

Atbalsts pētniecībai un attīstībai

L. MUIŽNIECE

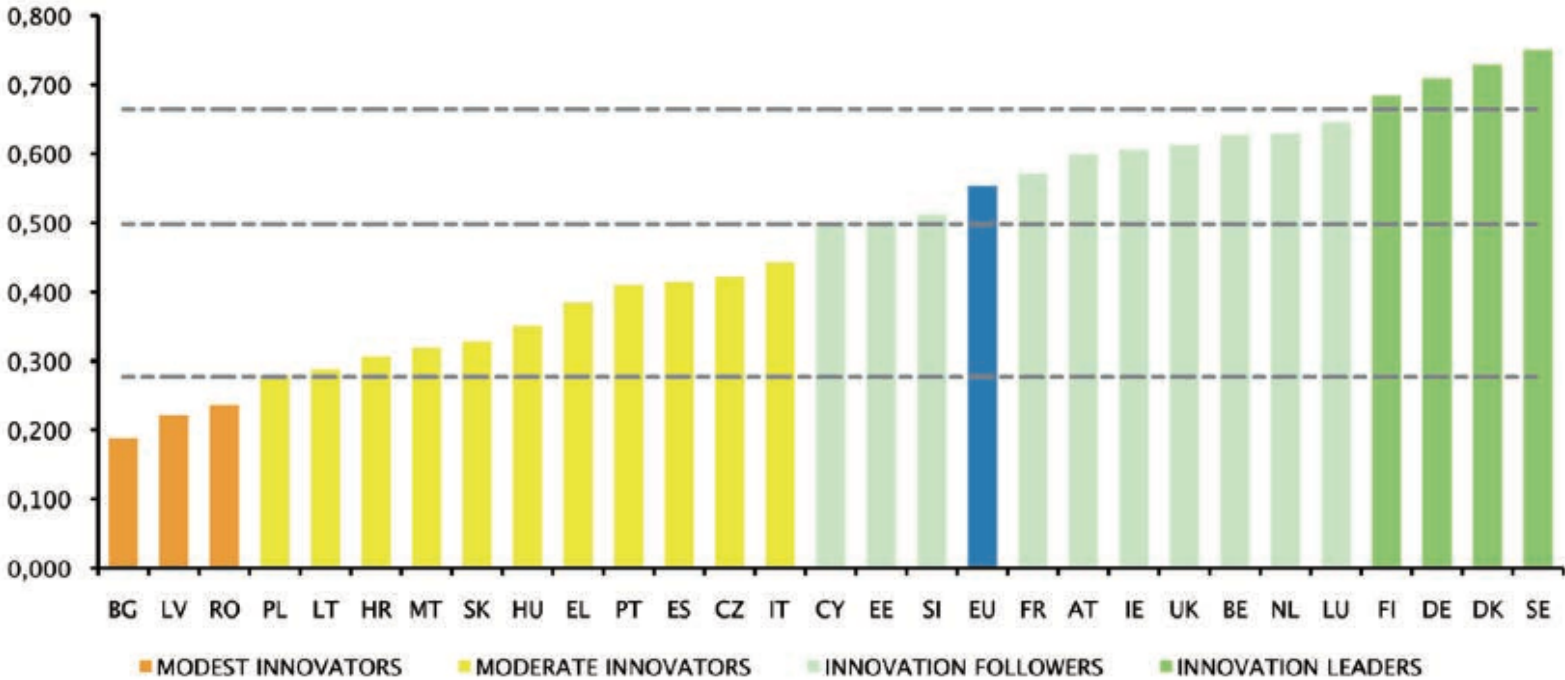
2. Member States' innovation performance

2.1 Innovation performance

The performance of EU national innovation systems is measured by the Summary Innovation Index, which is a composite indicator obtained by an appropriate

aggregation of the 25 indicators³. Figure 3 shows the performance results for all EU Member States including the newest Member State Croatia.

Figure 3: EU Member States' innovation performance



Note: Average performance is measured using a composite indicator building on data for 25 indicators going from a lowest possible performance of 0 to a maximum possible performance of 1. Average performance reflects performance in 2011/2012 due to a lag in data availability.

Open, excellent and effective research systems (Enablers)

In Open, excellent and effective research systems dimension the Innovation leaders and followers are performing the best (Figure 6). Denmark is the overall leader followed closely by the Netherlands, Sweden and the UK. This means that the innovation systems in these countries are open for cooperation with partners from abroad, researchers are well networked at international level and the quality of research output is very high. The performance of Germany, one of the Innovation leaders, is relatively weak, in particular due to a relatively low share of non-EU doctorate students. All the Modest and Moderate innovators perform below the EU average, only Spain and Portugal manage to get relatively close to the EU average.

Performance differences between all Member States are quite high for this dimension. Within the different performance groups the spread in performance is relatively high for the Innovation leaders, Innovation followers and Moderate innovators. Within the Innovation leaders Germany and Finland perform at a much lower level than Denmark and Sweden. Within the Innovation followers the high spread in performance is also shown by the fact that the best performing country (Netherlands) is performing twice as high as the least performing country (Cyprus). Within the Moderate innovators the best performing country (Spain) is even performing four times as high as the worst performing country (Poland).

Figure 6: Member States' performance in Open, excellent and effective research systems

