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# Technology Transfer in Slovakia and Abroad

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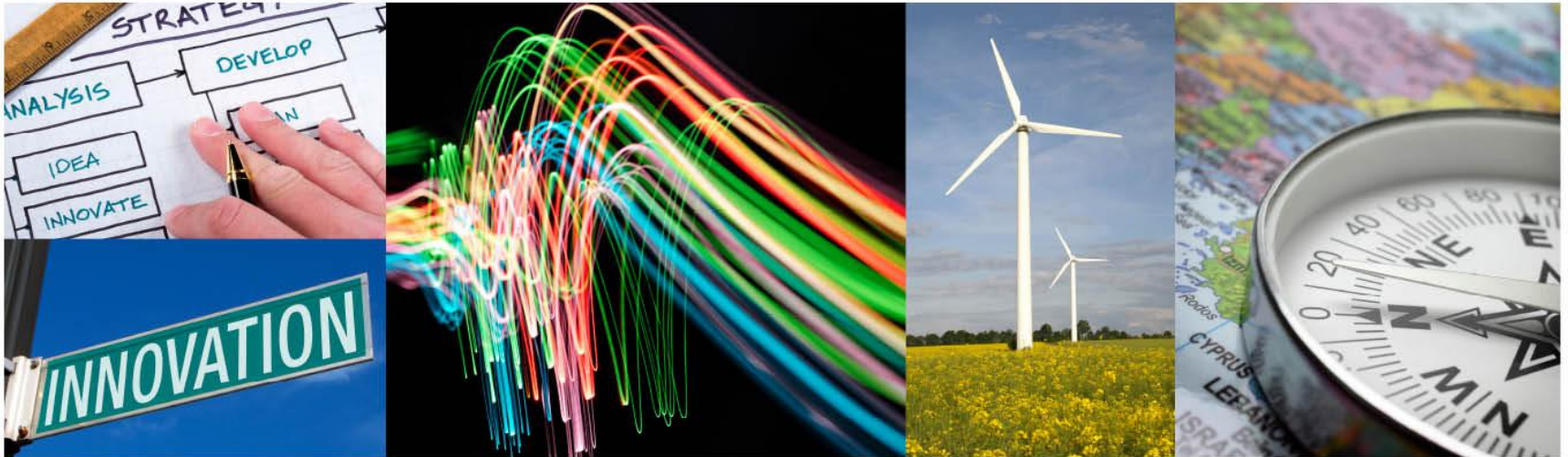
## *Models of Technology Transfer*

Steffen Preissler

Head of Department *Innovative Transfer Systems*

Fraunhofer Center for Central and Eastern Europe

October 9<sup>th</sup>, 2012, Bratislava/ Slovakia



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# Agenda

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- **Fraunhofer**
- **Models of Technology Transfer Centers at Universities/RTOs**
  - Universities, RTOs, EIF Tech Transfer Transactions
- **Centrally operated national systems for technology Transfer**
  - Fraunhofer, Steinbeis, Ascenion
- **Centrally operated systems vs non-centrally operated systems**
- **How to establish a regional technology transfer model**
- **Recommendations**

# The Fraunhofer-Gesellschaft



INNOVATION

The Fraunhofer-Gesellschaft promotes and undertakes applied research in an international context, of direct utility to private and public enterprise and of wide benefit to society as a whole.

- The largest organization for applied research in Europe
- 80 research institutes; 20,000 employees
- Annual research volume: €1.8bn, of which €1.5bn generated through contract research:
  - >70% from contracts with industry and public institutions
  - ~30% institutional financing (federal government and state governments)
- Customers: industry, service sector, public administration
- Spinoffs by Fraunhofer researchers are encouraged

# The Fraunhofer-Gesellschaft



## On the one hand

60 Institutes with different “institute cultures”

Applied research as a profession

Excellent research

Institutional and project funding

Management/rules of a public institution



## On the other hand

A single organization with one mission

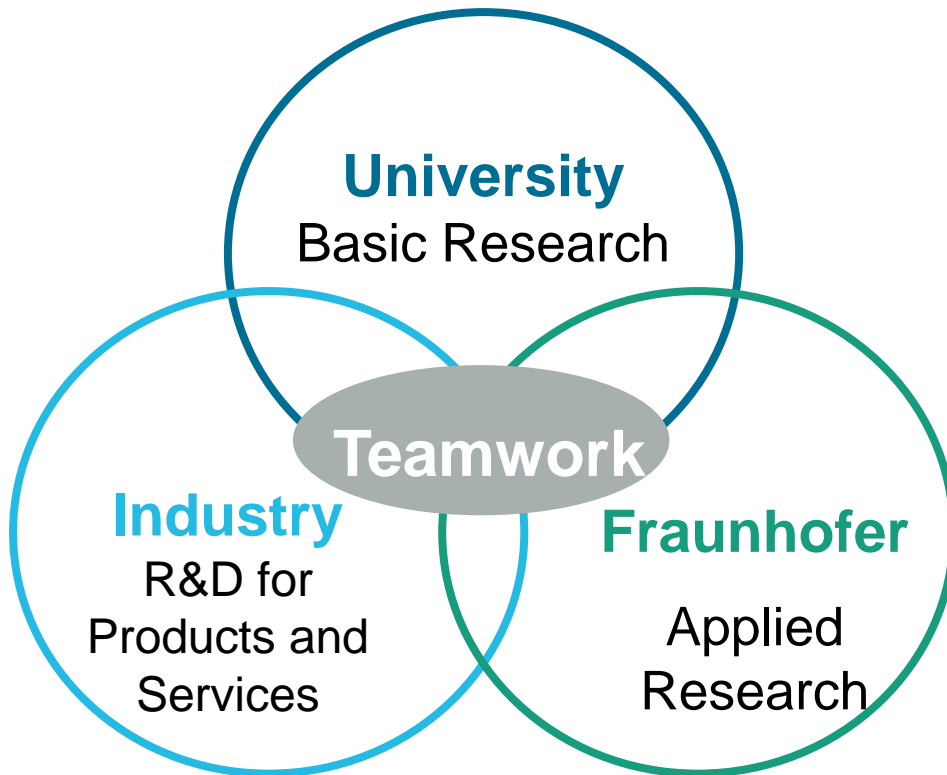
More than 250 business fields and core competencies

