FUTURE OF WORK: HOW CAN WE PREPARE?

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SOME TRENDS THAT WILL AFFECT WORK

In the 15-20 year time horizon some trends will affect how we will work in future:

1. **Demographic transitions:** most economies globally are ageing – this will change the way we work and the amount of available work, lead to skill shortages. Some economies have large young populations – they will require many new jobs
2. **Geographic transitions:** Migration is expected to increase due to conflict, for economic reasons but also in future for climate change reasons. Most of the migration will be South-North; **Protectionist tendencies** are increasing: could affect the location of jobs
3. **Rising income and wealth disparity** within countries may limit social mobility
4. **Urbanization** and a growing rural-urban divide will increase social disparities
5. Increasing **flexibility of work arrangements** (gig economy, freelancing)
6. **Technologies** are advancing quickly and will create growth, but also automation. AI and physical robotics alone will require between 75m and 375m people to change occupations due to automation (McKinsey Global Institute); 47% in the US will be automated (Frey/Osborne)

FOURTH INDUSTRIAL REVOLUTION

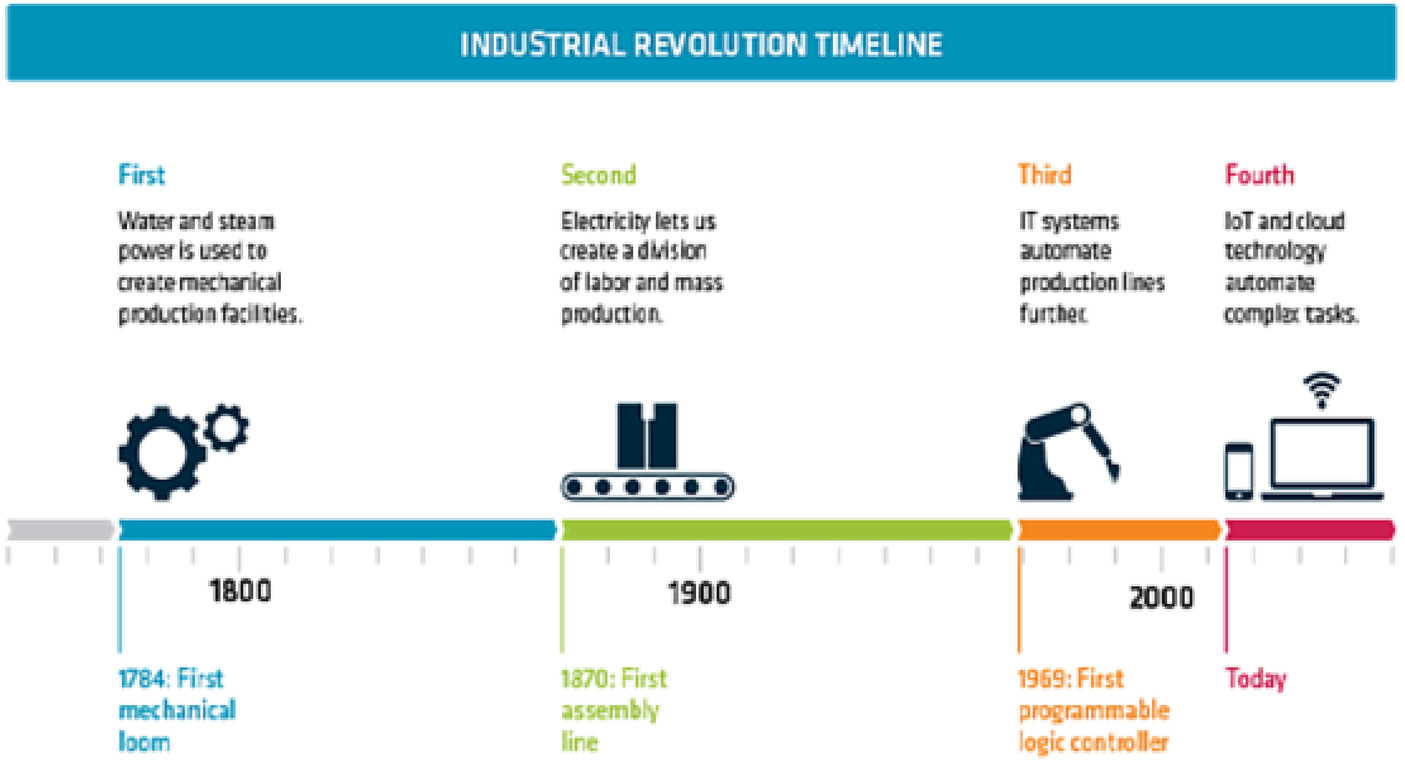

Image source: https://mjolner.dk

EMERGING TECHNOLOGIES

3D printing	Advances in additive manufacturing, using a widening range of materials and methods; innovations include 3D bioprinting of organic tissues.
Advanced materials and nanomaterials	Creation of new materials and nanostructures for the development of beneficial material properties, such as thermoelectric efficiency, shape retention and new functionality.
Artificial intelligence and robotics	Development of machines that can substitute for humans, increasingly in tasks associated with thinking, multitasking and fine motor skills.
Biotechnologies	Innovations in genetic engineering, sequencing and therapeutics, as well as biological-computational interfaces and synthetic biology.
Energy capture, storage and transmission	Breakthroughs in battery and fuel cell efficiency; renewable energy through solar, wind and tidal technologies; energy distribution through smart grid systems, wireless energy transfer and more.
Blockchain and distributed ledger	Distributed ledger technology based on cryptographic systems that manage, verify and publicly record transaction data; the basis of "cryptocurrencies" such as bitcoin.
Geoengineering	Technological intervention in planetary systems, typically to mitigate effects of climate change by removing carbon dioxide or managing solar radiation.
Ubiquitous linked sensors	Also known as the "Internet of Things". The use of networked sensors to remotely connect, track and manage products, systems and grids.
Neurotechnologies	Innovations such as smart drugs, neuroimaging, and bioelectronic interfaces that allow for reading, communicating and influencing human brain activity.
