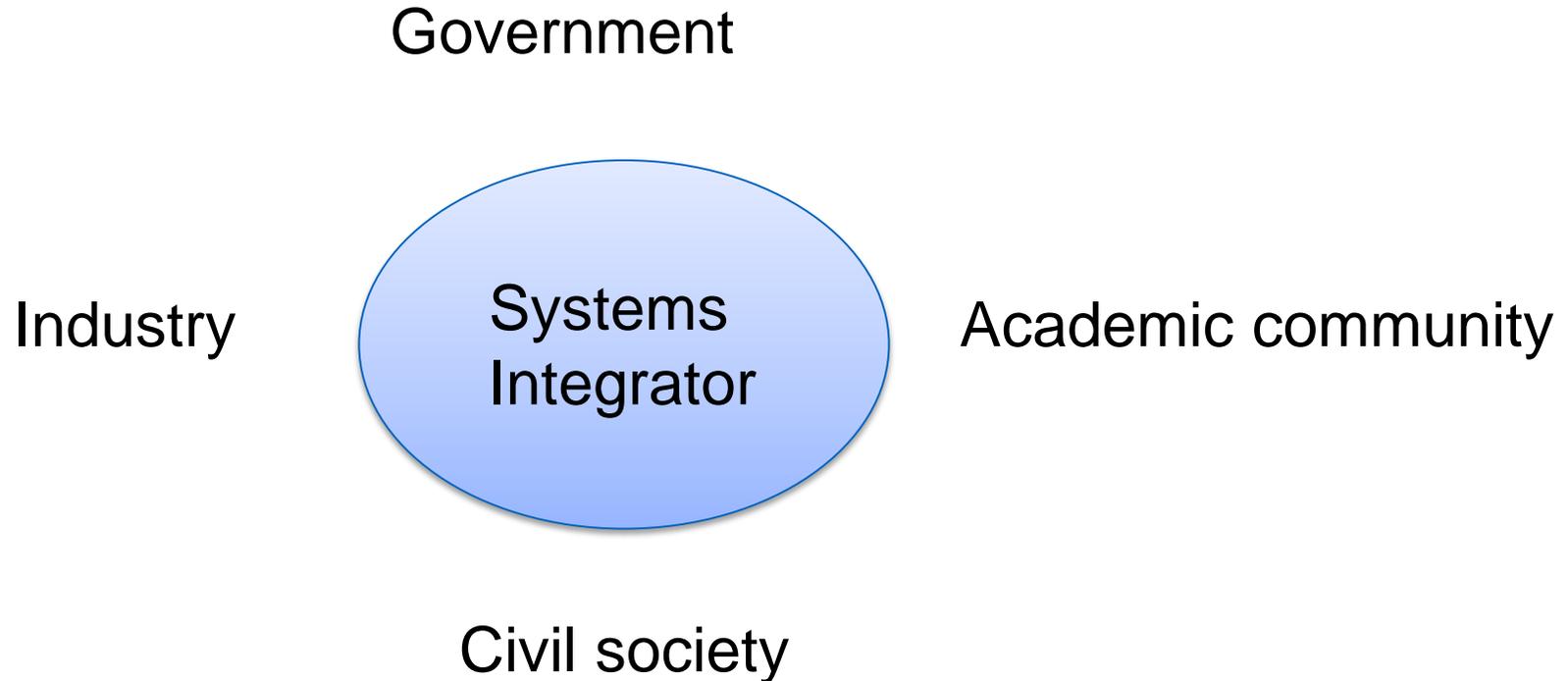


Innovation Management coping with the Grand Challenges; Industry Perspective

by Erkki Ormala

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Concerted action is necessary to address Grand Challenges (Kuhlmann & Rip, 2014)



Industry perspective

- Industry is committed to deliver
- R&D should focus more on the Grand Challenges
- An overall objective of creating sustainable growth
 - would increase industrial and social relevance and
 - encourage more industrial involvement in joint efforts
- To achieve the objectives R&D is not enough
- In addition, an enabling innovation environment needs to be created

Favorable Innovation Environment

Good understanding
of the changing landscape

4) Access to top-level
research and high
quality experts in a
variety of different fields

