



# Industry 4.0: the future of Wales

## Creating a sector wide response...

Carolyn Parry  
Project Associate (Wales)

The professional body for the Career Development Sector

# Creating a sector wide response

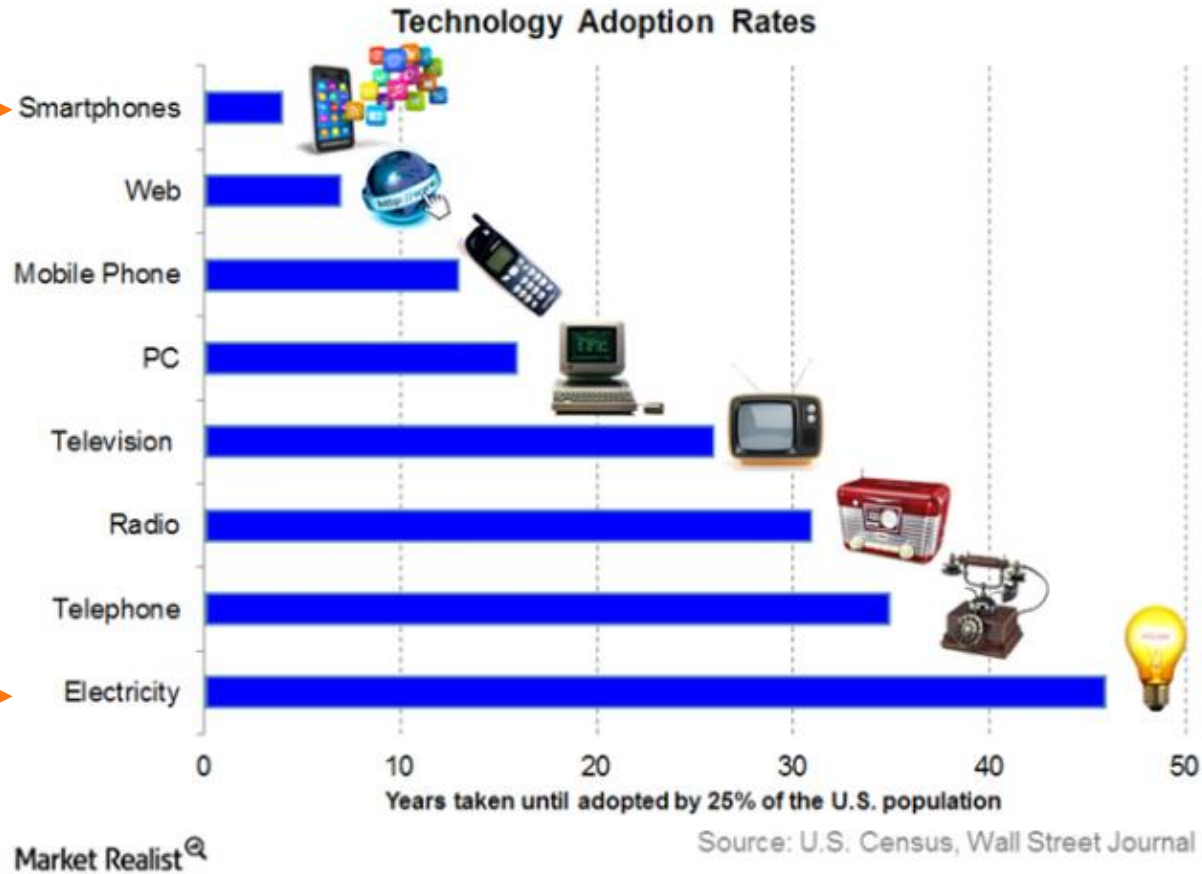


- ▶ Change in action
- ▶ WEF Future of Jobs 2018
- ▶ National Assembly recap
- ▶ Formulating our response

The Future of Work: Will Our Children Be Prepared?

The Future of Work

# The Times, They Are A'changing – fast!



Time it took for technologies to reach 50 million users.