New computing technologies	New architectures for computing hardware, such as quantum computing, biological computing or neural network processing, as well as innovative expansion of current computing technologies.
Space technologies	Developments allowing for greater access to and exploration of space, including microsatellites, advanced telescopes, reusable rockets and integrated rocket-jet engines.
Virtual and augmented realities	Next-step interfaces between humans and computers, involving immersive environments, holographic readouts and digitally produced overlays for mixed-reality experiences.

Source: The 12 emerging technologies listed here are drawn from World Economic Forum Handbook on the Fourth Industrial Revolution (forthcoming, 2017).

The Jobs Landscape in 2022

emerging roles, global change by 2022

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

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

Source: Future of Jobs Report 2018, World Economic Forum

NET OUTCOME UNCERTAIN

We know that we don’t know: the estimates of future supply and demand of jobs are highly uncertain. It is virtually impossible to predict the net outcome.

We know that we need to prepare for major transitions in the labour market, but we don’t know what the net effect will be.

Past technological revolutions have displaced many jobs (e.g. horse breeders when combustion engine was introduced), but led to unexpected outcomes and took decades to evolve (Hummingbird effect according to Xavier Sala-i-Martin): for example: combustion engine -> self-driven car -> mass production of cars -> tourism

We don’t know what types of jobs will emerge in the longer term, as consequence of the fourth industrial revolution.

HOW CAN WE PREPARE?

1. Track technology trends in your countries and global trends by staying connected with companies and other countries that are leaders in this space (e.g. Denmark tech ambassador)
2. Income distribution considerations: review social security systems and ensure that they allow for flexibility
3. Review labour market regulations and ensure they are flexible – last thing you want is that that you miss the productivity enhancing impact of technologies because labour cannot shift from one industry to another
4. Education needs to be broader and focus on soft and hard skills instead of on knowledge transmission; STEM education remains key as does coding
5. Adult education programmes will become more important than in the past; they need to be faster and more targeted;
6. Focus on innovation across the board: in the social sphere, public policy, and business
7. Ensure that the uptake of digital technologies is strong – this is the baseline for future disruptive technologies.
8. Ensure equality of opportunity for the young and future generations

THANK YOU

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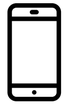

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