

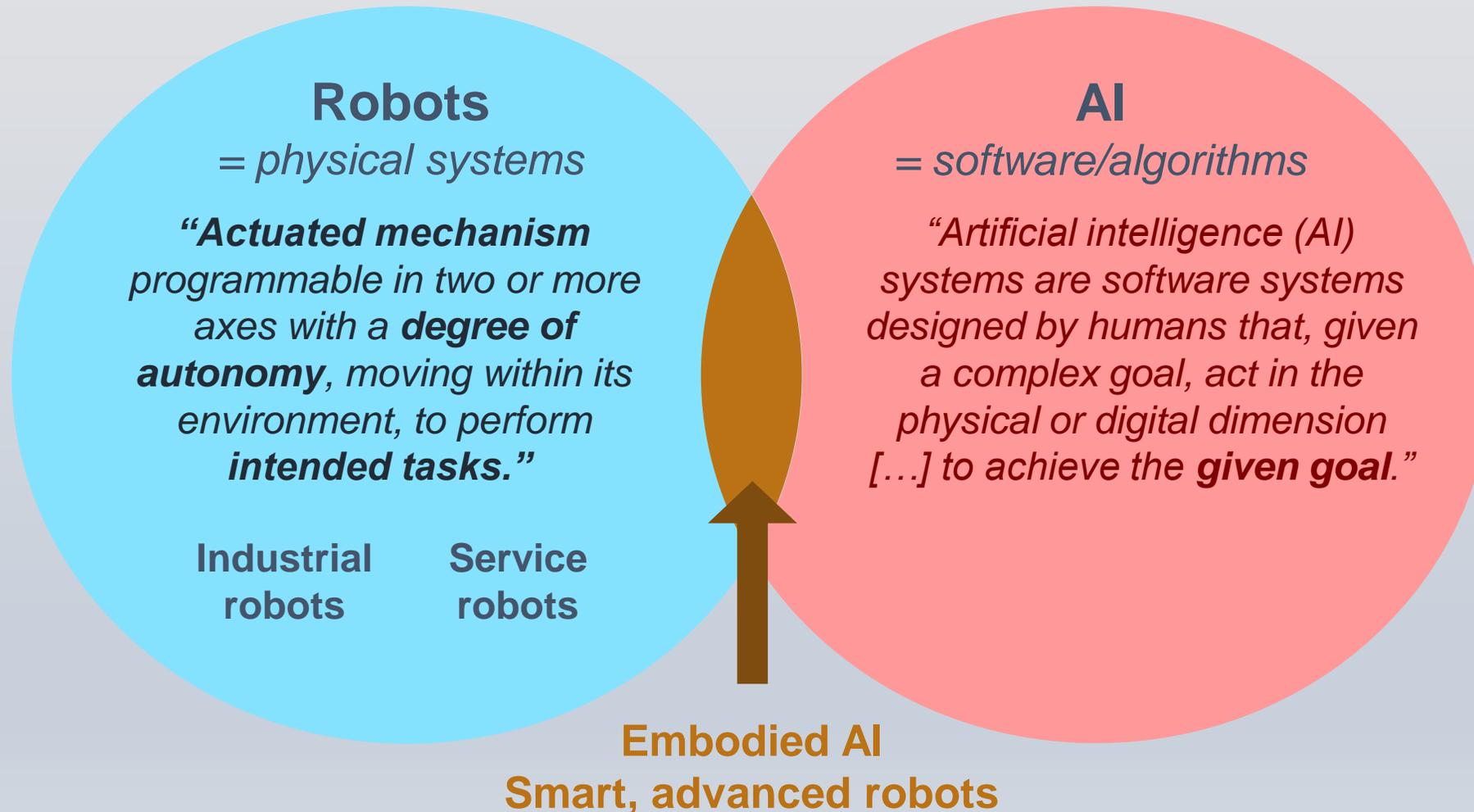


Assessing the social impact of AI and robotics

Dr. Susanne Bieller
General Secretary

What future for European Robotics?
28 January 2021

What is a robot, what is AI, and where is the connection?



