Digital Transformation and the Future of Latvia

Lessons from China, Germany, Cities, Industry 4.0

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Digital Transformation

- **What makes the Digitization of the World so different?**
  - Exponential growth, not linear (Buckminster Fuller example)
  - Digitization impacts all aspects of our lives
  - Opportunities for sustainable, environmentally friendly production
- **Profound and Systematic Change**
  - Pervasive power of digitization and information technology
  - Platforms effect means new dominant market players
  - Another power shift between countries and within countries

Digitization

- **Who loses, who gains?**
  - More inequality, potentially more unfairness
  - The great beneficiaries are the providers of intellectual or physical capital, i.e. the innovators, the investors, the shareholders
  - Reality of disruption and inevitability of impact
- **Drivers**
  - Across the physical, digital and biological worlds
  - Emerging technology breakthroughs such as artificial intelligence, robotics, internet of things and services, selfdriving vehicles, 3D printing, nanotechnology, bio-engineering, new materials, energy storage, quantum computing, …

2025: What can we expect

- Many people will wear clothes connected to the internet
- Most people will have unlimited storage on the internet
- There will be a thousand times more sensors connected to the internet than there are people on earth
- Many reading glasses will be connected to the internet
- Some products will only be available through 3D printing
- The first 3D-printed cars and driverless cars will be on the roads
- Some cities will be without traffic lights
- An AI machine will be on a Board of Directors of a company

Lessons from Germany I: Digital Strategy

- 7 fields of action
  - Digital Infrastructures
  - Digital Economy (including Industry 4.0) and Digital Work
  - Innovative Government
  - Innovative Living
  - Education, Research, Science, Culture, Media
  - Security, Protection, Trust
  - European and international Dimension of the Digital Agenda
- Research: over 70 000 researchers support German SMEs

Lesson from Germany II: Research Roadmap

(medium and long term societal challenges, not ranked)

Digital Economy and Society

- Industry 4.0
- Manufacturing / 3 D Printing
- Digital Infrastructure
- Information and Communications systems in manufacturing
- Man-machine interaction
- Big data technologies
- Innovative materials for production
- Photonics
- Work 4.0 / Education and Training

German Research Roadmap (ctd.)

Sustainable Economics and Energy

- Energy efficiency
- Renewable energies
- Energy storage
- Energy transport
- Securing of raw materials
- Efficient use of resources
- Alternative and secondary raw materials
- Protection of Environment and Resources
- Bio-economy
- Sustainable agricultural production and innovative land management

German Research Roadmap (ctd)

Intelligent Mobility

- Technologies for autonomous driving
- Technologies for linking the entire transport infrastructure
- Information and communication systems in the area of mobility
- Efficiency optimization in logistics
- Battery technologies
- Fuel cell and hydrogen technologies
- Alternative fuels
- Storage systems for alternative fuels
- Infrastructure for alternative drives
- Innovative materials for mobility
- Innovative technologies in aviation

German Research Roadmap (ctd)

Healthy Life

- E-health
- Personalized medicine
- New image technologies
- (Molecular) analytics and diagnostics
- (Minimally invasive) technologies for surgery
- Prothetics and implants
- New materials and pharmaceuticals in health
- Innovative bio technologies
- Environmental technologies

Research Roadmap Germany (ctd.)

Civil Security

- Information and Communication Systems in civil security
- Sensor and detection technologies
- Artificial intelligence and robotics in the civil security context
- Protective technology and equipment
- Simulation and modelling
- Biometrics and pattern recognition
- Navigational, observational and locating technologies.

My International Innovation Center roadmap
Made in China 2025 / 13th Five Year Plan

- Automotive / Mobility
- Bio-Engineering / Life Sciences
- Information Technology
- Intelligent Finance
- Agricultural Engineering and Automation
- Aviation, Drones, Robotics
- New Materials
- Alternative Energies (wind, solar)
- Big data, Pattern recoginition, Optimisation
- Alternative and Innovative Business Models
- Medical Devices
- Belt and Road Initiative

More lessons

- **Future Industries – Future cities**
  - Cities may be more important than countries
  - Industries will come back into the cities
  - Who is the competition? Who is a role model?

- Norway
  - Community based innovation in a „**founder`s city**“

What does all this mean for Latvia?

- Power Shift because of Digitization
- Real Independance: more than an army and recognised borders
- Innovation Imperative, Multidisciplinarity, Speed of Change
- Competition and Collaboration – against whom, with whom?
  - More collaboration within
  - Much better Positioning in the Baltics
  - Proactive Collaboration with Current Partners (NB8, Denmark Estonia, Finland, Iceland, Lithuania, Norway, Sweden)
- Inclusion and Diversity as a Strength
  - More than Riga. And include Latvians abroad
- Creation of Community and of Common Futures: Political Will to Energise Society
- Reach out to selected partners, internationally, including China

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