

# Finnish ICT Innovation Ecosystem

Workshop ICT Challenges for Innovation

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<http://www.vtt.fi/innovationstudies>

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## Agenda

- ICT for Innovation and Development
- ICT Development in Finland
- Finland ICT Innovation System
- Finnish Barrier-Free Program
- Current Situation: some highlights

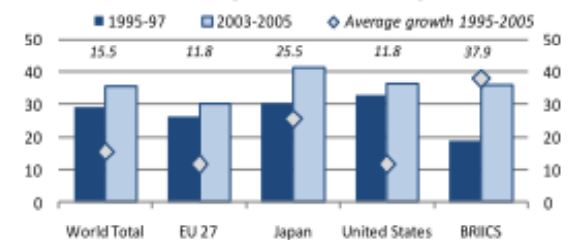
## ICT Research Trends – Some Stylized Facts

- Digital Convergence
- Convergence of service and technology driven business models
- Rivalry of Ecosystems: Turning products into technology platforms
- Continued relevance of S&T and continued growth of research & patenting
- High-end markets attract most business focus, but currently economically and socially excluded markets are most reliable source of growth

ICT related patenting grew 4,7% / year 95-05

In 2005, over 50 000 international ICT patents were filed

Share of ICT-related patents in total patents - %



Revealed technological advantage in ICT<sup>1</sup>, 2003-05



# ICT Innovation and Development

- Increasing recognition of the significance of innovation and ICT for development;
- Improved framework conditions for STI/ICT in the developing world
- New sources of global economic growth change innovation dynamics:
  - **Poor and emerging markets drive economic growth, not the rich;**
  - **Innovation adapted to the needs of the poor**
  - **Inclusive innovation**
  - **Emerging economies are playing growing role in global innovation networks**
- Transfer of national or business models is of limited viability.

## Finnish challenges

- **Understanding emerging knowledge dynamics**
- **Strengthening (networks with) institutions of innovation in the developing world**
- **Turning Finland global**
- **Departure from old business models**

## The Case of Finland

- Transformation into *knowledge based economy*.
- Economic and industrial renewal. Transition from:
  - closed and regulated economy to free-market society
  - technological follower to innovator
  - pre-dominantly forest & metal industry exports to ICT
  - coordination of the economy and production to coordination of knowledge production
- The "success" Finland: Nokia pulled ahead and the public sector was responsive follower
- Barrier-free society: Action Plan 2011-2015

## ICT Funding in Finland

- Ministry of Employment and The Economy
  - Tekes. Finnish Agency for Technology and Innovation
  - Patents
  - IPR
- Ministry of Education:
  - Higher Education and Science
  - Academy of Finland
- Ministry of Transport and Communications
  - Enabling environment
  - Standardization and regulation

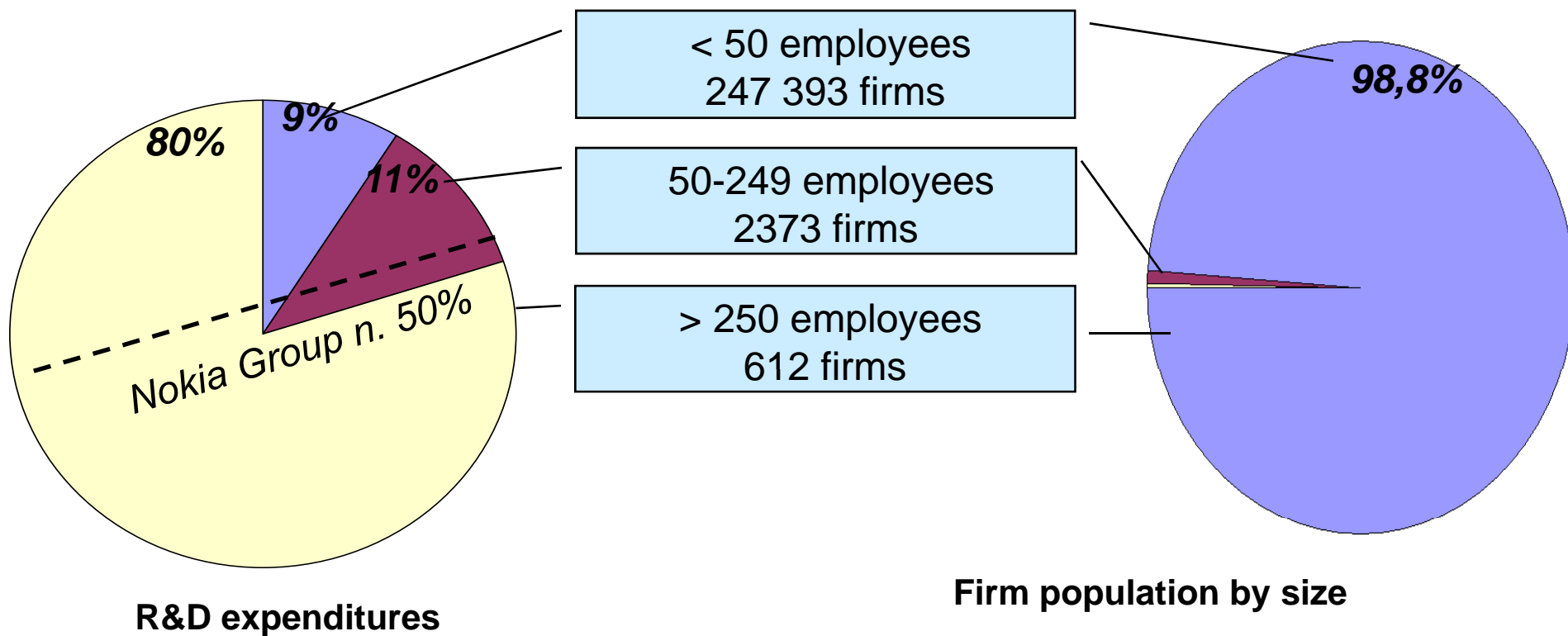
## The Technology Industry – the Most Important Sector in Finland

