

Current efforts in Finland to bring research results closer to the market; expectations from the innovation intermediaries in the regions

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# Structure of presentation

- 1. Purpose of presentation
- 2. Framework conditions evolution
- 3. Conceptual evolution
- 4. National policy evolution
- 5. Methodological evolution
- 6. Background
- 7. The renewal concept
- 8. Examples of the application of the new University Centre concept

# 1. Purpose of presentation

- To discuss the on going effort in Finland to valorise university research by the economy and, at the same time, to improve access of businesses to university-based services and embed university services into regional contexts.
- The presentation reminds of the conceptual and policy evolutions (slides 4-12), discusses the concept of the University Centres (slides 13-18), and brings examples of the application of the renewed University Centres concept (slides 19-23).

## Regions in evolution

- From talk blogs to Global Clustering and Networks
- From regionality to knowledge and business networks
- Globalization, globalization and globalization of talent; talent in focus
  - Students are increasingly seeking direct access to foreign universities and networking with "talents" and future business leaders during their studies. Construction of business networks is started during the study period
  - The number of international and national bachelor's degrees increases - distance learning.
  - **Higher education institutions will have recruitment problems in the future if the degrees are not competitive**
- The transport of goods and people to new service concepts based on information technology
- International development platforms for growth centers (the role of development companies is significant)
- The demand for natural resources from emerging global economies to new sustainable energy sources and materials
- Business Revenue Logging in the Business Area Diversifies - Growth in Revenue is Building on Global Online Business
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# Conceptual evolution

## Innovation and knowledge in evolution

- Small improvements leading to breakthroughs and radical innovations
- Market and development orientation alongside research and technology orientation
- Competence of research institutes for open competence. In many cases, competence and research institutes lacked a link to the market. Nevertheless basic research without linking to the market was heavily resourced. In the new paradigm of excellence, especially in companies operating in open markets (eg Microsoft, Google, Samsung, Valmet, Nokia, Patria, Tieto ...), but also in public actors who strive to develop open knowledge, experience and skills
- Basic research and scientific research will continue to develop as a top research if it is able to create added value for the players in the open knowledge base and increase their innovation and competitiveness
- In the future, companies will form excellence centers. It is not about expertise in research and education.

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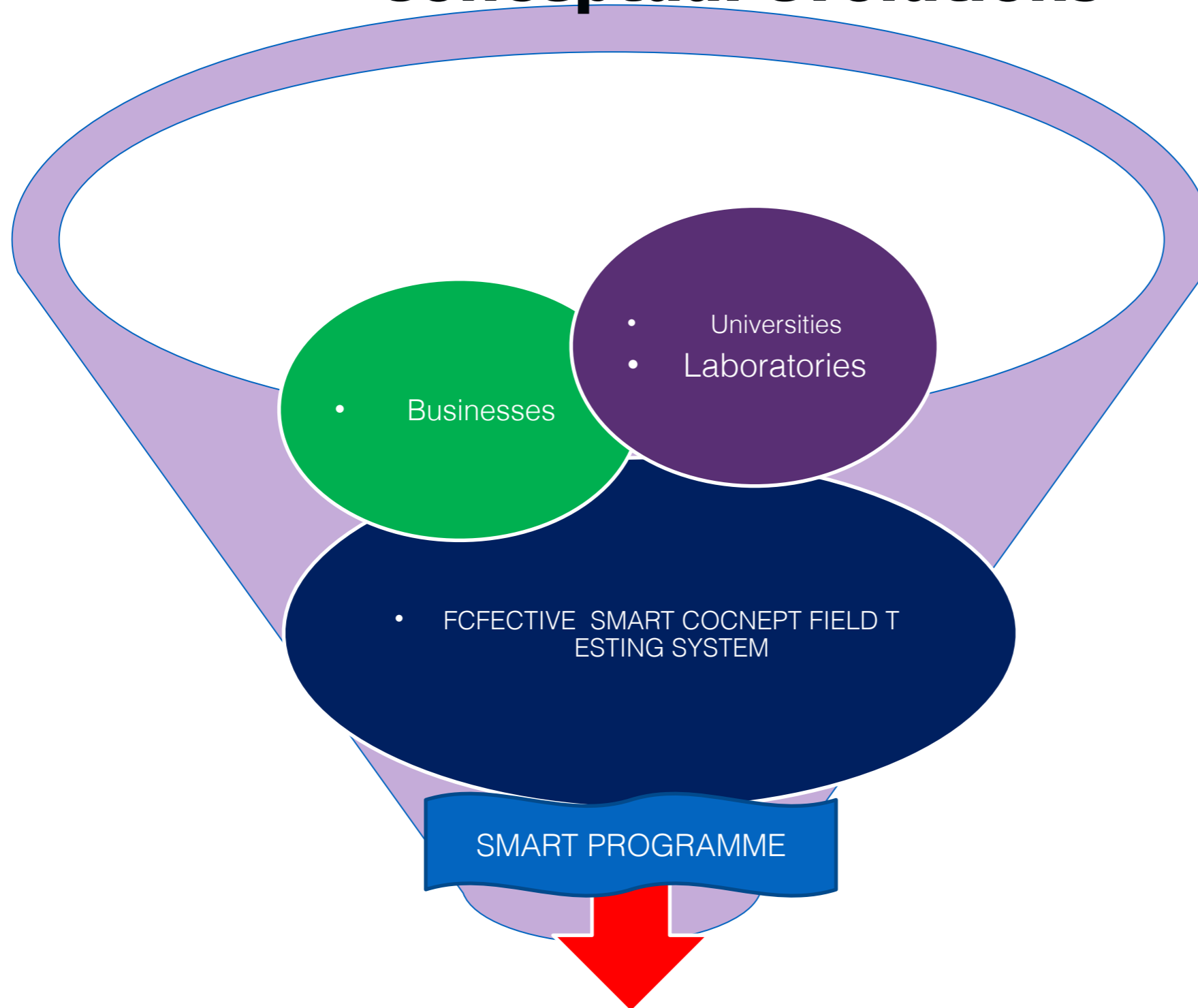
# Conceptual evolution

