2020 World Manufacturing Report

Manufacturing in the Age of Artificial Intelligence

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WORLD MANUFACTURING FOUNDATION

World Manufacturing Forum 2020

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Livestreamed from Cernobbio, Como

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THE WORLD MANUFACTURING REPORT JOURNEY

2018

2019

2020

Why AI in Manufacturing?

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- **Artificial Intelligence** is not just a technology but is increasingly being part of our daily lives.

- Manufacturing is an important driver for **societal well-being**: how can AI enhance that role?

- **Understanding the potential of AI** - its implications to organisations and its applications - is becoming increasingly relevant for many citizens, companies, and governments.

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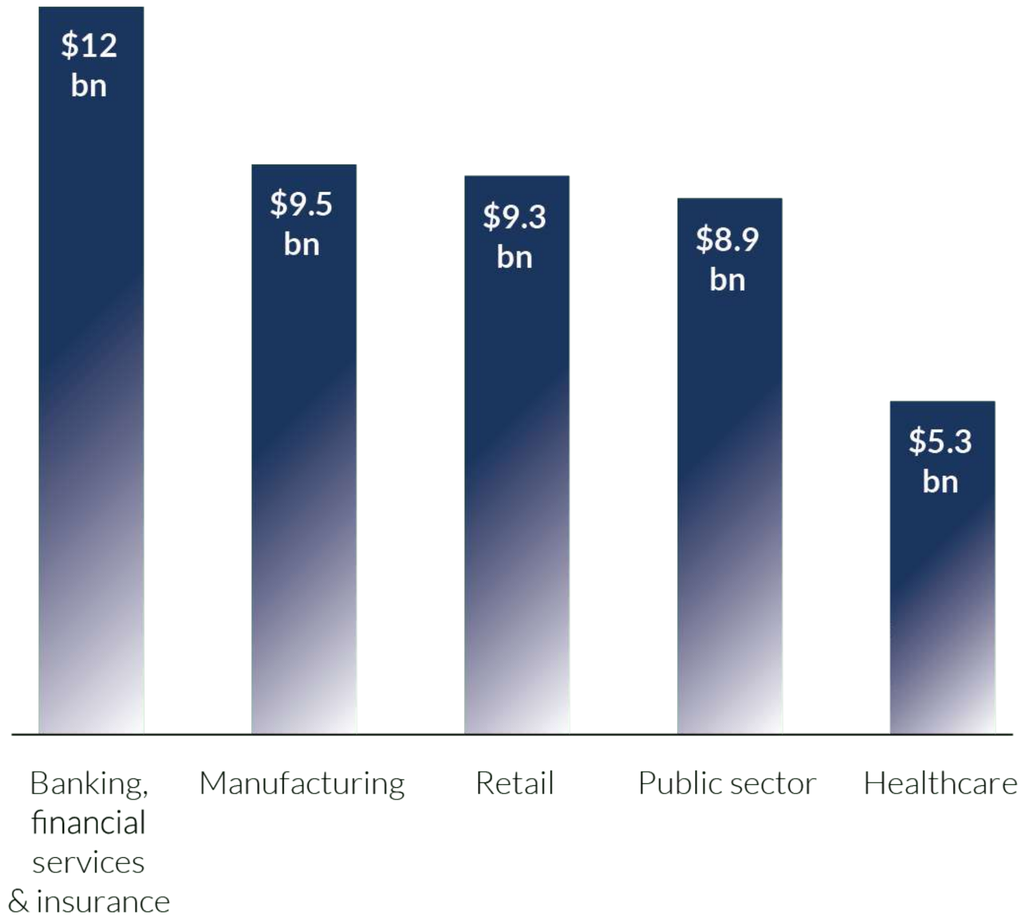
AI in Manufacturing is increasing in relevance

Projected AI spending by industry (2021)

(Source: Atos)