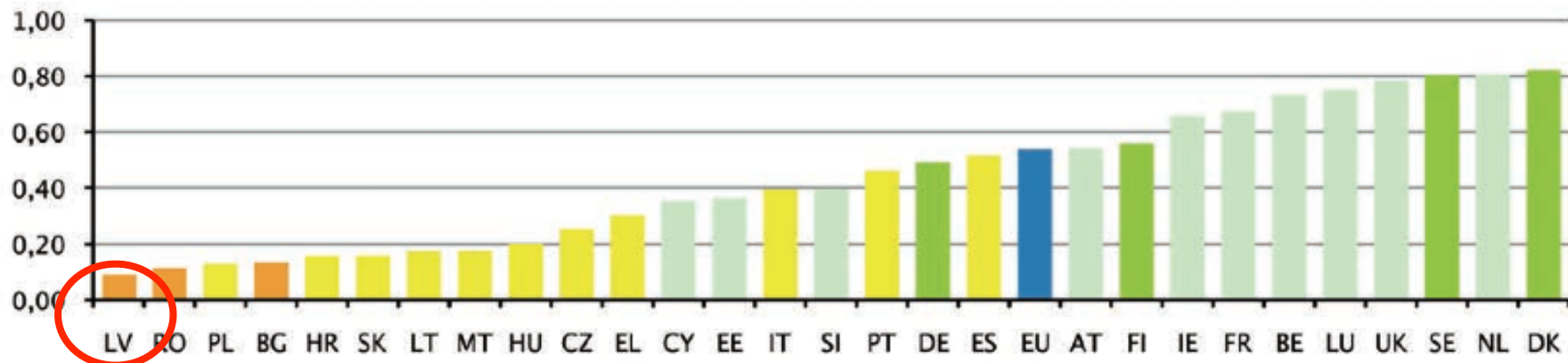


Figure 8: Member States' performance in Firm investments

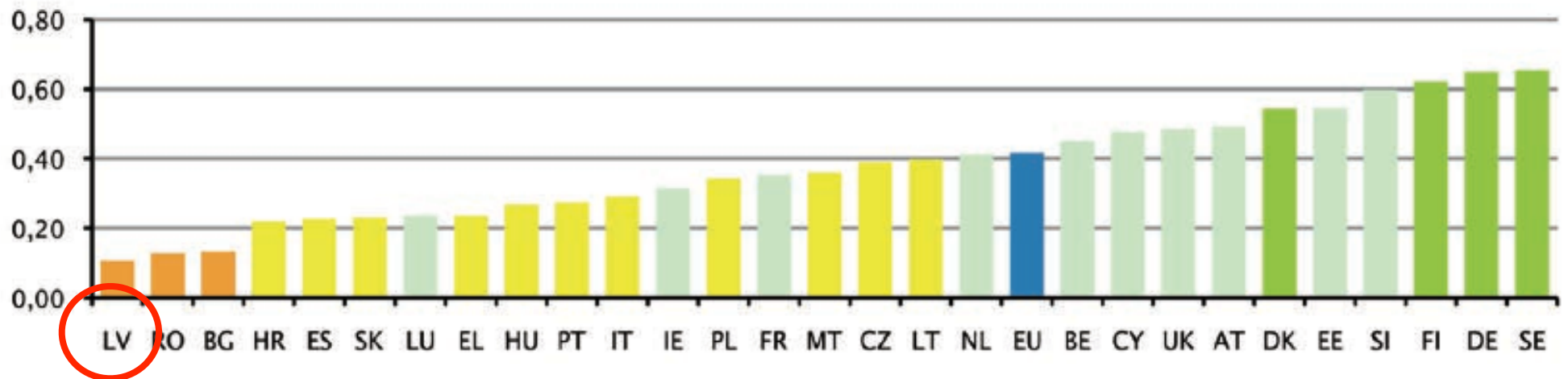
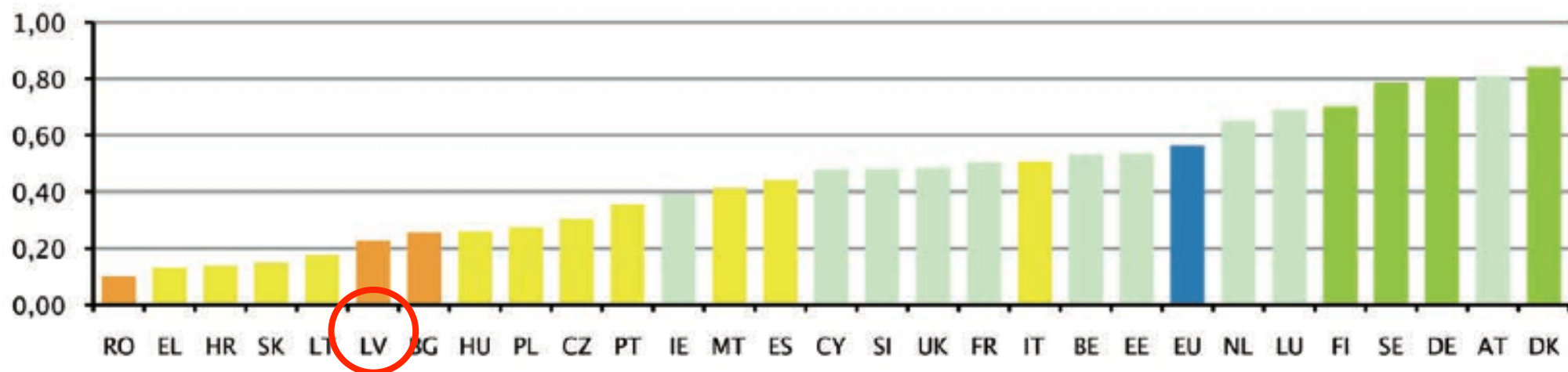




Figure 10: Member States' performance in Intellectual assets





Uncertainty, unappropriability, and
invisibility can lead to
underinvestment in R&D and the
optimal allocation of resources for
innovation is not reached.



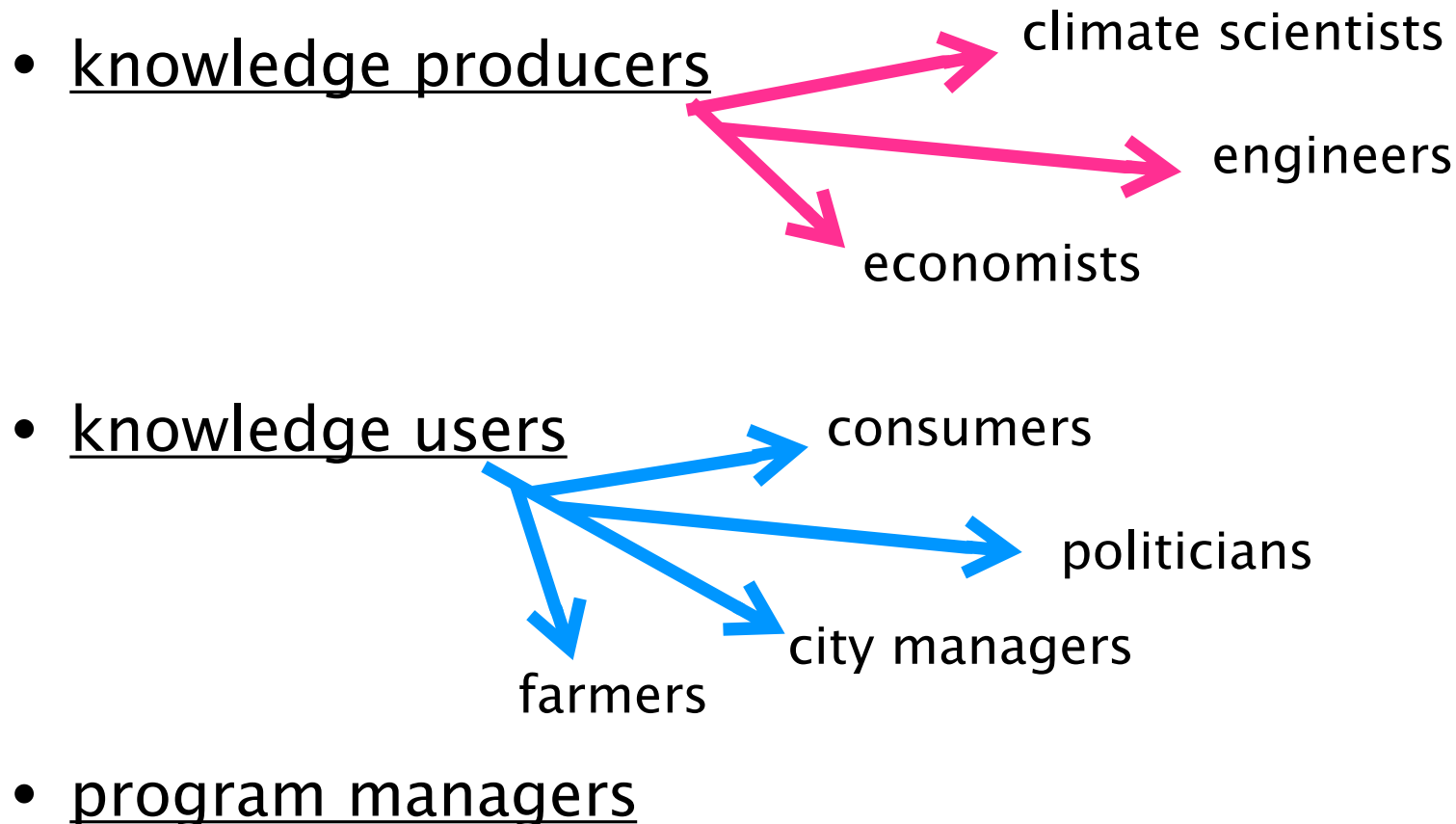
Great part of the research done by universities is basic research projects. It is not always possible to foresee the results for such research. It is even less likely that the results will turn into products in the market. For this reason companies will avoid to fund such projects.

