



Welcome to VTT and Bioruukki

**SmartPilots STUDY VISIT 5: VTT Technical
Research Centre of Finland, Bioruukki**

May 24, 2017

Tuulamari Helaja

Solutions for Natural Resources and Environment

VTT Technical Research Centre of Finland Ltd

VTT Technical Research Centre of Finland Ltd

- A leading R&D organisation in Nordic countries
- We provide expert services for our domestic and international customers and partners, both in private and public sectors

TOP 2

VTT is second most active patenting organisation in Finland (2014)

36%

of Finnish innovations include VTT expertise

We use

4 million hours

of brainpower a year to develop new technological solutions



Net turnover and other operating income 269 M€ for VTT Group in 2016
(VTT Group's turnover 188 M€ in 2016)



Personnel 2,414
(VTT Group 2016)

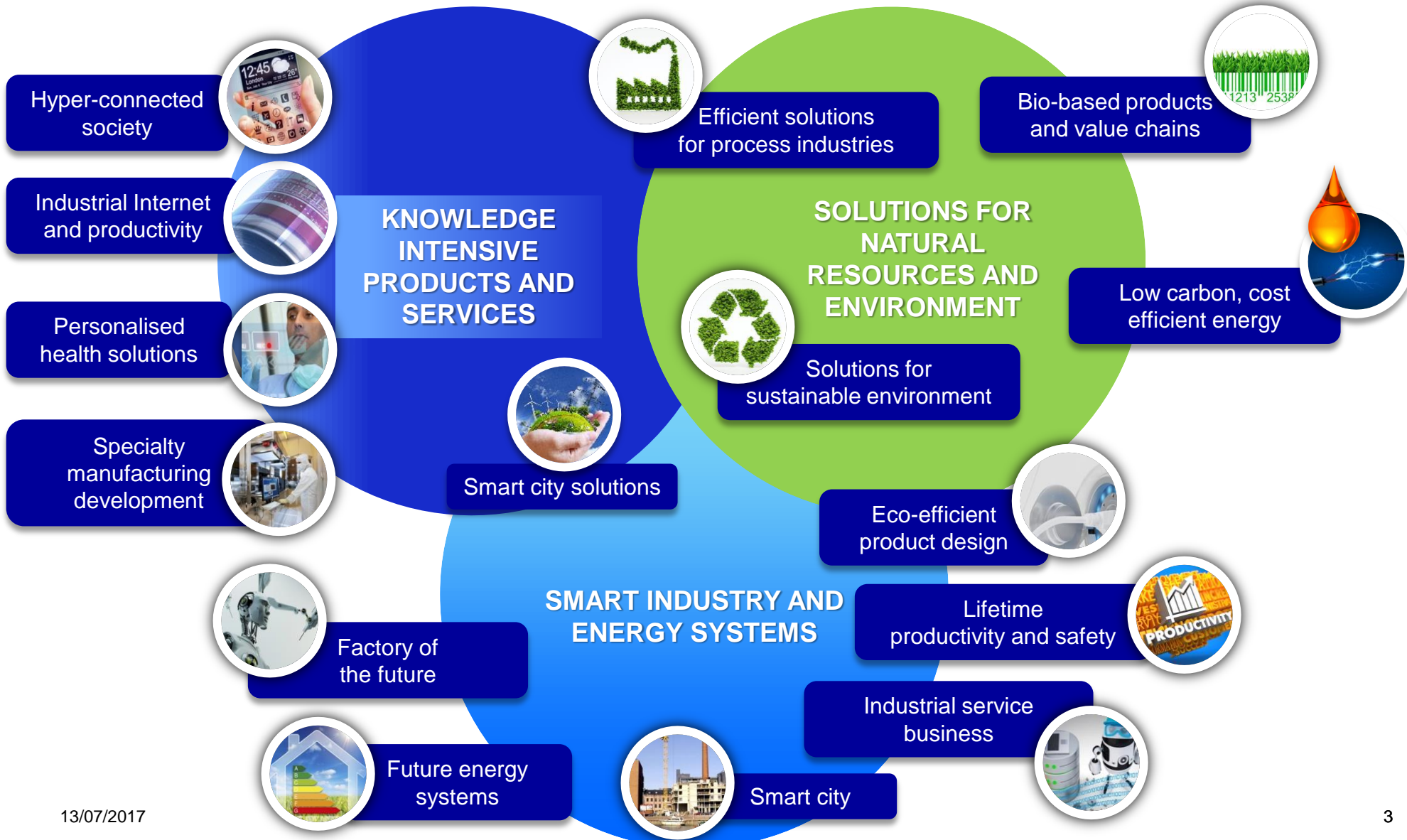


Unique research and testing infrastructure



Wide national and international cooperation network

Our key competences by business areas



Changes in VTT's operational environment

**CUSTOMERS SOURCE GLOBALLY
THE BEST INNOVATION
PARTNERS**

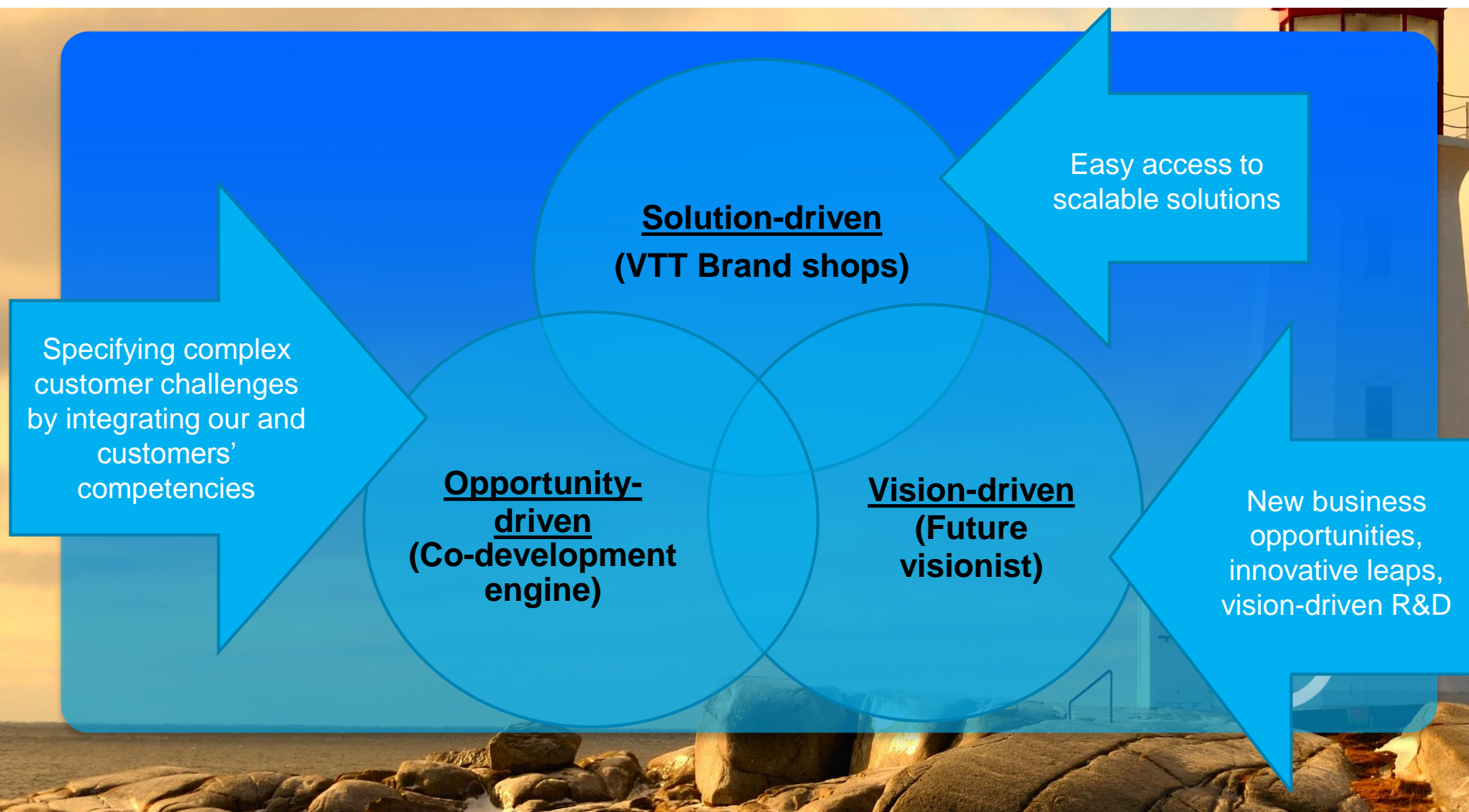
**CUSTOMER NEEDS BECOME
MORE COMPLEX AND