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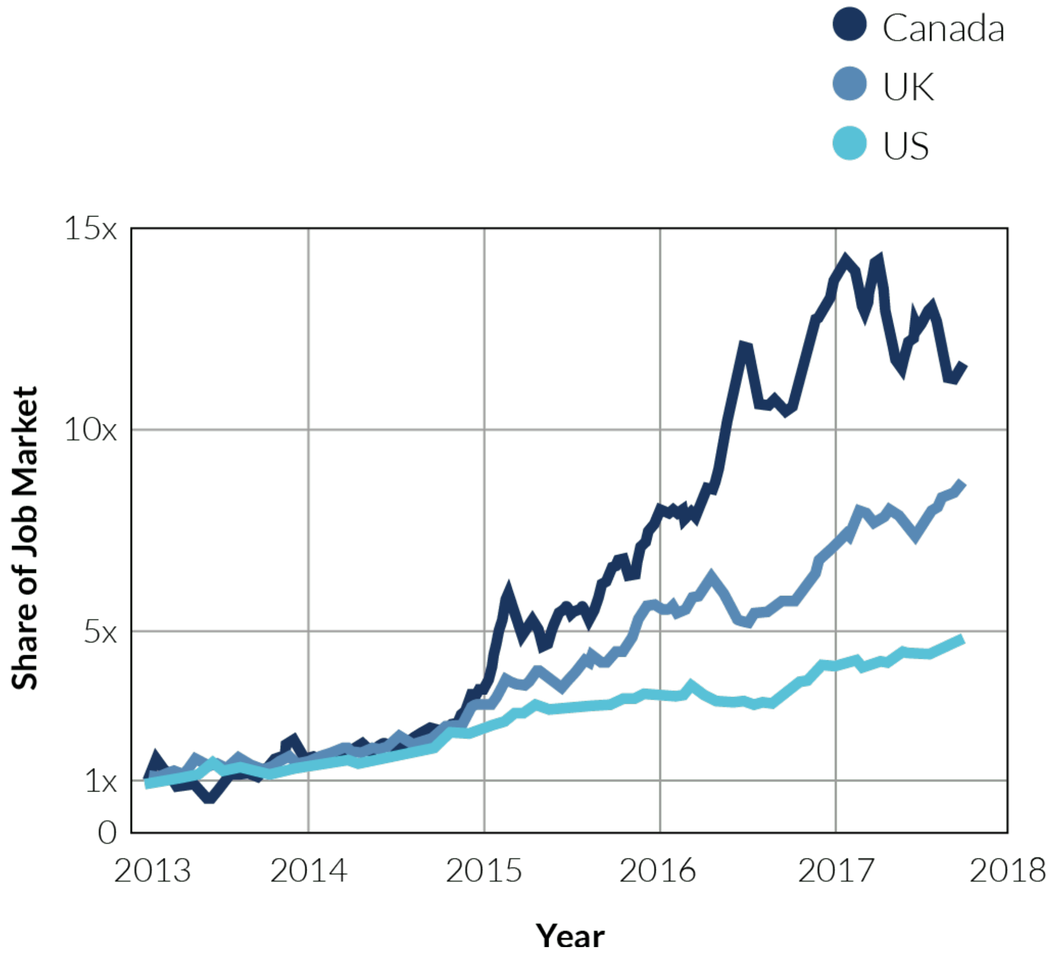
AI in Manufacturing is increasing in relevance

Share of jobs requiring AI skills

(Source: Indeed.com)



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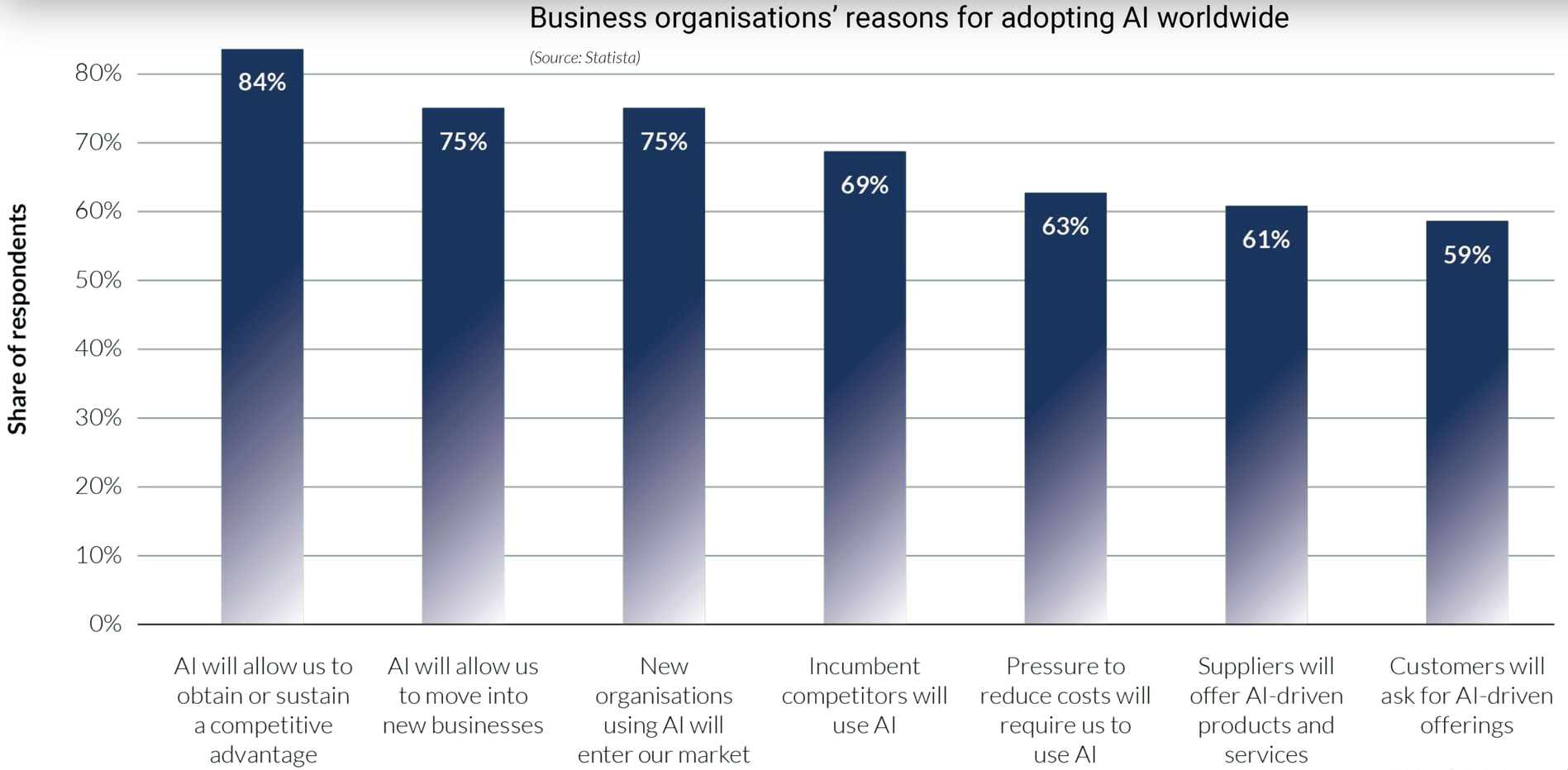
Companies are increasingly adopting AI to drive competitive advantage