WHY CO-OP IS KEY

- gap between what decision makers want from science and technology, and what science and technology is offering to decision makers
- = Much available knowledge is not put to use, and political support for new S&T falters

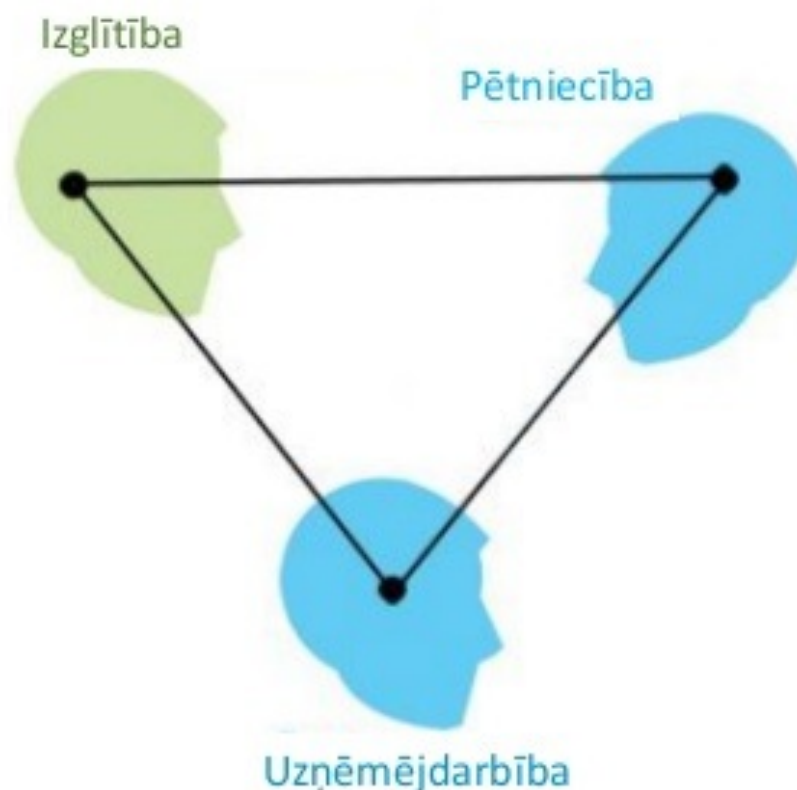
LINKING PROCESSES

Systems that successfully link knowledge with action tend to involve various groups in the conversation about research priorities, including:



Viedā specializācija

- Apvieno industriālo, izglītības un inovāciju politiku
- Ierobežots skaits prioritāšu, kurās attīstīt pētniecību un inovāciju
- Pamatojas uz teritorijas stiprajām pusēm un konkurētspējīgo priekšrocību



Zināšanu trijstūris

Virzieni:

1. Ražošanas un eksporta struktūras maiņa tradicionālajās tautsaimniecības nozarēs;
2. Izaugsme nozarēs, kurās eksistē vai ir iespējams radīt produktus un pakalpojumus ar augstu pievienoto vērtību;
3. Nozares ar nozīmīgu horizontālo ietekmi un ieguldījumu tautsaimniecības transformācijā.

Prioritātes:

1. "Augstas PV produkti"
2. "Produktīva inovāciju sistēma"
3. "Energoefektivitāte"
4. Moderna IKT
5. **Moderna izglītība**
6. Zināšanu bāze
7. Policentriskā attīstība

Specializācijas jomas:

1. **Zināšanu ietilpīga bioekonomika**
2. **Biomedicīna, medicīnas tehnoloģijas, biofarmācija un biotehnoloģijas**
3. **Viedie materiāli, tehnoloģijas un inženiersistēmas**
4. **Viedā enerģētika**
5. **Informācijas un komunikāciju tehnoloģijas**

2014.04.25.

Avots: ZTAL pamatnostādnes 2014-20 gadam <http://polsis.mk.gov.lv/view.do?id=4608>

TECHNOLOGY FOR SUSTAINABILITY

- In EU countries that can be considered as innovation leaders, the **private sector is the main innovation driving force** (Technopolis Group, 2011)
- Researchers Chaminade Cristina and Edquist Charles (2006; 151) mention that „**those few countries that do a lot of R&D are all rich, and much of their R&D is carried out by private organizations**“

TRIPLE-HELIX MODEL

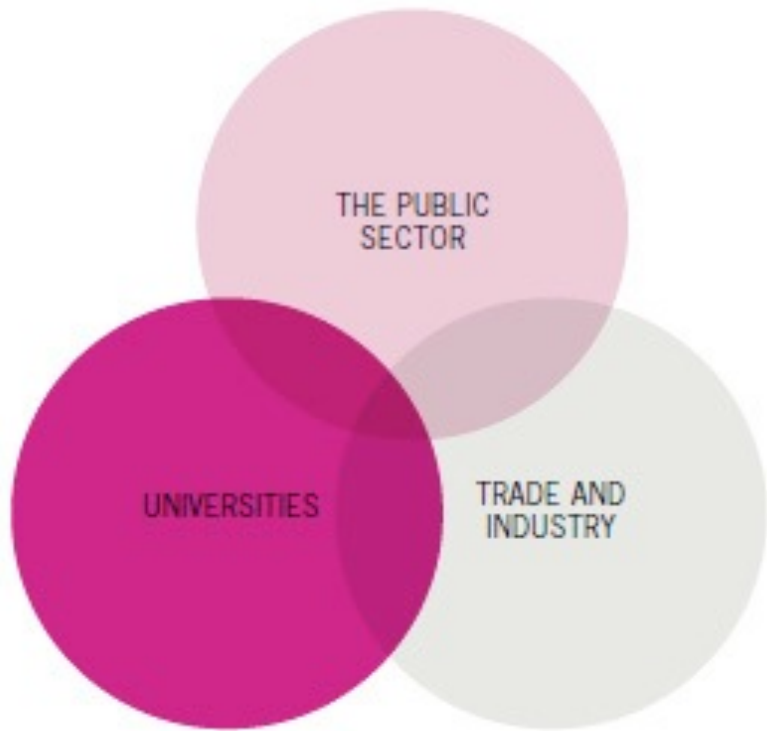
KNOWLEDGE TRIANGLE

- The need for sharing knowledge between research institutions and industry has become increasingly evident in recent years
- Historically, research institutions were perceived as a source of new ideas and industry offered a natural route to maximizing the use of these ideas
- The past decade has seen a significant change in the roles of both parties