Strong orientation towards applications

Revenues from contract research

Entrepreneurial activity

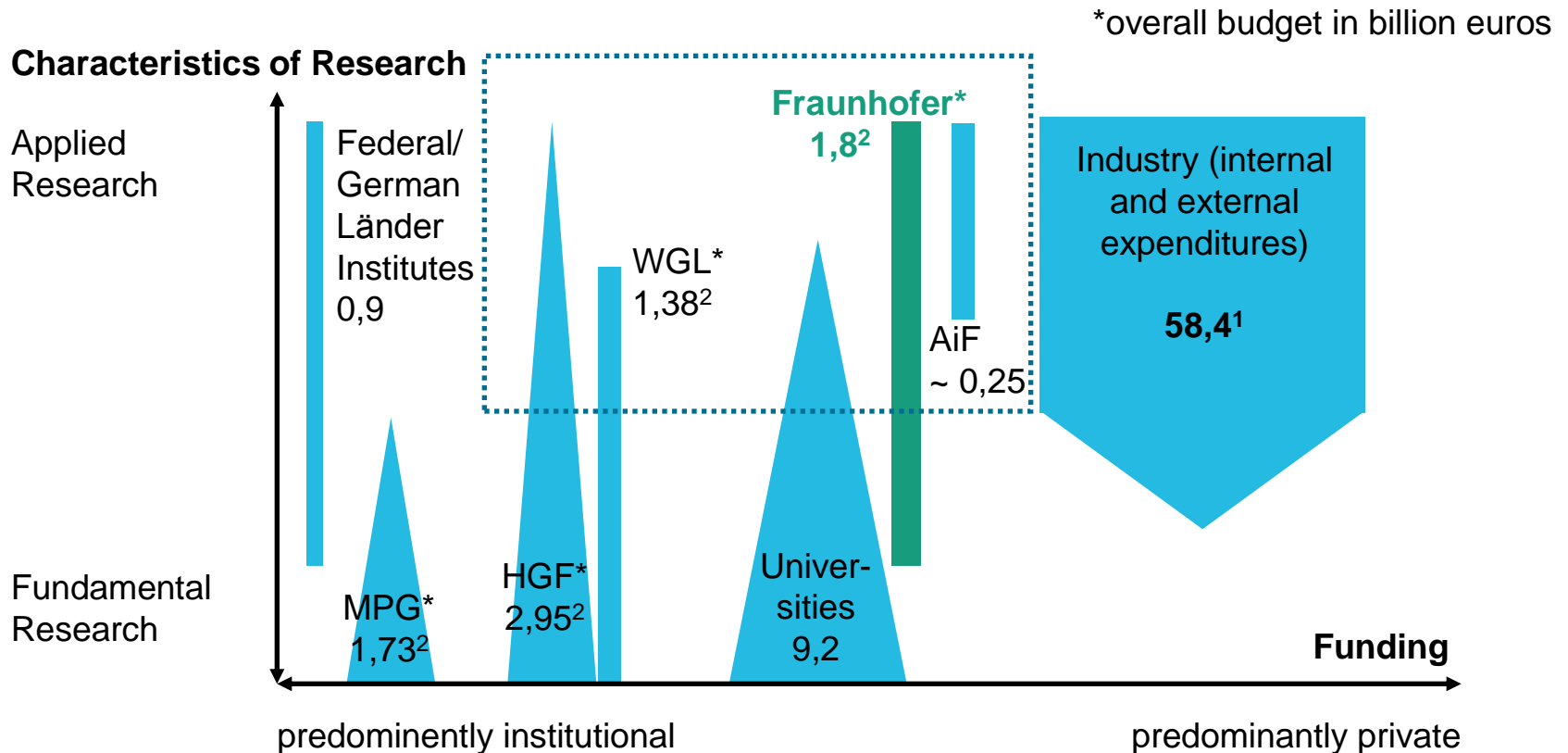
# The Fraunhofer-Gesellschaft



## Demands on a Fraunhofer Institute

- Scientific competence proven by the recognition of the scientific community
- Market success and entrepreneurial competence proven by contracts with industry and government; institutes work as for-profit centers
- Well-balanced financial mix of different independent sources

# The German Research Landscape



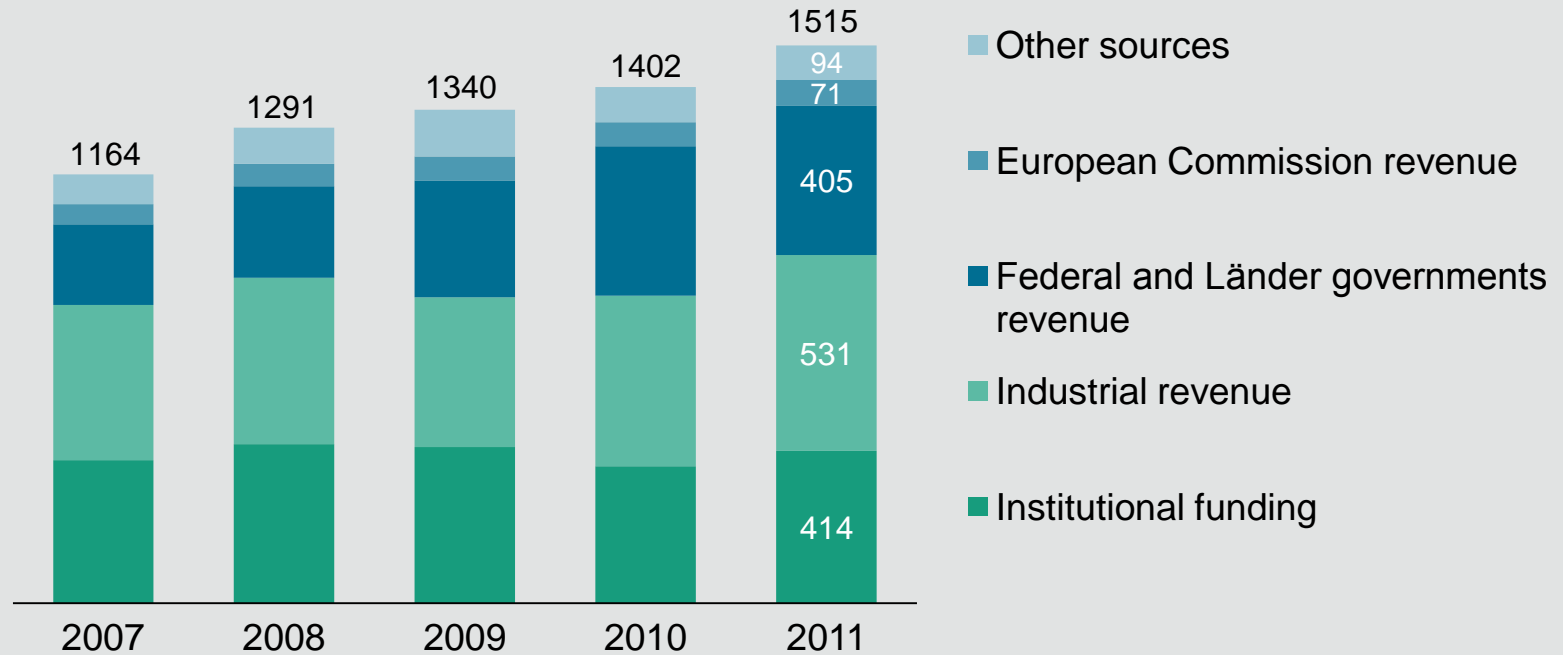
**HGF** Hermann von Helmholtz-Gemeinschaft  
**WGL** Wissenschaftsgemeinschaft Gottfried Wilhelm Leibniz  
**AiF** Arbeitsgemeinschaft industrieller Forschungsvereinigungen  
**MPG** Max-Planck-Gesellschaft

<sup>1</sup> estimation Wissenschaftsstatistik 2010, Stifterverband

<sup>2</sup> 2010

Source: Stifterverband für die Deutsche Wissenschaft, Destatis, research organizations

# Contract Research, (2007-2011, in € million)



# Fraunhofer MOEZ

## Mission Statement



Fraunhofer MOEZ is focused on  
processes of **internationalization**  
at the **intersection of business, science and politics.**

Together with our customers and partners

- in the **private sector**,
- in **public institutions** and **international organizations** as well as
- in the **sciences**,

we unlock the potential of an increasingly international knowledge economy for enduring **business and development strategies**, thus contributing towards a continuous deepening of **global value-creation partnerships.**

**Fostering competitiveness of...**

- **companies/SMEs**
- **regions/countries**



# Fraunhofer MOEZ

## Core Topic: Internationalization



**Fraunhofer MOEZ is the strategic partner  
for business, science, and politics  
whenever it comes to processes of internationalization.**

### Core Aspects of Internationalization

- Knowledge Economy
- Value Creation
- Sustainable Development

### Clients and Partners

- Private-sector enterprises
- European Commission
- Federal and state-level ministries
- Business associations, business incubators, chambers of commerce and industry
- Research institutions
- Networks, cluster organizations

# Fraunhofer MOEZ

## Facts and Data



- Location: Leipzig
- Year of foundation: 2006
- Staff (as of May 2012): 122; nationalities: 19
- Core expertise: Economics, Business, Political and Social Sciences
- Institutional link to University of Leipzig, Faculty of Economics and Management Science
- Director: Prof. Dr. rer. pol. T. Posselt (Professor of Innovation: Management and Economics)



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# Models for Technology Transfer

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1. Technology (Knowledge) Transfer at Universities
2. Push Perspective
3. Technology Transfer Offices at Universities
4. Types of Structures for Technology Transfer
5. Examples
  1. University of Glasgow
  2. Technical University Dresden

