CallaghanInnovation
New Zealand's Innovation Agency

Innovation:

Thrive or Survive

The world in 2040

50% of all cars sold are autonomous

65% of people live in urban areas
9.15B world population (7.63B in 2018)

AR/VR* is the ubiquitous viewing platform

China is the world's largest economy

India is the world's 2nd largest economy

AI ** everywhere

170 billion connected devices (40b in 2018)

47% of jobs have been automated

+1.62°C average temperature rise

54% of vehicles sold per year are electric

180m on the move due to climate change

$160USD per barrel of crude oil (up from $70USD)

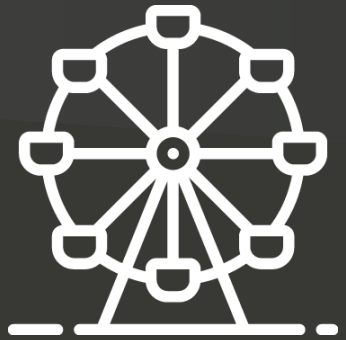
*Augmented & virtual reality
** Artificial intelligence

http://www.quantumrun.com/future-timeline/2040; https://www.pwc.com/gx/en/world-2050/assets/pwc-world-in-2050-summary-report-feb-2017.pdf; https://esa. un.org/unpd/wup/; https://www.iom.int/news/iom-migration-research-series-no-31-migration-and-climate-change