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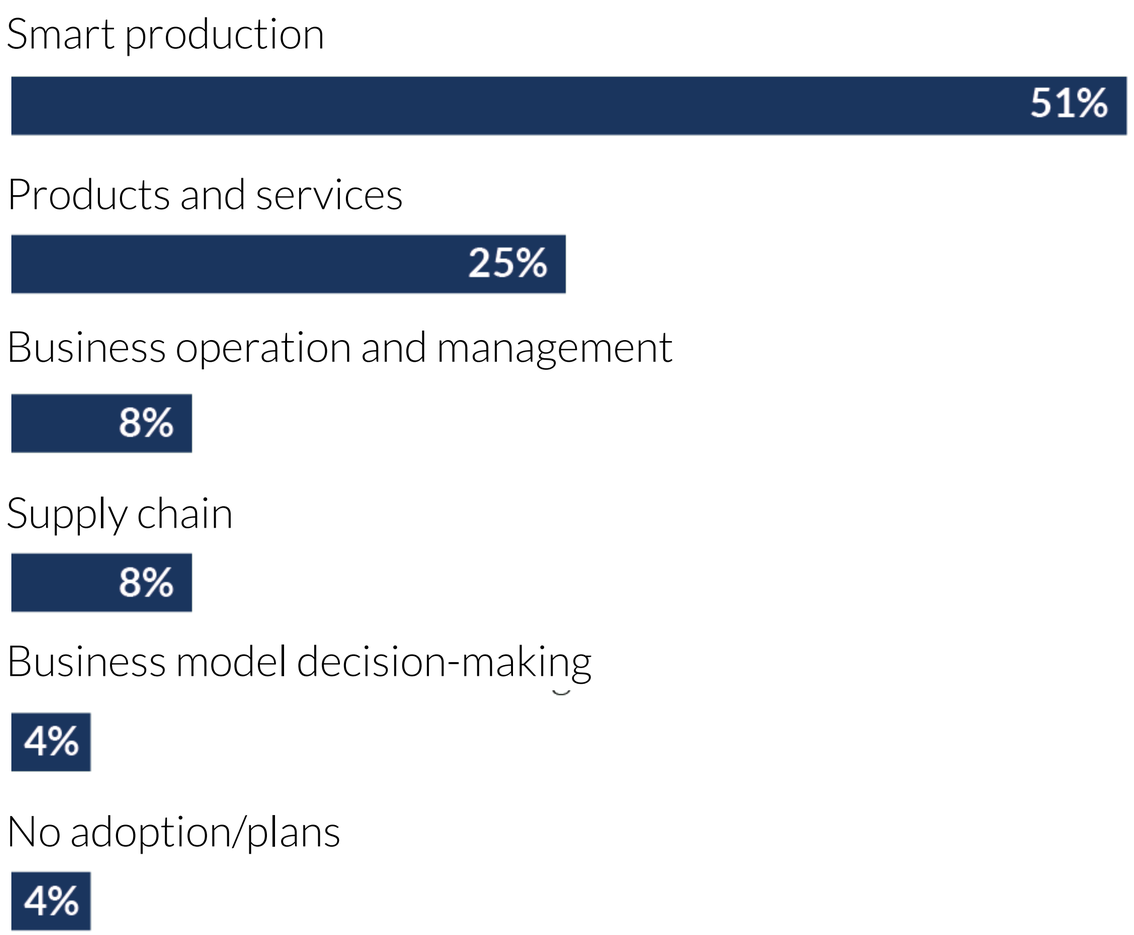
Companies are increasingly adopting AI to drive competitive advantage