- 60 % of total Finnish exports
- 80 % of private-sector R&D investment
- Some 290000 employed directly in the sector, a good 700000 employed in total, equalling over one quarter of the entire Finnish labour force
- The Federation of Finnish Technology Industries has some 1600 member companies



## Large Firm Innovation Economy

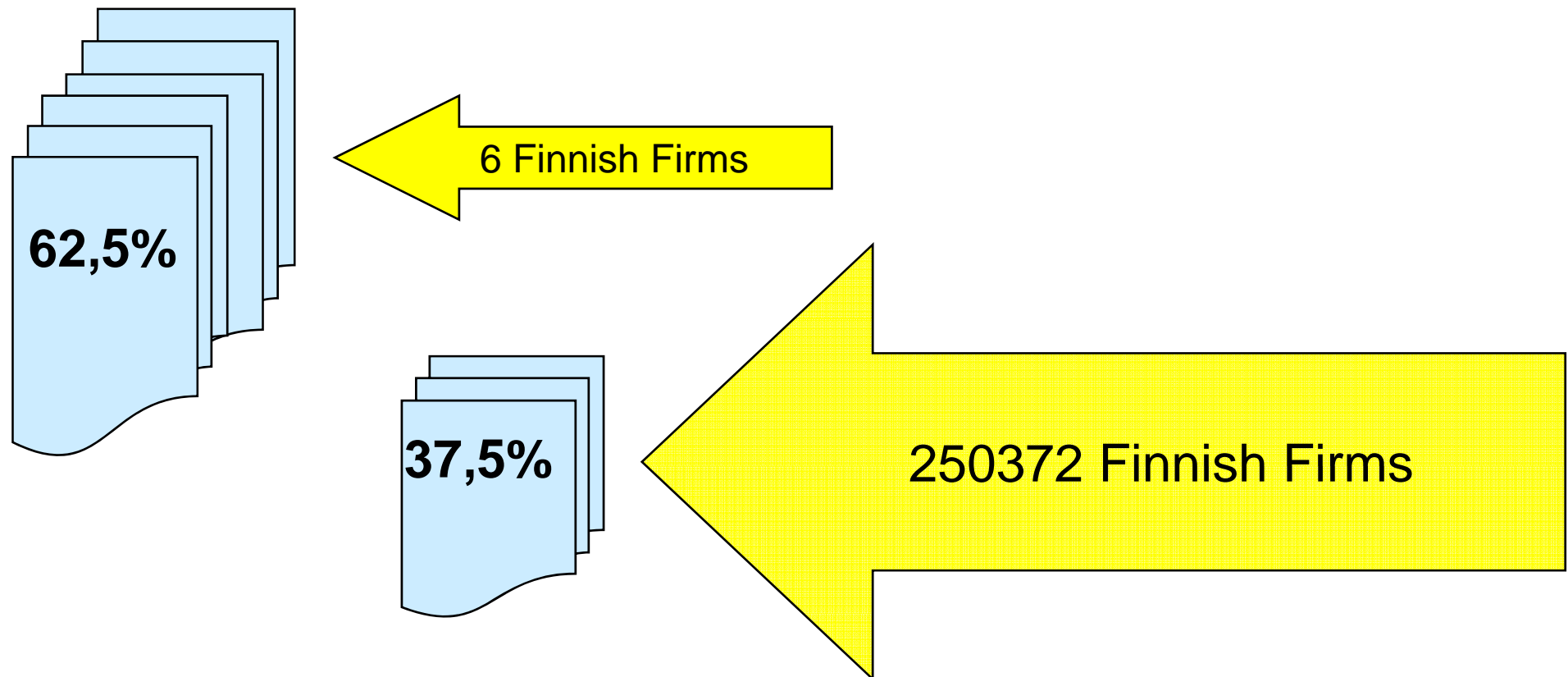
### - R&D Expenditure by firm size (2006)



