

# **Future workplaces, and how to prepare in a data driven society**

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# Overview

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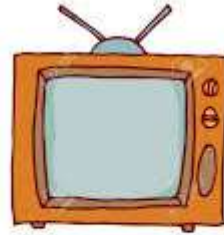
- Thinking about the future
- Change in the world of work
- Future trends
- What are we doing about it?
- Priority Science Hubs
- From strategy to delivering the science

# Why worry?

- **380,500** Fatal occupational accidents (2014)
- **2,403,965** Fatal occupational diseases (2015)
- **373,986,418** Non-fatal Occupational Accidents (2014)
- **4%** annual global GDP lost or
- **\$2,800,000,000,000**

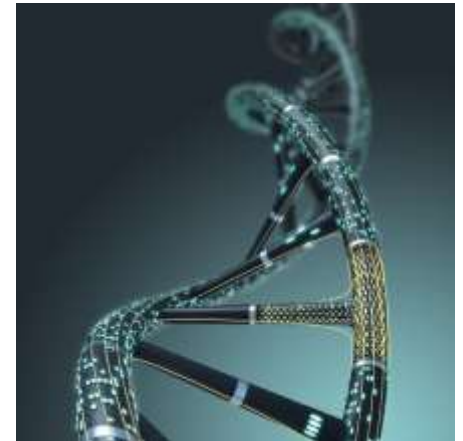
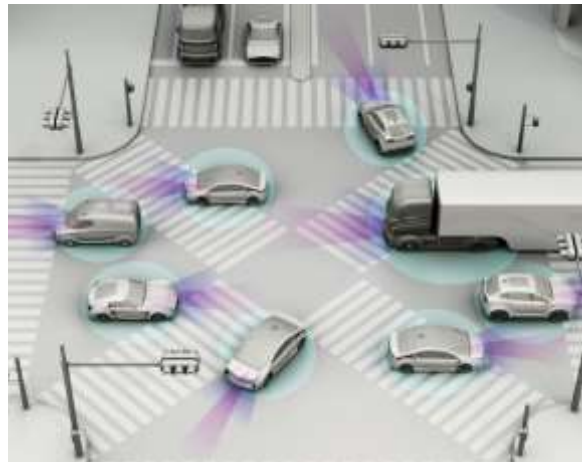


# Pace of Change



# Considering three horizons

- Possible - quantum computing
- Probable - autonomous vehicles
- Present - synthetic biology