Key fields for AI adoption

(Source: 2019 Deloitte survey on AI adoption in manufacturing)



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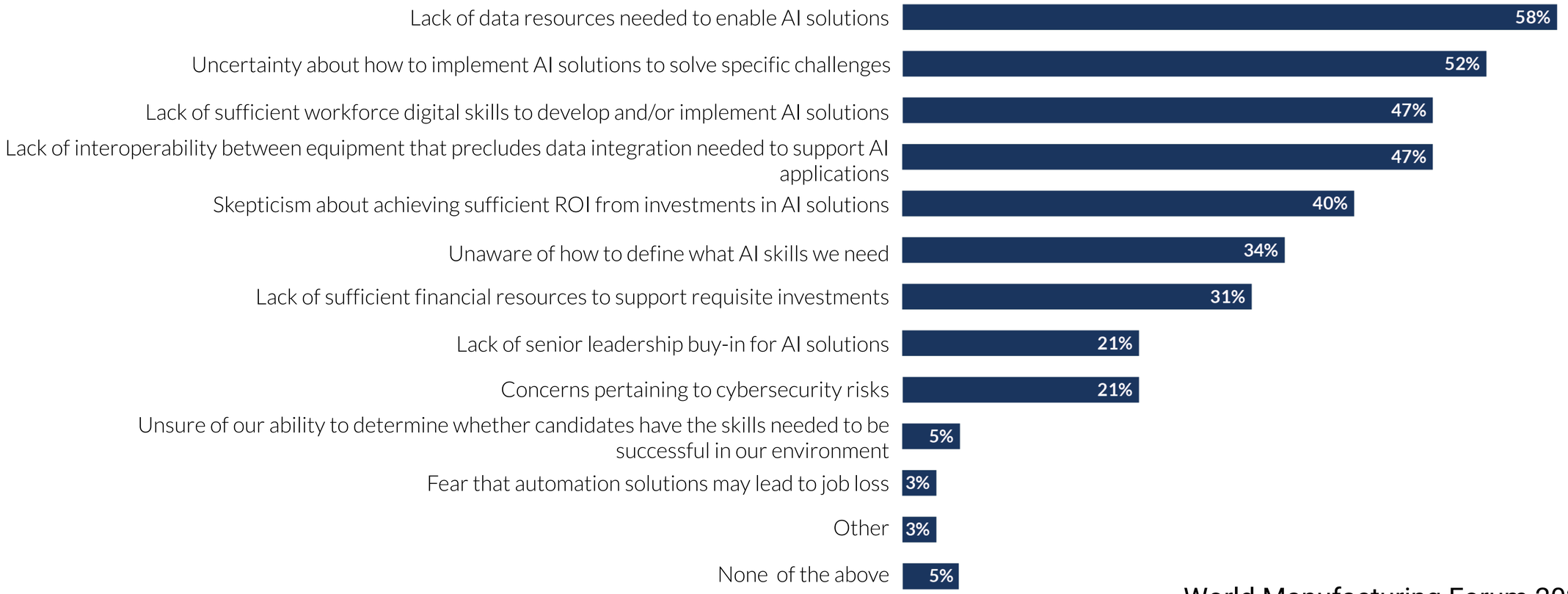
Barriers remain and are holding back companies from adopting AI

Barriers to AI adoption

(Source: MAPI Foundation)