3) Access to market;
Cost efficiency
Macro economic
stability

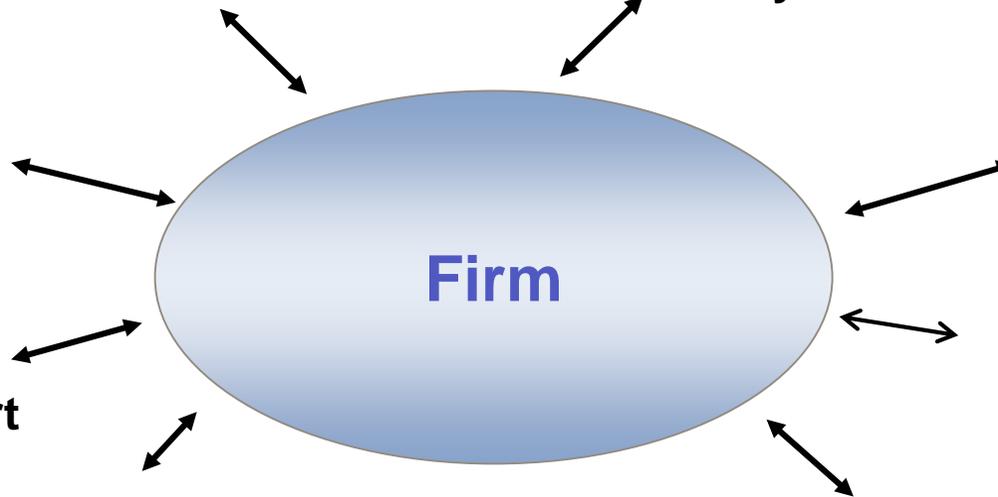
Easy access to
Broadband; ability
to use ICT

2) Access to VC
funding and support

Access to physical
assets

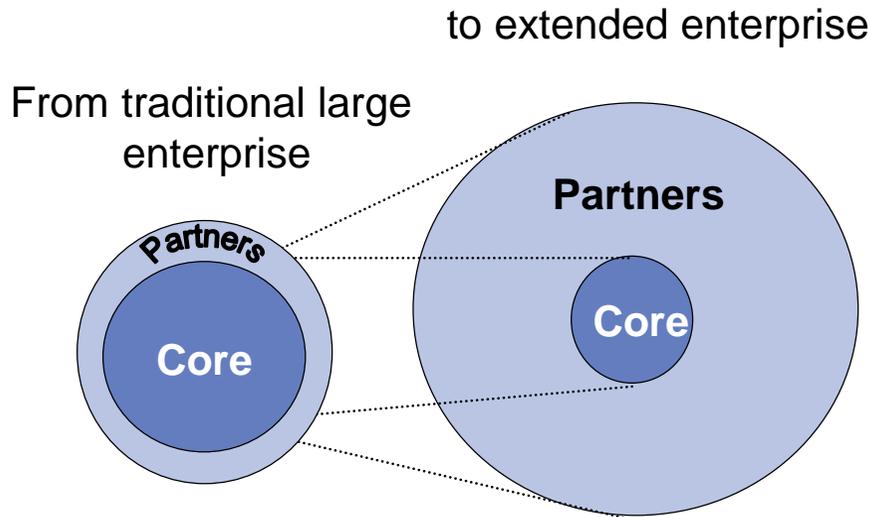
1) Innovation networks; Rich
fabric of private partners;
enabling vertical and horizontal
integration

Favourable regulatory
environment; harmonized rules;
IPR provisions; company
statutes; taxation, etc