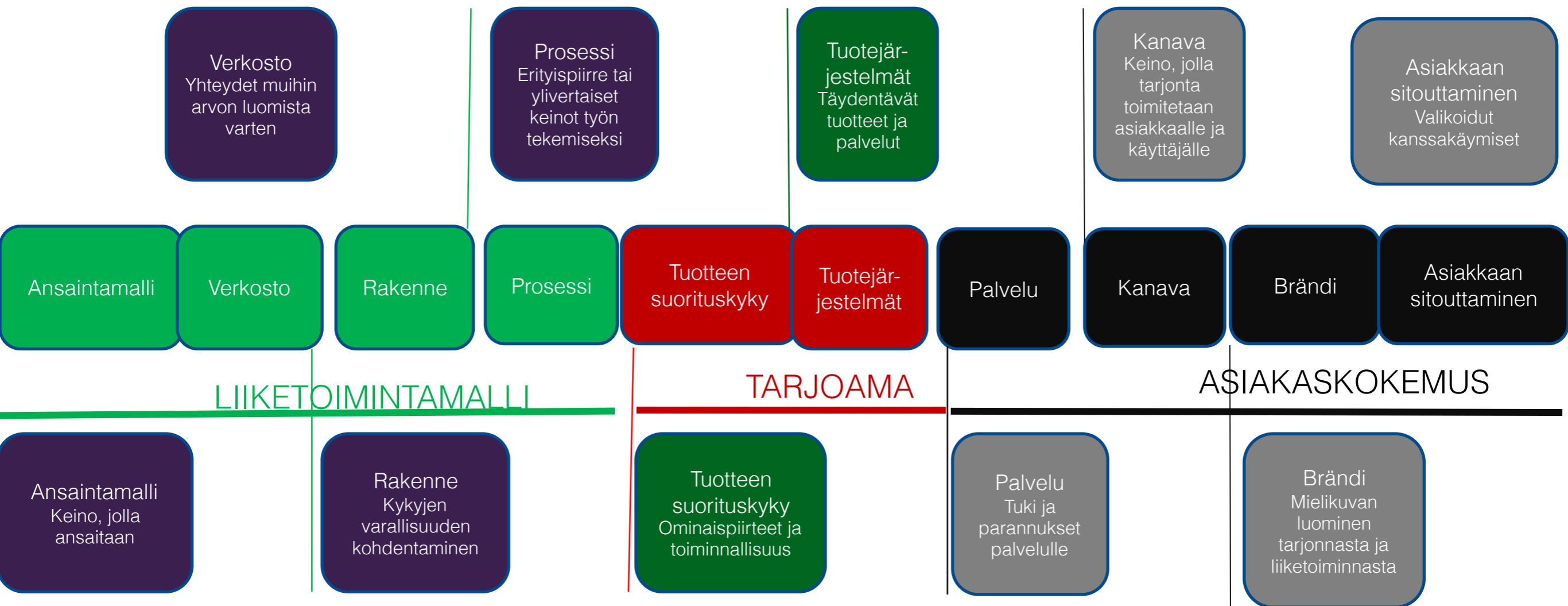
## Innovation ecosystem

- In the future, it is necessary to open up another development tool alongside science, technology and research-driven innovation, without undermining the importance of the current mainstream. This second development is a market-oriented and development-oriented line. Significant innovation activity always takes place at the customer interface. This has to be taken into account when defining the focus of regional development companies and universities.
- Value concepts are particularly important for service companies. The purpose of developing national and regional innovation activities is to create and strengthen national prosperity
- Finland and its regions provinces need an internationally networked roots of innovation-based ecosystem based on the natural strengths of the region.

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# Conceptual evolutions





## Innovation system and ten special innovations

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## Growth, affluence, as national (VNK 12/2006)

- The role of research and educational institutions in the new paradigm is to seek & identify research and educational needs from the different phases of value chains and value networks between present and future businesses. In particular, the market interface should be emphasized as a starting point for new product development ideas and research themes.
- In the old paradigm, one can solve their own problems, according to the new paradigm, value can only be created by solving problems of others, especially in the research and education sector.
- Development companies often solve problems with other companies (business, marketing, export, finance, etc.)

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## System innovation and development associations, “windows of opportunity”

- System innovations involve a number of complementary technological, organizational and policy frameworks (network and value chain innovations).
- Their development requires close co-operation between private, public (development companies, universities, financiers) and the civic sector. Such a co-operation organization involves a so-called public benefit problem: it benefits all those involved in co-operation, but organizational costs are only burdened by co-ordinators / coordinators. How do companies safeguard their interests in development companies, universities, RDI activities (projects)? The stronger and more cooperative the joint co-ordination and negotiating mechanism of companies, development companies and universities, the better the utilization of system innovations and common funding for the benefit of everyone. Then, results are achieved.