Sources: Statistics Finland, OECD

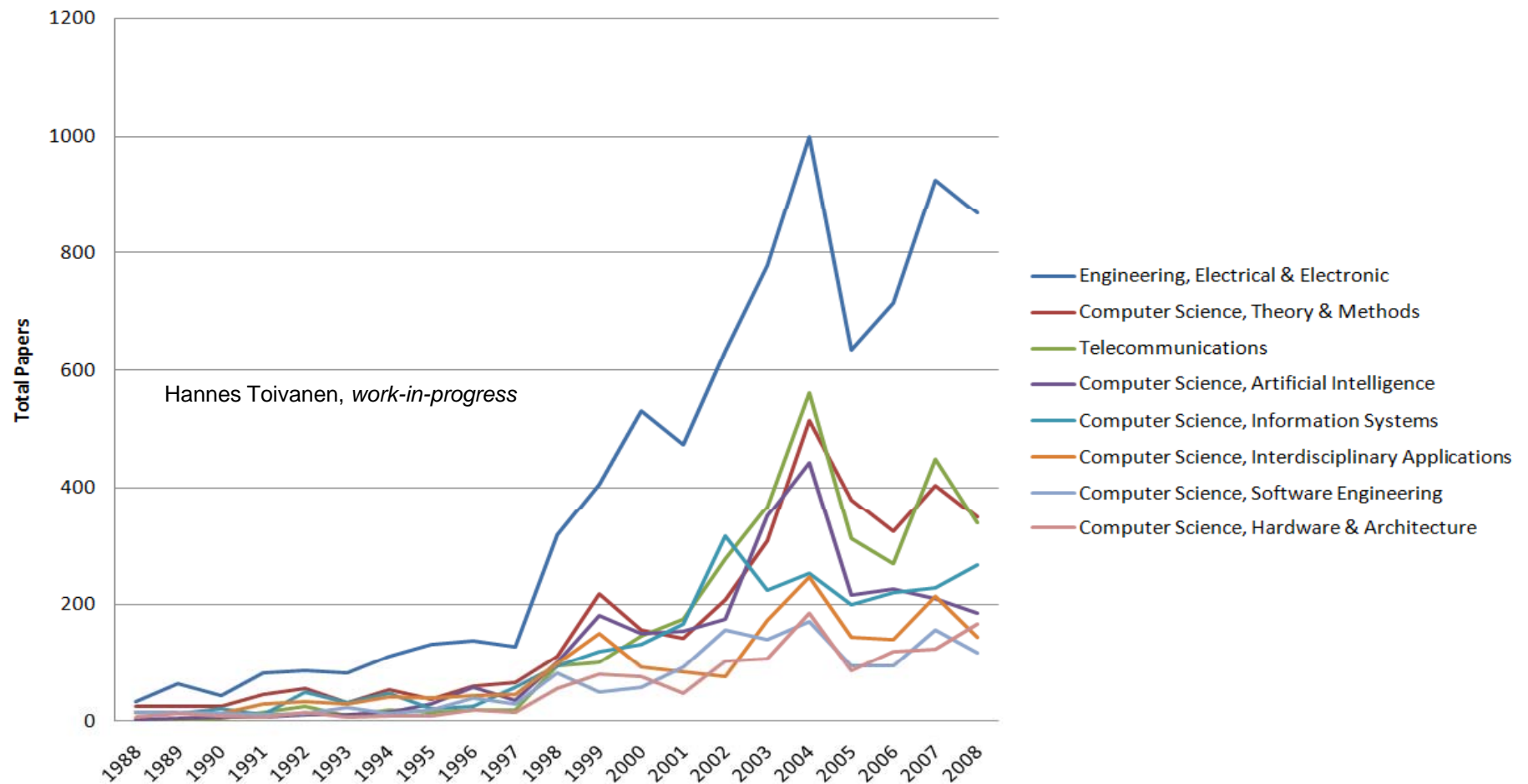


## Concentration of Innovation - EPTO Applications (2006 )