... see more

Product / Technology	Time it Took to Hit 50 Million Users
Airlines	64 years
Automobiles	62 years
Telephone	50 years
Electricity	46 years
Credit Cards	28 years
Television	22 years
ATMs	18 years
Computers	14 years
Mobile Phones	12 years
Internet	7 years
Facebook	4 years
WeChat	1 year
Pokemon Go	19 days

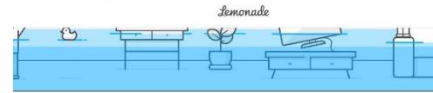




# Tech driven change is everywhere...



Siri



**Instant Everything**  
 Maya, our charming artificial intelligence bot, will craft the perfect insurance for you. It couldn't be easier, or faster.

See the Lemonade App in action

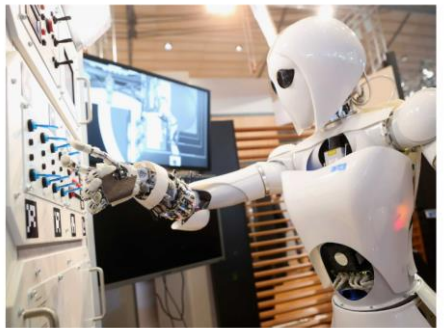
90 Seconds To get insured

3 Minutes To get paid



## BUSINESS INSIDER UK TECH

The results were stunning. AlphaGo beat Lee Sedol convincingly, 4 games to 1. So much for human intuition. And to add insult to injury, the Korea Baduk Association awarded AlphaGo the highest Go grandmaster rank.



AI.L.A., or Artificial Intelligence Lightweight Android, presses switches on a panel it recognizes during a demonstration at the German Research Center for Artificial Intelligence GmbH (Deutsches Forschungszentrum fuer Kuenstliche Intelligenz GmbH) stand at the 2013 CeBIT technology trade fair on March 5, 2013 in Hanover, Germany. CeBIT will be open March 5-9. Sean Gallup/Getty Images

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### Wimbledon 2018: AI uses player emotions to edit highlights

By Bill Wilson  
Business reporter, BBC News  
© 26 June 2018



fitbit Products Why Fitbit Get Motivated App & Dashboard Help

**fitbit versa**

Meet the all-new health and fitness smartwatch that packs personalised insights, 24/7 heart rate, music, apps and 4-day battery into a super lightweight design.

fitbit ionic adidas

A smartwatch with a unique coaching experience.

### How Surgeons Implanted 3D-Printed Titanium Ribs In A Cancer Patient

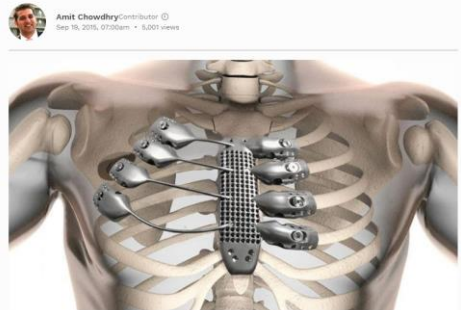


Image credit: Commonwealth Scientific and Industrial Research Organisation (CSIRO)



# Impact on careers and jobs...



pwc | UK

UK home > Services > Economics > Insights > How will automation impact jobs?

### How will automation impact jobs?

We've analysed over 200,000 jobs in 29 countries to explore the economic benefits and potential challenges posed by automation.

## Artificial Intelligence To Create 58 Million New Jobs By 2022, Says Report

Amit Chowdhry Contributor  
Consumer Tech  
Tech enthusiast, born in Ann Arbor and educated at Michigan State

Machines and algorithms in the workplace are expected to create 133 million jobs but 75 million jobs to be displaced by 2022, according to a report from the World Economic Forum (WEF). "This means that the growth of AI will create 58 million net new jobs in the next decade." However, there is expected to be a major shift in the types of jobs created. Specialized work and utilize remote staffing.

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Business > Business News > Economy

## Robots could make 700,000 jobs in Wales redundant so we need to get smart to create new ones

**\$15tn**  
Potential boost to global GDP from AI by 2030

**3%**  
of jobs at potential risk of automation by early 2030s



...which need to last 50 years



# World Economic Forum – September 2018



**“Workforce transformations are no longer an aspect of the distant future...**





**These transformations are a feature of today’s workplaces and people’s current livelihoods, and are set to continue in the near term.”**

*Klaus Schwab, Founder and Executive Chairman,  
World Economic Forum*

# World Economic Forum – September 2018



## The many faces of the robot revolution

	 Humanoid Robots	 Stationary Robots	 Aerial and Underwater Robots	 Non-humanoid Land Robots
Adoption among companies by 2022	23%	37%	19%	33%
First movers	(35%) Financial Services and Investors	(53%) Automotive, Aerospace, Supply Chain	(52%) Oil and Gas	(42%) Automotive, Aerospace, Supply Chain