- Consequently, the organization of co-operation for the development of system innovation requires a large number of public investment and independent organizations - development companies. A common organization for system innovations can be a development company responsible for the province's business policy (Business Oulu, Kainuun Etu or JOSEK, etc.)

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## Questions and forthcoming innovation policy

- What tax incentives should be introduced so that residents benefit, will not generate inefficient support mechanisms and the innovation system will not break?
- The development of societal changes is examined in the innovation research through the concept of system innovation. The concept of innovation requires that innovation, through product, service or process, provides an improvement over the former.
- According to the innovation concept, innovation can be innovation for one company, even if it was already introduced in another company.
- However, system innovation is a widespread change everywhere in the structures of the socio-technical system, a change from one socio-technical system to another. For example, a university center system (a common platform for universities), a top program of the Finnish government, or a comprehensive Cemis development program implemented locally in Kainuu (universities, AMK, CSC and VTT). How are municipalities, financiers, provincial developers and entrepreneurs promoting a systemic innovation policy? - other stakeholders (parliament, government, ministries)?
- For example, a change in production that meets the principles of sustainable development in the mining and bio-economy requires structural changes in user preferences, regulation, industrial practices, university operating models, technologies used, research and culture.
- @ Jouko Käsmä
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**TEKNOLOGIA+LIETOIMINTA- JA SYSTEEMIÄLY+ROHKEUS= ARVONLUONTI SUOMALAISILLE  
YRITYKSILLE**



# Background

## The University Centre concept

- University Centers are organizational innovations in which the activities of several universities are brought together. They act quickly as a **collaborative platform for multidisciplinary research projects and training programs.**
- University centres are pioneers of lifelong learning. For example, uniquely multidisciplinary Master's programs in the needs of working life have proven successful nationwide.
- The activities of the University Centers have a major impact on the competitiveness of their surrounding regions and Finland as a whole, the revitalisation of the business structure and the attractiveness of the regions.
- The impacts are reflected in new investments, rising educational levels of the population, employment rates and the income change of young and educated populations.
- University campuses and cities are rapidly evolving into important information communities where the links between education, research and business are exceptionally intense.