# Technology (Knowledge) Transfer at Universities

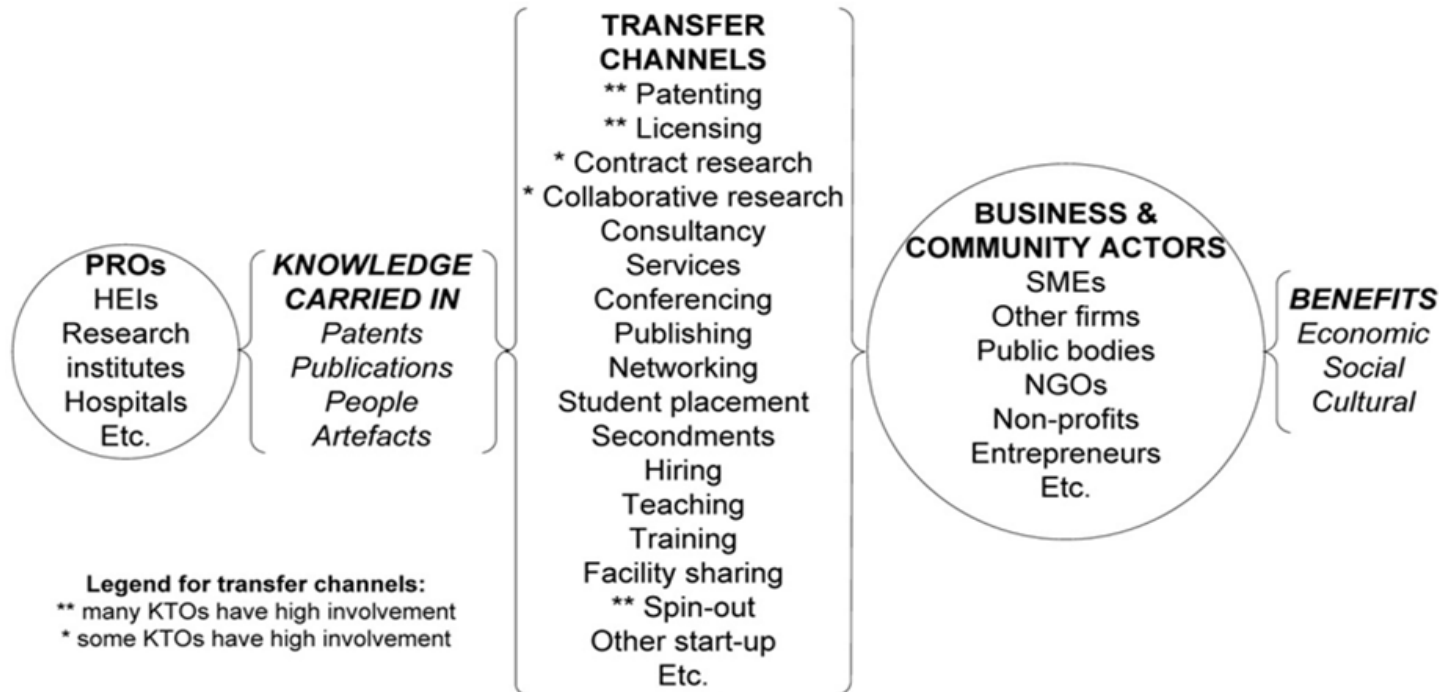
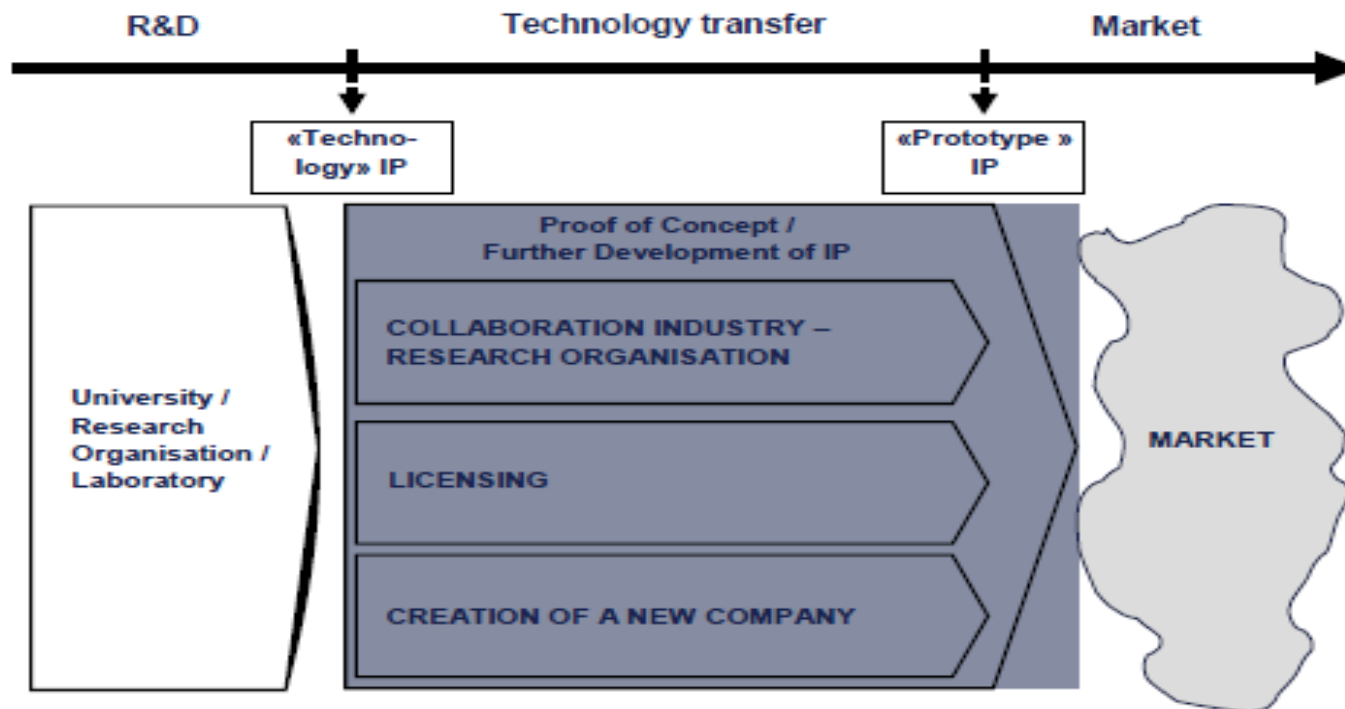


Figure 2.1: Knowledge transfer from PROs

European Commission (2009): Metrics for Knowledge Transfer from Public Research Organisations in Europe. Report from the European Commission's Expert Group on Knowledge Transfer Metrics. [Fig. p. 10]