Robotics and Artificial Intelligence

Robots are **tools** to help and **serve humans**

Robots are not autonomous like humans - **programmed for a certain task** and purpose

AI technologies enable robots to **sense and respond** to the real environment

AI technologies help companies **optimise** robot and process **performance**

Companies, esp. SMEs, want robots that are **easy to install, use and re-program.**

Main benefits of robots



Industrial robots

- improved **resilience**
- **energy** and resource **efficiency**
- workplace quality



Professional service robots

- **improved**, more reliable **services**
- better quality of work

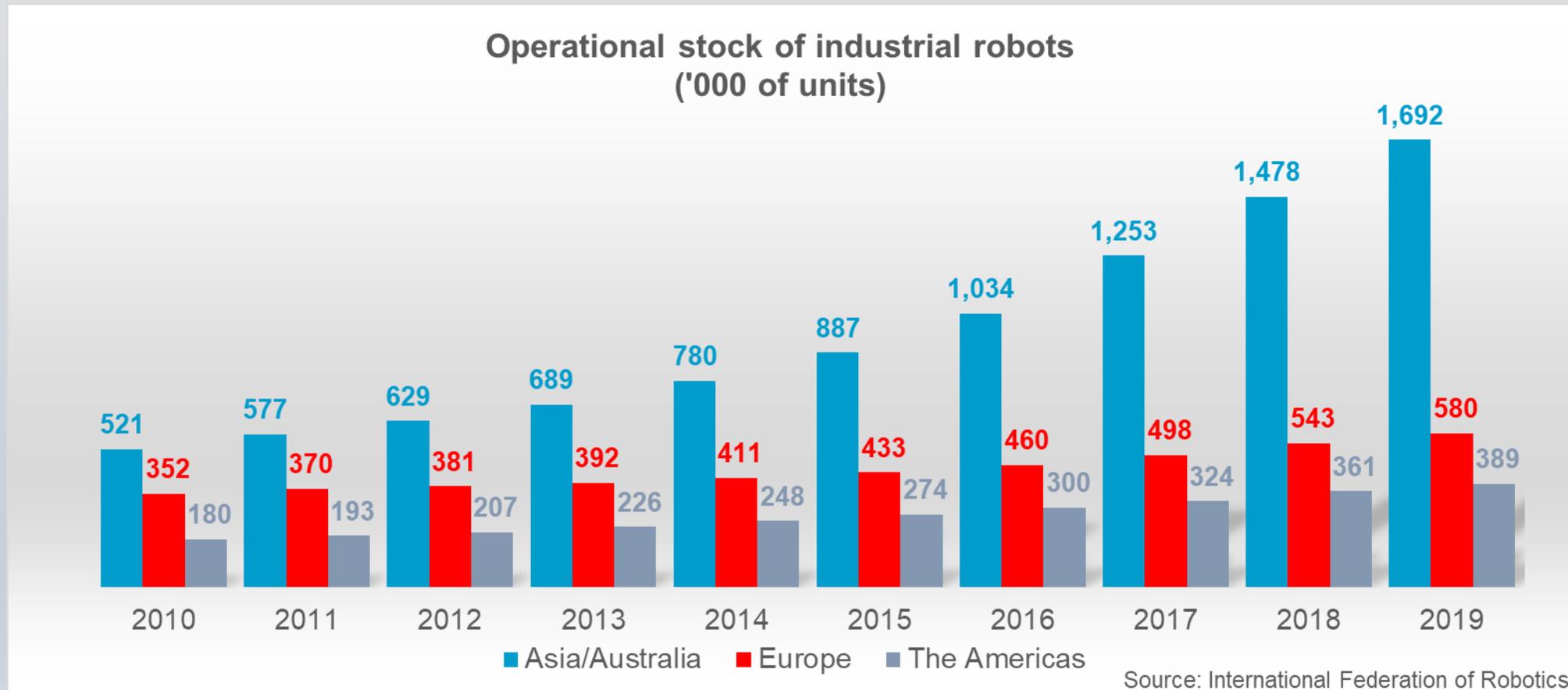


Service robots for private use

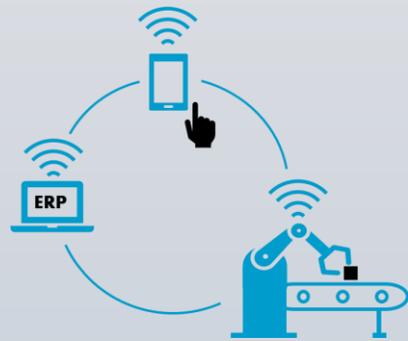
- convenience
- entertainment