## The six on going university centres

- six towns
- 10 universities

### **Kokkolan University Centre Chydenius**

Jyväskylä, Oulu, &  
Vaasa universities

### **Seinäjoki University Centre**

Tampere, Helsinki,  
Taideyliopisto  
Vaasa universities

### **Pori University Centre**

Tampere Technical  
University, Tampere, Turku  
and Helsinki universities.



### **Kajaani University Centre**

Oulu, Jyväskylä, and  
Lapland universities

### **Mikkeli University Centre**

Helsinki, East Finland and  
Aalto universities

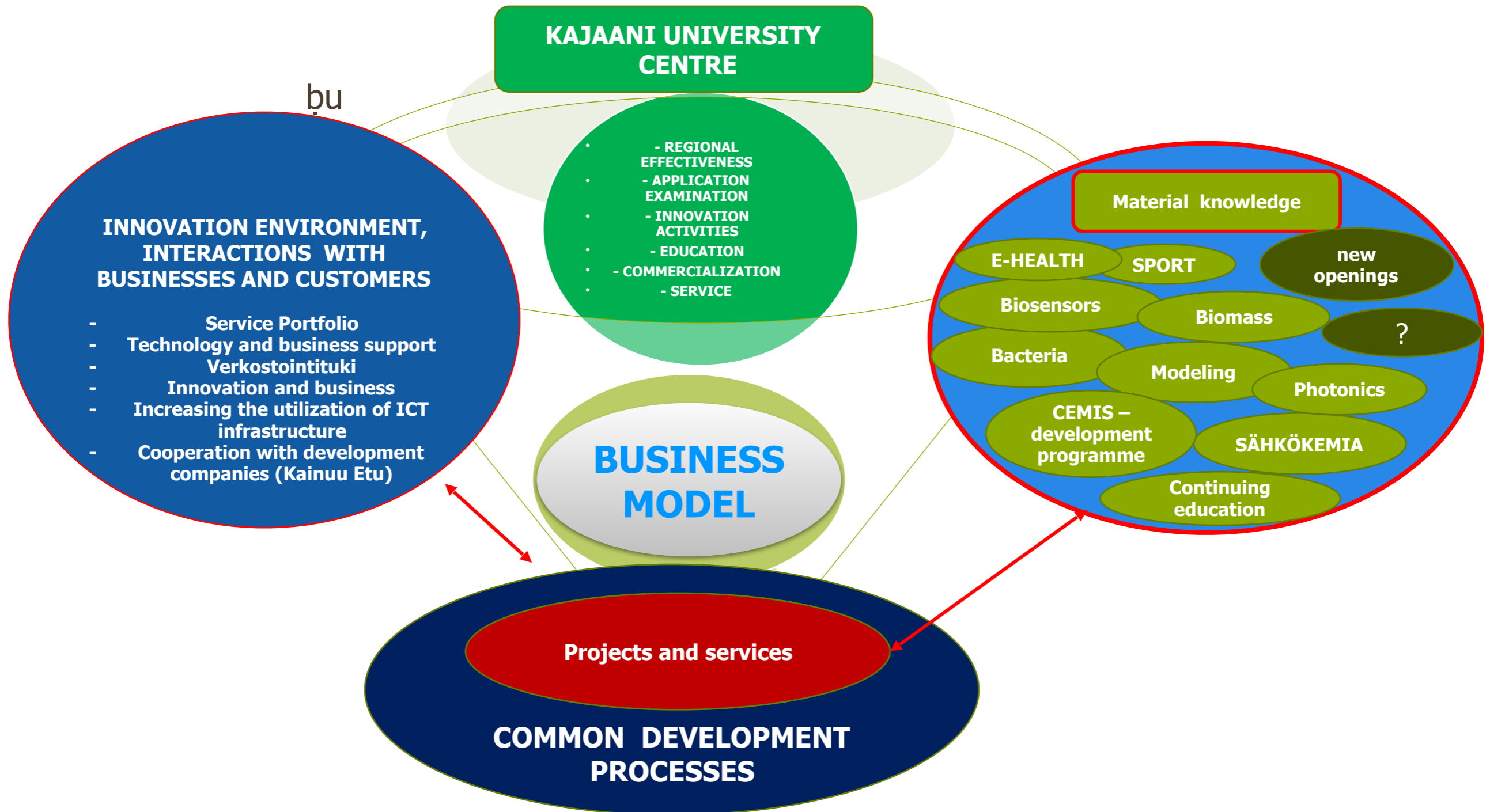
### **Lahti University Centre**

Helsinki, Lappeenranta, and  