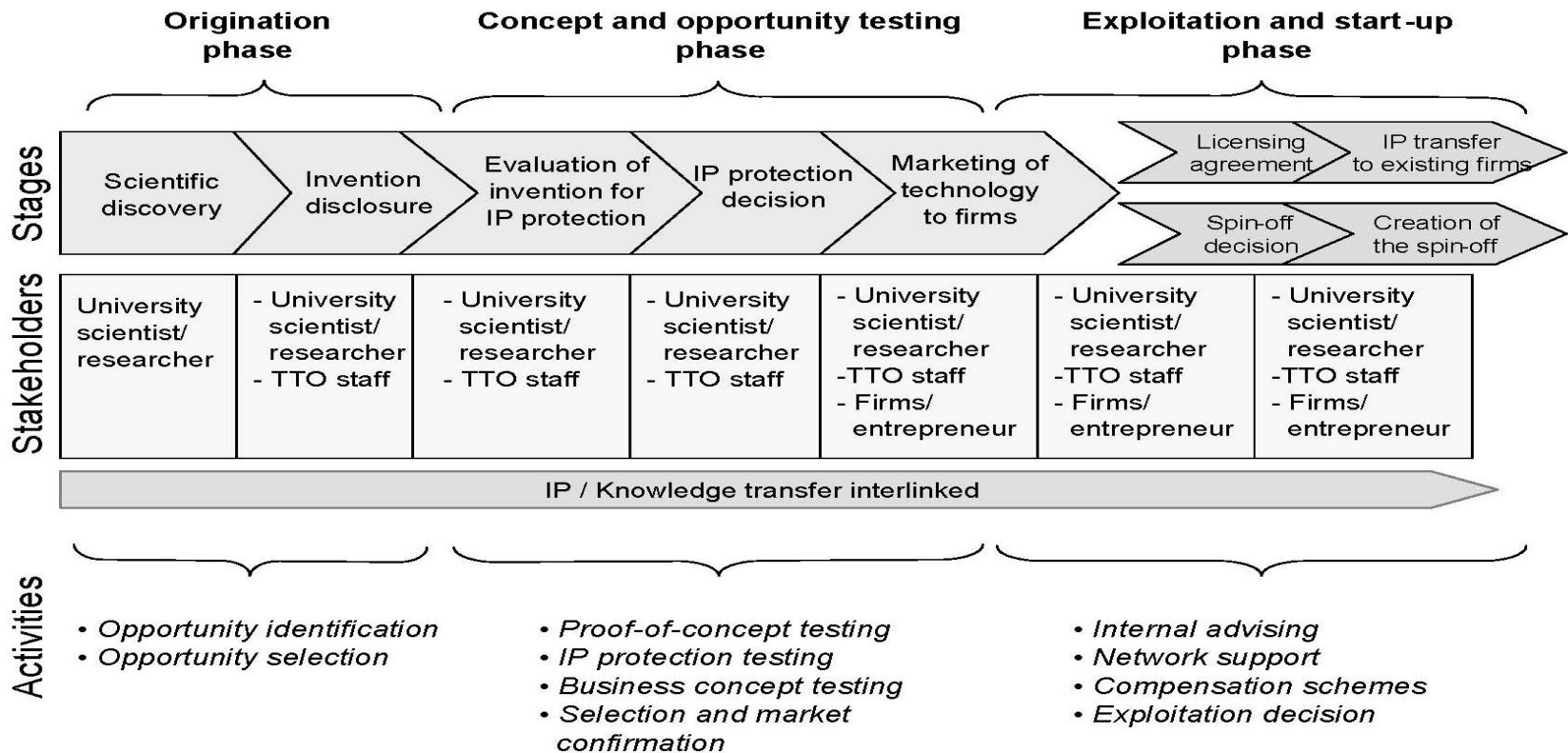
# Push Perspective

"Technology transfer" defines the process of transformation of the results of research and development (R&D) into marketable products or services. (TTA, p.II)



Source: TTA, European Investment Fund, 2005

# Push Perspective

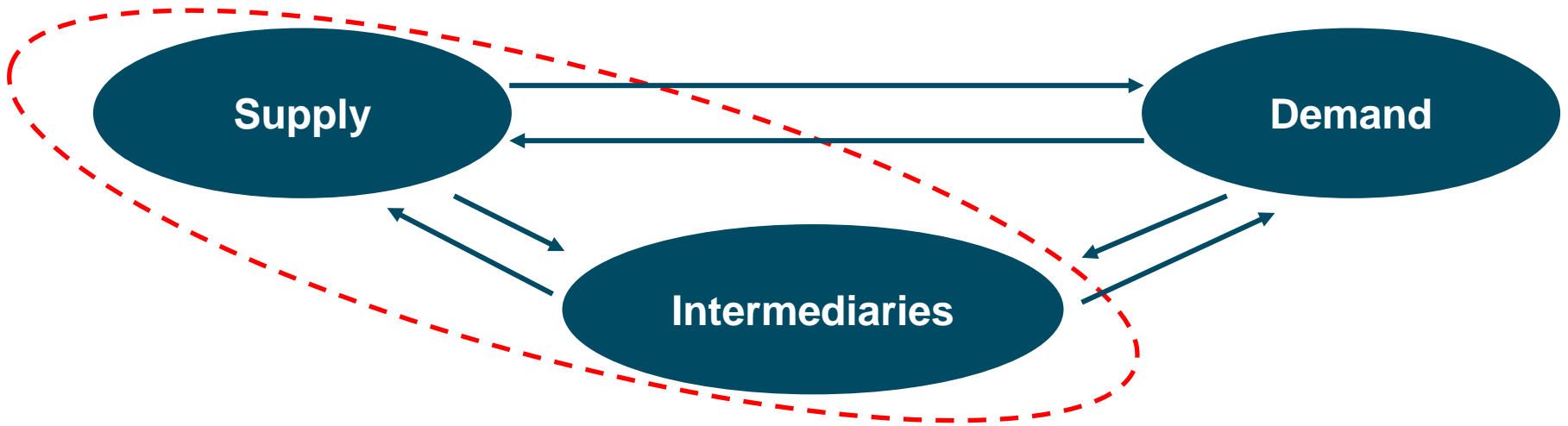


Source: TTA, European Investment Fund, 2005

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# Technology Transfer Offices at Universities

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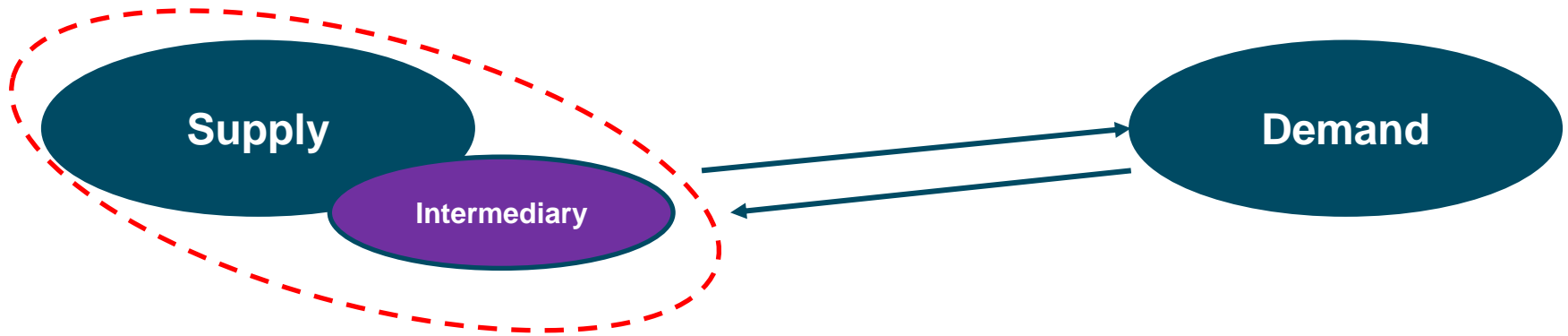


- Publicly funded R&D (Supply)
- Publicly funded TTO (Intermediary)

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# Technology Transfer Offices at Universities