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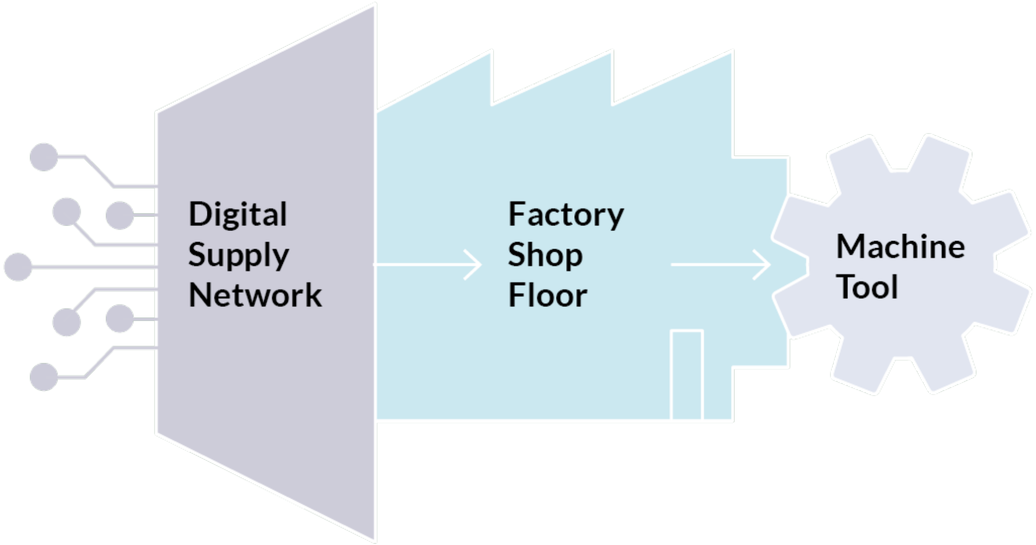
How can AI transform Manufacturing?

AI applications in manufacturing

(Source: World Manufacturing Foundation)



Core capabilities targeted at each level

(Source: World Manufacturing Foundation)

	DSN	Factory	Machine
resilience	●		
agility	●	●	
risk	●		
flexibility	●	●	
quality		●	●
dynamics		●	
safety		●	●
efficiency			●
adaptability			●

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Relevant skills are needed to work with AI

- **Foundation Skills**
- **Core Manufacturing Skills**
- **AI Skills**
- **Skills for Trustworthy AI**
- **Transversal Skills**

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Key Ethical Challenges Need to be Addressed

Transparency

Privacy and Data Protection

Technical Robustness and Safety

Human Agency

Lawfulness and Compliance

10 Key Recommendations

by the World Manufacturing Foundation

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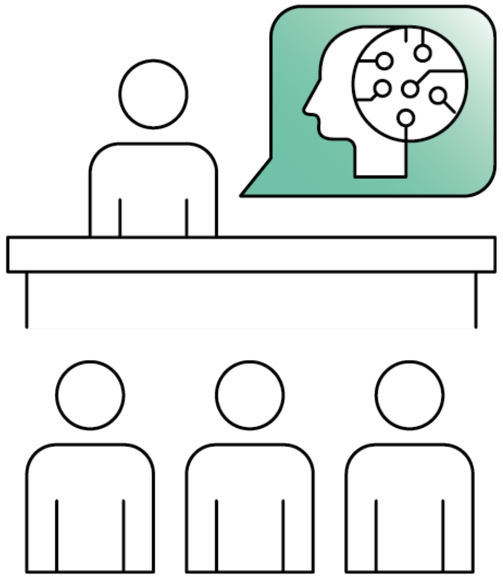
1 Foster Public Conversations to Increase Understanding and Build Trust in AI Systems



- Educate the society on the importance and capabilities of AI
- Correct misconceptions about AI
- Discuss and address the socio-economic impacts of AI

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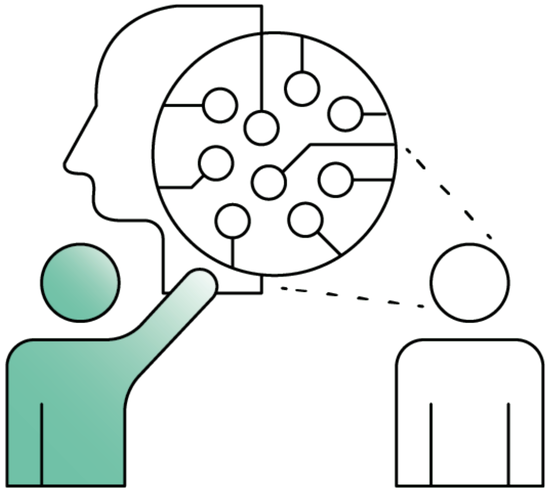
2 Manage Manufacturers' Expectations of AI Capabilities



- Choose the optimal AI solution based on the company's needs, resources, and capabilities
- Understand the limitations of AI and act to address them
- Encourage sharing of best practices on AI use cases

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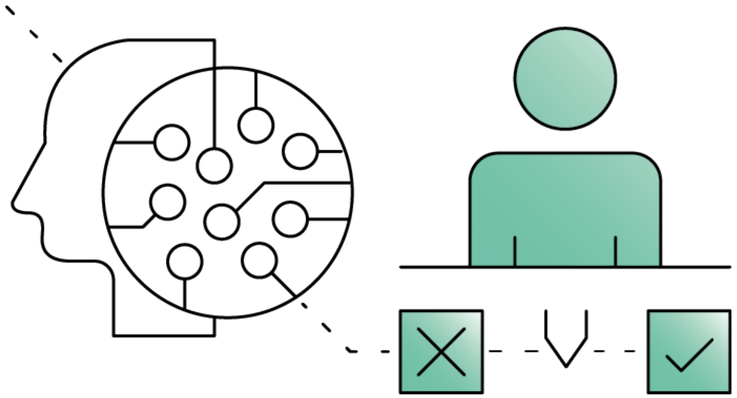
3 Implement Ethical Considerations throughout the AI Life Cycle