Global Megatrends Driving Change

Changing World Order

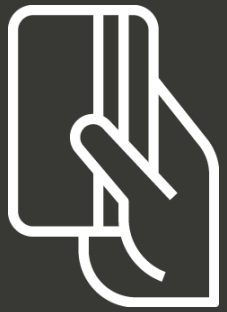
Changing Climate



Changing Infrastructure

Healthcare Revolution

Changing Demographics

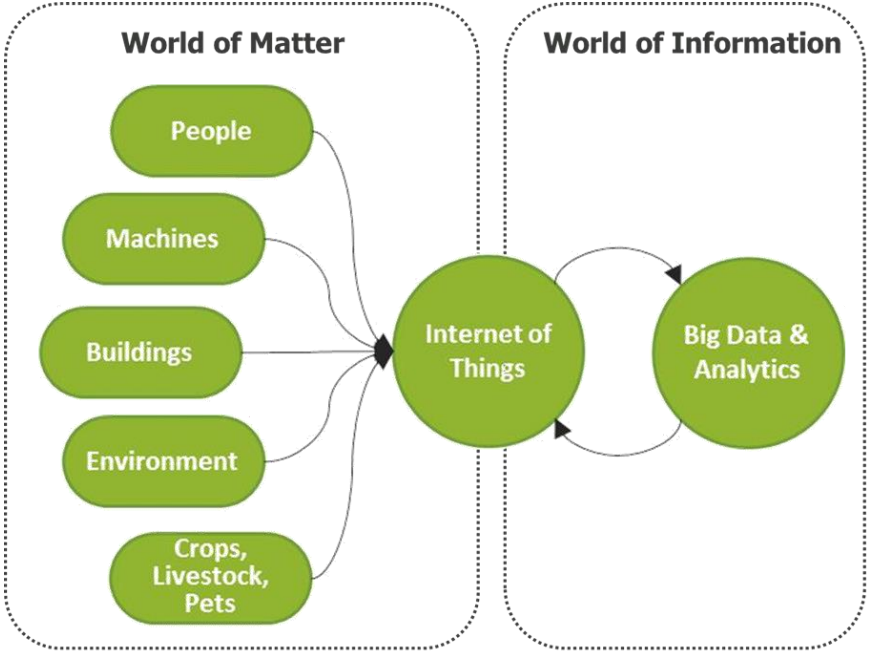


The Ethical/Empowered Consumer

Future of Work

Future of Business

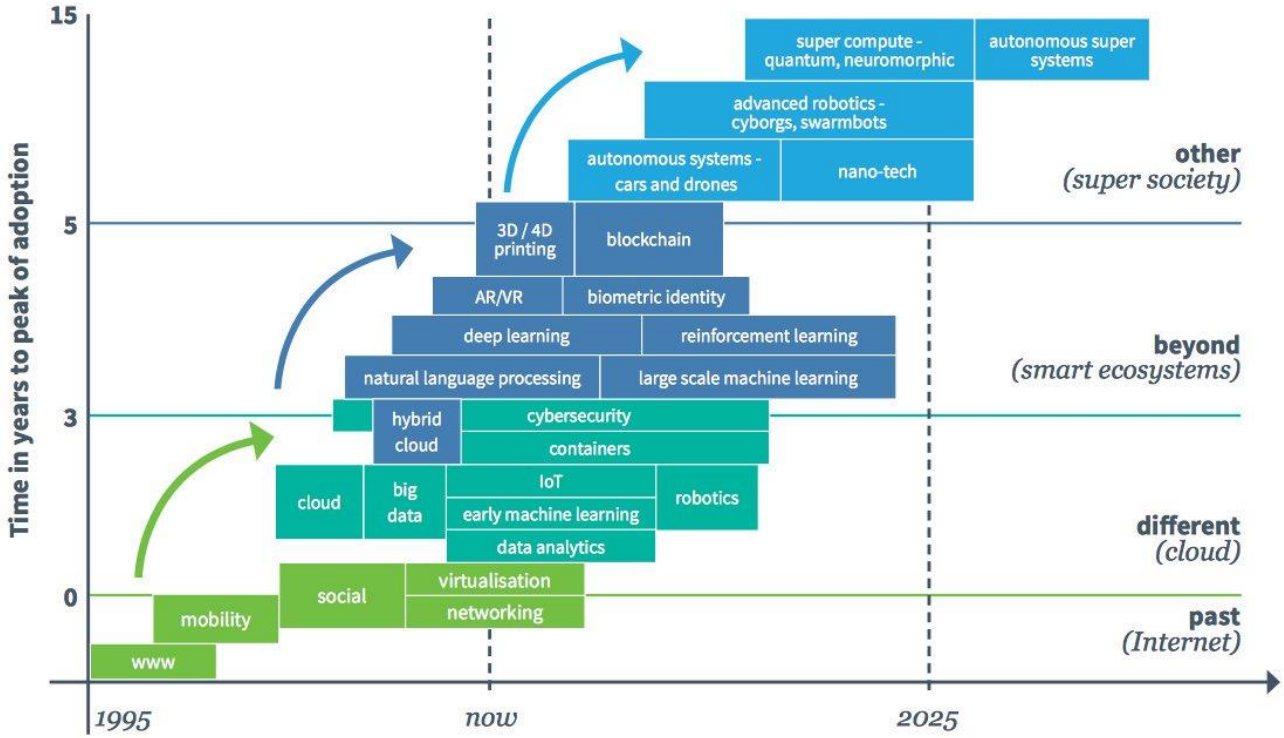
Industrial Internet Revolution



Industry	Big Data-related terms
Oil and Gas	Intelligent oilfield
Healthcare	Precision medicine, quantified self, digital health
Food & Beverage	Precision Nutrition
Agriculture	Precision agriculture
Automotive	Intelligent transportation systems, autonomous X
Manufacturing	Industrial internet, Industrie 4.0, Advanced manufacturing
Utilities & Energy	Smart grid, Smart buildings, Home Energy Management
Construction	BIM2.0, Intelligent Buildings
Consumer Goods	Recommendation engines, Nudge analytics, Quantified Life

"The intersection between the world of data, designs, and ideas, and the physical world of materials, machines, and living things"