Source: Statistics Finland

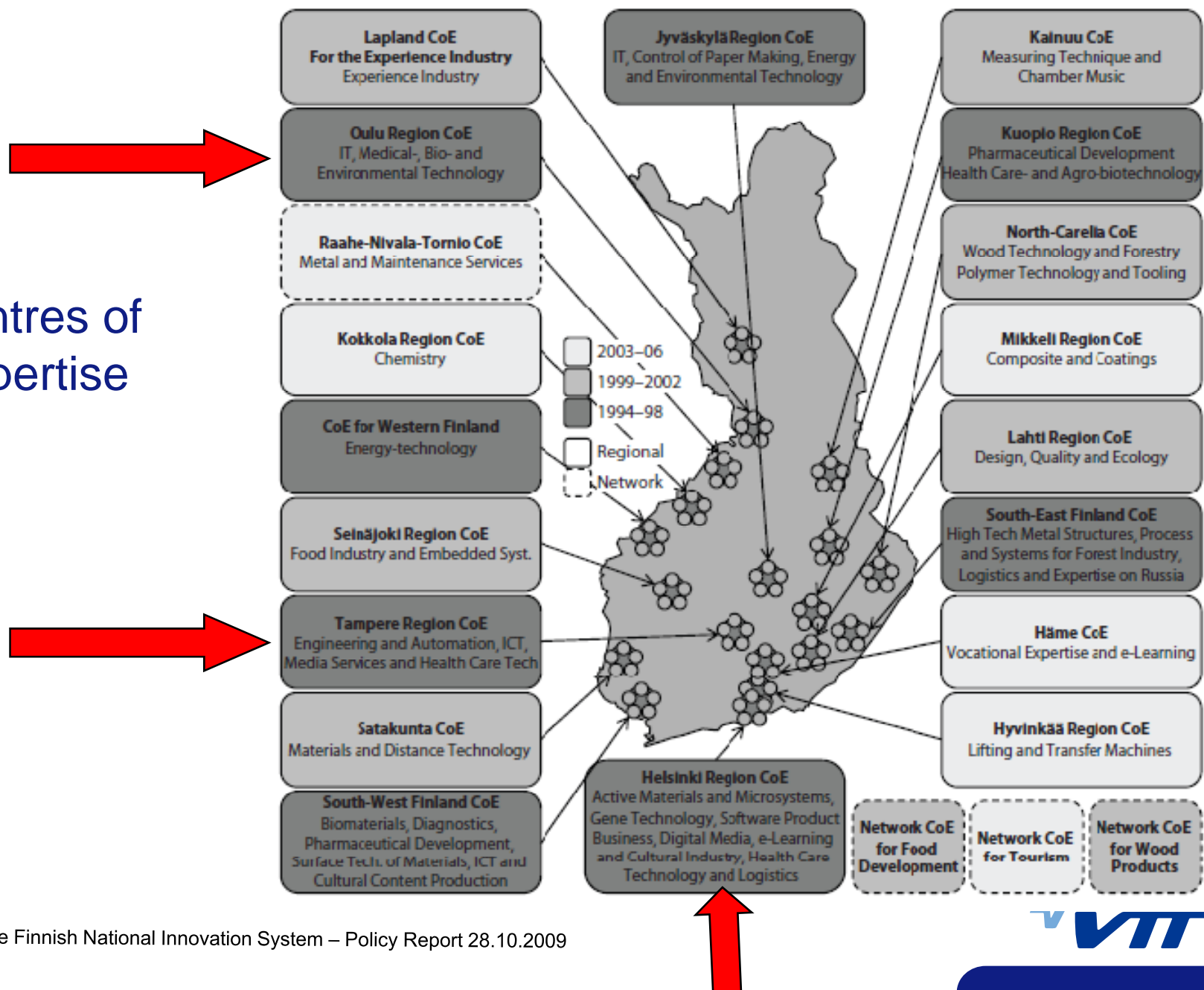
# Finnish ICT related research – publications by subject, 1988-2008