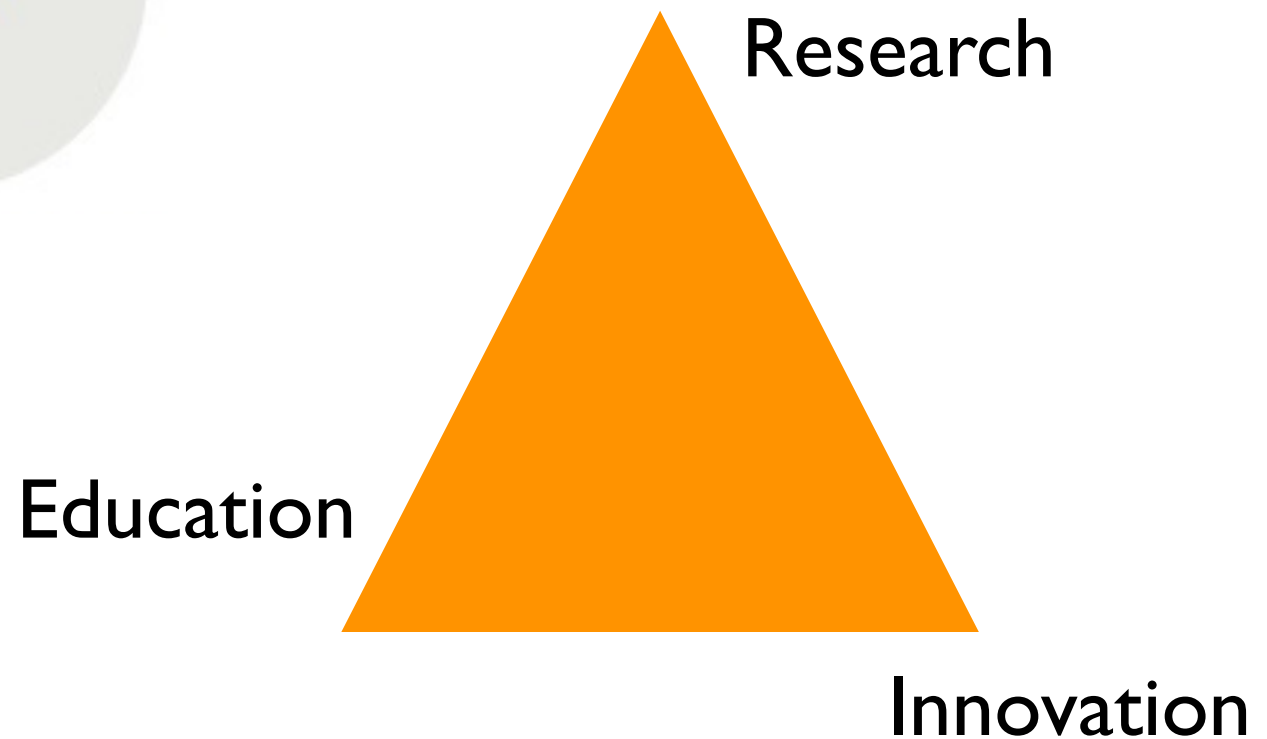
THE CONCEPTS ILLUSTRATING THESE CHANGES



TRIPLE-HELIX MODEL



KNOWLEDGE TRIANGLE



TRIPLE-HELIX MODEL

- 1) The Triple Helix concept interprets **the shift** from a dominating industry-government dyad in the Industrial Society **to** a growing triadic **relationship between university-industry-government** in the Knowledge Society.
- 2) It comprises a movement toward **collaborative relationships** among the three major institutional spheres, in which innovation policy is increasingly an outcome of interaction rather than a prescription from government
- 3) in addition to fulfilling their traditional functions, each institutional sphere also “takes the role of the other” performing **new roles** as well as their traditional function

NEW ROLES AND COOPERATION

TRIPLE-HELIX

New roles for business, academia, government

KNOWLEDGE TRIANGLE

Close, effective links between education, research, and business

WHAT THIS MEANS FOR THE INDUSTRY?

OPEN INNOVATION

OPEN INNOVATION

Open innovation (Henry Chesbrough, UC Berkeley)

- user, cumulative, mass, distributed innovation
- know-how trading
- external + internal ideas/ paths to market
- sharing of risk and reward
- transfer of innovations

OPEN INNOVATION

Includes going beyond sources of innovation

Changing the use of IP

customers

rivals

academia

customers

OPEN INNOVATION

- The rise of "open innovation" reflects the reality -
- companies can less and less afford to run a closed R&D shop
- Companies have to tap into the knowledge developed by universities and public research centers
- Companies often need to cooperate with other companies, including their competitors
- In order to find the best knowledge and the best partners, companies need to look across national borders

OPEN INNOVATION

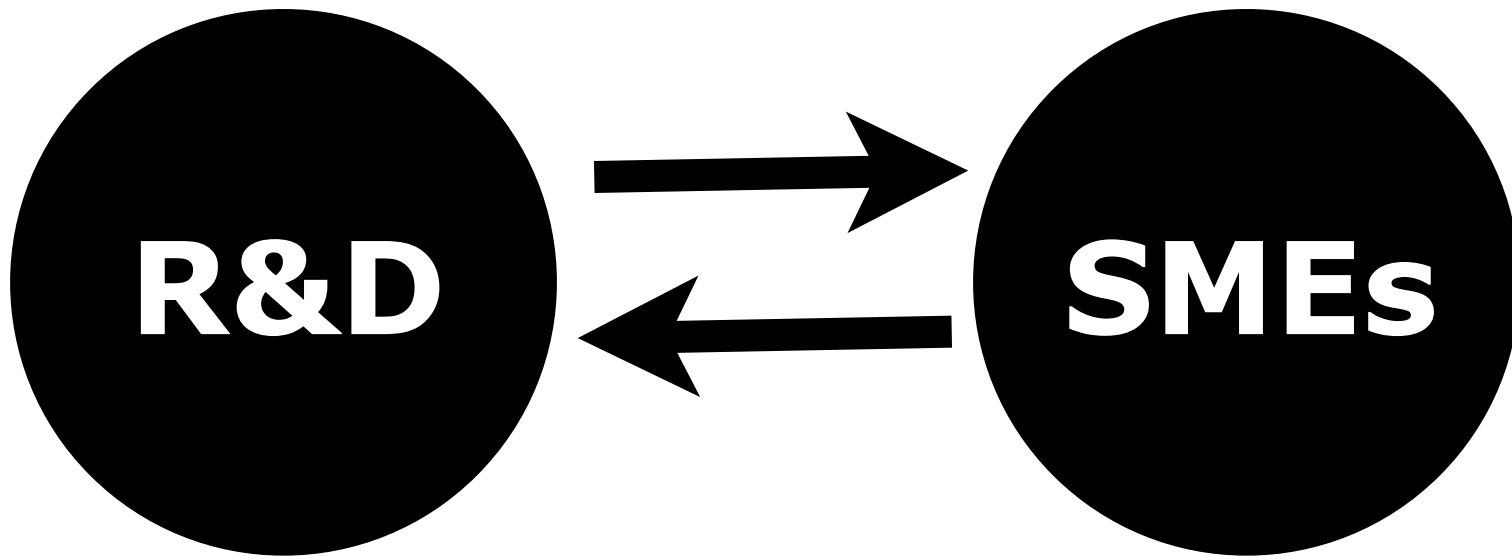
- Many **companies are** developing open innovation approaches to R&D, **combining in-house and external resources**, and aiming **to maximize economic value from their intellectual property**, even when it is not directly linked to their core business. In particular, they have begun to treat public research as a strategic resource.
- In parallel, it has become clear that **research institutions need to play a more active role in their relationship with industry in order to maximize the use of the research results**. This new role requires specialist staff to identify and manage knowledge resources with business potential, i.e. how best to take a new idea to market, ensure appropriate resources (funding, support services, etc.) to make it happen, and to obtain adequate buy-in by all stakeholders.

TECHNOLOGY FOR SUSTAINABILITY

- TECHNOLOGY IS AN ESSENTIAL INGREDIENT IN THE DEVELOPMENT OF A COMPANY AND NOT ONLY FOR MANUFACTURERS
- IT WAS THE SERVICE INDUSTRY THAT BOOMED PARTICULARLY DURING THE DEVELOPMENT OF ICT

(Guan et al, 2005)

GROWTH



TECHNOLOGY FOR SUSTAINABILITY

Research & technological development can:

- boost efficiency
- - costs
- help in developing new products
- + income

R&D ENVIRONMENT IN LATVIA

- public and HE sectors are the driving force of R&D and innovation as these sectors provide the most funding for such activities
- the cooperation between the industry and science is insufficient and needs to be significantly improved in order to enhance Latvia's innovation potential
- despite the + in number of patent filings from HE institutions during the last years, there's no significant increase in commercialization of inventions coming from HE sector

WHY SCANDINAVIANS ARE AHEAD OF US

INNOVATION LEADERS

NORDIC MODEL

ETC.





A resource for fabrication and characterization in the nano and micro scale, in their processes they are supporting the whole chain from education, research and development, to prototyping and production



EXAMPLES

IRnova

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[COMPANY](#)

[APPLICATIONS](#)

[PRODUCTS](#)

[CONTRACT MANUFACTURING](#)

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IRnova is Your source for high quality,
high performance infra-red detectors

NEWS

Meet IRnova in booth C-12 at
OPIE '14 in Yokohama

23 - 25 April 2014 Pacifico

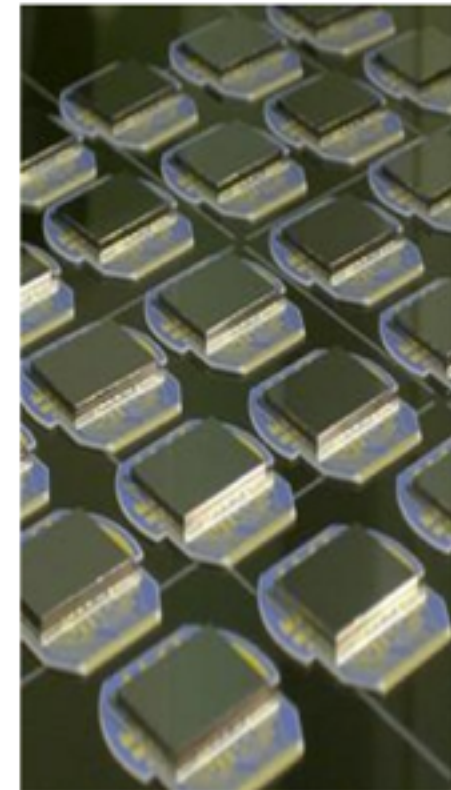
EXAMPLES

IRnova is a Swedish high-tech company engaged in the development, manufacturing and marketing of high-end cooled infrared detectors and related technology.