INDUSTRY BOUNDARIES
BLUR**

**CLOCK SPEED IN
INNOVATION ACCELERATES**



**WORLD IS FULL OF
OPPORTUNITIES FOR
EXCELLENT R&D**

**COMPETITION FOR PUBLIC
FUNDING INCREASES AND
CRITERIA CHANGES**





- CLIMATE ACTION
- RESOURCE SUFFICIENCY
- GOOD LIFE
- SAFETY AND SECURITY
- INDUSTRIAL RENEWAL

SONE's Focus Areas

Future cellulose-based high-value applications

- **Challenge:** How to maximize the value of Finnish forest resources and to support the renewal of forest industry to bio-product industry and generate new business from cellulose?
- **Means:** Development of innovative technologies and market-driven concepts for ligno-cellulosic products to support new value networks across industry sectors (forest-chemistry-energy-food)



C1 economy – replacing fossil carbon by CO₂ and other one carbon components

- **Challenge:** How to harness the beastly spectre of green house gases as an endless raw material source for value added bulk and specialty products and achieving the carbon-neutral society?
- **Means:** Development of innovative technologies to utilize CO₂ and CH₄ in energy, fuels and chemicals production



Circular economy concepts

- **Challenge:** How to shift from linear to circular flows of materials and value and to realize the underlying opportunities as export business to Finland? How to answer the new targets of EU commission and ensure the competitiveness and new market possibilities to Finnish industries?
- **Means:** Development of multi-purpose technology platforms, demonstration cases and innovative business models to support adaptation of clean technologies in global circular economy



Revolutionizing the food supply chain

- **Challenge:** How to ensure the quality and safety and to fulfil the diverse consumer needs and expectations in the changing food supply chain.
- **Means:** Analyse the transformation in food delivery ecosystems and its implications for new technology needs and opportunities in the food chain. Strong collaboration through VTT (digitalization and smart manufacturing technologies)



VTT Bioeconomy at glance

We AIM at

- Helping companies grow through our technical and scientific knowledge, infrastructure and IPR

We FOCUS on

- Development of new value added products and process concepts with industrial stakeholders
- Supporting transformation of industries and society

