

**UNIVERSITY
OF OULU**

**Automation-driven efficiency to energy
systems: adjusted balance between
production and consumption**

University of Oulu, Oulu, 5.4.2017

**WELCOMING AND OPENING
WORDS**

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4

Our strategy is based on five thematic, internationally significant research focus areas



We make a significant contribution to solving global challenges in five focus areas

Our researchers contribute to solving global challenges by combining multidisciplinary approaches, high-level research and fruitful collaborations in the following five focus areas.

Creating sustainability by materials and systems

Molecular and environmental basis of life-long health

Digital solutions in sensing and interactions

Earth and near-space system and environmental change

Understanding humans in change





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The sustainability of e.g. biofuels used in the EU

- Aimed to be ensured by the [Renewable Energy Directive \(RED\) 2009/28/EC](#)
- Sustainability of materials, processes and systems, e.g. energy systems

Using and developing sustainability assessment tools

- Sustainability assessment tools, e.g. life-cycle assessment, environmental footprint studies, input-output modelling and multi-regional analysis
- Economic, environmental, social sustainability

- Promotes learning and carries out research that pushes the boundaries of the known
- Contributes to solving some of the greatest global challenges, including
 - Sustainable resource use
 - Responsible business
 - Intelligent systems and services development
 - Harnessing environmental risks
- Research activities
 - Fundamental material science
 - Production and use of materials and systems
 - Concepts of bio- and circular economies
 - Clean technologies
 - ICT and productivization

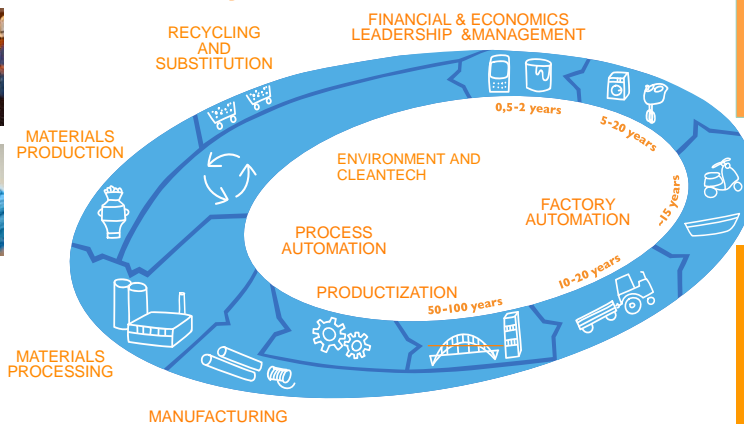
5

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Material Life cycle



The Faculty of Technology focuses its education and research activities on **sustainable utilisation and industrial value addition of natural resources**

10.4.2017

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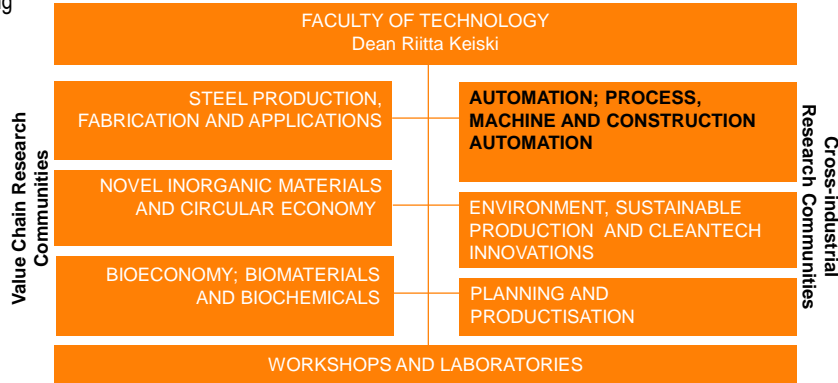


RESEARCH COMMUNICATIONS - A new research organization structure



Reason: Science is increasingly a group effort, universities must build structures to support that

Goal: To improve knowledge flows, enable collaboration and enhance multidisciplinary and possibilities for new research funding



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RESEARCH COMMUNITIES



World Business Council on Sustainable Development

"Sustainable development involves the simultaneous pursuit of economic prosperity, environmental quality and social equity. Companies aiming for sustainability need to perform not against a single, financial bottom line but against the triple bottom line." www.wbcsd.org/

- Provide **forums for all researchers** to support group work and joint activities.
- Improve **knowledge flows**, enable **collaboration** and enhance **new research openings**.
- Take an interdisciplinary approach to **creating sustainability** through the responsible and smart use of natural resources.
- Connect expertise to produce **intelligent solutions to mastering global challenges**.
- Drive **innovations** by encouraging creative thinking, and by fostering e.g. **inter-sectorial and international collaboration**.

8

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RESEARCH COMMUNITIES



- Sharing research and innovation **ideas**
- Planning **projects**
- Cooperation with **companies, networks and other stakeholders**
- Collaboration with other faculties' and research institutes' researchers
- Providing our **students** an environment to enjoy learning as an integral part of our scientific activities
- Enhancing **systematic doctoral education** and high quality degree programs
- Experience, and cooperation with **working life**

9

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AUTOMATION RESEARCH COMMUNITY



Automation Research Community is focused on (spearhead and development areas)

- Process-, machine- and construction automation
- Control and system methods
- Energy automation
- Supervisory, monitoring and control room design
- Machine automation and diagnostics
- Automation and robotics in construction and mining
- Industrial process automation

10

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