Aalto universities



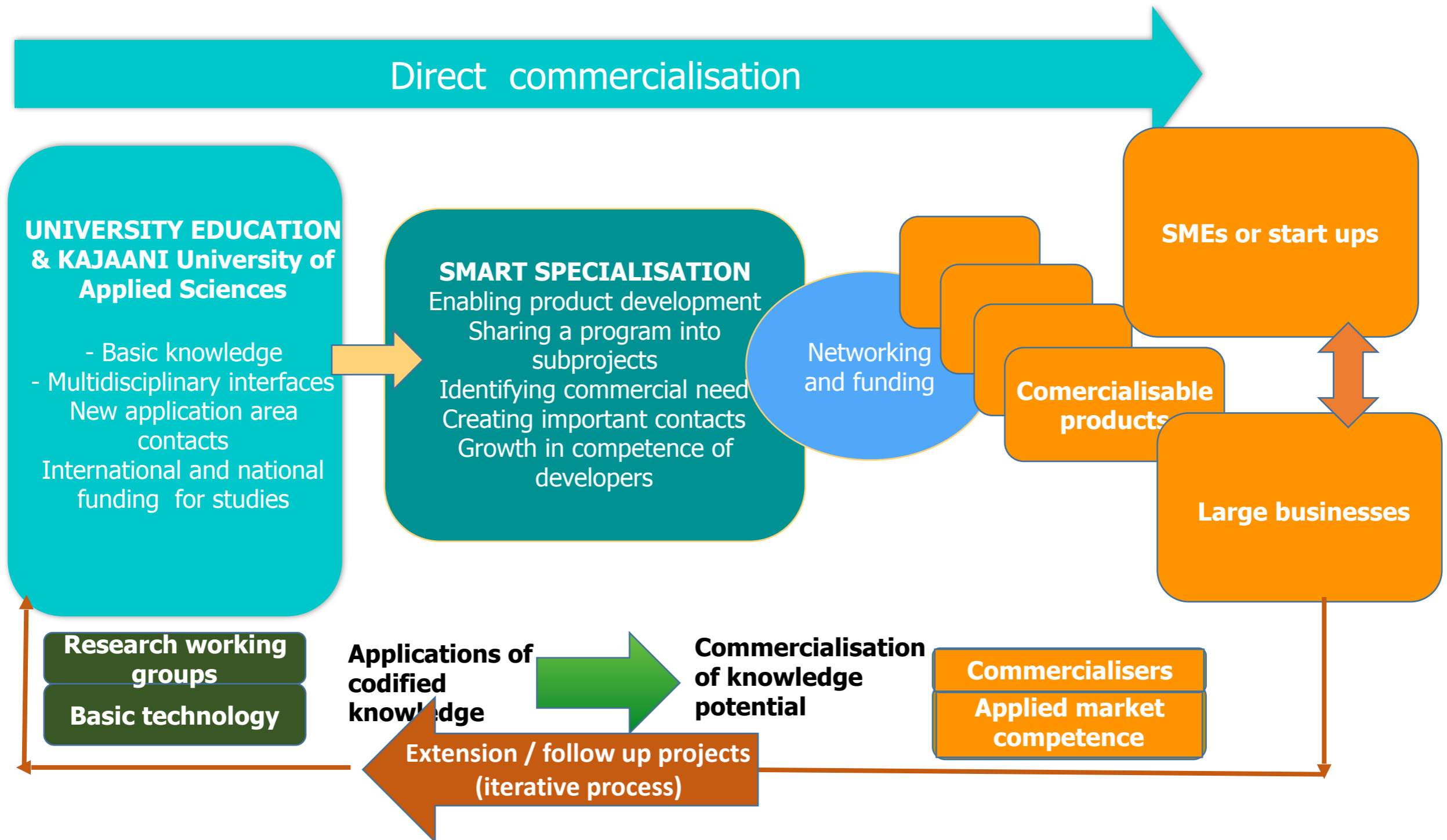
# The renewal concept

## KAJAANI UNIVERSITY CENTRE AND DEVELOPMENT OF FIRMS



# The renewal concept

Kajaani University Centre developed innovation processes and smart specialisation and thereof associated commercialisations





# The renewal concept

## What is new?

- 1) Ten universities accessible across Finland to regions that do not have university units; joint development actions among the members of the network
- 2) Common development processes in six University Centres
- 3) Effort to address fragmentation of the Finnish landscape (large territory with small population)