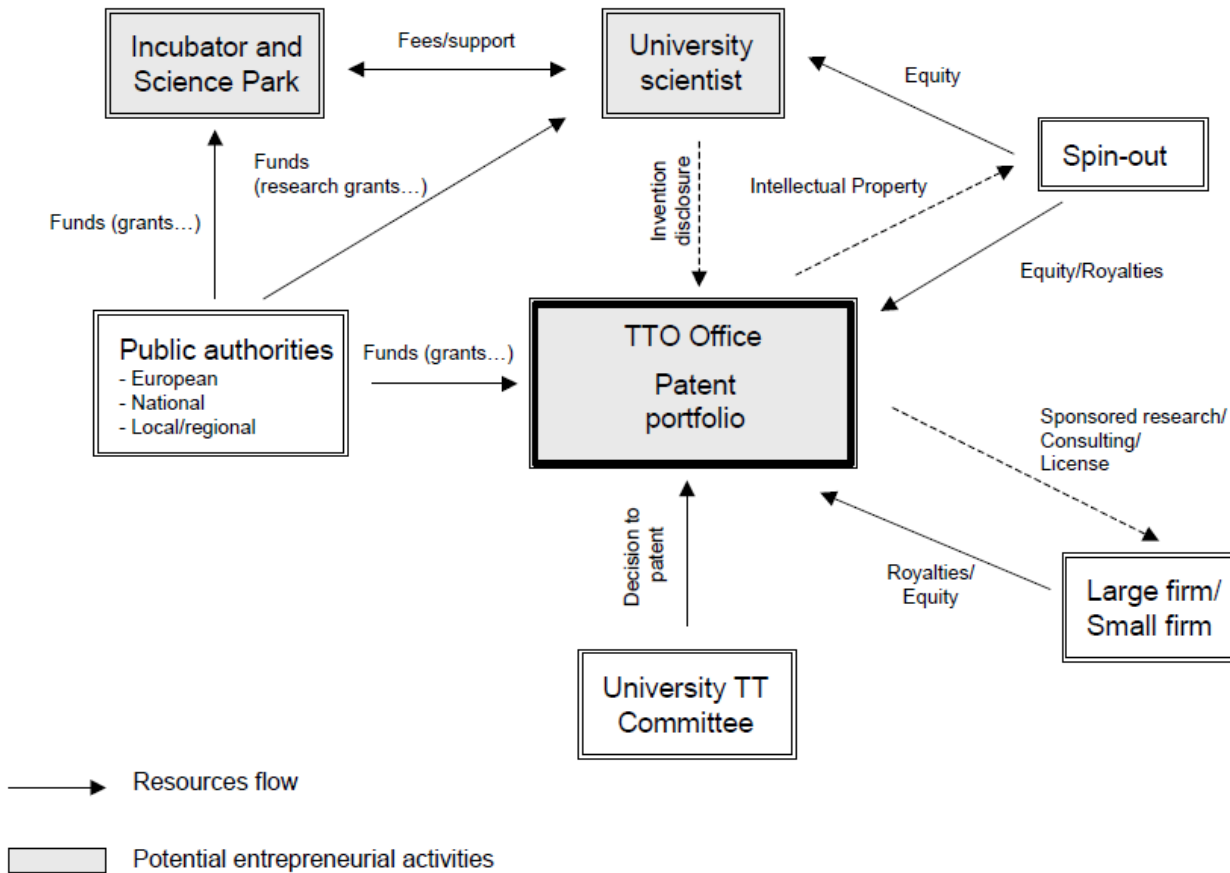
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- TTO as part of the university
  - *Budget*
  - *Staff*
  - *Hierarchy*



# Technology Transfer Office at Universities



Source: TTA, European Investment Fund, 2005

# Types of Structures for Technology Transfer

	Coach	IP Manager	Full service provider	Integrated business
<b>Key functions</b>				
- Contract research			+	++
- Licensing	+	++	+	+
- Spinout creation	+		+	+
- Coaching	++		+	+
<b>Objective</b>	Develop entrepreneurship	Monetise IP	Commercialise research / create wealth	TT is part of "raison d'être"
<b>Discrimination in projects supported</b>	Low	Medium	Medium	High
<b>Proactive search for opportunities</b>	Low	Limited	Limited	High
<b>Level of control over technology transfer process</b>	Low	Low	Medium	High
<b>Spinout funding</b>	None / very limited	None / very limited	Seed fund	VC fund
<b>Likely adopters</b>	Limited TT resources	Large stream of IP	Large universities	Large Research Institutions
	Regions in reconversion	Strong surrounding ecosystem		
	No ownership of IP by RO			
<b>Examples</b>	Twente	Large US universities	Chalmers	IMEC
	Inra	Cancer Research	KULeuven	INRIA
	Gent University		Cambridge	BTG
				TTP

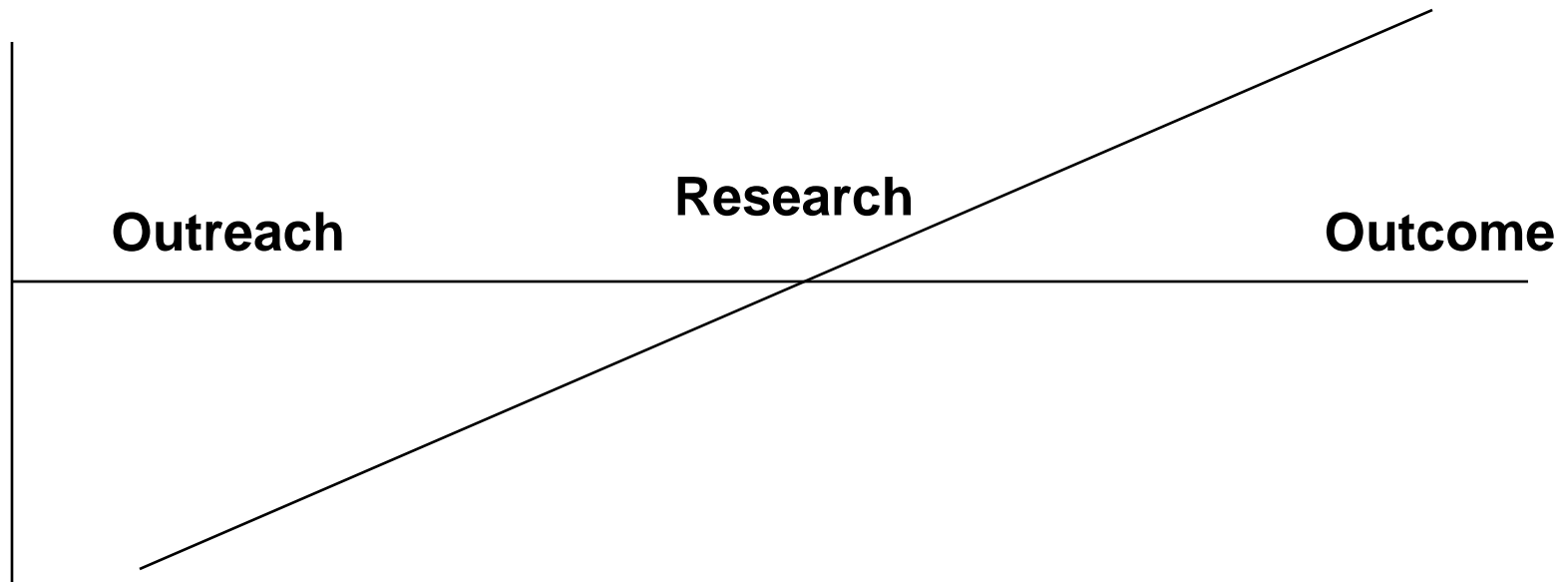
Source: TTA, European Investment Fund, 2005