- Consider ethical implications in the ideation, development and implementation of AI projects
- Ensure that AI systems do not discriminate
- Promote interdisciplinary teams working in AI projects

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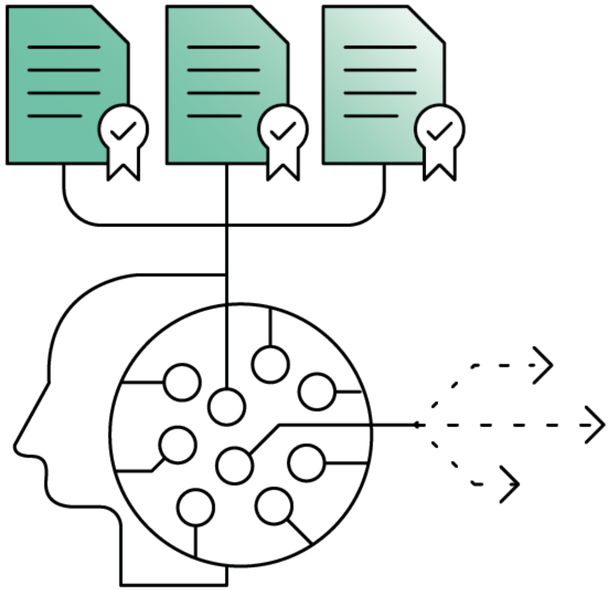
4 Ensure Data Quality, Privacy and Availability



- Ensure data accuracy and completeness
- Promote responsible data collection and management practices
- Explore new ways of trusted data sharing

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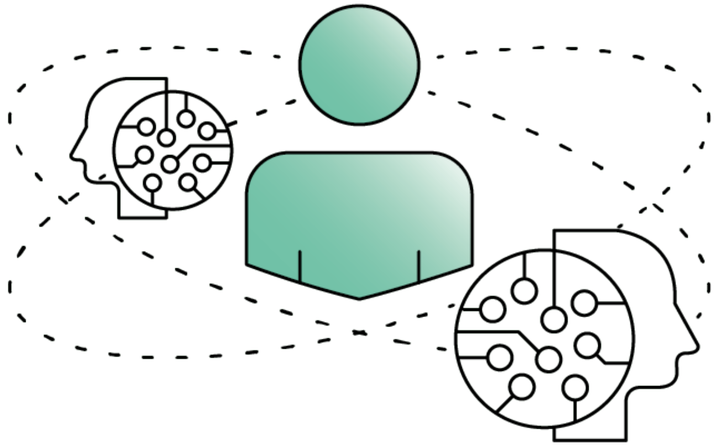
5 Put Humans at the Centre of AI Work Environments



- Prepare workers psychologically for a future with AI
- Empower humans to enhance AI capabilities and vice versa
- Increase acceptance by making AI explainable and transparent to workers

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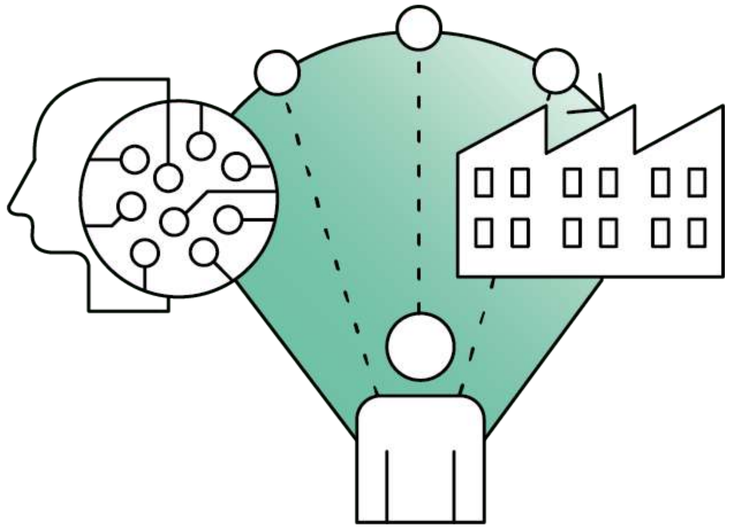
6 Ensure AI Strategic Alignment across the Entire Organisation