- 4) Aligned with RIS3 of the regions for each one of the six cities
- 5) Adopting a standardised, qualified, innovation management approach

# The renewal concept

## What is new?

6) Clear terms of cooperation with other development organisations, for example

### University Centre

research knowledge

State of the art industrial trends

Interdisciplinary knowledge

skills

Education

### Innovation agency

business knowledge

localised industry knowledge

Interdisciplinary applications  
competence

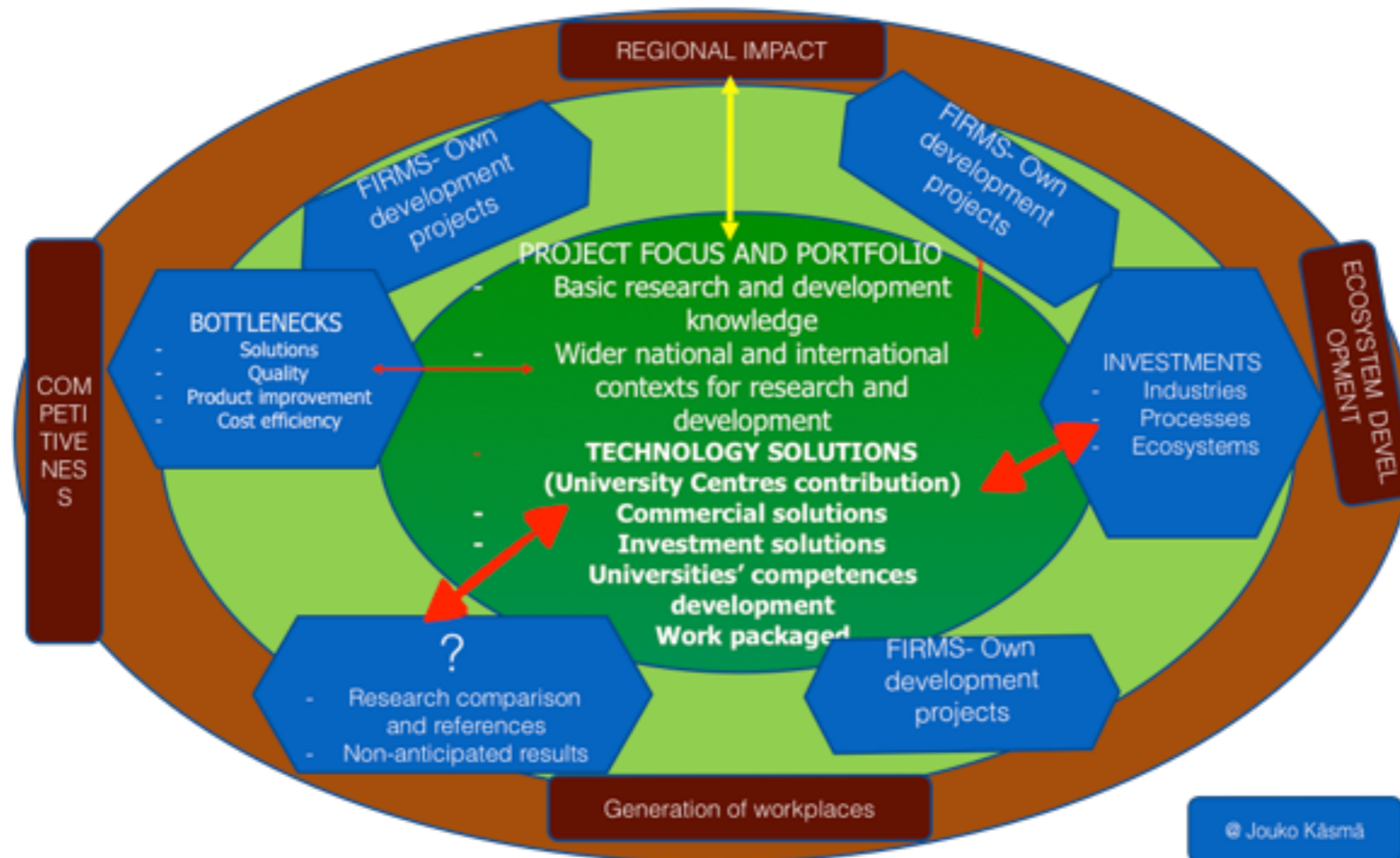
7) Potential to apply comprehensive, industry-based roadmaps related to the RIS3