# How work changes



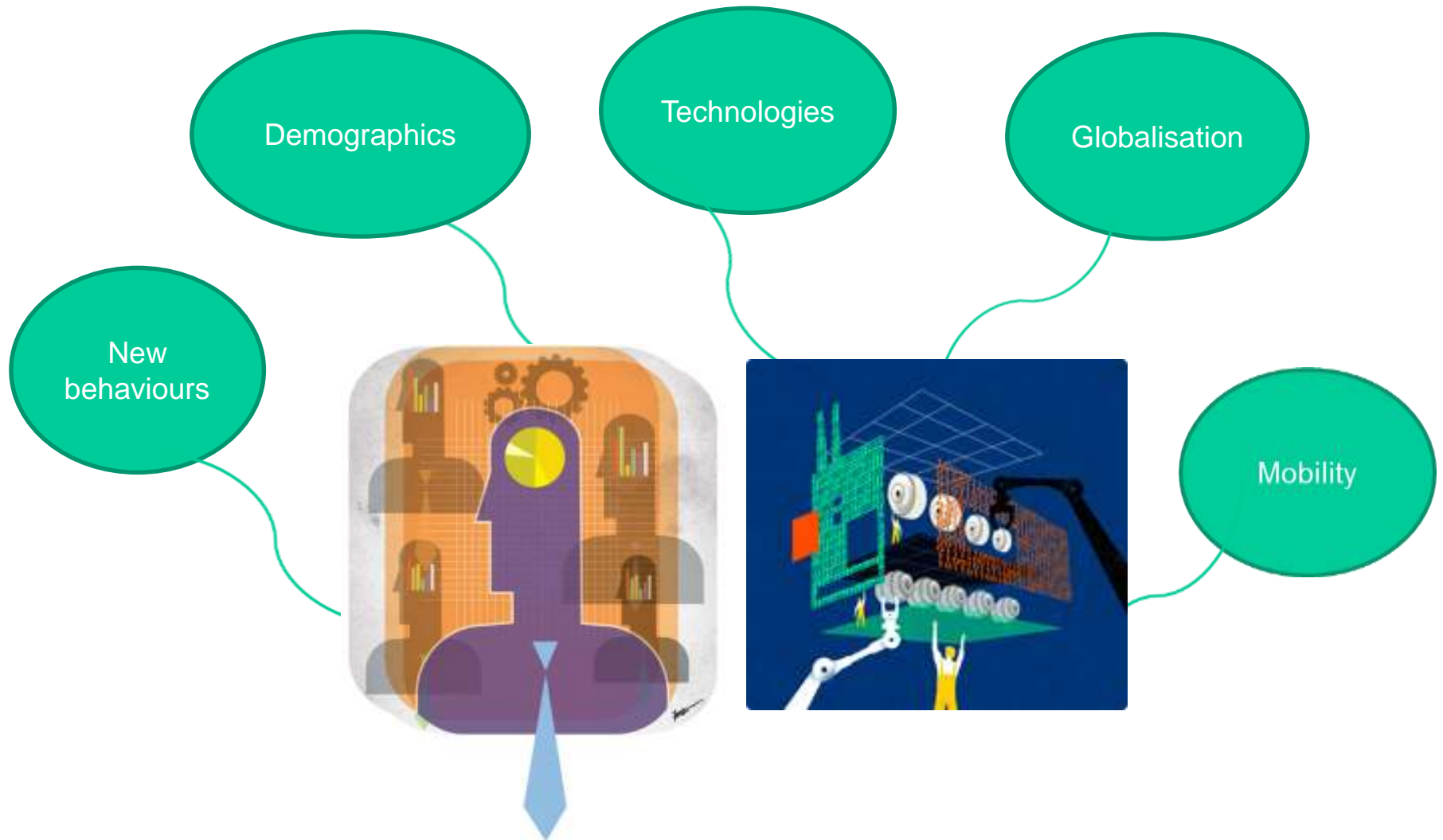
From  
this



To  
this



# Trends shaping the future world of work





# Technological trends

- By 2020, the number of connected sensors & devices will be twice that of the human population
- Presents both opportunities and risks
- Tomorrow's world of work unrecognizable from that of today





# The changing face of work

Co-worker or cobot -sophisticated robots working alongside workers without the need for segregation



Welcome to the cognitive era

- Artificial Intelligence: ‘the science of making machines smart’

# The changing face of work



Working any time, any place, any space - working patterns driven & enabled by ICT

‘Wearable’ H&S - monitoring our vital signs to indicate potential H&S risks



# Gaps in knowledge and understanding

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- How will the safety & health of a peripatetic globally dispersed workforce using connected devices be managed?
- Will improved monitoring technology improve safety for lone workers or those in hazardous situations?
- Do we know what is required to approve Remote Autonomous Systems?

# The future of – agriculture

- Vertical farming on an industrial scale
- Smarter data driven farms
- Precision farming – reduced resource use



# Jobs in the Future

- Elderly well being consultant
- Vertical farmer
- Haptic programmer
- Waste data handler
- Avatar manager
- Memory augmentation surgeon



# HSE Strategy



<http://www.hse.gov.uk/strategy/strategy-document.htm>



# HSE Strategy



Acting  
together



Tackling  
ill health



Keeping  
pace with  
change



Managing  
risk well



Sharing  
our success



Supporting  
small  
employers

# Work and Health Strategy

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Keeping  
pace with  
change