## NOTE:

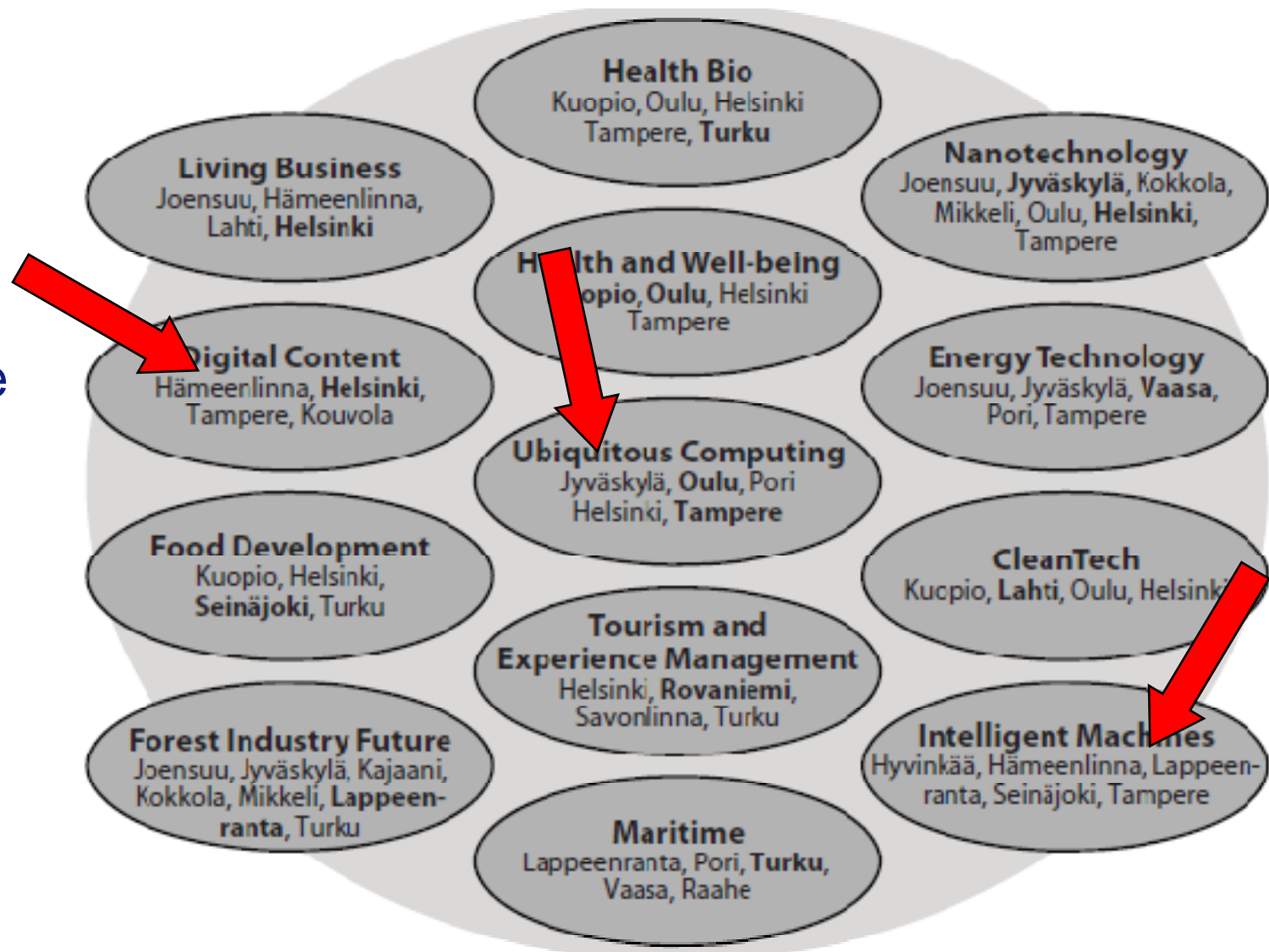
- **Data source:** Thomson Reuters Web of Science; VTT Database; Articles, Proceedings and Meeting Abstracts;
- N: 16 494 – NOTE: Data cleaned, includes cross-disciplinary papers – *work in progress*