- Perform strategic exercise when making decisions related to AI
- Ensure that voices from across the organisation are heard in AI projects
- Devise an AI change management strategy for the entire organisation

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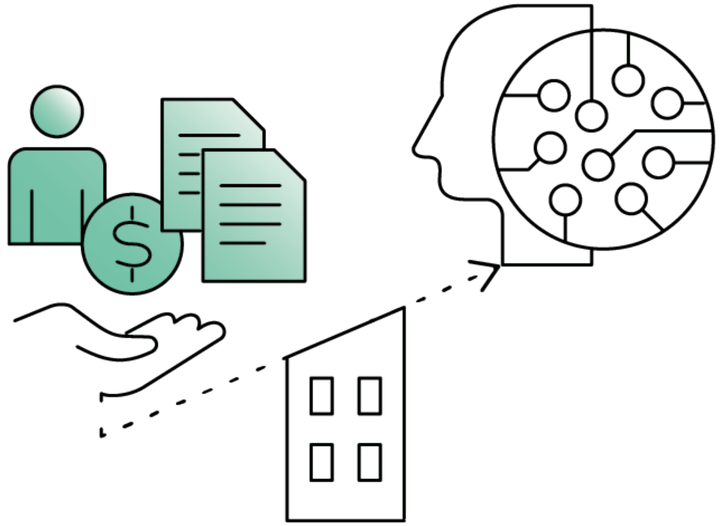
7 Support Manufacturing SMEs in their Journey towards AI



- Provide incentives to encourage uptake of AI in SMEs
- Support SMEs in building a skilled workforce
- Promote alliances and platforms to share data and other valuable resources

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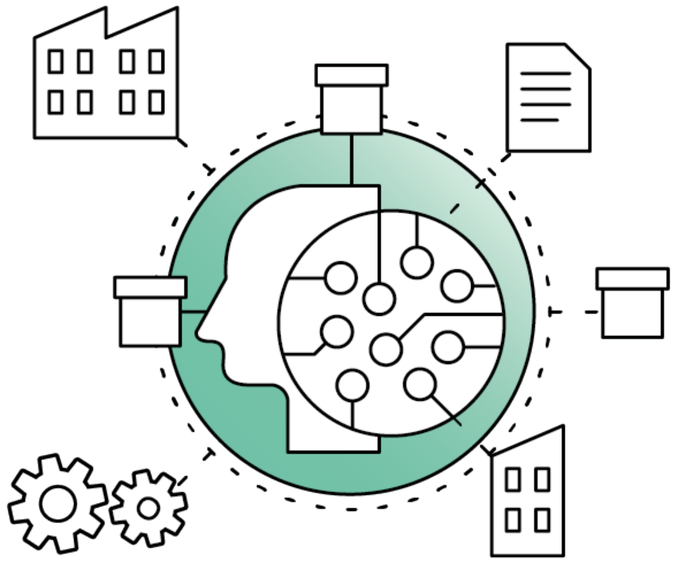
8 Promote AI to Support Resilient Supply Networks



- Leverage on AI to detect and respond to disruptions in supply networks
- Exploit AI capabilities to optimise day to day operations
- Use AI to develop new approaches to solving problems and create new business models

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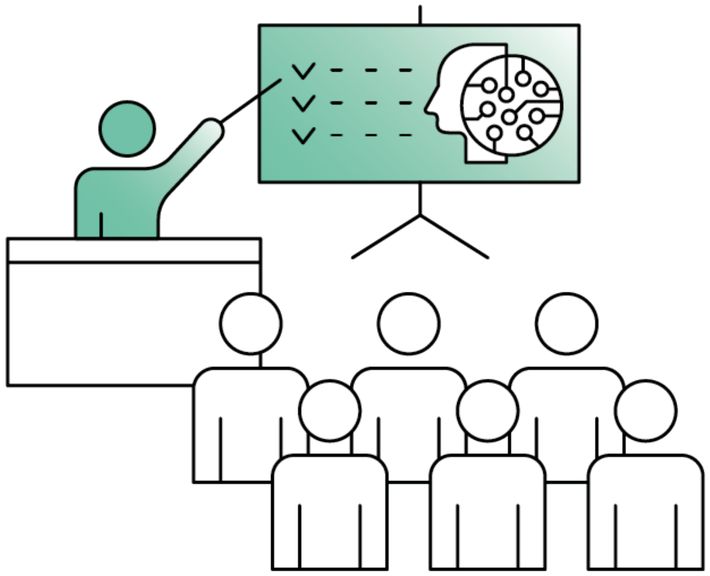
9 Educate and Train the Current and Future Workforce to be Prepared to Work with AI



- Teach both technical and human-centric skills needed to work with AI
- Integrate AI education in different academic disciplines
- Leverage on AI to make learning more effective and inclusive