FACTS

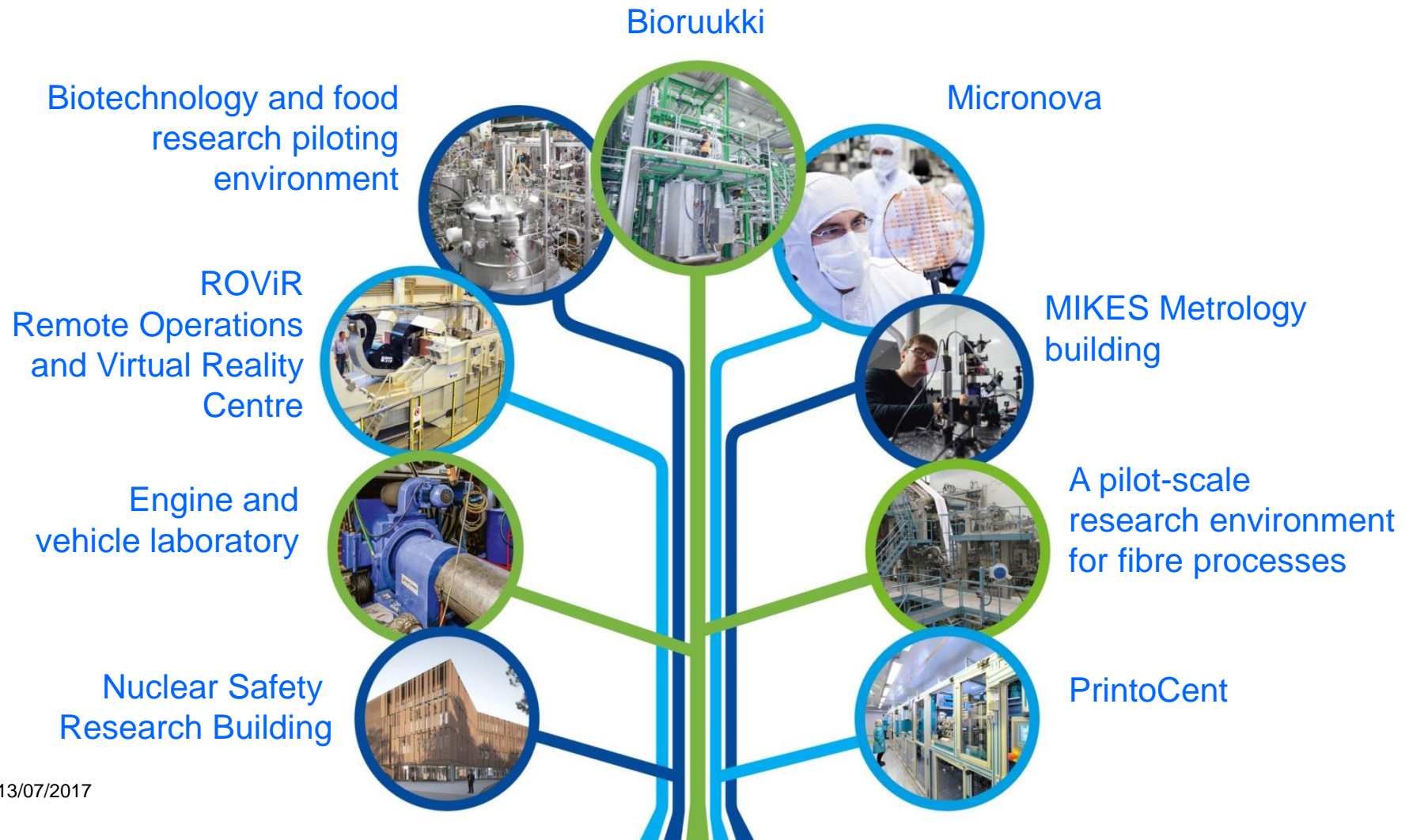
- 500 person years of research
- 200 customers, from which 13 key customers
- 300 peer review articles (2015)
- 140 patents and patent families
- 1 – 2 spin-offs annually



RESEARCH TOPICS

- Novel web-based fibre products
- Biofuels and energy
- Packaging materials and products
- Bio-based performance chemicals
- Wood-based and recycled textiles
- Plant based foods

VTT's R&D infrastructure – an essential part of the national research infrastructure



SONE - Solutions for natural resources and environment

PROSPERITY
FROM
NATURAL
RESOURCES

Bioeconomy • Circular economy • Cleantech



BIOBASED
VALUE CHAINS



INNOVATIONS FOR
SUSTAINABLE
ENVIRONMENT

LOW CARBON
ENERGY

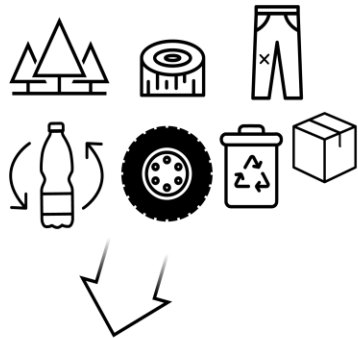


BIORUUKKI PILOT CENTRE: Value from integration

WILL MY GREAT IDEAS WORK?

