Strategic development of innovation policy in Finland

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Research manager
Digitalising industries
Strategic development of innovation policy in Finland targeting at

• making the 100-year-old Finland attractive and competent environment for experiment and innovation
• transforming Finland into the digital era
• capitalizing on European collaboration
Finland outperforms in digitalisation

Digital Transformation Scoreboard for Finland

Finland ranks 2nd in Europe in the Digital Economy and Society Index (DESI) 2017

Digital Intensity Index in firms

Finland ranks 2nd in Europe in the Digital Economy and Society Index (DESI) 2017
Productivity of the Finnish national economy

1Source: Productivity surveys [e-publication].
Access method: http://www.stat.fi/tti/ttut/ttut_201/5_2016-
11-30_tie_001_en.htm
Recent actions

- **Strategic Governmental Program for Growth**
  - Employment and competitiveness
  - Skills and education
  - Wellbeing and health
  - Bio-economy and clean solutions
  - **Digitalisation, experimentation, deregulation**
    - Increase the use and development of robots
    - IoT, big data, cybersecurity, smart transport

- **Reboot Finland**

- **Artificial Intelligence**
  Minister of Economic Affairs Mika Lintilä (May 18th):
  - Support utilisation of *artificial intelligence and robotics in innovation* activities of companies

- **Platform economy**
Reboot Finland
transforms the 100-year-old Finland into the digital era

- 100 actions during 2017
- Reboot
  - Factory
  - Hospital
  - School
  - Ship
  - ...
EU – Finland’s Digitalisation Strategy
integrating the exiting and planned activities
Platform economy: survey and road map

https://www.tekes.fi/
## Regional strengths (some examples)

### MOBILITY
- On-sea: autonomous maritime
- Smart mobility (Transdigi)

### MANUFACTURING
- Smart manufacturing
- Printed electronics

### HEALTH
- Health Campus Turku
- Good Life
- eHealth, Oulu HealthLab

### ENERGY
- Smart energy services

### PROCESS
- Smart bio-based solutions
- EIT Raw Materials CLC

### ICT
- Super IoT
- 5G test network
- EIT Digital CLC

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**DIHs (draft)**

- **Botnian Arc:**
  - Steel and metal

- **Oulu:**
  - ICT

- **Tampere:**
  - Machines & manufacturing

- **Turku:**
  - Ship building
  - Bio-economy
Digital Innovation Hubs, examples:

BIORUUKKI PILOT CENTRE: Value from integration

- PROVIDES DATA TO LOWER TECHNICAL AND ECONOMIC RISK
- ACCELERATES GLOBAL MARKET LAUNCHES OF YOUR INNOVATIONS
- BIOCHEMICALS
- FUELS
- MATERIALS: Textile & composites, Teflon, nanofibres

FINLAND BASED EXCELLENCE
IOT ECOSYSTEM AND ALLIANCE WITH 100+ IOT COMPANIES

EASY ACCESS
Project leader selects best players from the competence pools and navigates through the development process from the idea to product.

TAILORED SOLUTIONS
Our cross-industry and multidisciplinary alliance customizes cutting edge technology innovations and research to match your needs.

NO VENDOR LOCK
We provide agile, cyber secure and tailored IoT solutions ready to be seamlessly integrated with your existing processes, tools and platforms.

REFERENCES
SuperIoT Alliance has a proven track record and a well-established and flexible ecosystem.
Tekes – Finnish Funding Agency for Innovation

- Public innovation programs
- Finances annually about 1,500 business and 600 public research projects
- Supports European actions
- SHOK financing (ended)
  - Bio-economy (FIBIC)
  - Built environment (RYM)
  - Energy and environment (CLEEN)
  - Health and well-being (SaIWe)
  - Information and communication (Digile)
  - Metal products and mechanical engineering (FIMECC)
  - DIMECC

2018 Business Finland

EXAMPLES OF ONGOING PROGRAMS:

5th Gear
Next generation wireless data communications, creation of new business, and Finland as a target for international investments.

Team Finland Industrial Internet Program 2014–2019
Renew business operations through Industrial Internet & encourage companies from different fields to cooperation.

Bits of Health 2014–2018
Digitalisation to promote health, early diagnosis, health monitoring and personalized treatment.

Smart & Green Growth – clean transition to the bioeconomy
R&D environments and business ecosystems in the Finnish bioeconomy and clean solution sectors.

Liideri – Business, Productivity and Joy at Work 2012–2018
Competitive workplaces, management methods and new forms of work organisation and working

Feelings: Intangible value creation & experienced value 2012–2018
Customer experience, emotions & meanings as key drivers.

Innovative Cities 2014–2017
Internationally attractive innovation clusters in Finland

Smart Energy
Finland as forerunner and testbed of smart energy solutions.