⇒ quality of life

How many industrial robots are in use worldwide?



Smart connected robots in manufacturing support the competitiveness



AUTOMATED PRODUCTION

Digitization of the entire process



OPTIMIZING PERFORMANCE

Connecting robots and other machines to a central computing server or the cloud



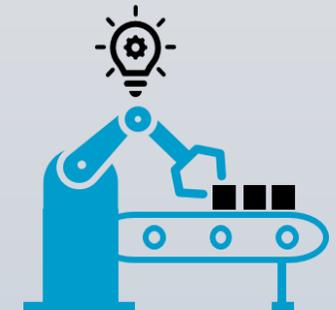
VIRTUAL SIMULATION AND DIGITAL TWIN

simulate operations before installation and predict impacts during use



ROBOT AS A SERVICE

new business model allows for better predictability of expenditures

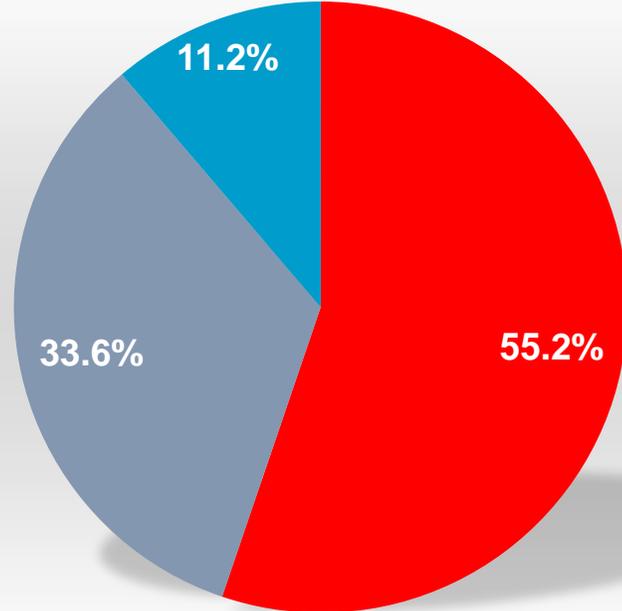


SENSE AND RESPOND

enables robots to respond to external environment

Europe strong in professional service robots

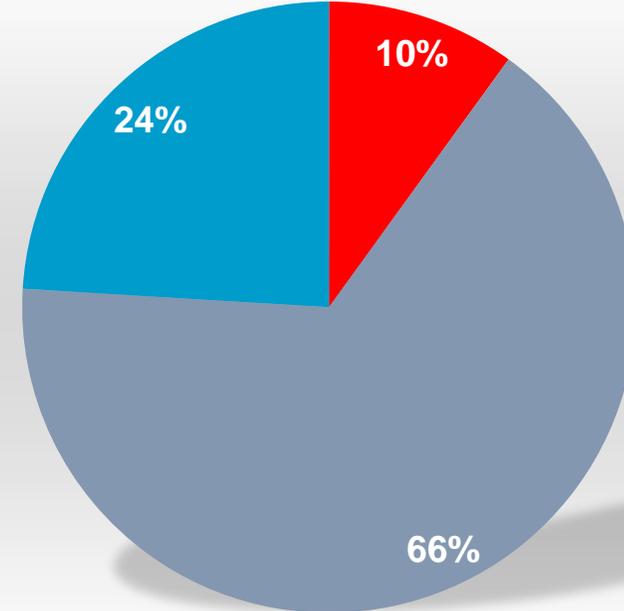
Service robots for professional use by region of origin.