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# University of Glasgow

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## Returns to University



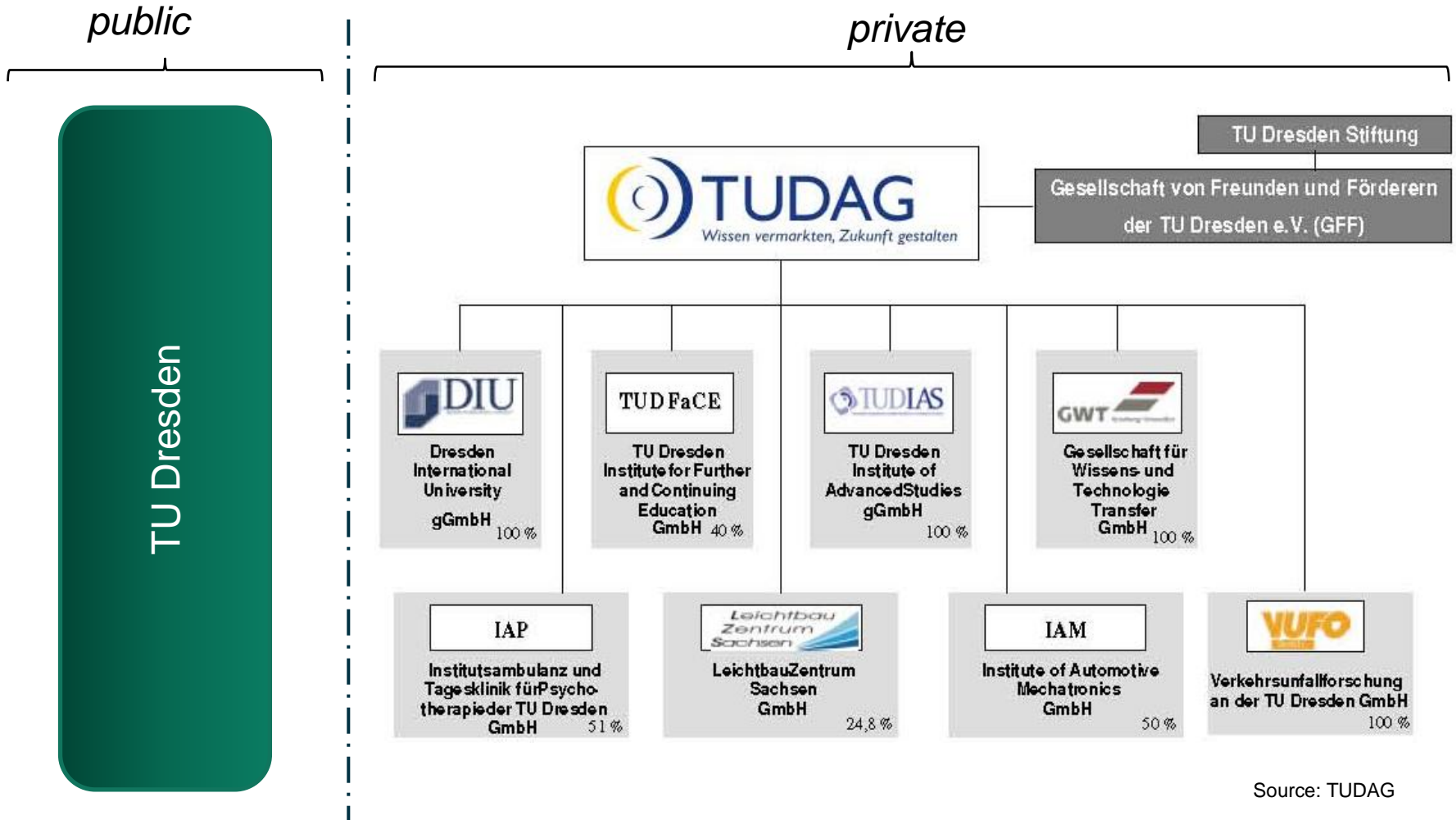
Source: Dr Kevin Cullen

## Outreach $\longleftrightarrow$ Outcome

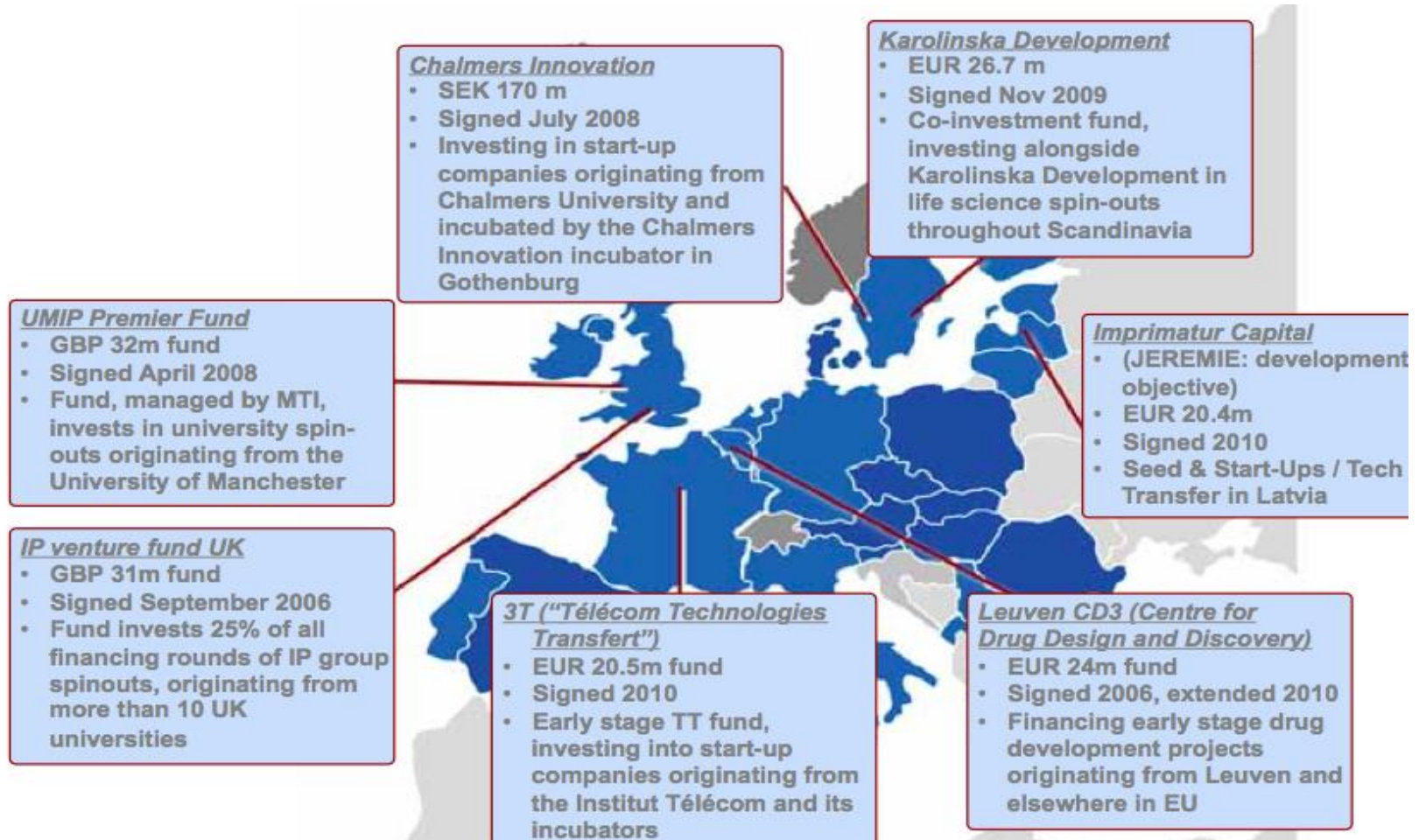
	Outreach Activities	Research & Technology Dev., Contract Research	Licensing	Venturing
Activity	No. of: <ul style="list-style-type: none"> <li>• SMEs worked with</li> <li>• Student placements</li> <li>• Companies created</li> <li>• Networking events</li> </ul>	No. of: <ul style="list-style-type: none"> <li>• Research Awards</li> <li>• Consultancy</li> <li>• CPD</li> <li>• Proof of Concept</li> </ul>	No. of: <ul style="list-style-type: none"> <li>• Disclosures</li> <li>• Patent Applications</li> <li>• Patents Granted</li> <li>• Options Granted</li> </ul>	No. of: <ul style="list-style-type: none"> <li>• Business Plans</li> <li>• Joint Ventures</li> <li>• Companies leveraging in external investments</li> </ul>
Quality	Income in support of activities and feedback	Income: <ul style="list-style-type: none"> <li>• Research (HESA)</li> <li>• Consultancy</li> <li>• Etc.</li> </ul>	Income from licensing, cash or equity value upon realisation	Value of equity realisation
Impact	Longitudinal and difficult to track	No. of jobs created in HEIs	Export income, no. of jobs created in HEIs	No of jobs created, turnover and realisation of equity

