FUTURE OF WORK:
HOW CAN WE PREPARE?

MARGARETA DRZENIEK HANOUZ
MANAGING PARTNER, HORIZON GROUP
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

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

133 Million

decreasing 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

75 Million

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 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

MARGARETA DRZENIEK
MANAGING PARTNER

HORIZON Group
2 route Martin Bodmer
1223 Cologny/Geneve
Switzerland

+41786112468 info@horizon-group.ch www.horizon-group.ch
(under construction)
WELCOME TO HORIZON