■ Europe ■ Americas ■ Asia/Australia

Source: International Federation of Robotics

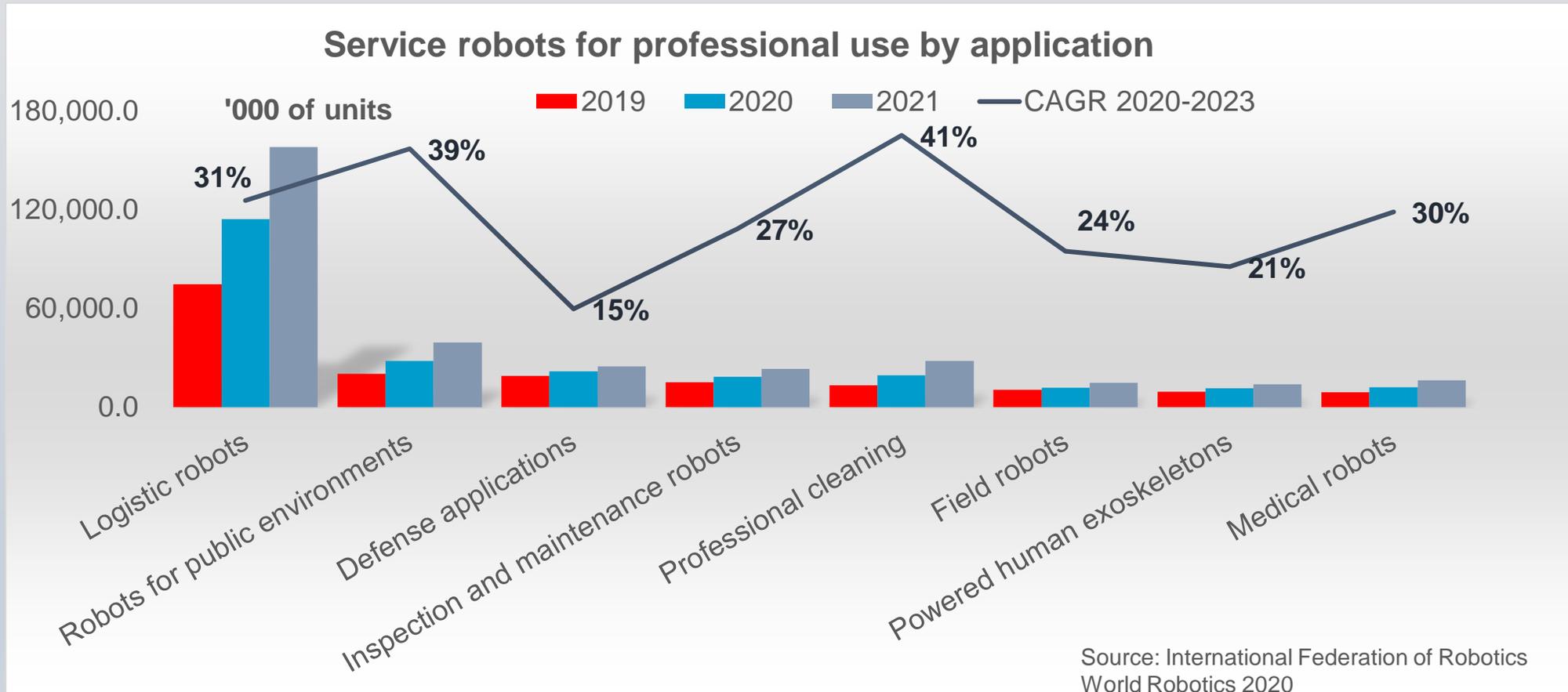
Service robots for personal/domestic use by origin