History

Company history and milestones

2012	Launched SF ₆ detector
2008	Launched electronics evaluation kit
2007	Offered Detector Dewar Cooler Assemblies (DDCA)
2007	IRnova was spun off from Acreo AB
2005	Launched two new QWIP products – 640×512 and 384×288
2003	QWIP 640×480 in production
1999	Volume production started
1997	First QWIP product launched – 320×240
1996	First QWIP prototype
1986	QWIP research initiated within Acreo AB



EXAMPLES

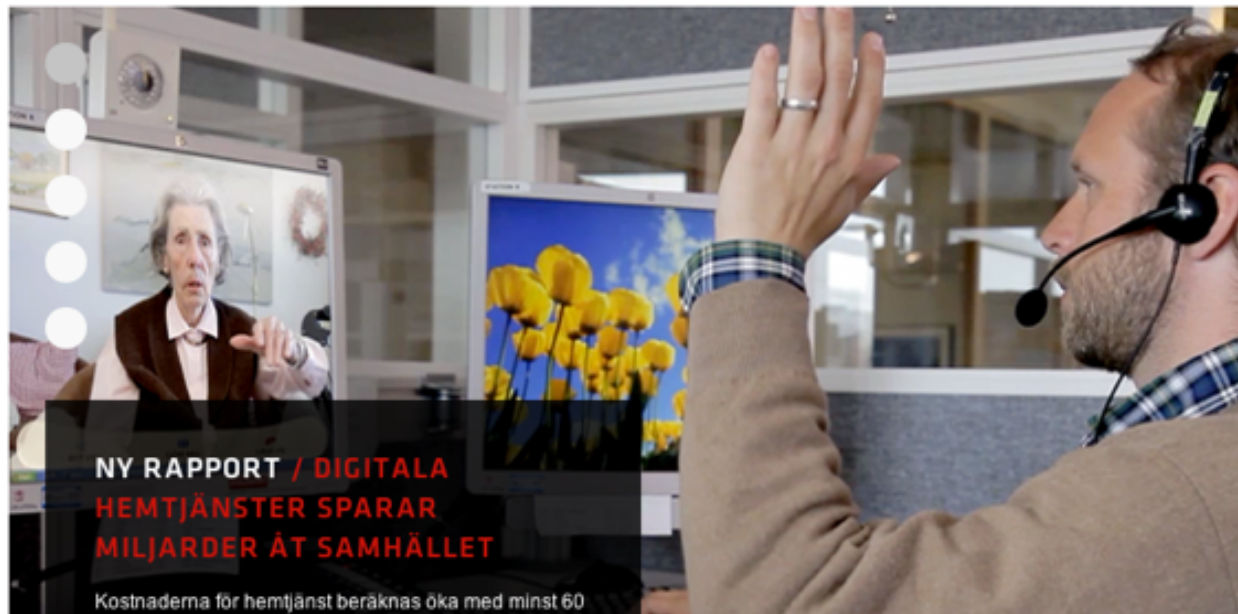


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INTEGRATED INNOVATION PLATFORM
www.acreo.se

15.2

IDÉPLATTFORM FÖR TRYCKT ELEKTRONIK I SVERIGES RADI...

KISTA 5G TRANSPORT LAB - NEW COLLABORATION WITH ERICSSON AND KTH
Ericsson has, together with Acre...

CONNECTED PAPER I COMPUTER SWEDEN

OPTOPUB - OPTO FOR LIFE-SCIENCE AND COMMUNICATION APPLICATIONS
The 3rd Optopub event in 2014 will be held...

Silex Innovations Inc.

Ascatron AB

Proximion AB

EXAMPLES



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BUSINESS SERVICES



Our Offer

Research

Development and research based consulting

Excellence Centers

- Business Services

Success Stories

+ Products

Small scale production

Explore business opportunities

+ SME Development process

INTEGRATING TECH

SENSORS

PLATFORMS

COMMUNICATION

SOFTWARE

GUI

NEW
FUNCTIONS

NEW
BUSINESS

THE ROLE OF R&D

The role of R&D became more important in the development of entrepreneurial competitiveness after the 2nd WW



Tech development in chemistry, electronics, autos and pharmaceuticals

=

development of new products

THE ROLE OF R&D

Some fast developing areas now:

nanotechnology, materials

biotechnology, stem cell research

computer science

photonics



Can be applied in many different fields so a vast range of products can be developed

KEY ENABLING TECHNOLOGIES

“A significant part of future goods and services are as yet unknown, but the **main driving force** behind their development will be Key Enabling Technologies (KETs), such as **nanotechnology, micro- and nano-electronics** including semiconductors, **advanced materials, biotechnology** and **photonics**. Mastering these technologies means being at the forefront of managing the shift to a low carbon, knowledge-based economy. They play an important role in the R&D, innovation and cluster strategies of many industries and are regarded as crucial for ensuring the competitiveness of European industries in the knowledge economy.”