# World Economic Forum – September 2018

## The Jobs Landscape in 2022



emerging  
roles,  
global  
change  
by 2022

133  
Million

### Top 10 Emerging

1. Data Analysts and Scientists
2. AI and Machine Learning Specialists
3. General and Operations Managers
4. Software and Applications Developers and Analysts
5. Sales and Marketing Professionals
6. Big Data Specialists
7. Digital Transformation Specialists
8. New Technology Specialists
9. Organisational Development Specialists
10. Information Technology Services

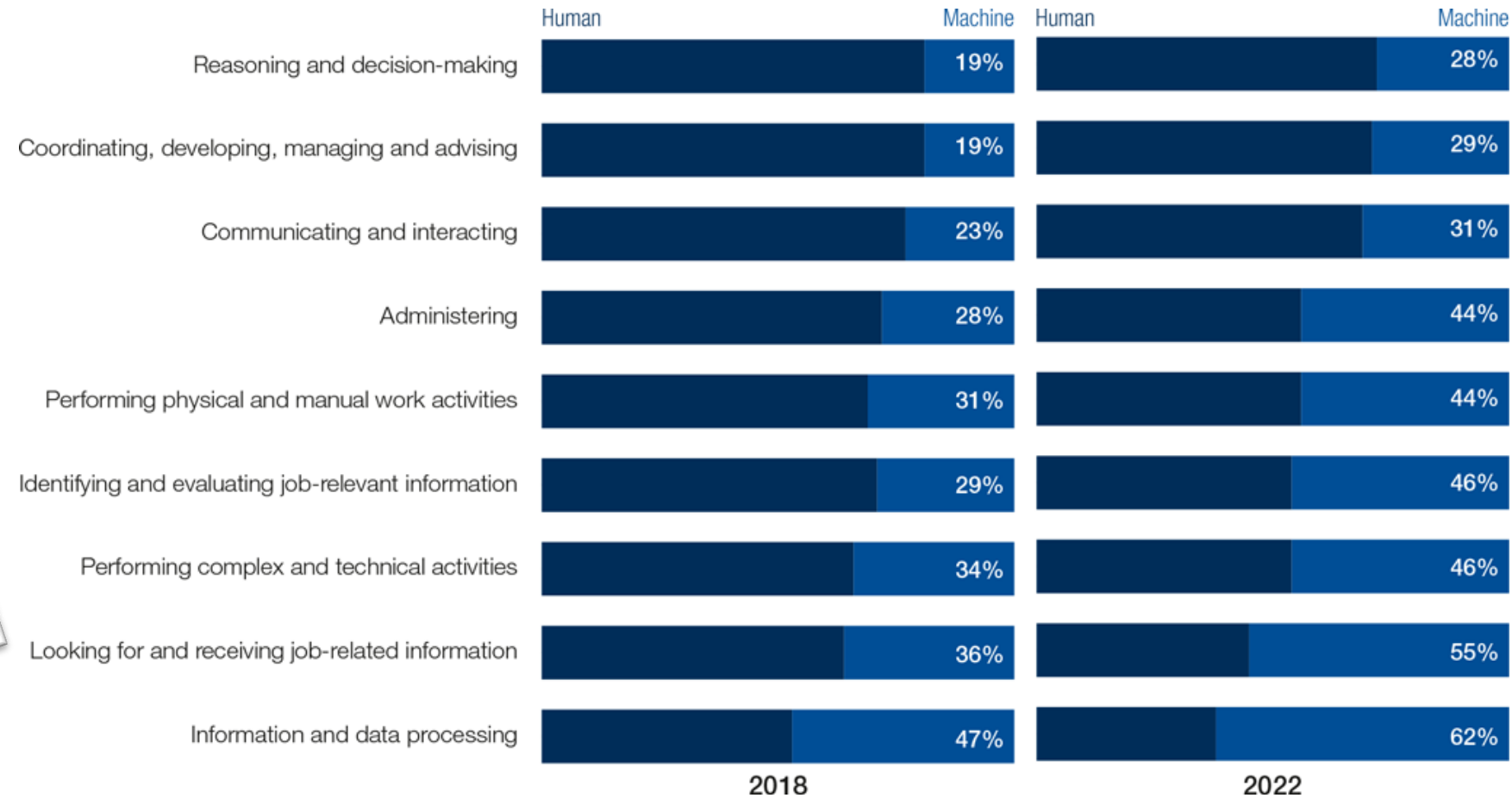
declining  
roles,  
global  
change  
by 2022