■ Europe ■ Americas ■ Asia/Australia

Source: International Federation of Robotics

Service robots



“AI has the potential to rehumanize work, giving us more time to be human, rather than using our time to work like machines”

Paul R. Daugherty and H. James Wilson



Reimagining work processes



Fusion skills

- Not just speeding up work tasks, but allowing workers, managers and executives to completely reimagine processes
- Human and machine skills combined create better outcomes than working independently
- Human and machine hybrid activities

Source: *Human + Machine – Reimagining Work in the Age of AI* by Paul R. Daugherty and H. James Wilson

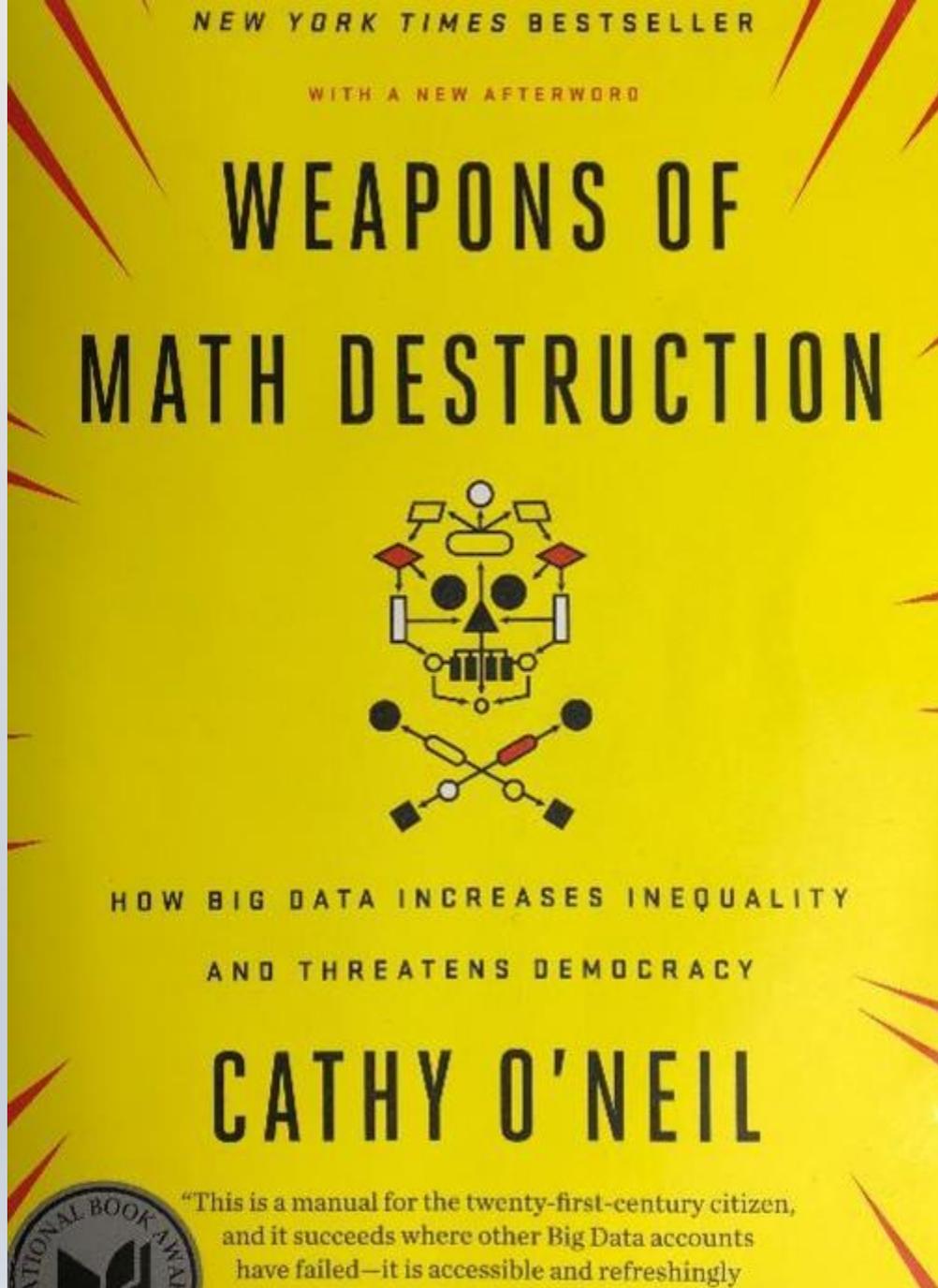
Be aware of the risks

The risk of discrimination

- Who gets into the universities?
- Who can climb the property ladder?
- Which teachers are fired?

Let's not forget:

Machine learning systems are set up by people!



Don't overestimate the technology

Moravec's Paradox*

What is simple even for children (e.g. sensorimotor and perception skills) is difficult for machines. And vice versa.

