GET TO ZERO

Engagement • Continuous Improvement • Critical Controls

ARTIFICIAL INTELLIGENCE

Introduction

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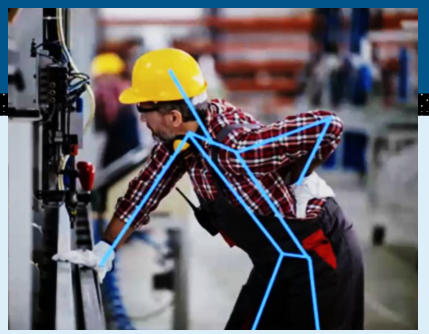
SIBELCO

"AI is technology that enables computers and machines to simulate human learning, comprehension, problem solving, decision making, creativity and autonomy." Source: IBM

Artificial Intelligence

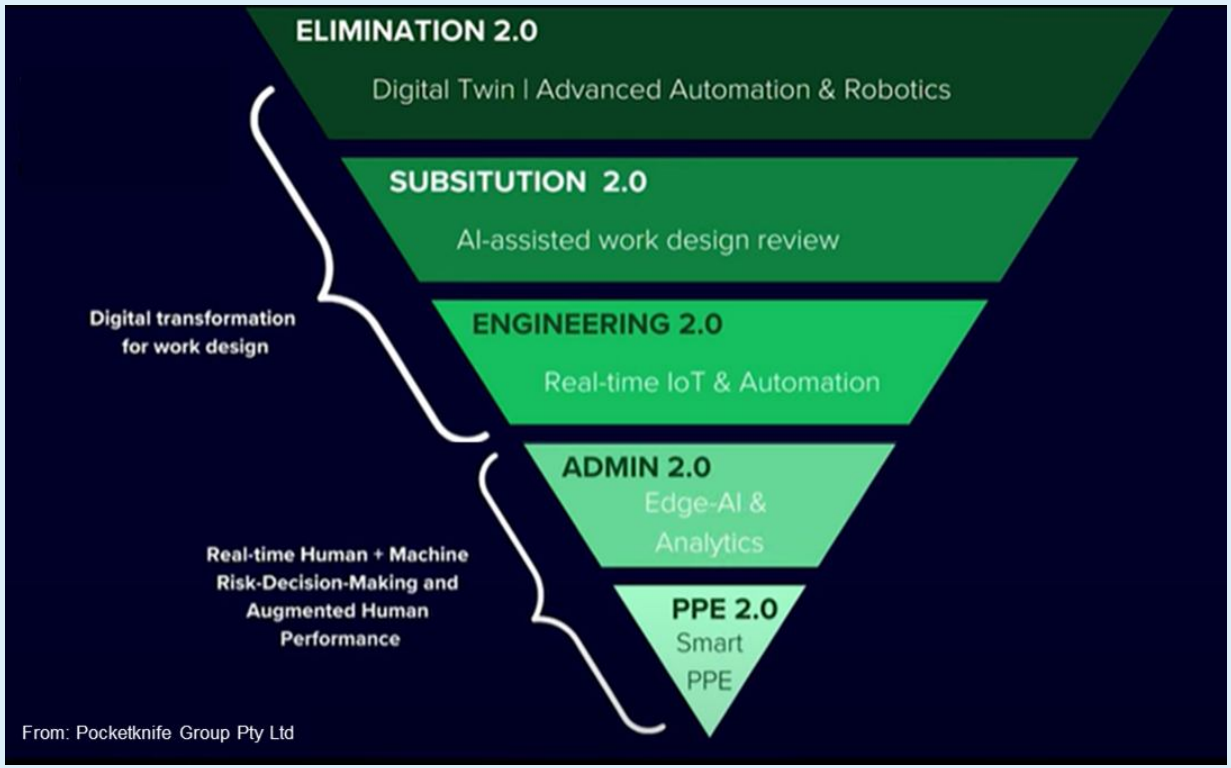
Applications, relevant to health and safety

- AI is good for analysing huge amounts of data and spotting trends that may otherwise be invisible.
- Examples are in:
  - **analysing human movement / ergonomics**
  - **analysing health data / biometrics**
  - **analysing incident data**
  - **monitoring machine movements, preventing collisions**
  - **hazard spotting (eg. workstation assessment)**
  - **inspection robots and drones / predictive maintenance**
  - **autonomous machines for repetitive and hazardous tasks**
  - **scheduling (eg. to avoid fatigue, heat stress)**
  - **monitoring compliance with rules (eg. PPE usage)**
  - **asbestos fibre counting, real time RCS monitoring…**
- Besides collecting and analysing data, AI can also be used to provide helpful contextual information to humans in real time.



Artificial Intelligence

Technology enhanced “Hierarchy of Controls 2.0”



Digital Twins = used in simulations, replicating functionality, features, and behaviour.

IoT = Internet of Things

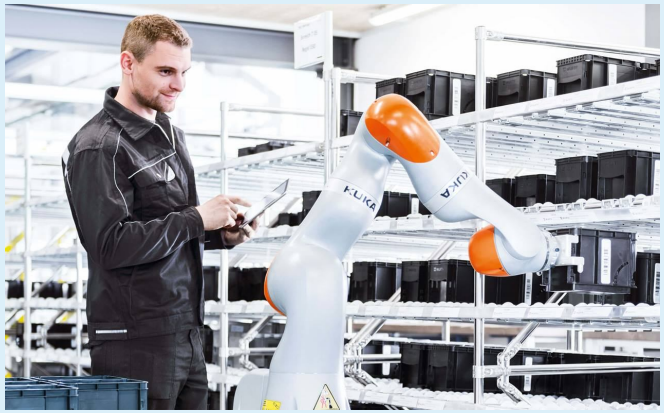
Edge-AI = AI in devices throughout the physical world (eg. mobile devices, sensors)

Save lives

Artificial Intelligence

Potential risks from AI

- **Physical safety risks**
  where humans work alongside robots and autonomous machines



- **Mental health risks**
  due to loss of trust and fear of the technology

Save lives

Artificial Intelligence

Physical safety risks

Things to consider: Management System approach

- Organisational readiness (commitment, resources…)
- Assessing suitability of operation for automation
- Project management and communication
- Integration into the operations
  - Planning
  - Design
  - Risk management / hazard control
  - Safe Working Procedures and Work Instructions
  - Defined responsibilities
  - Infrastructure needs
  - Maintenance and inspection
- Training and skills development
- Emergency preparedness and incident response

Save lives

Artificial Intelligence

Mental health risks

- AI brings change. It can also be mis-used, effectively to spy on people.
- Suspicions and fears of employees are important, even if they are misguided
- Need to consider mental health issues
  - **potential stress, anxiety, loss of autonomy, loss of job satisfaction, de-personalisation, reduced social connection…**
- A key factor is the wider (safety) culture in the company that is implementing AI
  - **If it is coming from a good place, then it will be more accepted.**
- Need to consider the “what, why and how” in our communication, so that we build trust and understanding, adoption and improvement
  - **keep the human in the loop, with transparency in decision making**
  - **allow workers to have their input towards recommendations made by AI**
- Consider peer to peer support structures and “AI free” zones

Artificial Intelligence

AI is here! Should we be worried?

- There are potential benefits to health and safety, people, planet, profit
  (but it is probably implemented for productivity and efficiency reasons first…)
- However, AI brings its own risks.
- In an ideal world, ethically and morally:
  - AI should not necessarily replace or automate the jobs of people, but instead augment them
  - AI should be used to solve real problems; not just technology for technology's sake
  - We should always ask whether AI is the best option
- What does it mean for the HS Professional?