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# Science Strategy

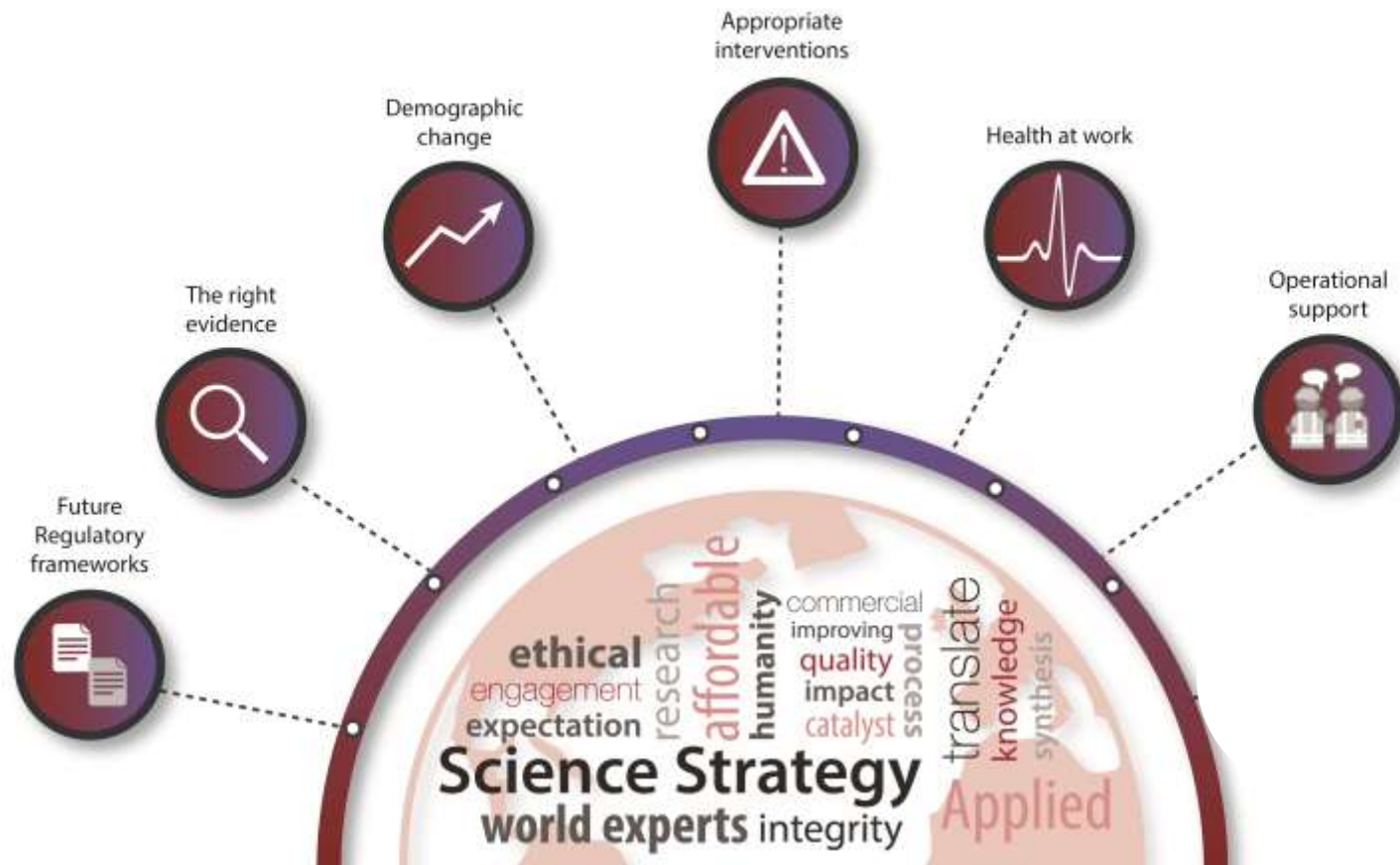


# Science and Evidence Strategy

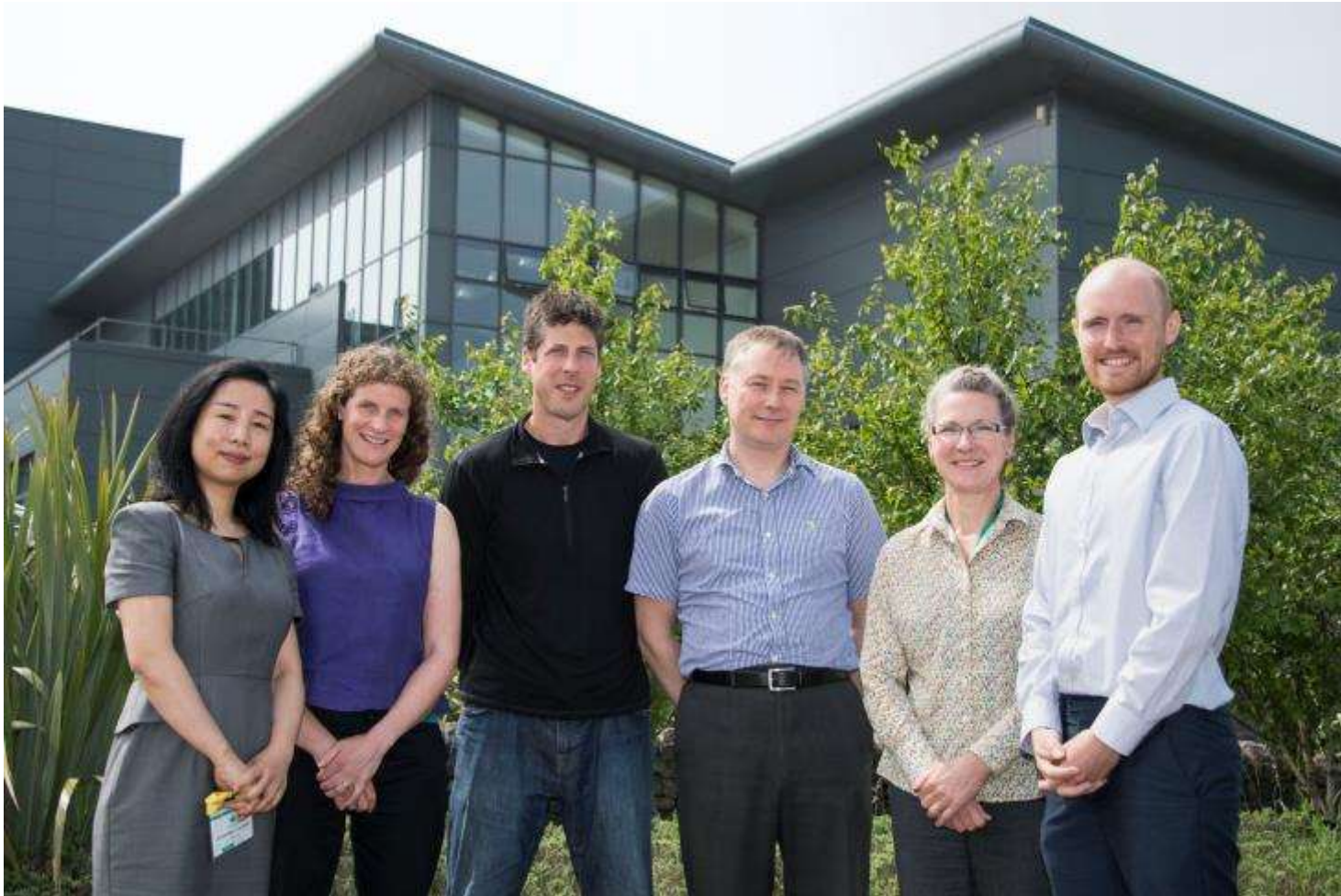




# HSE's Science Hubs



# Science Hub Leads



# Communicating



Health and Safety  
Executive

## HSE's Science and Evidence investment plan

High-quality science, evidence and analysis underpin HSE's risk-based, goal-setting regulatory regime and are vital for ensuring effective and proportionate risk management that protects workers and safeguards the public while enabling productivity, innovation and growth. Our Science and Evidence Strategy 2016-2020, underpinned by our areas of research interest, is at the heart of our science and evidence approach.

### Current Position

Our current investment portfolio of work is delivered through six science hubs; these are:

- Regulatory frameworks which are fit for the future;
- Taking responsibility for health at work;
- The right evidence for the future;
- The impact of demographic change on the future workforce;
- The right intervention strategy for the British industrial sector base;
- Lessons learned from investigations.

In each science hub, work is undertaken to ensure that robust science and evidence is provided to inform HSE policy and to support operational activities.



The diagram illustrates the Science Strategy, centered around a semi-circle with the text 'Science Strategy' and 'world experts integrity'. Surrounding this are various icons and labels: 'ethical', 'transparency', 'innovation', 'research', 'evidence', 'regulation', 'protection', 'health', 'safety', 'well-being', 'productivity', 'growth', 'innovation', 'research', 'evidence', 'regulation', 'protection', 'health', 'safety', 'well-being', 'productivity', 'growth'. The diagram also includes a central circle with the text 'Science Strategy' and 'world experts integrity'.