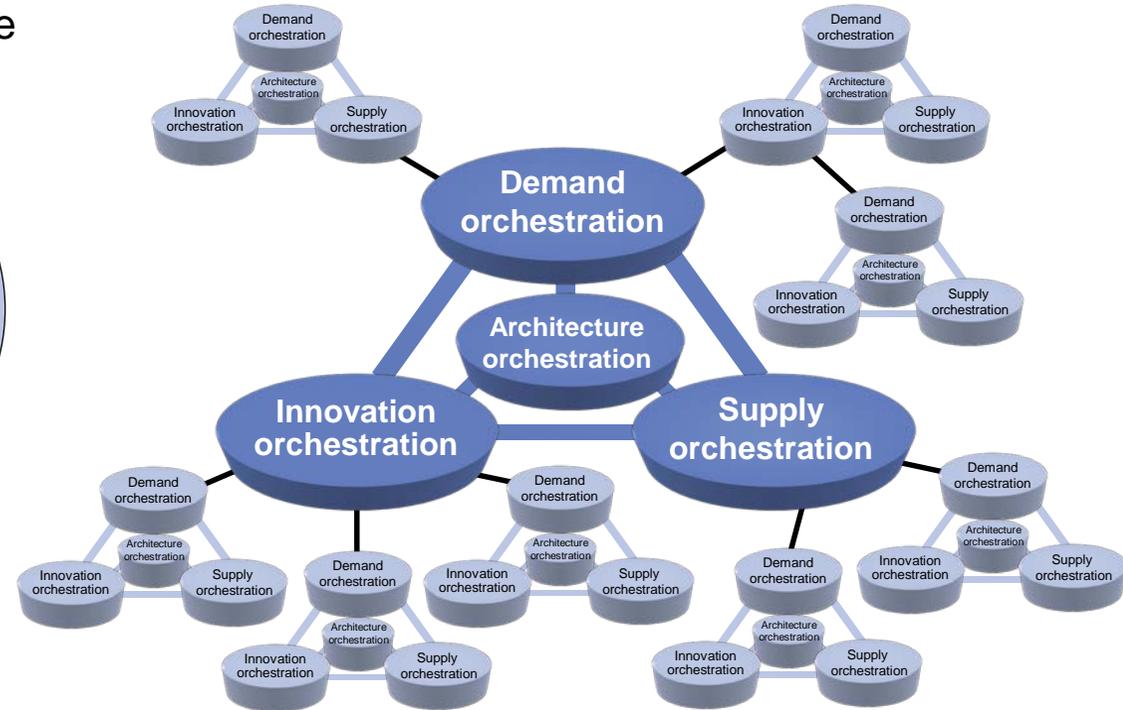


1) Innovation networks

enable new ways of knowledge creation and utilization



with orchestration capability



2) Venture capital investments by country

Million US dollars, 2012

- Estonia (2011) 1.8 Italy 91.7 Australia 331.3
- Slovenia (2011) 2.5 Finland 101.6 Korea 606.9
- Czech Republic 6.7 Denmark 101.7 Germany 706.2
- Russian Federation (2011) 9.3 South Africa (2011) 109.6 France 710.5
- Poland 11.7 Ireland 113.5 Israel **867.0**
- Greece (2011) 13.7 Belgium 115.9 United Kingdom 929.1
- Luxembourg 14.2 Norway 143.4 Canada 1470.1
- Portugal 20.4 Spain 148.1 Japan 1553.6
- New Zealand (2011) 28.9 Switzerland 209.5 United States **26652.4 (75% of all OECD)**
- Austria 43.5 Netherlands 226.5
- Hungary 82.6 Sweden 285.6