Witty City 2013–2017
Better living and working environments

Arctic Seas 2014–2017
Arctic know-how

BEAM – Business with impact 2015–2019
Sustainable growth for Finland and the developing world.
VTT Technical Research Centre of Finland Ltd

75 years’ experience in supporting our clients’ growth with top-level research and science-based results.

www.vttresearch.com #vttpeople, @VTTFinland

Net turnover and other operating income
269 M€ (VTT Group 2016)

Unique research and testing infrastructure

Personnel 2,414
(VTT Group 2016)

Wide national and international cooperation network

VTT Lighthouses and opportunities 2030

**CLIMATE ACTION**
- Smart mobility services
- Low emission power trains
- Zero energy communications

**RESOURCE SUFFICIENCY**
- High performance materials
- Zero environmental impact processes
- Agile material-product integration

**GOOD LIFE**
- Productivity, competitiveness and wealth by Artificial Intelligence
- Sharing and platform economy
- Agile and learning society

**SAFETY AND SECURITY**
- Resource flows in super connected ecosystems
- Global water resilience

**INDUSTRIAL RENEWAL**
- Customer as a designer
- Artificial Intelligence as a designer
- Design for life-cycle excellence

**LOW CARBON MOBILITY AND COMMUNICATION**
- Low emission power trains

**RENEWABLE MATERIALS**
- Mineral materials from secondary resources
- Material substitution

**DISRUPTION OF WORK**
- Preventive health support
- Predictive diagnostics and care
- Healthcare process optimization

**SECURING CRITICAL SUPPLIES**
- Seamless security
- Secure communication networks
- Critical infrastructure protection

**DESIGN FOR FUTURE**
- Manufacturing for need
- Real-time supply-chain
- Future production strategies

**ENERGY INTELLIGENCE**
- Energy users as producers
- Value from energy system flexibility
- Energy storages everywhere

**SUSTAINABLE NON-RENEWABLES**
- CO₂-derived energy carriers
- Carbon cycle in forest industry
- High-value products from CO₂ compounds

**CYBER SECURITY**
- Autonomous transport hubs
- Safe autonomous operations
- Controlled autonomy

**LOW CARBON ENERGY**
- Future renewable energy solutions
- Future nuclear energy

**SMART BUILT ENVIRONMENT**
- Urban intelligence
- Cognitive built environment
- Future proof cities

**RE-BIRTH OF PRODUCTION**
- Operational excellence as a service
- Data economy

**CLIMATE NEUTRAL INDUSTRIAL PROCESSES**
- Zero-C industry

**CARBON REUSE ECONOMY**
- Re-think agro-food processing
- Food without fields
VTT Industrial Renewal lighthouse: OPPORTUNITIES and PATHWAYS

**DESIGN FOR FUTURE**
- Modular systems
- On-demand production of unique features and parts
- On demand production of niche products
- Systems' mass customization

**RE-BIRTH OF PRODUCTION**
- Autonomous production cells
- Fabless/virtual factory
- Real-time factory
- Cognitive factory
- Autonomous supply chain

**DISRUPTIVE BUSINESSES**
- Global supply chain management
- Agile production in decentralised ecosystems
- On-demand manufacturing
- Consumer factories

Manufacturing for need
Real-time supply-chain
Future production strategies
VTT example of ecosystem building: REBOOT IOT FACTORY

REBOOT FINLAND IOT FACTORY IS A STRATEGIC DEVELOPMENT PROGRAM BEYOND IND 4.0

EMPOWER FACTORIES TO CAPTURE VALUE FROM IOT SOLUTIONS AND TRANSFORM INTO PLATFORM ECONOMIES

FACTORY REBOOT SEQUENCE TO SCALE-IN (POCS, CHALLENGES), SCALE-UP (PILOTS) AND SCALE-OUT (MULTIPLE FACTORIES)

2018-2020, starting with 6 pilots but growing to a wide ecosystem

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VTT – focusing on EU research and innovation

| Platforms & alliances: VTT in ca. 20 ETP’s | TOP 1
EU funding beneficiary in Finland ** |
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<tbody>
<tr>
<td>ECSEL (Electronic Components and Systems)</td>
<td>TOP 11 in research ranking *)</td>
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<td>SPIRE (Sustainable process industry)</td>
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<td>FoF (Factories of Future)</td>
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<td>EFFRA (European Factories of the Future Association)</td>
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<td>BDVA (Big Data)</td>
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<td>Robotics</td>
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<td>Photonics</td>
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<td>EIT KIC’s (Digital, Raw Material, Food)</td>
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<td>JIIP, Earto, etc.</td>
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ca 450 public international projects ongoing (2016)

EU project portfolio
54.5 M€ (2016)

*) research ranking 2015 **) ca 38 M€ income from EU 2016
Summary
Strategic development of innovation policy in Finland preparing for the next 100 years

- Governmental Programs for Growth
- Strong emphasis on digitalisation
  - Artificial Intelligence
  - Platform Economy
- Ecosystems approach
- Working together
  - In Finland, in EU and globally