# Future Regulatory Frameworks ?



Shared assets



Industry 4.0 inc  
autonomous  
systems and  
human/robotic  
interface



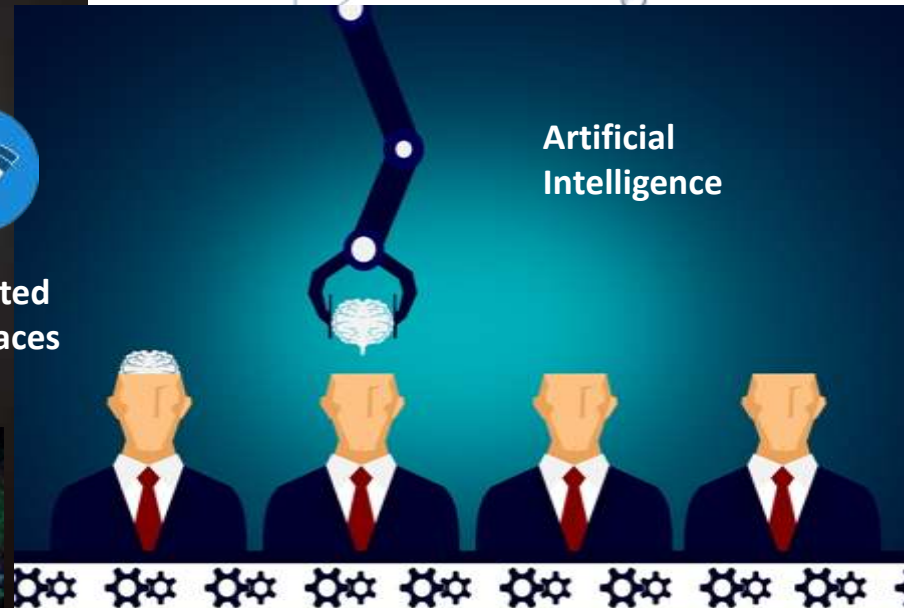
Big data and  
algorithmic  
decision making