GROGLASS

<http://www.groglass.com/>



NEW PRODUCT DEVELOPMENT

Idea generation

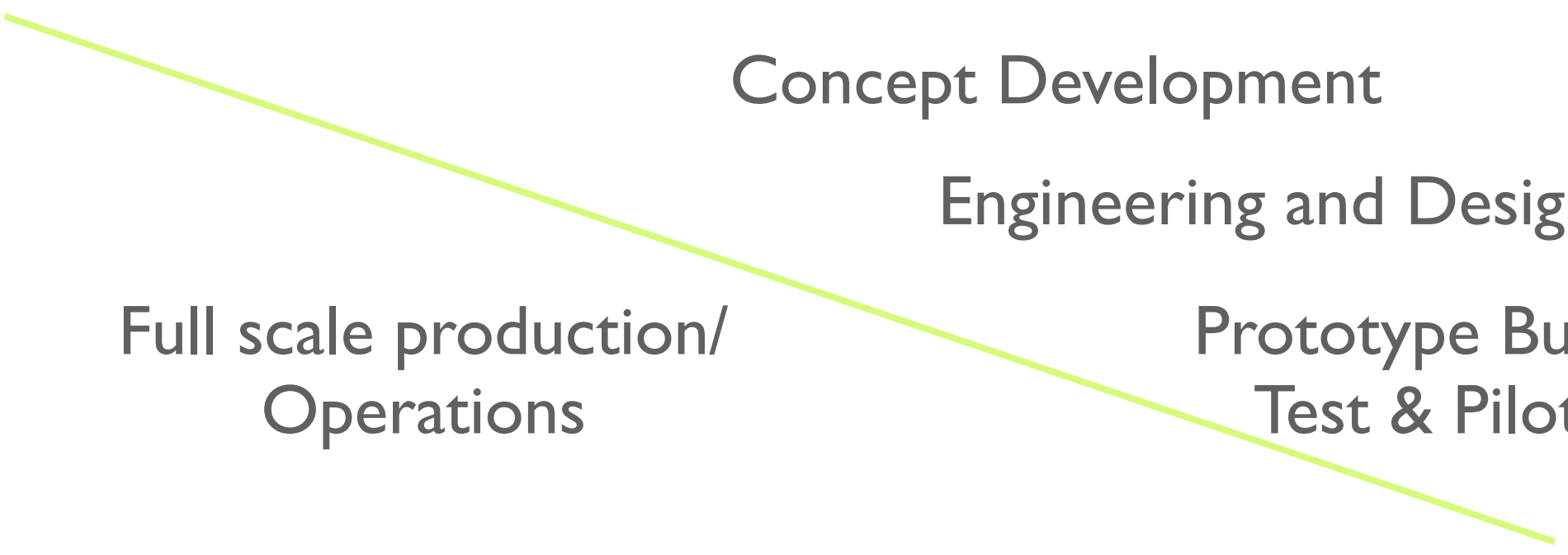
Business/ Technical
Assessment

Concept Development

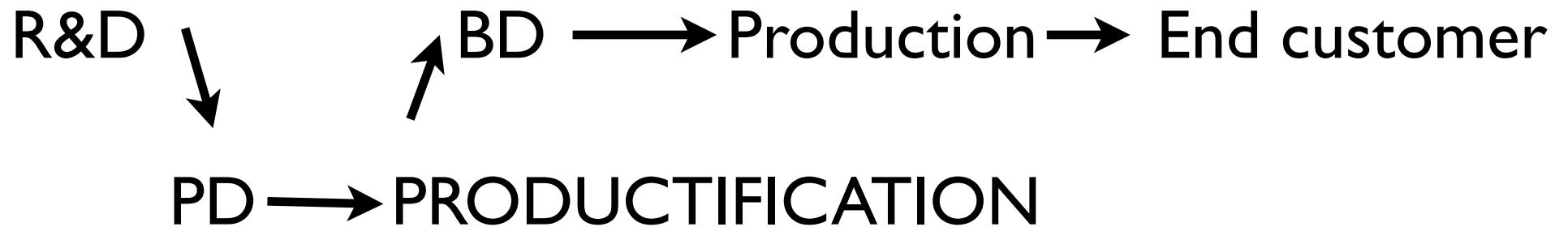
Engineering and Design

Full scale production/
Operations

Prototype Build
Test & Pilot



VALUE CHAIN - PRODUCT DEVELOPMENT



PROTOTYPE

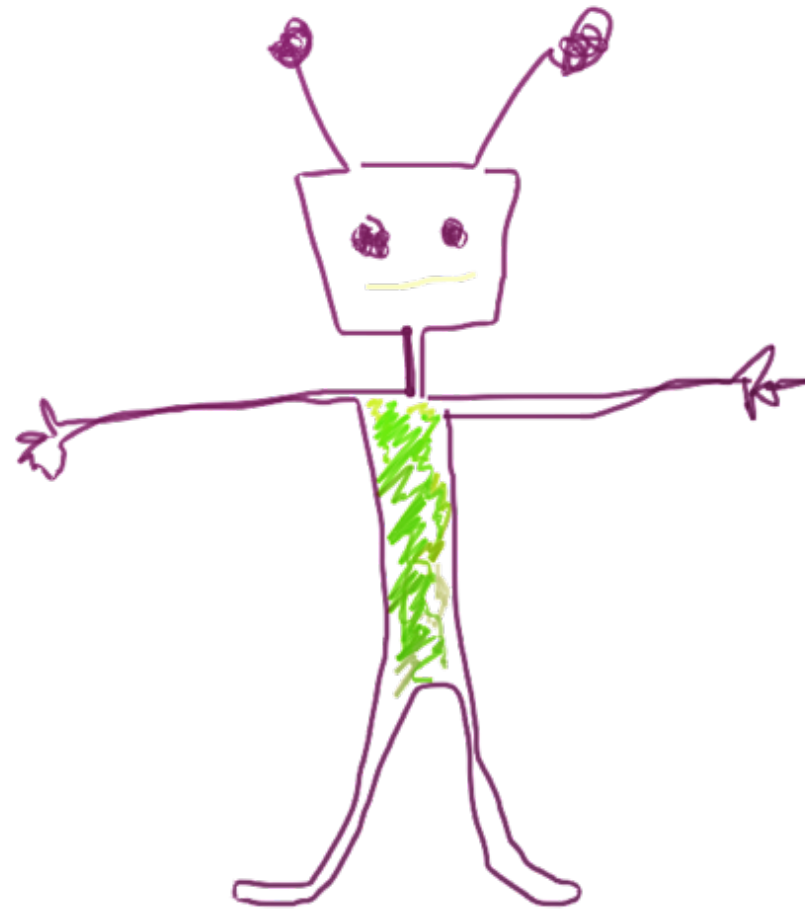
Frascati Manual

Often the most important phase of the experimental development of an innovation is the construction and testing of a **prototype** which is classified as R&D (if the primary objective is to make further improvements).

PROTOTYPE

Frascati Manual

= **original model**
constructed to include
all the technical
characteristics and
performances of the new
product



PROTOTYPE

Prototype

Testing + Modifications



Full-scale production

Manufacturing start-up phase

Modifications + Training



Tech transfer

TECH TRANSFER

The process by which ideas and concepts are moved from the laboratory to marketplace (Phillips, 2002; Williams & Gibson, 1990)

The transfer and knowledge and concept from developed to less technologically developed countries (Derakhshani, 1983; Putranto et al., 2003)

The transfer of inventive activities to secondary users (Van Gigch, 1978).

Technology transfer involves an intentional, goal-oriented interaction between two or more social entities, during which the pool of technological knowledge remains stable or increases through the transfer of one or more components of technology (Autio and Laamanen, 1995)

*Defining the Concepts of Technology and
Technology Transfer:
A Literature Analysis*

TECH TRANSFER

Knowledge networks facilitate the exchange of technology and commercial information



Informal networks tend to be based on personal contacts or “communities of practice” or simply arise in the normal course of business.



Formal or managed networks can be organised by business organisations such as chambers of commerce, research associations, technology services companies, consultants, universities or public research organisations or sponsored by local, regional or central governments

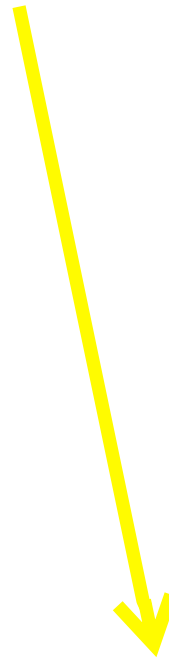
TECH TRANSFER

3 types of linkages to enterprises

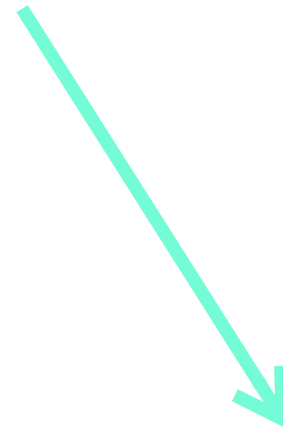
*Oslo
Manual*



open information sources that do not involve purchases of knowledge and technology or interaction with the source



