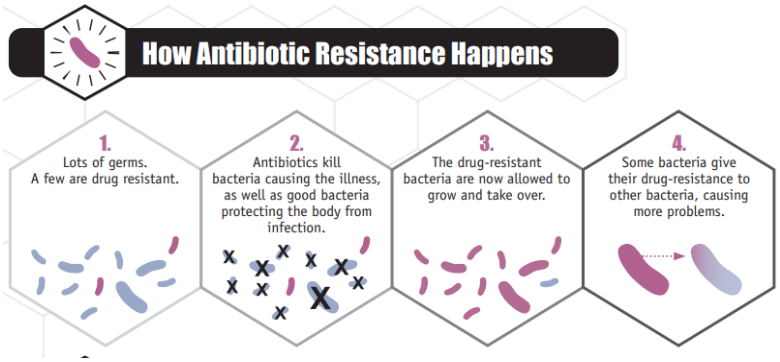
Antibiotic resistance
How does it occur?



Source: "Antibiotic Resistance Threats in the United States, 2013", Centre for Disease Control and Prevention

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Antibiotic resistance
Impacts on society

Impacts on society

- Use of more costly drugs
- Extended treatment and recovery periods
- Greater disability and death
- Routine procedures complicated by inability to treat infections

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Antibiotic resistance
Impacts on society

33,000

people in the European Union and European Economic Area die each year as a direct consequence of antibiotic resistant bacteria

Source: European Centre for Disease Prevention and Control study, 5 November 2018

Costs the EU **EUR 1.5 billion** per year in healthcare costs and productivity losses.

Source: EU Action on Antimicrobial Resistance, European Commission

Antibiotic resistance adds nearly **$1,283** to the bill for treating a bacterial infection and costs the **US $2.2 billion** annually

Source: Health Affairs research, 21 March 2018

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Antibiotic resistance
Impacts on insurers

Impacts on society

- Use of more costly drugs
- Extended treatment and recovery periods
- Greater disability and death
- Routine procedures complicated by inability to treat infections

Impacts on insurers

- Increase in claims
- Higher cost per claim for healthcare providers
- Amend pricing
- Consider which conditions to cover
- Reduced asset values

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Antibiotic resistance
Monitoring

Greater innovation and investment are required in research and development of new antimicrobial medicines, vaccines, & diagnostic tools.

Source: World Health Organisation
https://www.who.int/news-room/fact-sheets/detail/antibiotic-resistance

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Questions

Comments

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