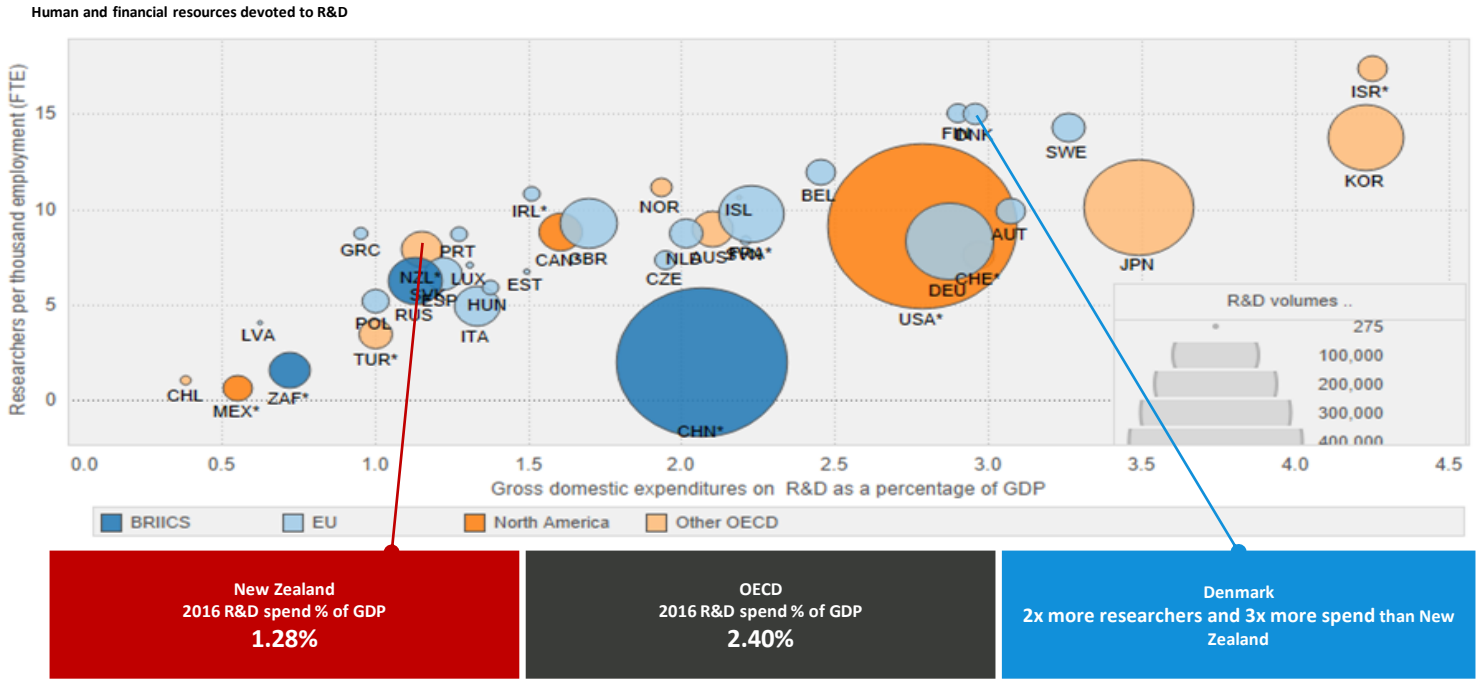
Horizons of technology disruption



source dimension data via @mikequindazzi

NZ invests half as much as other countries in innovation

New target: R&D spend at 2% of GDP by 2027



New Zealand
2016 R&D spend % of GDP
1.28%