Connected  
workplaces

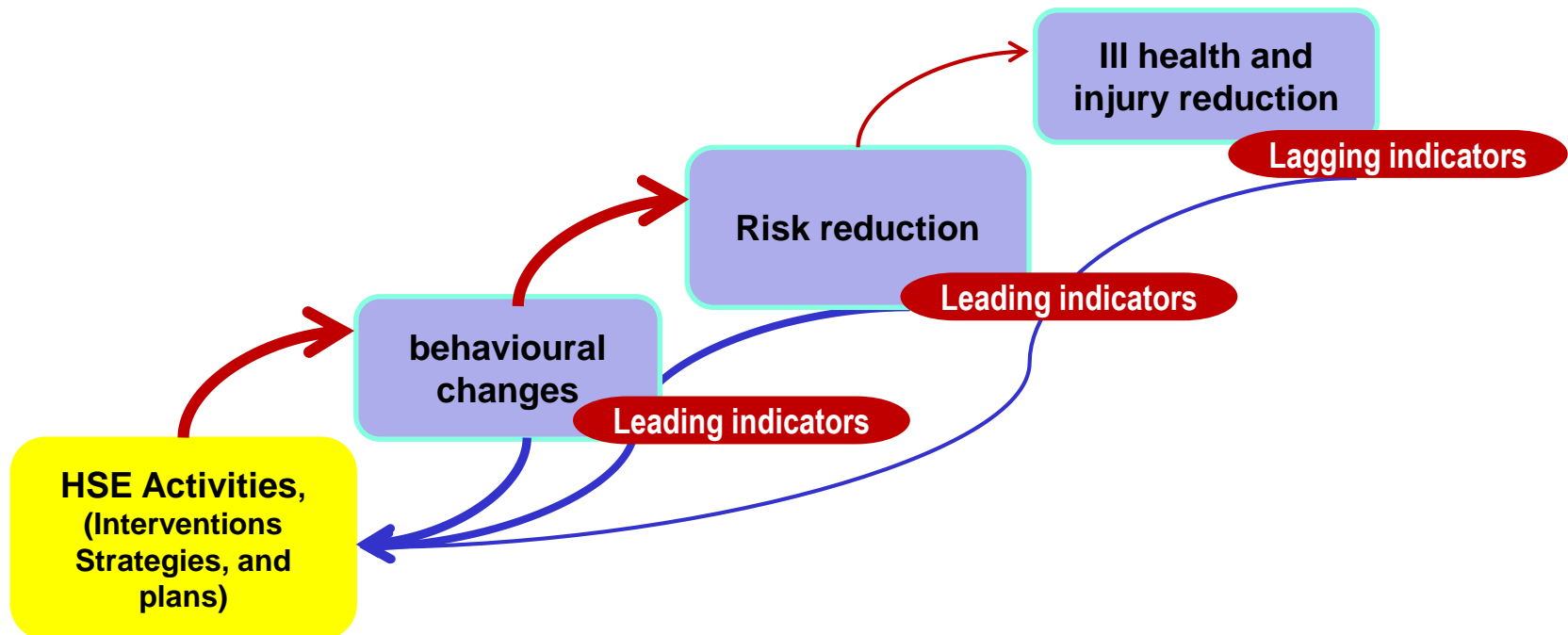


Artificial  
Intelligence



# Future Evidence

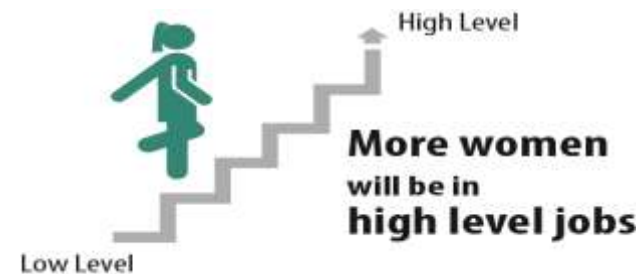
- How can we greatly improve our measurement of HSE's impact?
- Where HSE can influence the most?
- Do we need to develop leading indicators and systematically report against them in order to demonstrate, in a timely fashion, HSE's impact on workplace behavioural changes and risk exposure reduction?