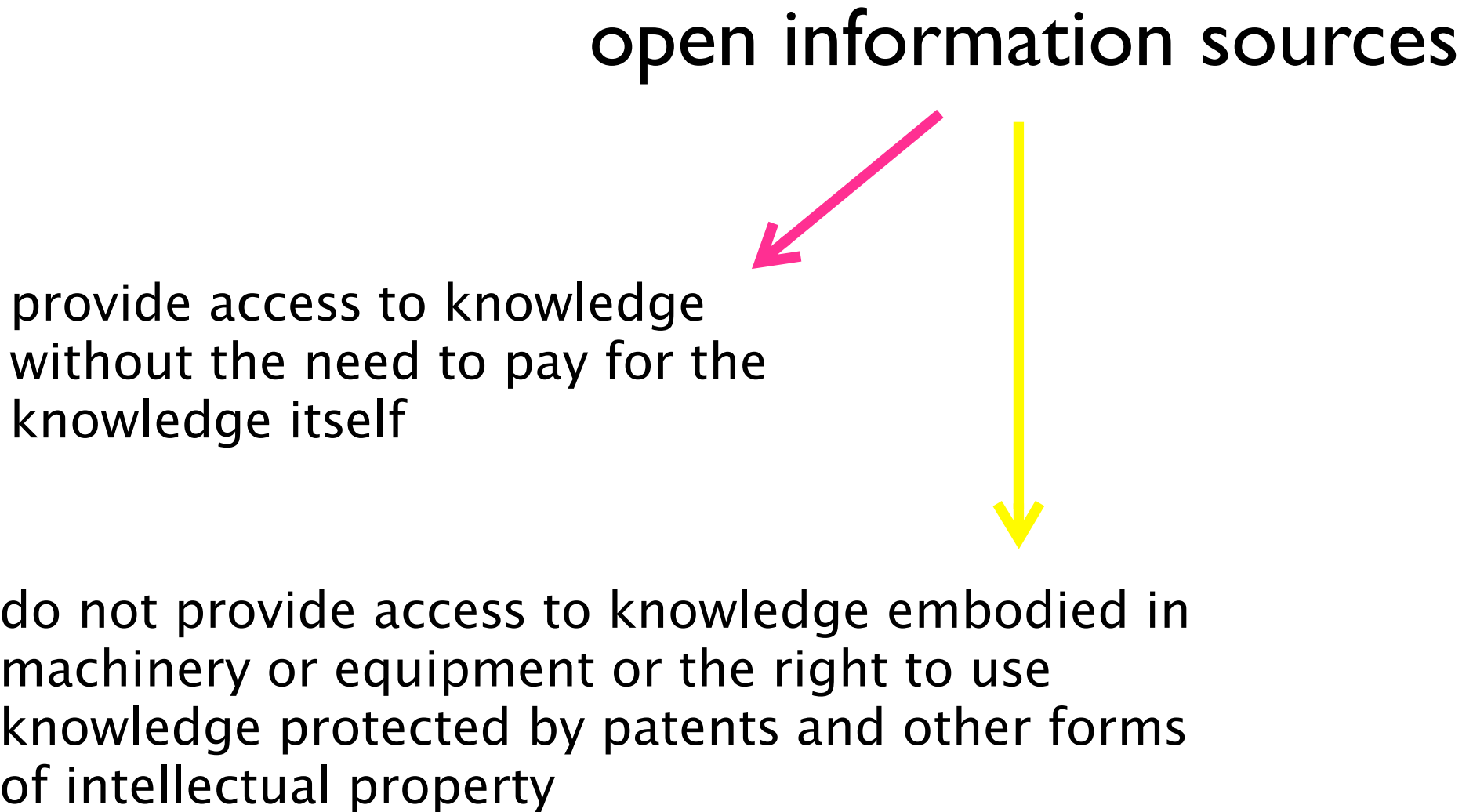
purchases or acquisition of knowledge and technology



innovation co-operation

TECH TRANSFER

open information sources



provide access to knowledge
without the need to pay for the
knowledge itself

do not provide access to knowledge embodied in
machinery or equipment or the right to use
knowledge protected by patents and other forms
of intellectual property

TECH TRANSFER

open information sources



Publications, journals
Patent documents
Attendance at
exhibitions etc.



marginal fees for
access

TECH TRANSFER

Acquisition of technology and knowledge **involves the purchase of external knowledge and technology** without active co-operation with the source.

Equipment
Machinery
Know-How
Licenses
Contract
research
Software
Patents
Consulting

TECH TRANSFER

Cooperation

Innovation co-operation involves active participation in joint innovation projects with other organisations. These may either be other enterprises or non-commercial institutions.

Co-operation is distinct from open information sources and acquisition of knowledge and technology in that all parties take an active part in the work.

TECH TRANSFER

BIOtech and **NANOtech** - quick transition from research to products



RI work is essential in developing new products



Relatively new fields of science



cooperation is essential for SMEs

tech transfer

Existing Product

Upgraded product

New
Technology

New Product

tech transfer

TTOs - A LINK BETWEEN

tech transfer

TTOS

LIAA (Investment and Development Agency of Latvia):

Technology transfer contact points (TPK) are research institutions or university departments that **support and promote knowledge and technology transfer** and which are responsible for **establishing and maintaining external communication**, providing information about the organization's research activities and experiences.

tech transfer

TTOS

TTO is an instrument for an entrepreneur to use the scientific base of a country and acquire significant research based solutions for improving its performance

tech transfer

TTOs in Latvia

LATVIJAS UNIVERSITĀTE

VENTSPILS AUGSTSKOLA

LATVIJAS MĀKSLAS AKADĒMIJA

LATVIJAS LAUKSAIMNIECĪBAS UNIVERSITĀTE

RĪGAS STRADIŅA UNIVERSITĀTE

RĒZEKNES AUGSTSKOLA

RĪGAS TEHNISKĀ UNIVERSITĀTE

DAUGAVPILS UNIVERSITĀTE

tech transfer

services provided by TTOs

Tech Transfer Contact Point, University of Latvia:

- info on **cooperation possibilities**, ability to receive consultancy and research services
- info on **laboratory services** for analysis and expertise – competence data base, equipment
- info on **solutions** developed by scientists
- consultations on **new product development**
- **IPR** advice
- **meeting** with researchers and entrepreneurs to foster new ideas and look for solutions

TTOs worldwide

Business Development and
Technology Transfer Corporation
of Schleswig-Holstein

More business.
SCHLESWIG-HOLSTEIN

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Start

We pave the way for your success
in Schleswig-Holstein



▶ We pave the way for
your success in
Schleswig-Holstein



▶ Trade fairs



Welcome to WTSH, the one-stop agency for business development and technology transfer in Schleswig-Holstein



Building of Business Development
and Technology Transfer
Corporation of Schleswig-Holstein.

any problems, we'll help you find the solutions – at least in anything to do with business development and technology transfer.

Up North in Germany

The Business Development and Technology Transfer Corporation of Schleswig-Holstein (WTSH) is your first point of contact for all matters relating to business development in Schleswig-Holstein. We provide you with a comprehensive one-stop service. If you're an entrepreneur or investor or simply interested in Schleswig-Holstein's economy, you've come to the right website for Germany's most northerly state: Schleswig-Holstein.

This website tells you more about our state and our service. We assist you in finding the right site for your business. We support you in your innovation processes. We arrange the right contacts.

If you have any questions, we've got the answers. If you have

Businessland

Logistics hub of the North



E-Book "Logistics
hub of the North"

Why is Schleswig-Holstein
a strategically important
logistics location in
Europe?

Wirtschaftsland

Health Care Industry
The Health Care Industry



New Brochure

Schleswig-Holstein in the
Health Care Industry the
No. 1 in Germany!

▶ more

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TECHNET_NANO



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EXAMPLES

TECHNET_NANO



PROJECT PARTNERS

University of Southern Denmark
Royal Institute of Technology, Sweden
Christian-Albrechts-Universität zu Kiel,
Germany
Flensburg University of Applied Sciences,
Germany
WTSH - Business Development and
Technology Transfer Corporation of
Schleswig-Holstein, Germany
University of Latvia, Latvia
Kaunas University of Technology, Lithuania
Applied Research Institute for Prospective
Technologies, Lithuania
Center for Physical Sciences and Technology,
Lithuania
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SCIENCE
LINK

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Why Science Link matters

The purpose of the project Science Link is to support and encourage innovation and entrepreneurship in the Baltic Sea Region, to strengthen the region's competitiveness in a global context.

The purpose of a special policy for innovation, new ideas, is to promote economic growth and increased knowledge in a country, region or amongst the involved organisations. Some well-known results of innovations, bright ideas, are ball bearings, a zipper that changed fashion, matches or one of the most widely prescribed drugs in the world, Astra's Losec.

FUNDING OPTIONS

Incentives for R&D

- HORIZON 2020
- EUREKA
- 8 Contact Points for Technology Transfer


LIAA

FUNDING OPTIONS

Others:

- EUROPEAN TERRITORIAL COOPERATION
- GIIIC and Norwegian Financial Instrument
- Nordic council grants
- Other business incubators
- UL Innovation center – consultations!