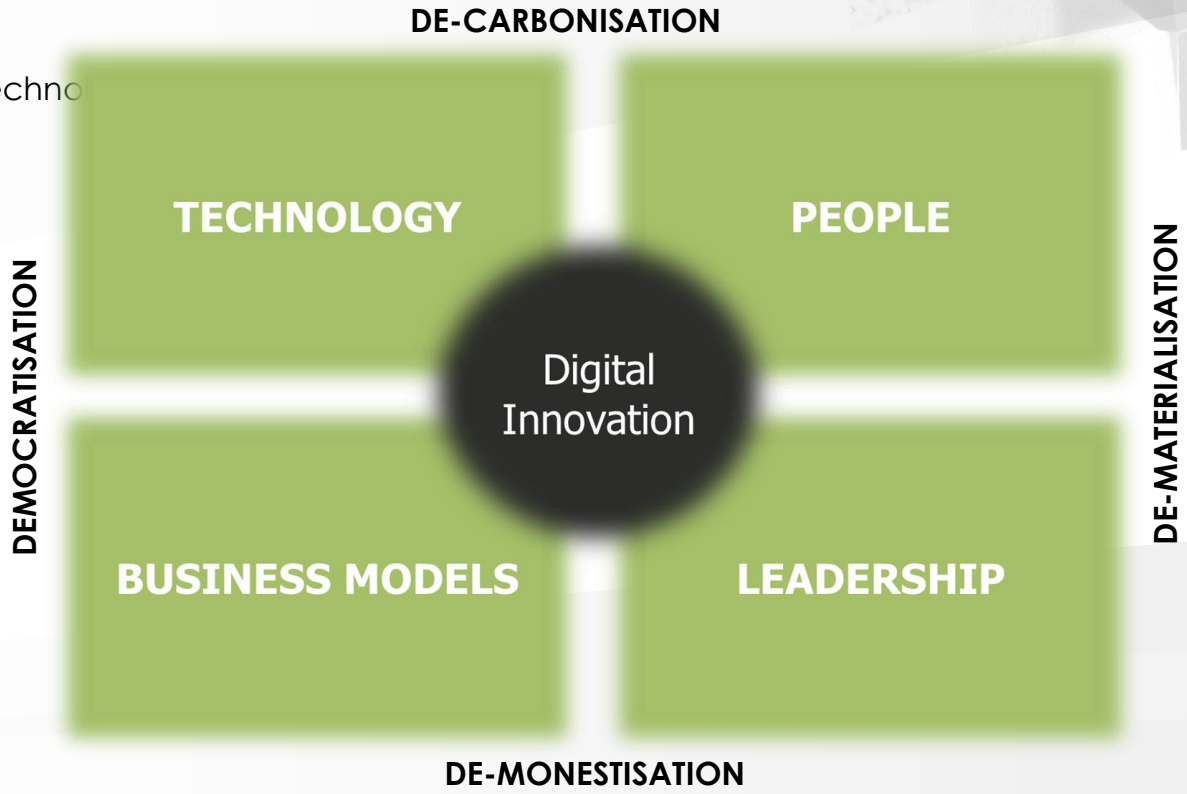
OECD
2016 R&D spend % of GDP
2.40%

Denmark
2x more researchers and 3x more spend than New Zealand

Source: OECD, Main Science and Technology Indicators, January 2017

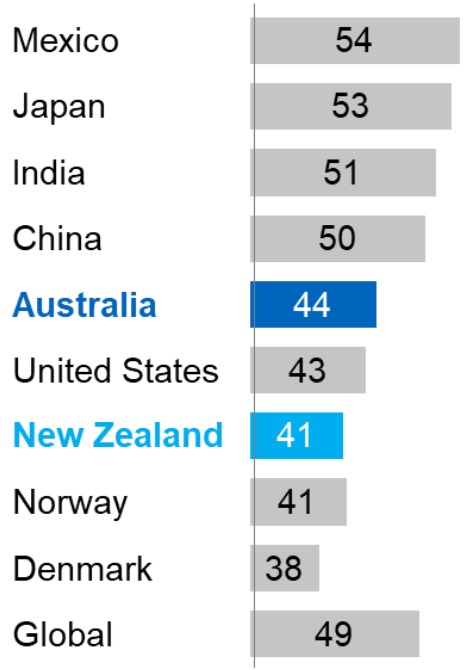
Flow on effects of technology revolution