## Centres of expertise

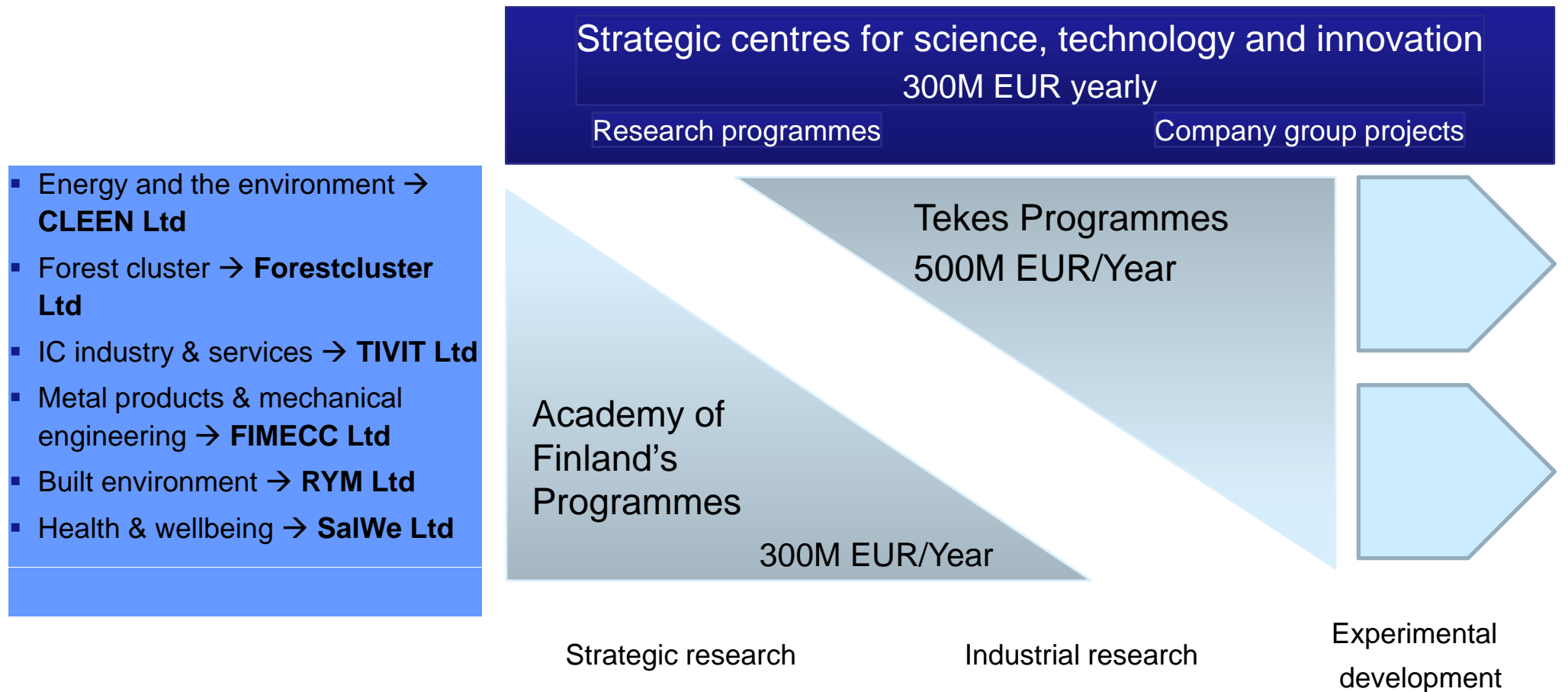


Source: Evaluation of the Finnish National Innovation System – Policy Report 28.10.2009

## Competence clusters



## Strategic Centres for STI within national strategy



Source: Tekes

# Digital Agenda for 2011 – 2020 – Productive and inventive Finland



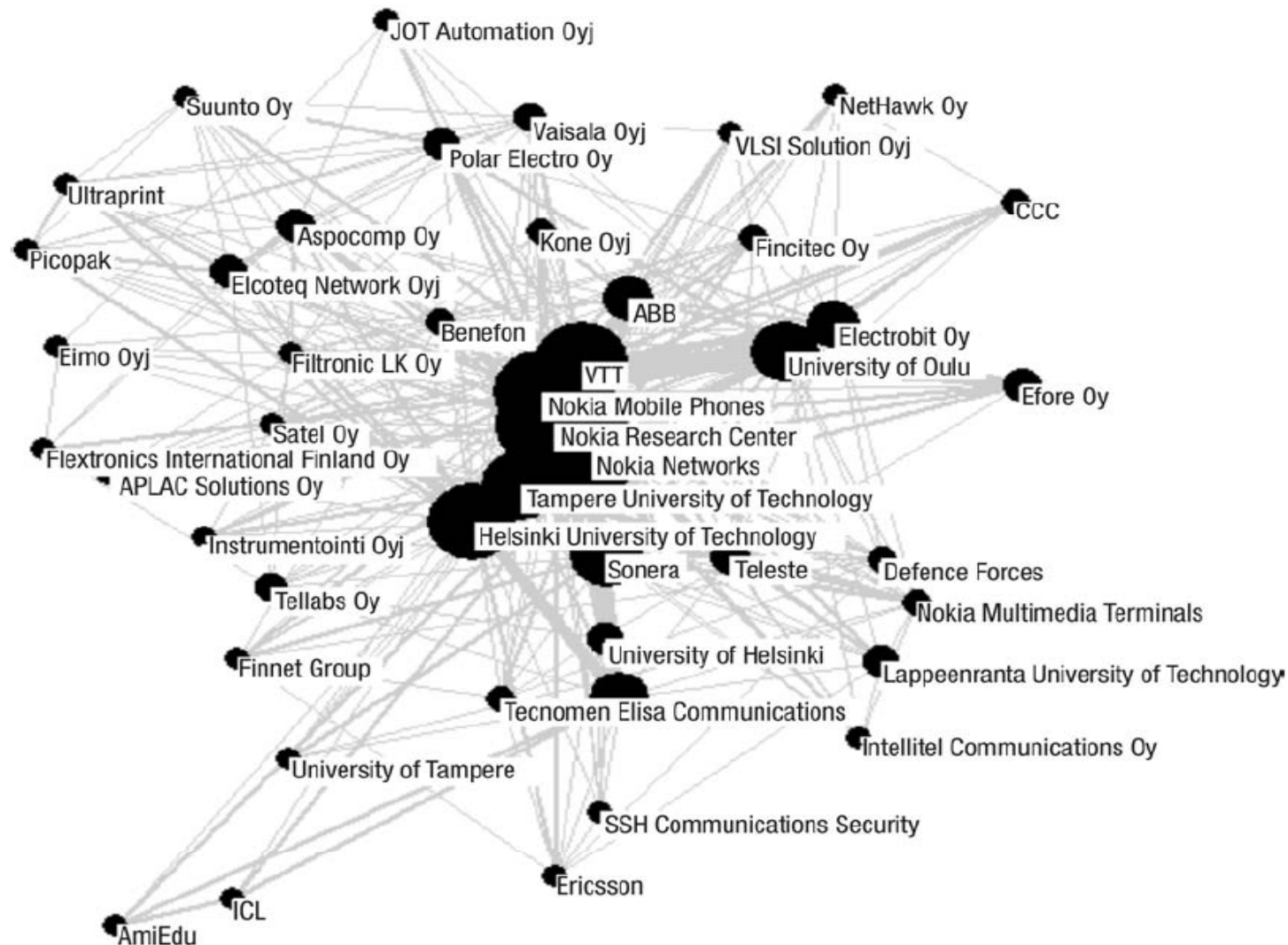
Source: Ministry of Transportation and Communication