FUNDING OPTIONS

- Norwegian Financial Instrument



<http://em.gov.lv/em/2nd/?cat=30793>

Programme for developing new products and technologies for micro, small and medium sized enterprises

The period of application -

3rd Dec 2012 until the funding is used

LIAA decides whether to accept it or not in 3 months time

The aim of the project -

To foster the development of innovations, new products or technologies, technology transfer and competitiveness of micro and SMEs

ENTERPRISE EUROPE NETWORK

The Enterprise Europe Network is the largest network of contact points providing information and advice to EU companies on EU matters, in particular small and medium enterprises (SMEs). We provide practical answers to specific questions in your language.

- <http://www.een.lv/en>
- <http://www.een.lv/en/bbs>

WHAT SUSTAINABILITY

MEANS?

SUSTAINABILITY

=

the capacity to **support, maintain** or **endure**

Latin *sustinere* (*tenere*, to hold; *sus*, up)

SUSTAINABILITY

=

responsible and **proactive** decision-making
innovation



negative impact

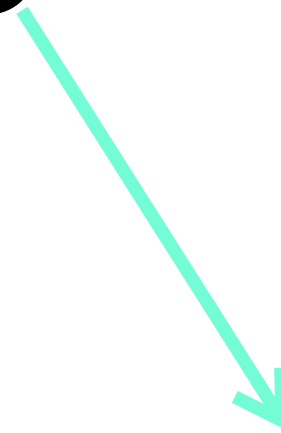
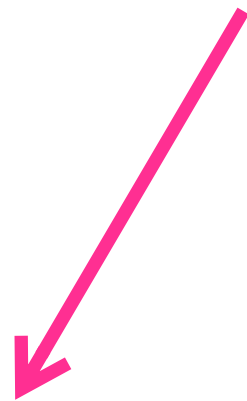


balance between social, environmental, and economic **growth**

SUSTAINABILITY?

3

E's



environmental demands

economic demands

social equity demands

SUSTAINABLE DEVELOPMENT

Sustainable development as defined by the UN is **not universally accepted** and has undergone various interpretations.

What sustainability is, what its goals should be, and how these goals are to be achieved are all **open to interpretation**.

 wiki

BUSINESS SUSTAINABILITY

- triple bottom line

- profits, people a



- business that can survive

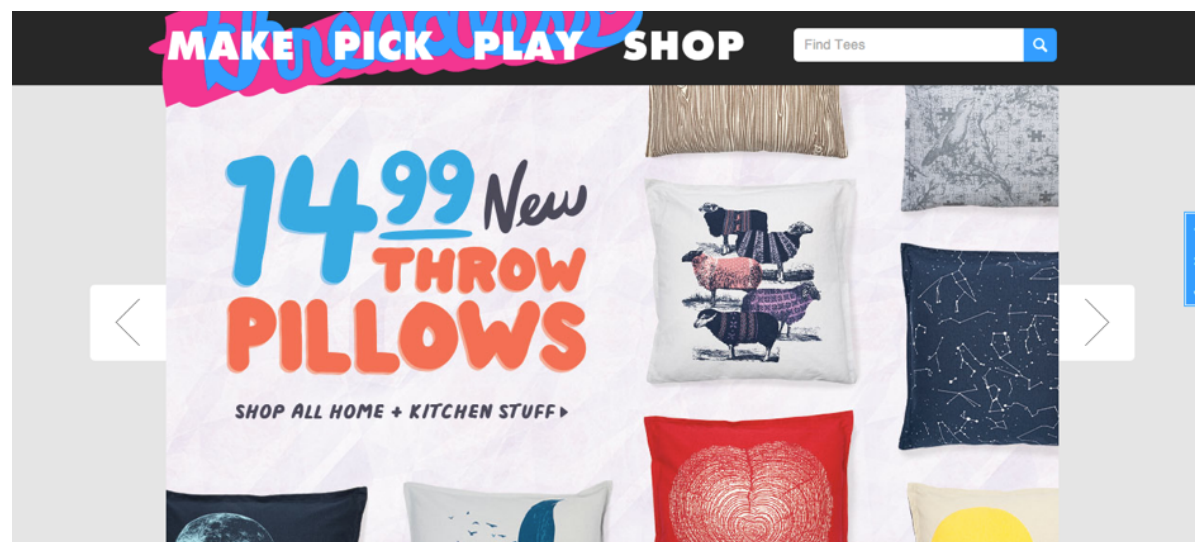
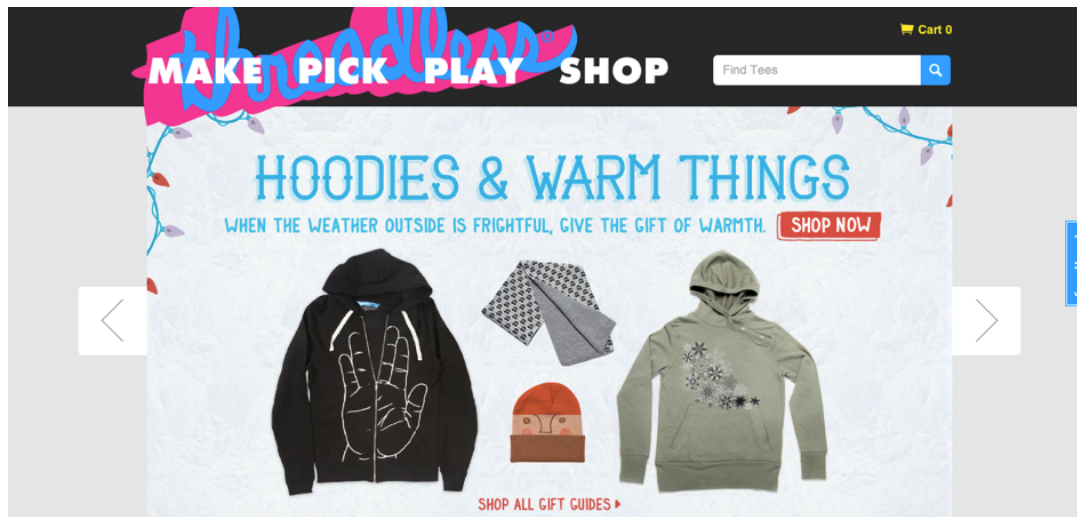
- these businesses create economic value and contribute to ~~healthy~~ ecosystems and ~~strong~~ communities

A SUSTAINABLE BUSINESS?

- Find an example of a sustainable business
- Describe it - industry, vision, mission etc.
- Ground your opinion:
 - why is it sustainable?
 - in what way is it sustainable?
 - can it improve?

IN ORDER TO DESIGN SUSTAINABLE PRODUCTS
CO-OP WITH CONSUMERS IS ALSO NECESSARY

THREADLESS - <http://beta.threadless.com/>



IN ORDER TO DESIGN SUSTAINABLE PRODUCTS
CO-OP WITH CONSUMERS IS ALSO NECESSARY

Hövding airbag



SOCIAL ISSUES

THREADLESS - <http://beta.threadless.com/collections/causes>



Bat Conservation International
25% of sales benefit Bat Conservation Int'l



American Cancer Society
25% of sales benefit American Cancer Society



Children's Brain Tumor Foundation
25% of sales benefit CBTF



WellDone
25% of sales benefit WellDone



CARE
100% of proceeds benefit CARE



Whole Planet Foundation
25% of sales benefit Whole Planet Foundation

ONE BILLION MINDS

ONE BILLION MINDS

SOLVE

CHALLENGE

THE BILLION BLOG

MAKE OUR DAY

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free, quirky and open to everyone

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Solve a Challenge. Connect Directly with another Individual, Company or Non Profit. Win awesome awards. Explore opportunities together.

SHOWING 1 - 5 OF 5 CHALLENGES



Crime Watcher

Madhu Kalyan

3 days left
India



Next Generation Wood Stove Design Challenge

Melissa Bollman

21 days left
United States



Financial inclusion for remote low-income communities

Javier Tenorio

Closed | Results
Mexico

Search by Challenge Name

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ANY

Filter by Location

ANY

SEARCH

THANK YOU!

LITERATURE:

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