8) Expectations: collaborative projects across Finland; also with extended network in Sweden and the UK. 😊 😊.

# Examples of the application of the new University Centre concept

## 1) Contribution to the implementation of RIS3

Through technological solutions addressing bottlenecks / modernisation / diversification objectives, and leading to investments.



# Examples of the application of the new University Centre concept

## 2) Finnish Academy Terva-program

- Predictors and biomarker changes of successful weight loss supported by ICT and near real-time monitoring of biomarkers by IoT-enabled wireless energy harvesting –powered CMOS biosensor array - implementation to patients and population at large .Director of the consortium: Prof. Markku Savolainen, Research Unit of Internal Medicine, Faculty of Medicine and Oulu University Hospital.
- Directors of subprojects: Prof. Juha Häkkinen, Circuits and Systems (CAS) research unit, Faculty of Information Technology and Electrical Engineering; Prof. Harri Oinas-Kukkonen, Oulu Advanced Research on Service and Information Systems (OASIS) research unit, Faculty of Information Technology and Electrical Engineering; Prof. Vesa Virtanen, Unit of Measurement Technology (MITY), Kajaani University Consortium.
- - 3-year project, budget of MITY 449 000 €, Collaboration of MITY and Häkkisen aims to successful transfer of couple of biosensors to a chip. The power needed would be taken from the battery of the mobilephone and a small reader would be attached to the phone.

# Examples of the application of the new University Centre concept

## 3) Competences and types of projects agreed for each University Centre:

Academy: ICT2023-programme

- user-centred health technology and digital health services.
- Intelligent Support System to Promote Healthy Nutrition Among Older People (ISMA)
- Consortium: Univ. Oulu and Oulu Deaconess Institute
- Univ. Oulu: Petri Pulli (consortium leader), Timo Lämsä, Heli Jantunen ja Vesa Virtanen
- ODL: Raija Korpelainen (their PI)
- Total budget just under 1 M€ out of which MITY's part is about 191 000 € – same as other univ. Oulu groups. Pulli's group gets double; 2-year project

MITY: further development of measurement- sensitivity enhancement and transfer to point-of-care system

- RACE (TEKES:n Water programme). Development of measurement methods of toxic compounds for the chemical process industry.
- CLEEN / MMEA - programme: Development of on-line measuring devices and assessment of the suitability of biosensors for the development of water contamination management
- LUMO: Development of liquid monitoring by new optical methods
- NICK (TEKES:n Green Mining programme): Development of small nickel concentrations in the extractive industries
- SULKA: Development of methods for monitoring and analysing sulfur compounds in extractive environments



# Examples of the application of the new University Centre concept

## 4) UC embeddedness: Cooperation with Kainuun Etu and the promotion of regional industries





THANKS!

**Jouko Käsmä, project manager, University of Oulu**

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