<http://dx.doi.org/10.1787/888932829837>

3) Access to markets; EU Digital Agenda 2010

Action areas of the Digital Agenda

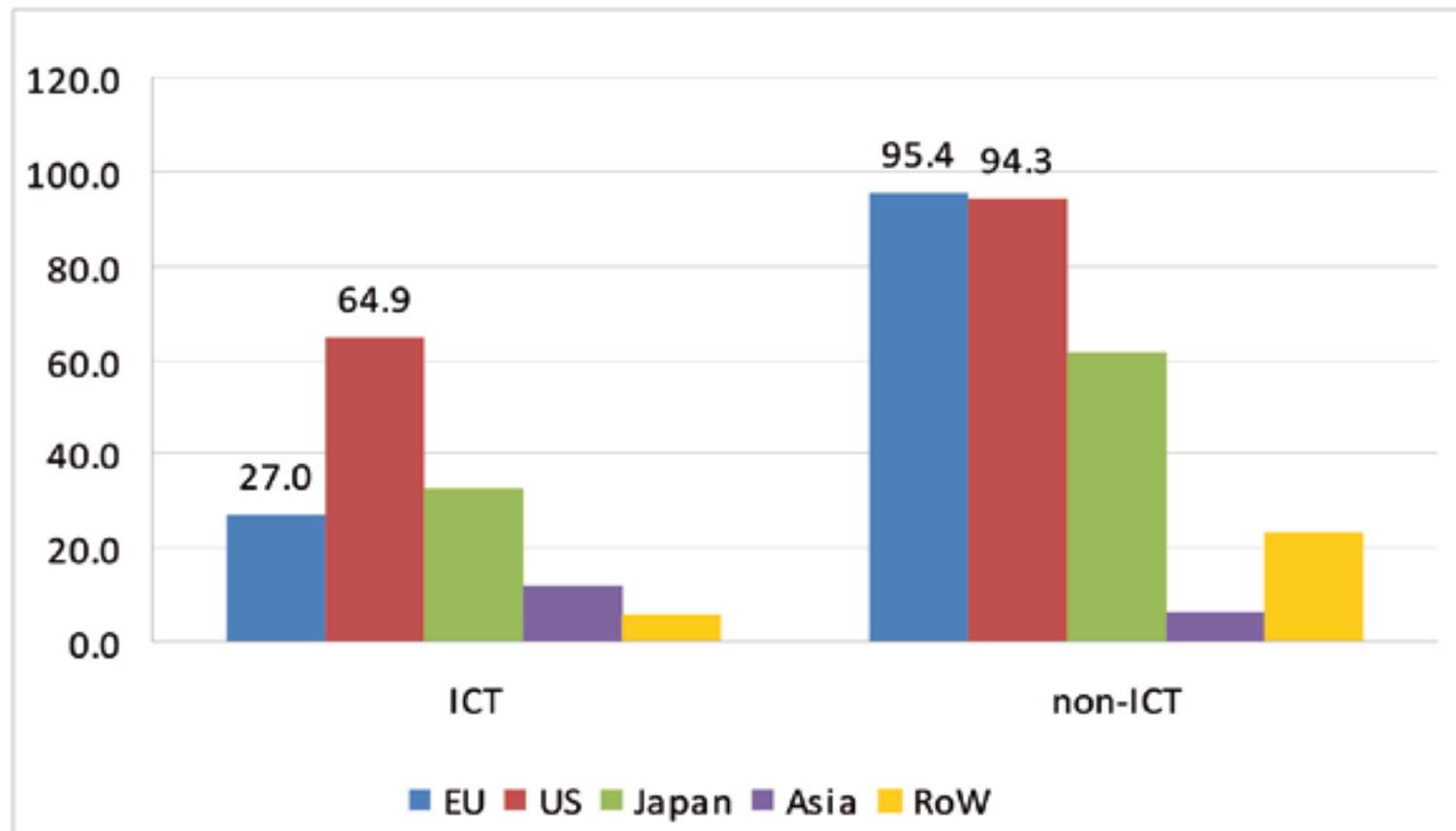
- A vibrant digital single market
- Interoperability and standards
- Trust and security
- Fast and ultra fast internet access
- Research and innovation
- Enhancing digital literacy, eskills and inclusion
- ICT-enabled benefits for EU society
- International aspects of the digital agenda

Implementation and governance

Completion of the Digital Single Market by 2015 would increase EU GDB at least 4% by 2020

- **copyright reform**
- **data privacy**
- **consumer protection**
- **intermediary liability**
- **radio spectrum**
- **standardization**
- **payment systems**
- **WEEE recycling schemes**

4) Access to top-level research; R&D investments in the ICT sector and non-ICT sectors by EU, US, Japanese, Asian and RoW Scoreboard companies, in billions of €(2008)



... in a variety of fields

Future Internet

- Personalized
 - Interactive
 - Context aware
 - Semantic
-
- Digital convergence
 - Cloud computing
 - New user experience
 - Mobile sensing
 - Nanotronix
 - Ubicom
 - Ultra fast internet access
 - ...

***ICT is an enabling technology
to address all Grand Challenges***

ICT will change

- Innovation
- **Environment/energy efficiency**
- Media
- Digitalization of services/ecommerce
- Universal access/BoP
- Industrial Internet
- eLearning
- eHealth
- ICT enabled society

ICT is an enabler for low carbon solutions

- SMART2020 Report: ICT could reduce CO2 emissions by enabling reductions in other sectors **up to 15 %** of total global emissions by 2020