Source: Dr Kevin Cullen

# Technical University Dresden



# EIF Tech Transfer Transactions



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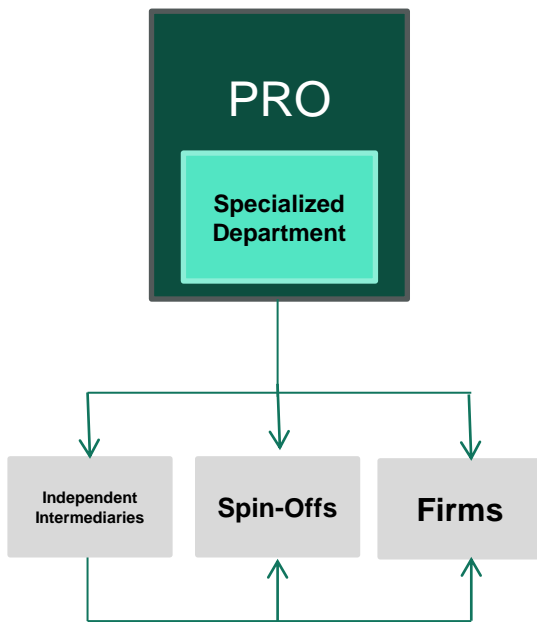
# Centrally Operated Systems

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1. Introduction
2. Fraunhofer
3. Steinbeis

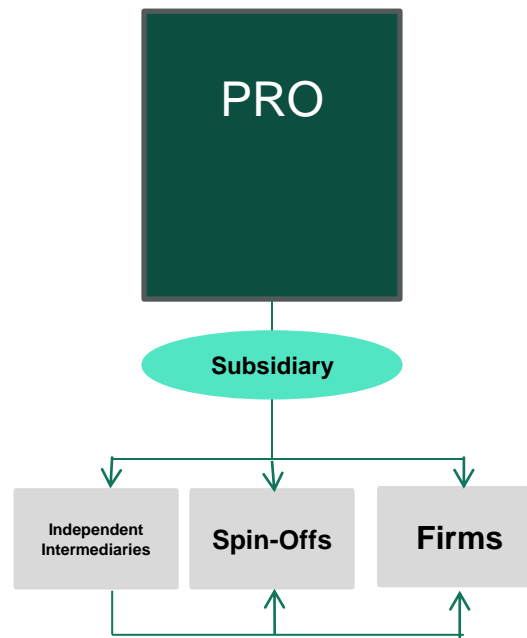
# Centrally Operated Systems - Introduction

„Department-type“



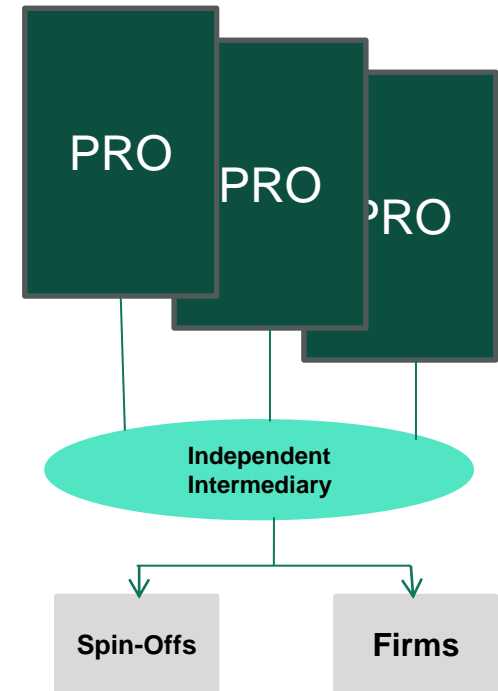
- TTOs, TLOs
- *Steinbeis*
- *Fraunhofer*