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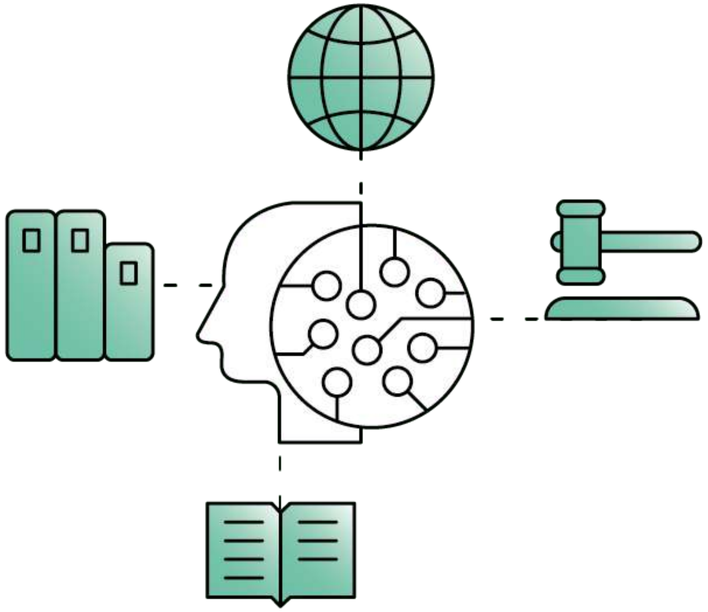
10 Implement Standards, Policies, and Regulations to Guide a Sustainable AI Adoption



- Evolve standards, policies and regulations to fast-changing developments in AI
- Develop over-arching principles or guidelines that can be adopted in policy formulation globally
- Establish standards to guide the development of trustworthy AI systems

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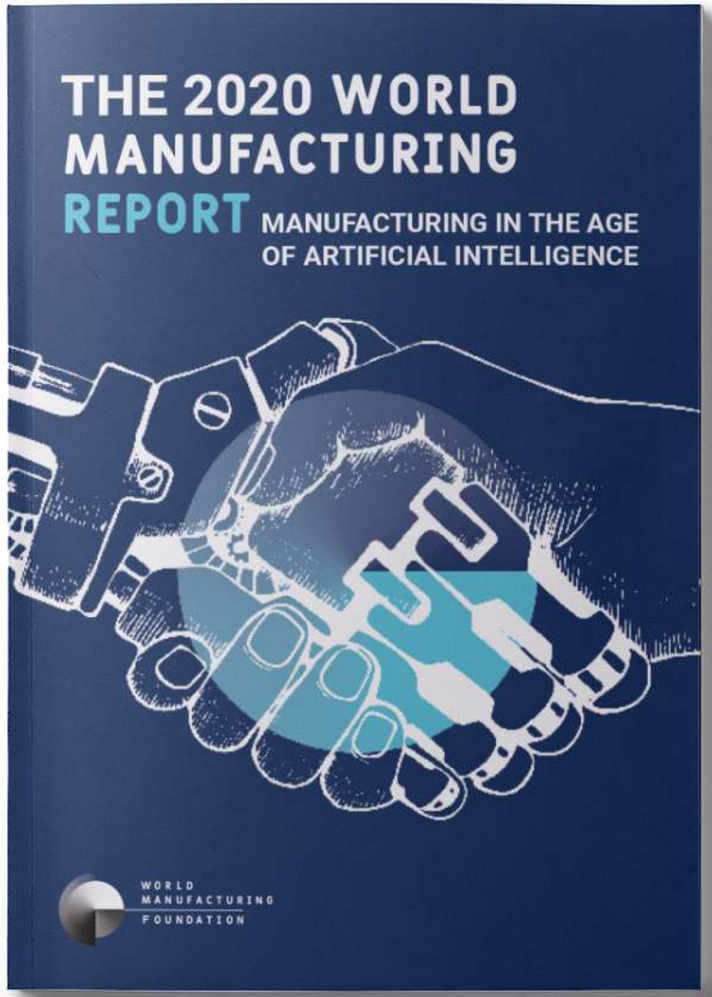

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50+ Contributors globally

30+ Nationalities represented

Young Manufacturing Leaders' Essays

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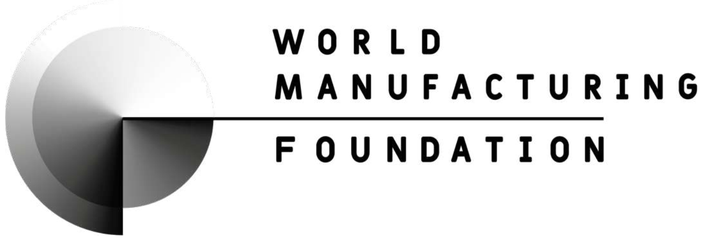

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