Flow on effects of techno

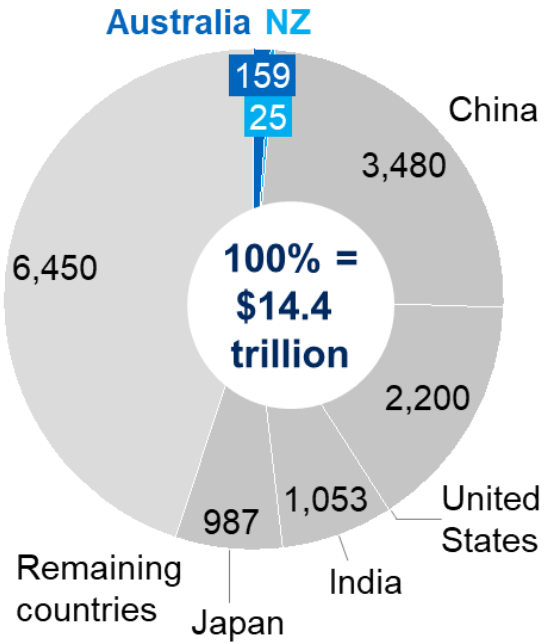


McKinsey analysis shows scale of impact

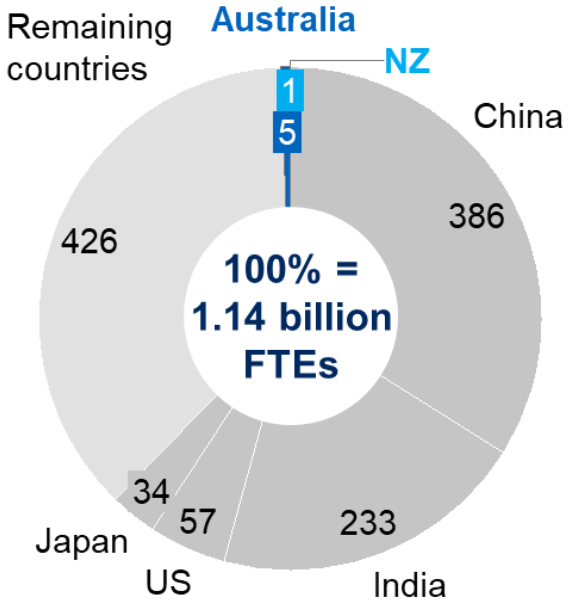
Automation potential, %



Wages impacted, $Bn

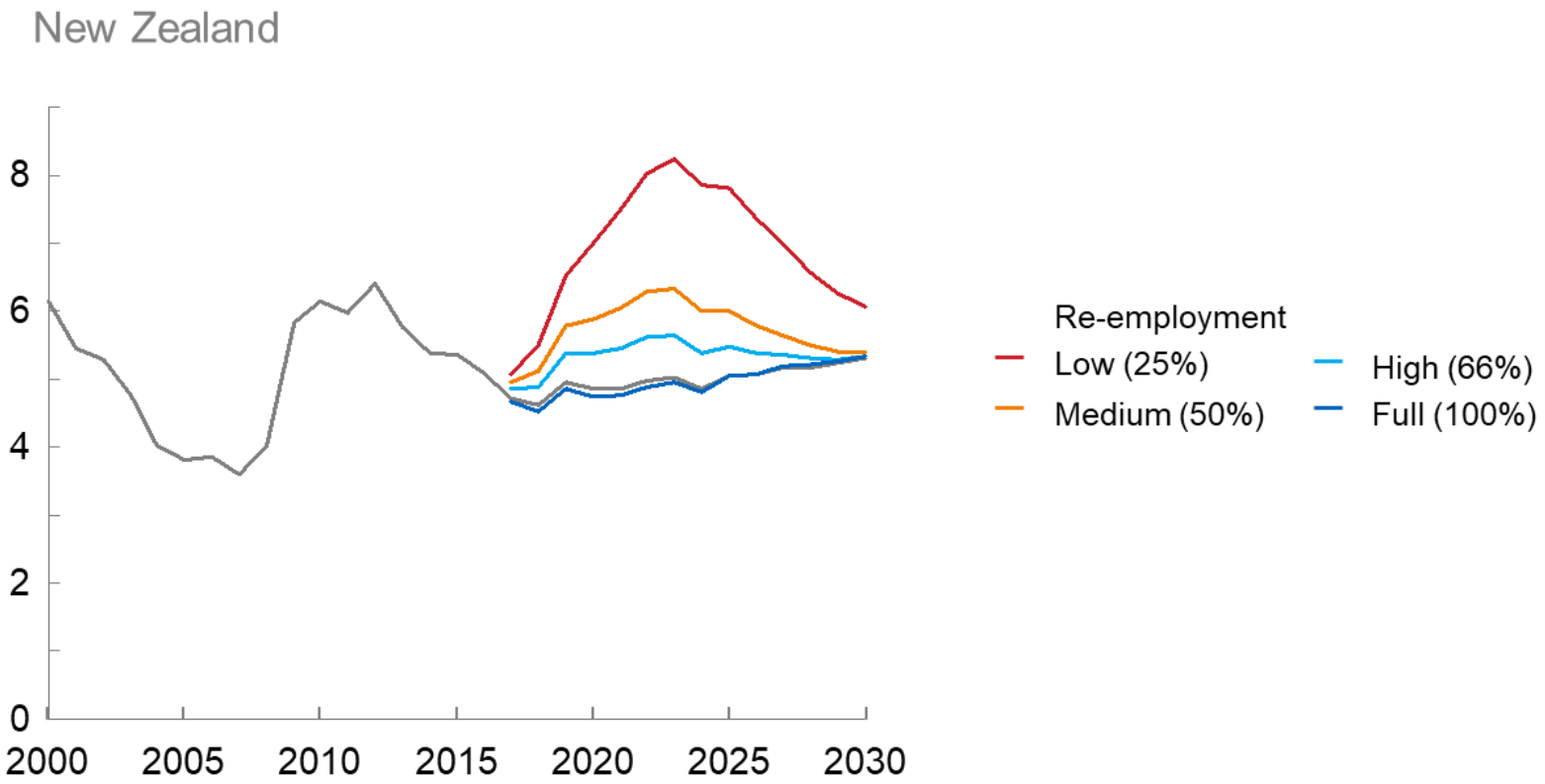


Labour impacted, Mn FTE



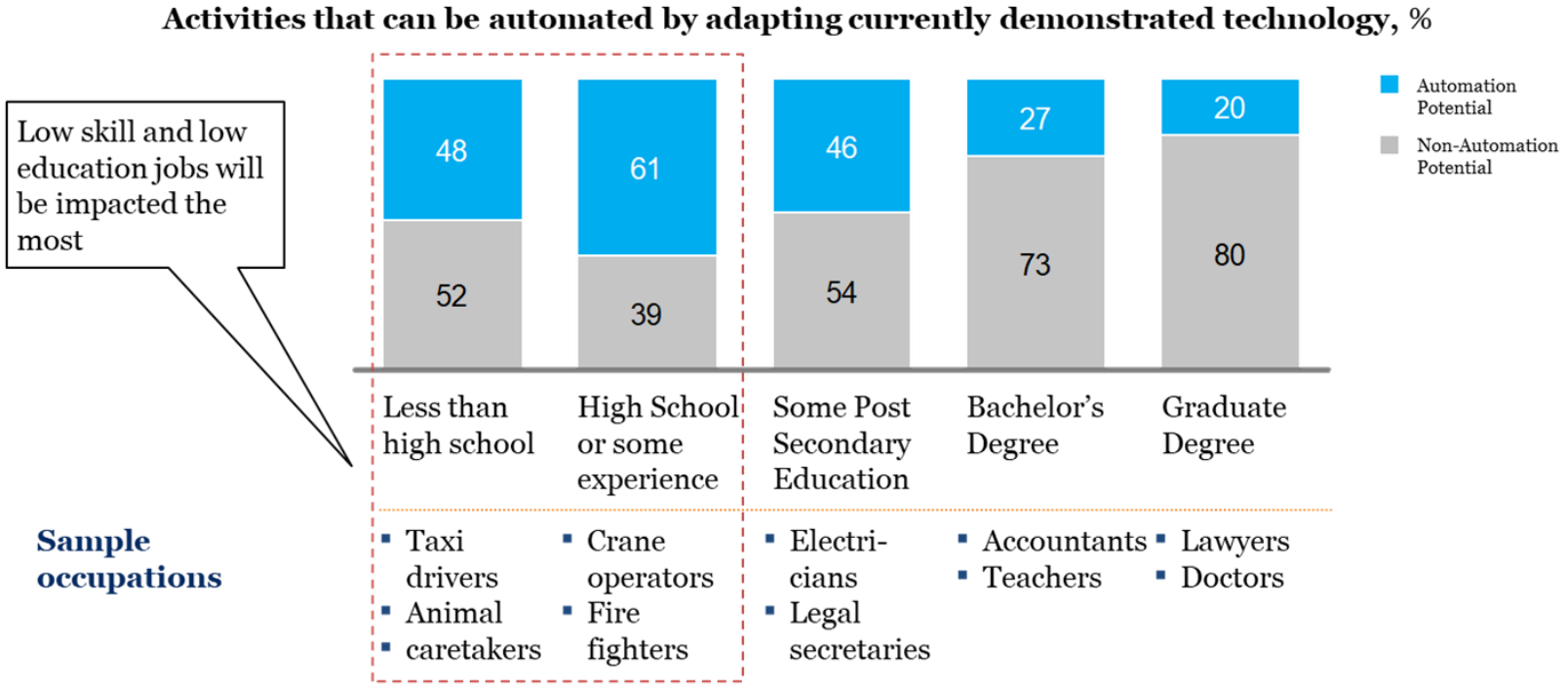
Source: McKinsey & Company