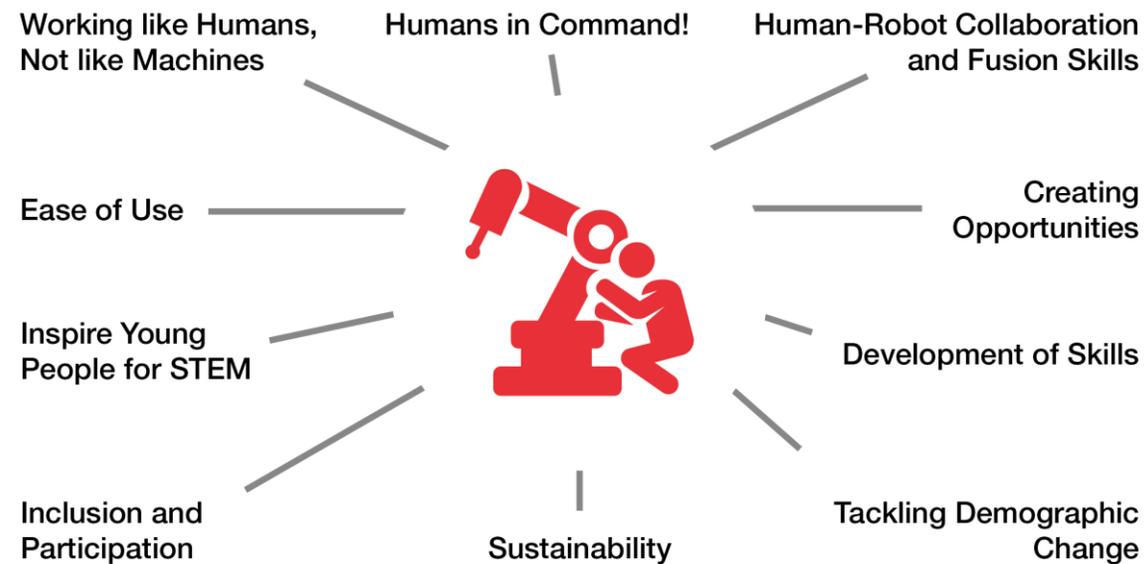
** after roboticist, AI researcher and futurist Hans Moravec*



Europe is very concerned about the Future of Work



The Good Work Charter of the European Robotics Industry 10 Focus Areas to Shape the Future of Work



Source: EUnited Robotics – Good Work Charter

Cultural and national differences in the attitude towards robots and AI

Europe

Trustability
Explainable AI

strong competences in
hardware engineering

high ethical standards
very concerned, critical,
fearful society

America

Data driven SR start-ups
Strong VC support

advantages in data
collection and AI

de-regulated, liberal
economy

Asia

Financial support
Technology enthusiasts

strong competences in CE
and hardware engineering

Embracing new technology
ELSE issues not a concern

Take home messages

Robots and AI can help in decision making

Responsibility stays with humans/organizations developing and using the systems

Be aware of the risks, but also seize the opportunities

Use your competences and address real market needs

Education and skills are most important elements to build trust