# Demographic change and how do we manage it?



**HAPPY RETIREMENT! CANCELLED**  
By **2020** the state pension age for some people could be **70**



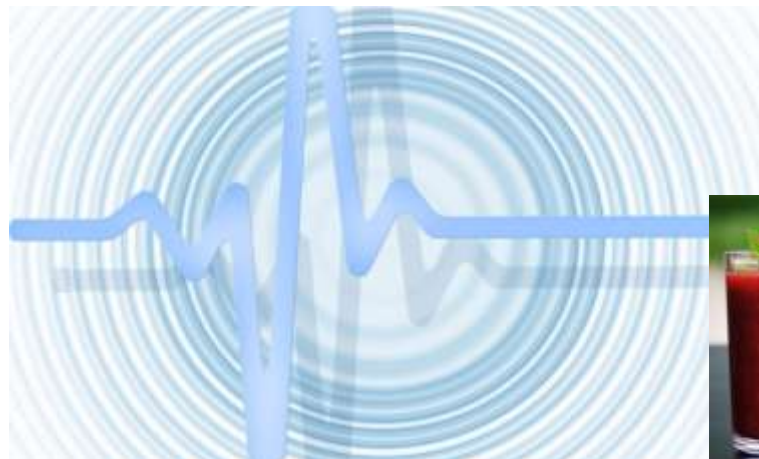


# Appropriate Interventions



What will the future asset base look like

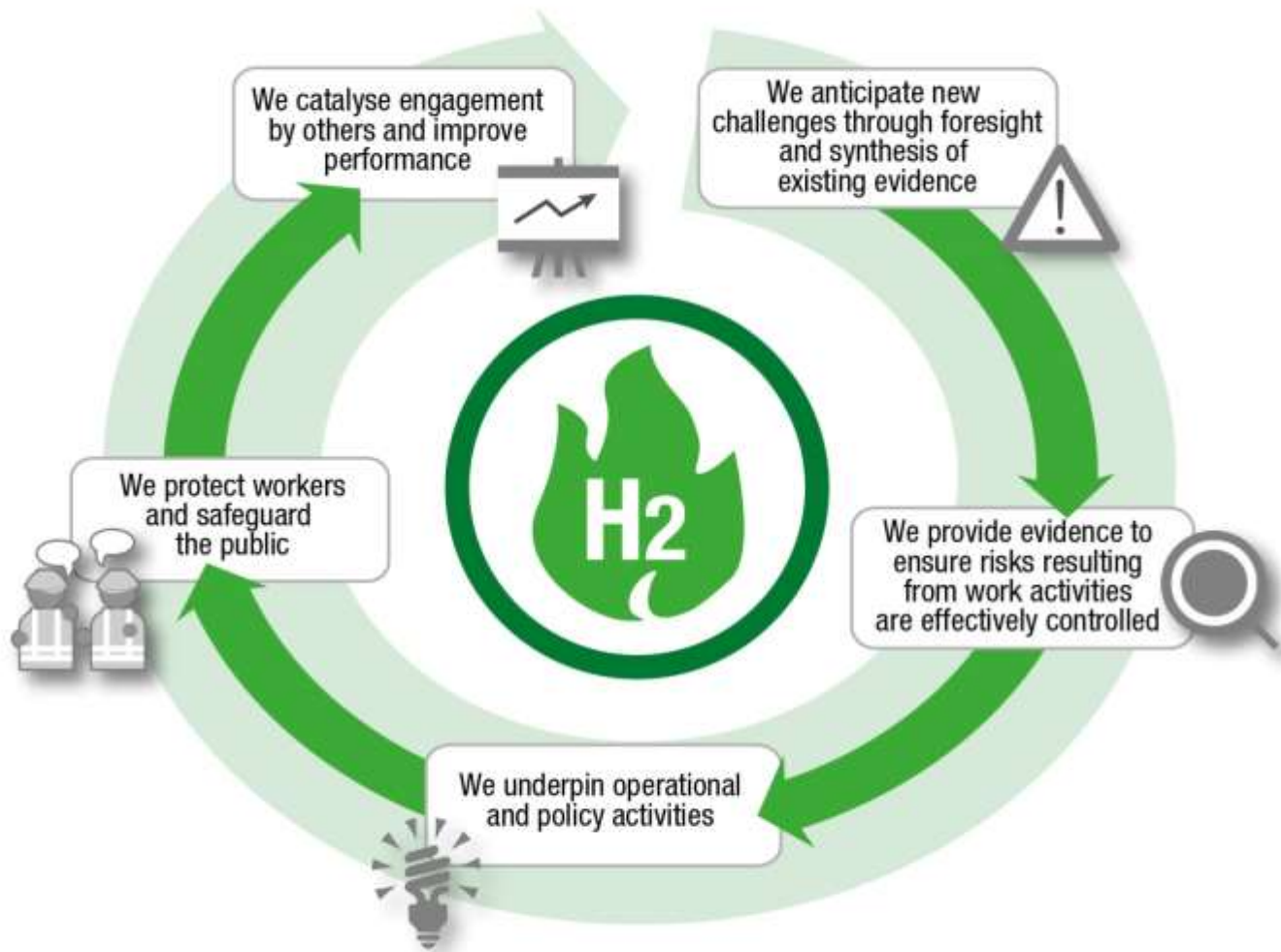
# Health and Work



# Science and Evidence Strategy



# Delivering the Strategy



# Discovering Safety Programme



**DISCOVERING  
SAFETY**

**Delivering health and safety  
benefits through a data driven  
global community**



# Conclusions

## Foresight review on global safety evidence

Towards a global safety outlook

May 2018

Lloyd's Register Foundation  
Report Series: No.2018.1

- Draw on existing data sources
- Identify opportunities to continuously improve and enrich available safety data
- Identify effective evidence-based interventions
- Make global safety analysis and data accessible for public use
- Scope education and development programmes for the global community



# Conclusions

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- The future is always coming!
- Arrives more quickly than before
- [Think and Plan] vs [Watch and Fail]
- Opportunity vs threat
- Understand the risk early
- Reduce potential for unplanned downtime

**An ambition?**

**No one was harmed in  
the making of this  
product.**

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# Thank you