The dilemma is the transition, less so the end game



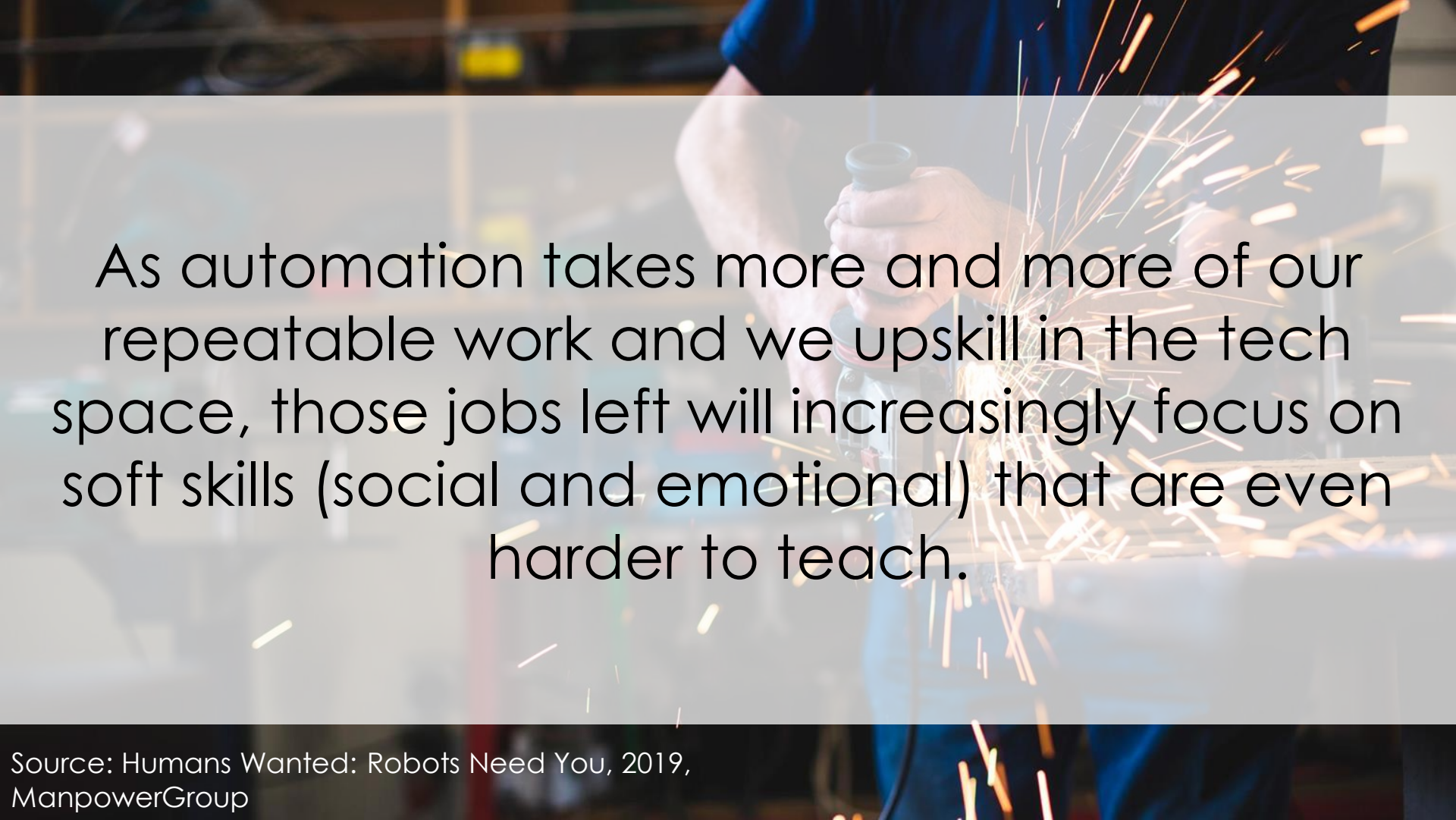
Source: McKinsey & Company

How do we solve inequality issues?



Will automation technologies increase leverage and strengthen 'winner-takes-all'?

Source: McKinsey & Company



As automation takes more and more of our repeatable work and we upskill in the tech space, those jobs left will increasingly focus on soft skills (social and emotional) that are even harder to teach.

Source: Humans Wanted: Robots Need You, 2019, ManpowerGroup

84% of employers will upskill their current workforce versus 21% in 2011

Source: Humans Wanted: Robots Need You, 2019, ManpowerGroup

Over half of all employees will require significant reskilling and upskilling by 2022