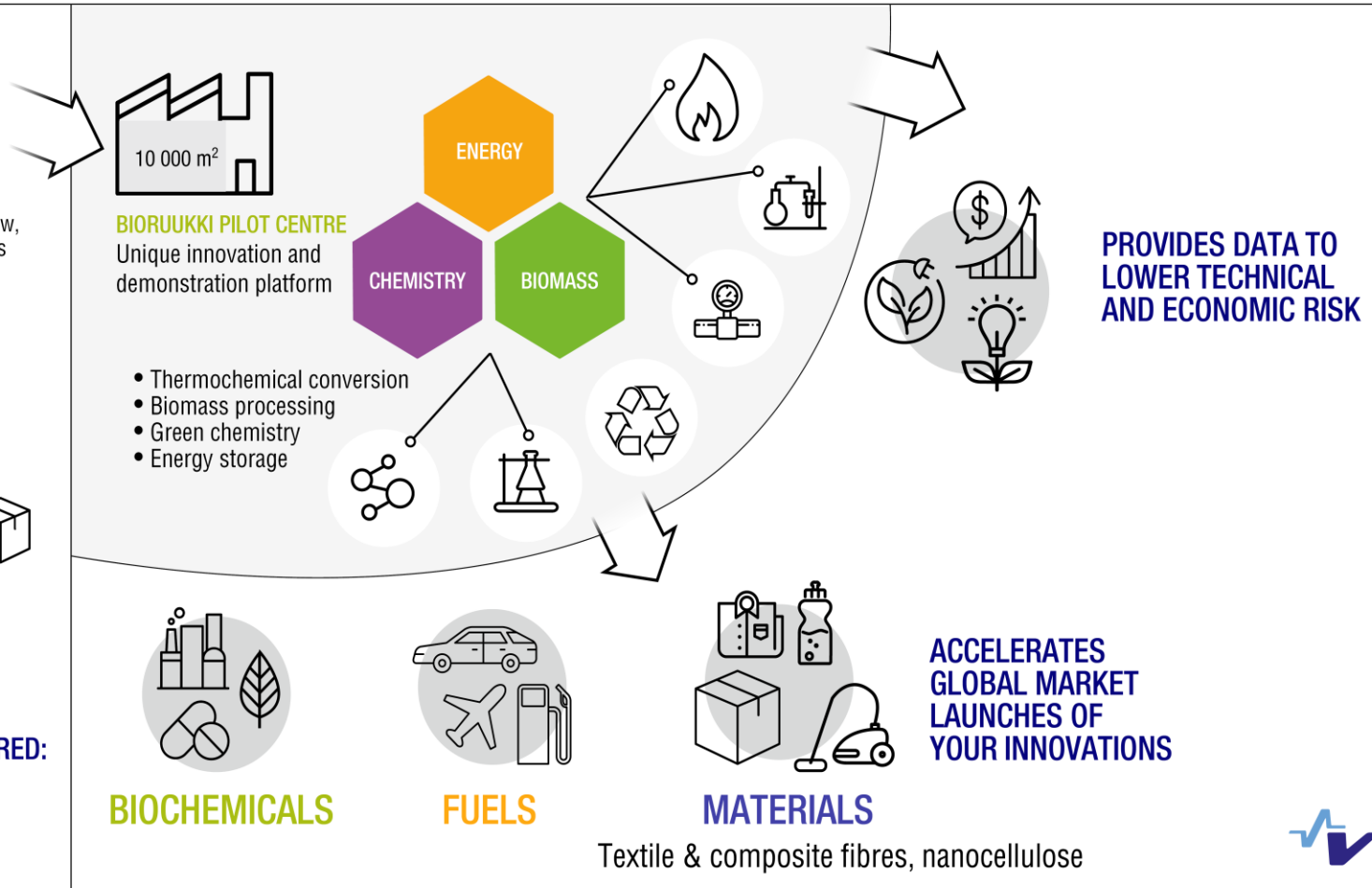
New business opportunities in bioeconomy and circular economy demand cross-disciplinary knowhow, piloting and demonstration facilities for a fast track to market.

Piloting provides techno economic data for an industrial scale biorefinery investment decision.



QUESTIONS TO BE ANSWERED:

- Will my idea work?
- Will it be economically viable?





TECHNOLOGY «FOR BUSINESS»