SMART 2020: The enabling effect of ICT

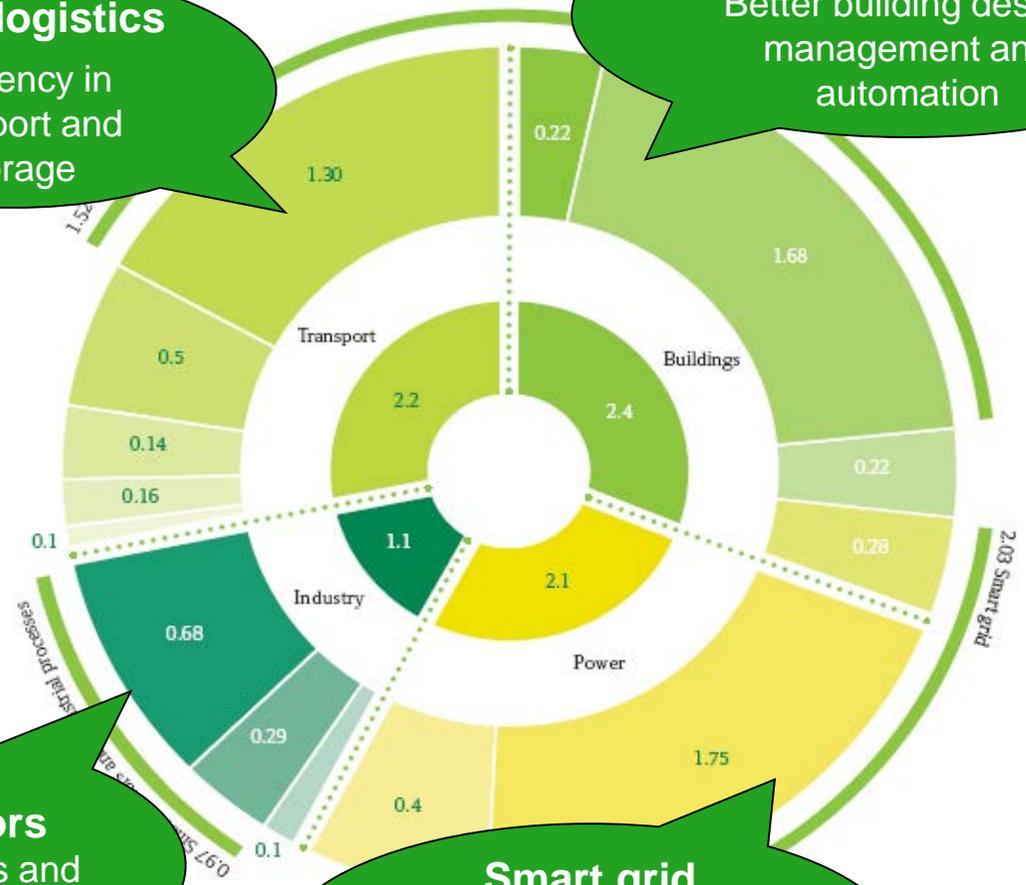
In 2020, ICT could enable reductions of 7.8 Gt CO₂e

Smart logistics
Efficiency in transport and storage

Smart buildings
Better building design, management and automation

Smart motors
Optimized motors and industrial automation

Smart grid
Better monitoring and management of electric grids



Source: Climate group/GeSI: SMART 2020

4) Access high quality experts; Skill Shortage

Twenty-seven per cent of businesses in Europe reported that they had left an entry-level vacancy open over the past year because no one with the right skills could be recruited. Only education providers were confident that the young people they trained had the skills they needed to equip them for work: 74 per cent believed their graduates were prepared for work but only 38 per cent of youth and 35 per cent of employers agreed. (McKinsey, FT 13 January, 2014)

eSkills

- Users must have the necessary digital skills. Many European citizens and enterprises currently do not use IT sufficiently. This results in a growing difficulty in filling digital jobs. In 2011, the European Union was faced with 300 000 unfilled vacancies in the ICT sector; if this trend is not checked, there could be as many as 900 000 unfilled vacancies by 2015. This skills mismatch is detrimental to our economic and social policy objectives.
- **(EUROPEA COUCIL 24/25 OCTOBER 2013; CONCLUSIOS)**



The way forward

- **Create a systems integrator involving all the stakeholders**
- **Design a joint SRA**
- **Adopt a systemic approach**
- **Build an enabling environment and respect the complexity of the challenge**
- **Educate people for innovation, not only for research**
- **Look for the scientific frontier and cross disciplinary challenges**
- **Build ecosystems to gain leadership, critical knowledge assets and control points in the new value domains emerging from the Grand Challenges**

Thank you