Talent Strategies for the Skills Revolution

01 BUILD

Invest in learning and development

02 BUY

Go to market to attract the talent that cannot be built in house

03 BORROW

Cultivate communities of talent beyond the organization

04 BRIDGE

Redeploy, reassign or release people to new roles inside or outside the

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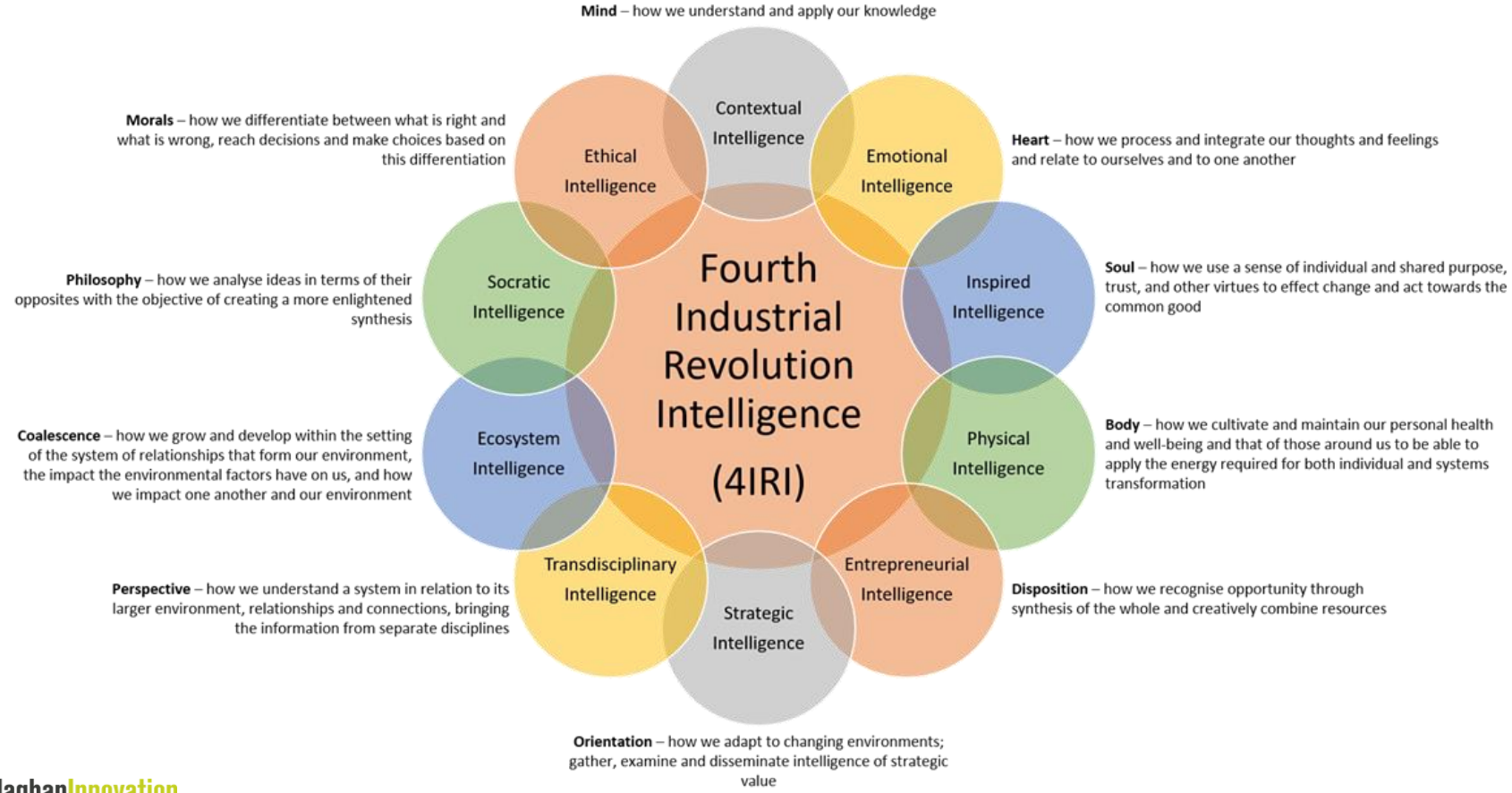
Source: Humans Wanted: Robots Need You, 2019,

FOURTH INDUSTRIAL REVOLUTION INTELLIGENCE MODEL – ©Cobus Oosthuizen, PhD



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ISRAELI INNOVATION: PUTTING THE TECH IN AGRITECH

ISRAEL HAS OVER **500 AGRITECH START-UPS** AND COMPANIES. **50%** OF THEM WERE FOUNDED IN THE LAST FEW YEARS

GREENSOIL INVESTMENTS

With offices in Reanana and Toronto, and $ 100m under management, GreenSoil Investments funds companies in the agro & foodtechnologies and building innovation sectors. Founded in 2011, GreenSoil's agro & foodtechnologies fund has a portfolio of 8 promising companies and is the largest dedicated fund in this space in Israel.

START-UP NATION CENTRAL

Start-Up Nation Central is an Israel-based non-profit that serves as a gateway to Israeli innovation. The organization leverages its in-depth knowledge of Israel's innovation sector to introduce business leaders, governments, and NGOs from across the globe to the most relevant people and technologies that address their critical needs.

Scaleup .nz

Scale Up New Zealand

- **A new, free online platform that:**
- Collects and organises accurate and up-to-date information on businesses in the New Zealand innovation ecosystem
- Allows entrepreneurs, funders, analysts and investors to search for information in multiple ways
- Enables them to connect with each other for mutual benefit
- Is based on a proven international model

Driving Innovation: Questions to Ask

- ✔ How are you **talking about** what you do? In today's language or **future**?
- ✔ How are **global and sector mega trends impacting** your future?
- ✔ What level of R&D are you undertaking? **Application** of emerging technologies to:
  - New (and adjacent) products and service offerings
  - New customer experience / interactions
  - Operational efficiency / transformation
  - Supply chain interactions and integrations
  - Health and Safety
  - New business models
- ✔ Are you **innovating simultaneously** – product, operational, organisational?

Driving Innovation: Questions to Ask

- ✔ Are you **actively planning** your workforce for transition to **automation** and up-skilling / re-skilling? Are you active in the **global search for talent** in new roles involving AI, Big Data, Blockchain for example?

- ✔ Are you investing in **preparing your leaders with new skills** for leading through the industrial revolution?

- ✔ Have you **mapped your current and future eco-system**s you will be operating in?
  - Actively planning your eco-system approach?
  - Participation in hackathons, incubators and accelerators?
  - Identification of relevant (international) eco-systems partnerships?
  - Identification of acquisition opportunities?

“

One hundred inspired New Zealand entrepreneurs can turn this country around. This is the challenge for us all”

Sir Paul Callaghan, 1947–2012