The Fourth Industrial Revolution

SPEAKER

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THE FOURTH INDUSTRIAL REVOLUTION
Defining the fourth industrial revolution
A societal transformation and radical shift that technologies make possible. These impact more than economics, they impact values, identities and possibilities for future generations;

Emerging set of industrial technologies dependent on their interoperability and combinatory capacities. A disruption and blurring of the lines between industry sectors;

A systemic change, driven by emerging technologies, that will impact business, society and politics that will require new regularity frameworks to mitigate the unintended social, economic and environmental externalities of these technologies.

The 4IR is unique due to its speed, breadth and depth of changes caused by the introduction of emerging technologies (i.e. automation, gene drives, drones). This is affecting more people faster than ever. It’s attributes include:

- Non-linearity;
- Convergence: coming together of digital and non-digital technologies; incremental encroachment of global influence, culture and technologies upon one another; overlap of technological fields;
- Re-emergence: integration of digital into the traditional material, physical domain (i.e. 3D printing, bioprinting, neuroprosthetics).
Shaping the Future of Health and Healthcare

Accelerating Precision Medicine
the fourth industrial revolution and its societal implications
Thank you!
Shaping the Future of Health and Healthcare
Every stakeholder has a role to play

Collaboration will maximise impact

As Producers:
Incentives for the creation of health and well-being

As Community Leaders:
Creating enabling environments

As Employers:
Workplace Wellness
How can the world deliver healthy lives and healthcare for 9.7 billion people by 2050?

By 2050, the world’s population will have risen to 9.7 billion, with 2 billion over the age of 60. However, the global health and healthcare system is ill-equipped to deal with this demographic transformation. To keep populations healthy, and to cure patients more effectively, solutions need to come from outside traditional healthcare.

The **system initiative on Health and Healthcare** provides a unifying framework for health preservation and improved healthcare delivery. The effort brings together stakeholders from the public and private sectors to catalyze opportunities to accelerate these goals.
Shaping the Future of Health and Healthcare

Overview

1 The need
• Solutions to increase access of individuals to healthy products, services and settings
• Effective pathways for policies, regulations, business solutions to population based health promotion
• Strategic, long-term focus for solutions across continuum of care and life-cycle
• Collaborative mind-set across sectors and stakeholders

2 The vision
Healthy lives, health security and healthcare for 9.7 billion people

3 The Community
• Governments (Health, Education, Finance, Agriculture, Youth, Welfare)
• Business (health, wellness, insurers, food, beverages, sports, physical activity, IT, media, infra-structure)
• Civil Society
• Academia
• International Organizations (WHO, UNFPA, UNAIDS, UNDP, EU)
## Projects

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| Human-Centric Health                | Understand how a human-centred approach to a healthy lifestyle can transform the health ecosystem, particularly in the prevention of NCDs | - Develop and disseminate critical knowledge and tools that focus on triggers for long-term behaviour change in individuals, policy-makers and business leaders leading to, healthier lifestyles  
- Catalyse concrete public-private cooperation opportunities across non-traditional health and healthcare stakeholders, leveraging the Forum as a platform to maximize impact in the NCDs agenda |
| Managing the Risk & Impact of Future Epidemics | Mitigate and contain the threat of global disease outbreaks to prevent the development of public health emergencies | Regional: Public Private collaboration models for national and sub-regional preparedness and response schemes in high risk geographies  
Global: Vaccine Innovation where there are insufficient market motives or technologies |
| Value in Healthcare                 | Improve efficiency of healthcare delivery, cost and outcome                | - Reduce waste in healthcare systems  
- Accelerate personalized and precision medicine to improve outcomes and adapt payment models to spur innovation while ensuring access and financial sustainability?  
- Leverage consumerization to improve healthcare provision and patient empowerment |
| Global Platform for Access to Care  | Accelerate public-private cooperation aimed at universal health coverage through | - Develop the technical parameters for a virtual market place where country needs, private-sector offerings and new financing mechanisms can be matched  
- Synthesize sources of “learnings” on business models, financing mechanisms and partnership approaches |
Shaping the Future of Health and Healthcare  Accelerating Precision Medicine
Shaping the Future of health and healthcare

World Economic Forum
The 4th Industrial Revolution and the role of Medtech

Shaping the future of healthcare

SPEAKER:
Eleni Antoniadou
President
European Health Parliament

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Preventive Medicine and e-Health

- Increase of the quality of life
- Ubiquitous diagnostic monitoring
- Balanced diet, elimination of obesity, the end of hunger
- Augmenting well-being and decrease in mental diseases
In the present, poor bodies are at the service of rich bodies. Can we change the narrative in the future and make the right to life a reality for all?
Precision Medicine & Nanobiotechnology

- Systemic savings
- Efficient drug testing on the right segment of patients
- Improved formulations or new dosages
- Significant increase in efficiency and effectiveness of clinical treatments

Patient

Diagnostic Nanocarriers

Epigenetics

Big data

Human microbiome & Human Genome Project

Biobots for targeted drug delivery
Gene Editing

- Different types of therapeutic editing
- Specificity: A prerequisite for broad clinical application

Patient

CrispR-Cas9

Zinc Finger Nucleases (ZFNs)

Transcriptional Activator-Like Effector Nucleases (TALENS)

Enhancement genetics?

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Bioethics and Biopolitics

• The future of healthcare holds the unprecedented opportunity to decrease inequalities
• Let’s connect the dots between research, industry, and politics maintaining an ethical and human-centric focus

• Risks & responsibilities:
  - Hacking medical devices
  - Privacy and confidentiality of medical records
  - Patient empowerment VS negligence in the era of digital healthcare
  - Financial inequalities could lead to biological inequalities?
  - Ageing and overpopulation
  - Bioterrorism
  - Transhumanism & Singularitarianism

Are we brave enough for the future we think we want?

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