## Barrier-Free Society Action Program 2011-2015

- Underlining legal instruments for ICT policies in Finland:
- **Finnish constitution**
- **Act on Television and Radio Operations** (744/1998) - EU Directive 2007/65/EC on broadcasting services,
- **Act on Yleisradio Oy (Finnish Broadcasting Company)** (1380/1993)
- **Act on Electronic Services and Communication in the Public Sector** (13/2003)
- **Administrative Procedure Act** (434/2003)
- **Act on Public Contracts** (348/2007)
- **Act on Services and Assistance for the Disabled** (380/1987)
- **Non-Discrimination Act** (21/2004)
- **Act on Interpreter Services for Persons with Disabilities** (133/2010)



## Finland – Some highlights

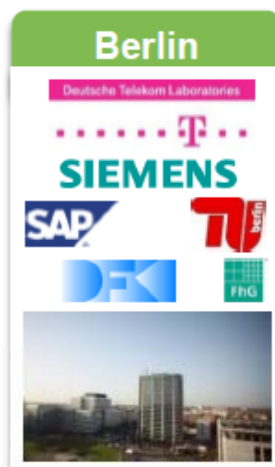


Source: Castells and Himanen (2002) The Information Society and the Welfare State: The Finnish Model

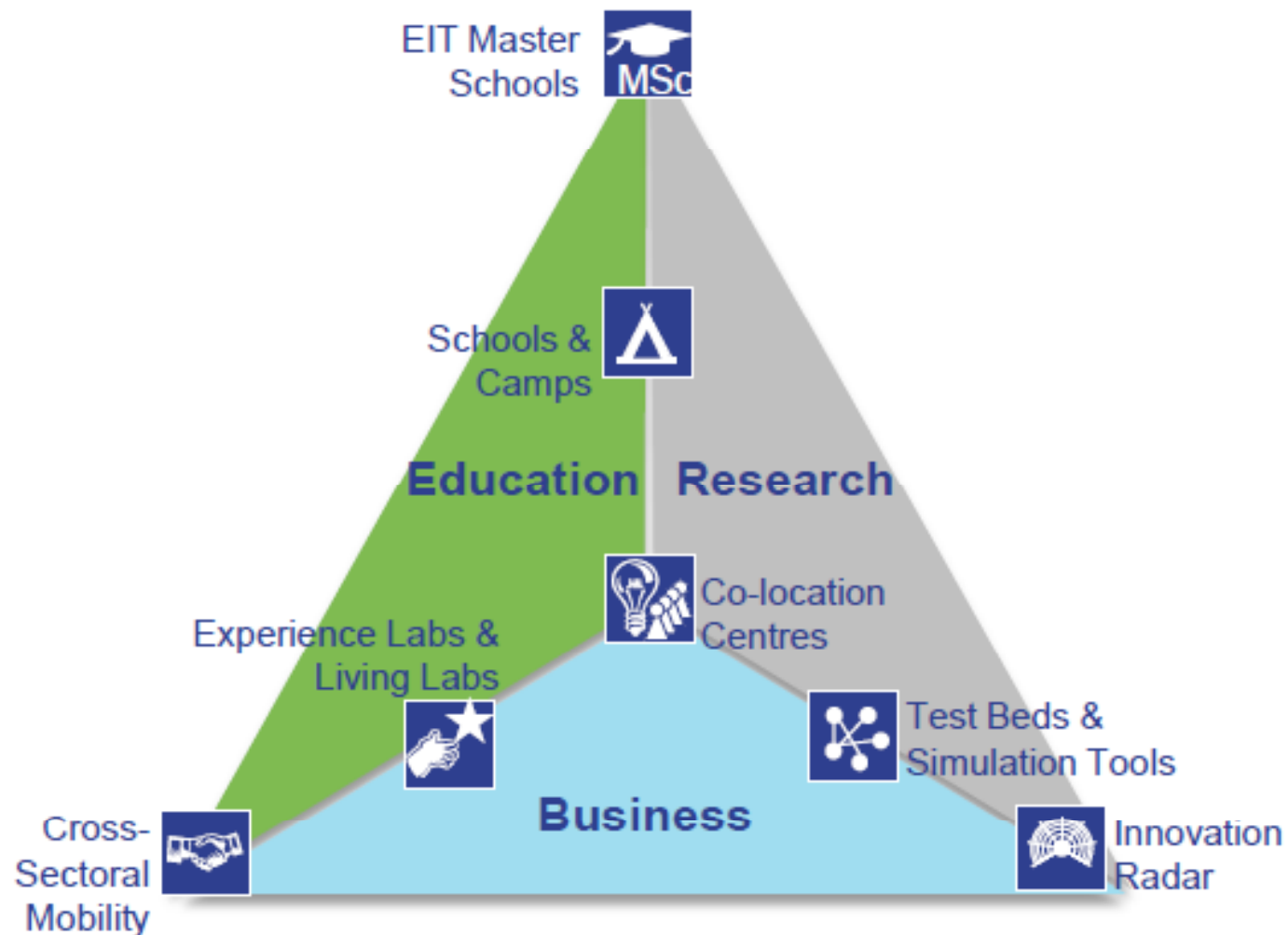


	Smart Spaces
	Smart Energy Systems
	Health & Wellbeing
	Digital Cities of the Future
	Future Media and Content Delivery
	Intelligent Transportation Systems