75  
Million

### Top 10 Declining

1. Data Entry Clerks
2. Accounting, Bookkeeping and Payroll Clerks
3. Administrative and Executive Secretaries
4. Assembly and Factory Workers
5. Client Information and Customer Service Workers
6. Business Services and Administration Managers
7. Accountants and Auditors
8. Material-Recording and Stock-Keeping Clerks
9. General and Operations Managers
10. Postal Service Clerks

# World Economic Forum – September 2018



# World Economic Forum – September 2018



By 2022 everyone will need  
an extra

**101**  
days of  
learning



# World Economic Forum – September 2018



## 2022 Skills Outlook

### Growing

- 1 Analytical thinking and innovation
- 2 Active learning and learning strategies
- 3 Creativity, originality and initiative
- 4 Technology design and programming
- 5 Critical thinking and analysis
- 6 Complex problem-solving
- 7 Leadership and social influence
- 8 Emotional intelligence
- 9 Reasoning, problem-solving and ideation
- 10 Systems analysis and evaluation

### Declining

- 1 Manual dexterity, endurance and precision
- 2 Memory, verbal, auditory and spatial abilities
- 3 Management of financial, material resources
- 4 Technology installation and maintenance
- 5 Reading, writing, math and active listening
- 6 Management of personnel
- 7 Quality control and safety awareness
- 8 Coordination and time management
- 9 Visual, auditory and speech abilities
- 10 Technology use, monitoring and control

WORLD  
ECONOMIC  
FORUM

COMMITTED TO  
IMPROVING THE STATE  
OF THE WORLD

# Industry 4.0: the future of Wales Themes



- ▶ Social context of change
- ▶ Equality
- ▶ Retraining and lifelong learning
- ▶ Support for R & D
- ▶ Welsh diaspora and alumni expert networks
- ▶ Training enhanced digital skills
- ▶ Developing post docs in AI and automation related fields

# Industry 4.0: the future of Wales Sectors



“

The technology that we've got in the UK is as good as anywhere else in the world, if not better. We're one of the leading areas.

**Professor Simon Blackmore**  
Head of Agricultural Robotics,  
Harper Adams University

”

- ▶ Emerging technology (inc. cyber and big data)
- ▶ Smart agriculture (drones, robots, test beds, precision S/W & H/W)
- ▶ Continuous and Autonomous Vehicles (5G test bed)
- ▶ Education (new ways of providing lifelong learning)



# Industry 4.0: the future of Wales

## Consequences & challenges



“

In Wales, the problem is that the vast majority, particularly of SMEs, are completely unengaged with the automation agenda. When we talk to businesses..this is just not on anybody's radar, and it's much the same in the public sector.

**Professor Calvin Jones**  
Cardiff University

”

- ▶ Regional Skills Partnerships to reprofile plans
- ▶ Need for quality LMI/planning
- ▶ Aging population
- ▶ Rural nature of Wales
- ▶ Broadband inequality
- ▶ Longer working lives

# Industry 4.0: the future of Wales

## Opportunities

“

Most primary school children will end up in jobs that don't yet exist today. So, how do we start encouraging businesses to think about that kind of longer term planning and engagement with their communities?

**Catherine Phillips**  
Business in the Community

”

### THE WITNESSES CALLED FOR:

- ◆ Careers advice for adults effected by change.
- ◆ Targeted support and investment in lifelong learning and education, with a focus on those most at risk.
- ◆ Better Welsh labour market intelligence, and wider research on the effects of automation in Wales.

# Creating a sector wide response



- ▶ What do we welcome?
- ▶ What needs changing?
- ▶ What's missing?

Three groups each to create brief written answer to one question.



# Feedback



- ▶ What do we welcome?
- ▶ What needs changing?
- ▶ What's missing?

# Next steps



- ▶ What do we welcome?
- ▶ What needs changing?
- ▶ What's missing?

# Contact details



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