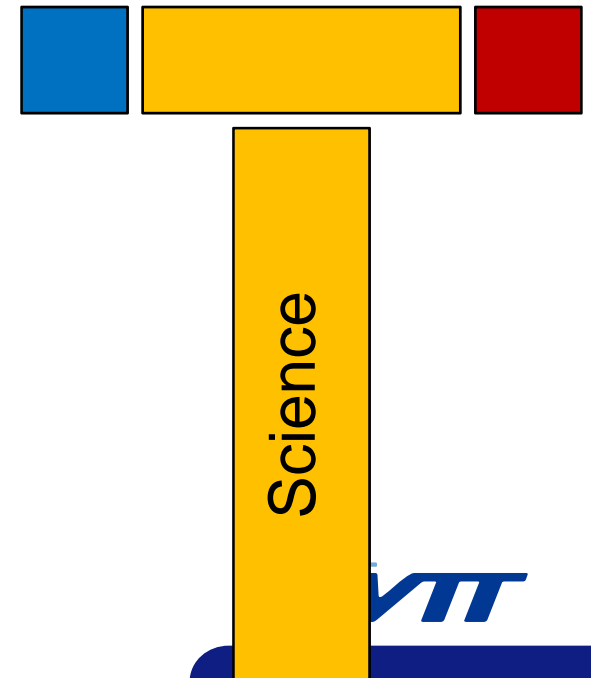
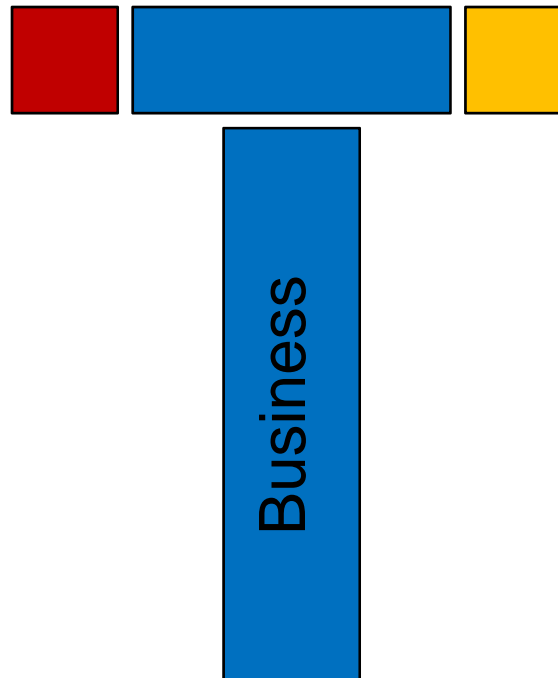
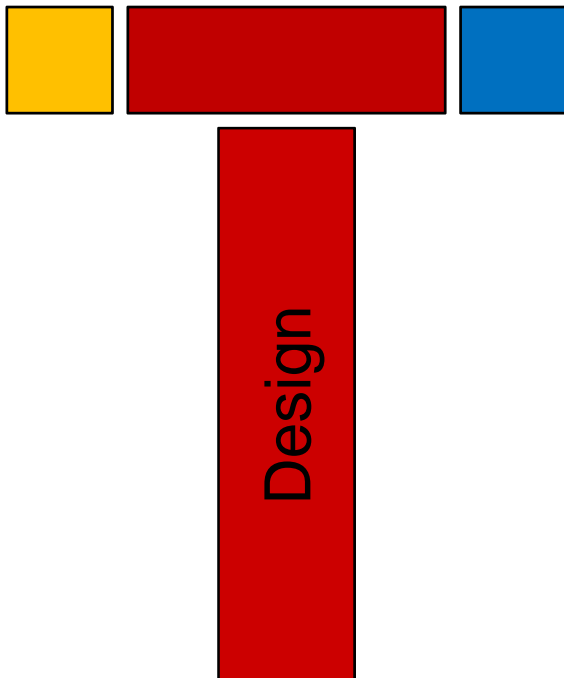
## EIT ICT Labs Ecosystem



# EIT ICT Labs



## Education



# Research

**TiViT**

FUTURE INTERNET

DEVICES AND INTER-  
OPERABILITY ECOSYSTEM

CLOUD SOFTWARE

NEXT MEDIA



	Computing in the Cloud
	Internet Technologies and Architectures
	ICT-mediated Human Activity



FUTURE  
INTERNET  
PPP

## Business

Innovation  
in  
established  
companies

- SHOK - Tivit
- Company R&D - Nokia

New  
business  
creation

- Start-ups
- Spin-offs







# VTT creates business from technology

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