„Wholly -owned“



- TUDAG
- *Ascenion GmbH*

„Independent“

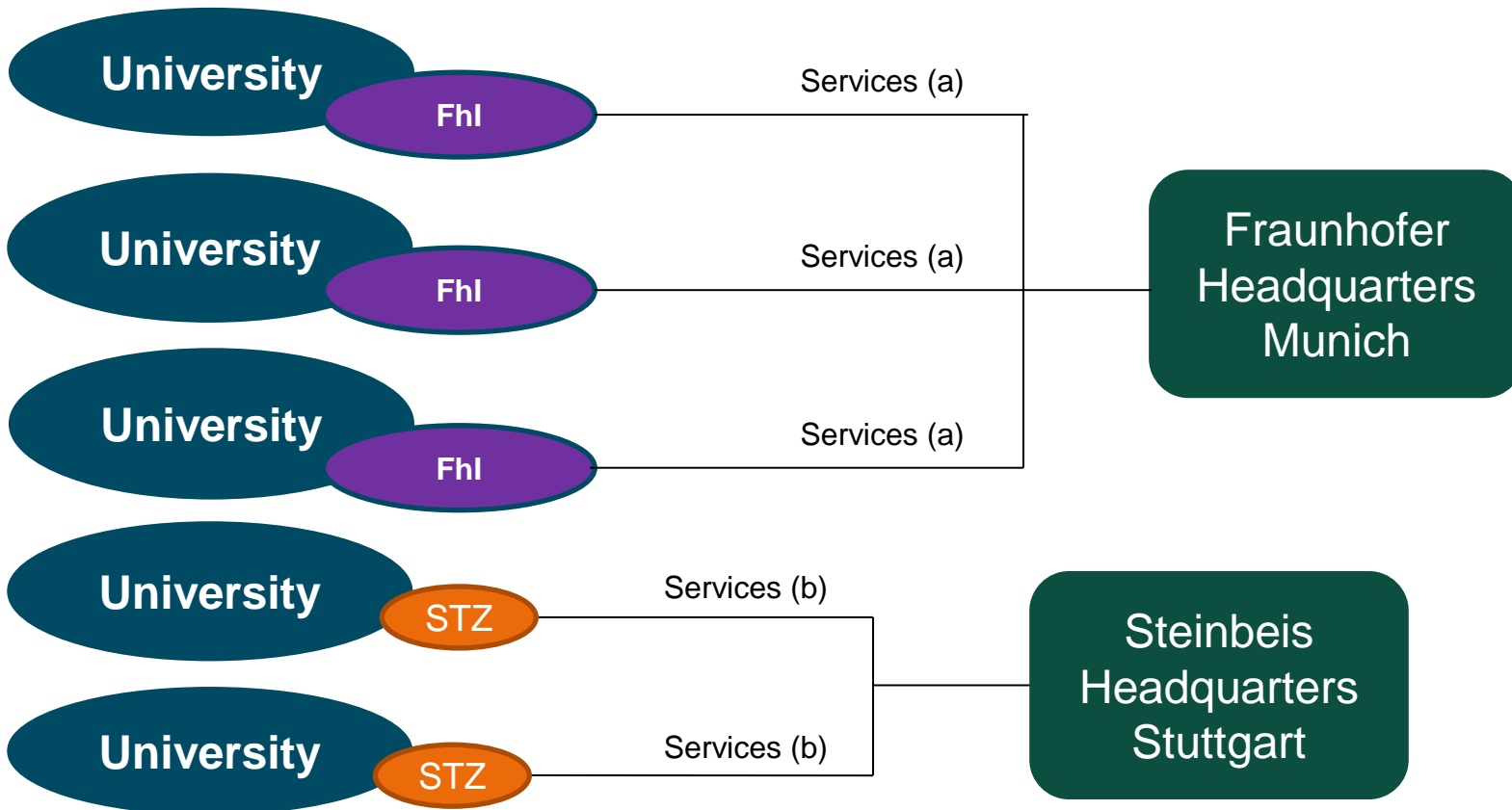


- PVAs

Source: ITTE, p. 12, adapted from OECD 2002



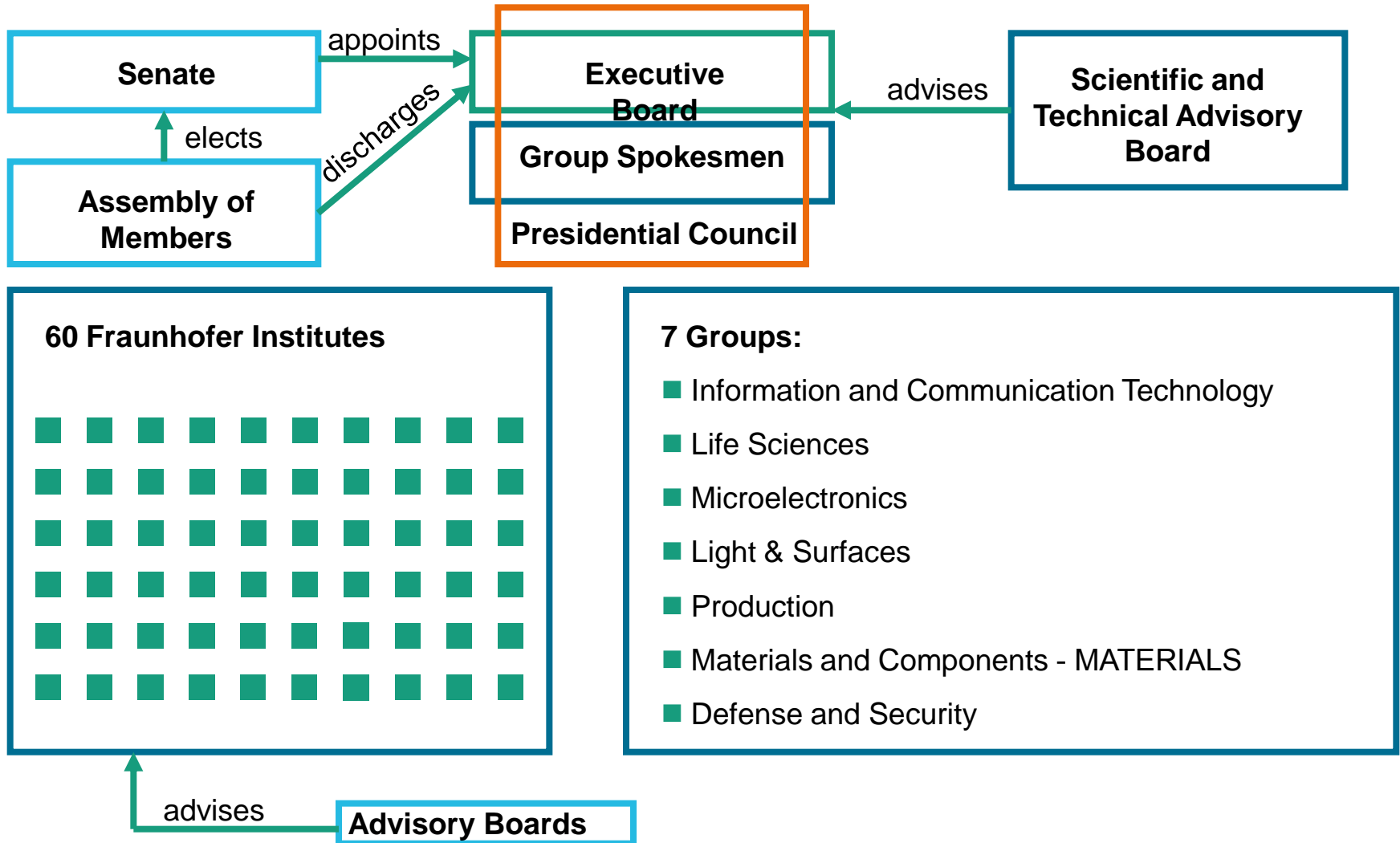
# Centrally Operated Systems



# Centrally Operated Systems – Department-Type

	Fraunhofer	Steinbeis
Headquarters	<ul style="list-style-type: none"> <li>• One legal entity</li> <li>• Corporate strategy</li> <li>• Representation, Corporate identity</li> <li>• Institutional funding</li> <li>• Assignment of director</li> <li>• Administrative support to the institutes (Publicly funded projects, human resource management, contracts, IP strategy)</li> </ul>	<ul style="list-style-type: none"> <li>•Service provider and consultant for entities</li> <li>•Financial management and accountancy</li> <li>•Human resource management (contracts, salaries, taxes)</li> <li>•Support in the fields of law, insurance and public relations</li> <li>•Support during formation of a company</li> <li>•Get charges (usually 9% of turnover)</li> <li>•External legal relations (foundation)</li> </ul>
Entities	<ul style="list-style-type: none"> <li>• Marketing</li> <li>• Research agenda</li> <li>• Acquisition</li> <li>• Costs and earnings</li> </ul>	<ul style="list-style-type: none"> <li>•Acquisition</li> <li>•Marketing</li> <li>•Contracts</li> <li>•Profits</li> <li>•Costs</li> <li>•Investments</li> <li>•Within foundation: head's liability</li> </ul>

# Fraunhofer (structure)

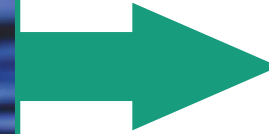
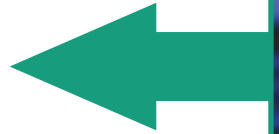


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# Fraunhofer Institutes

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Responsibility

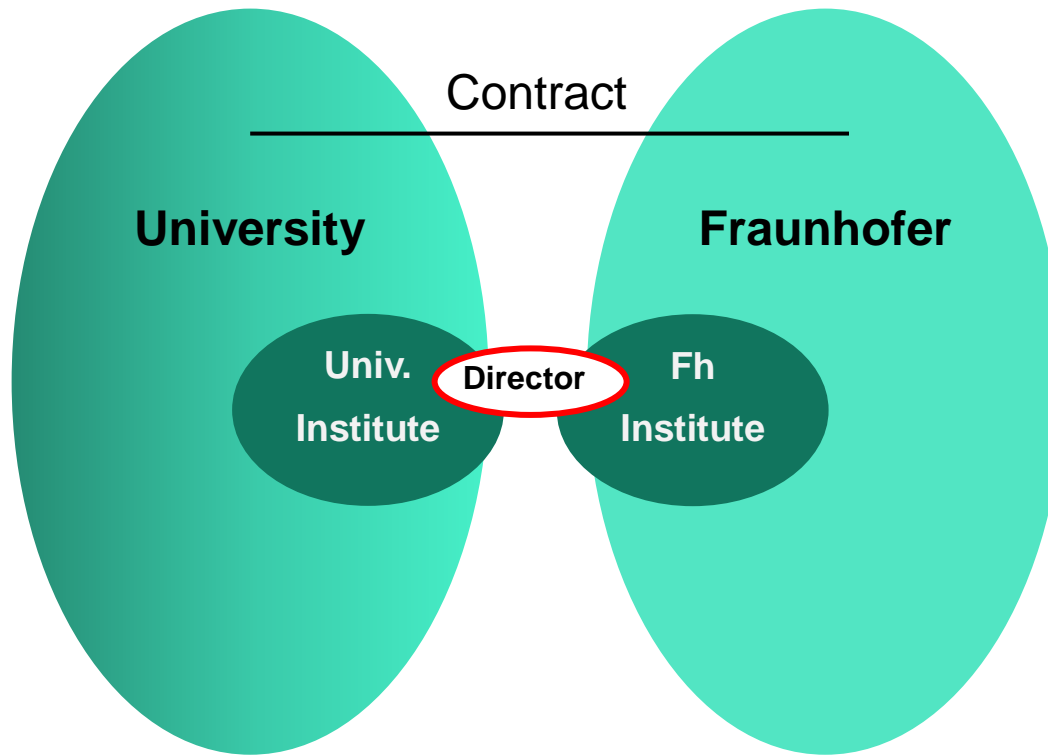


Structural freedom

- Project results
- Standing in the scientific community
- Financing
  - Approx. 35% basic financing
  - Approx. 65% from the market

- Area of research emphasis
- Allocation of resources
- Project acquisition
- Project management

# Universities and Institutes



- Clients
- Clients
- Clients
- Clients
- Clients
- Clients
- Clients



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# Basic Funding for the Fraunhofer-Gesellschaft

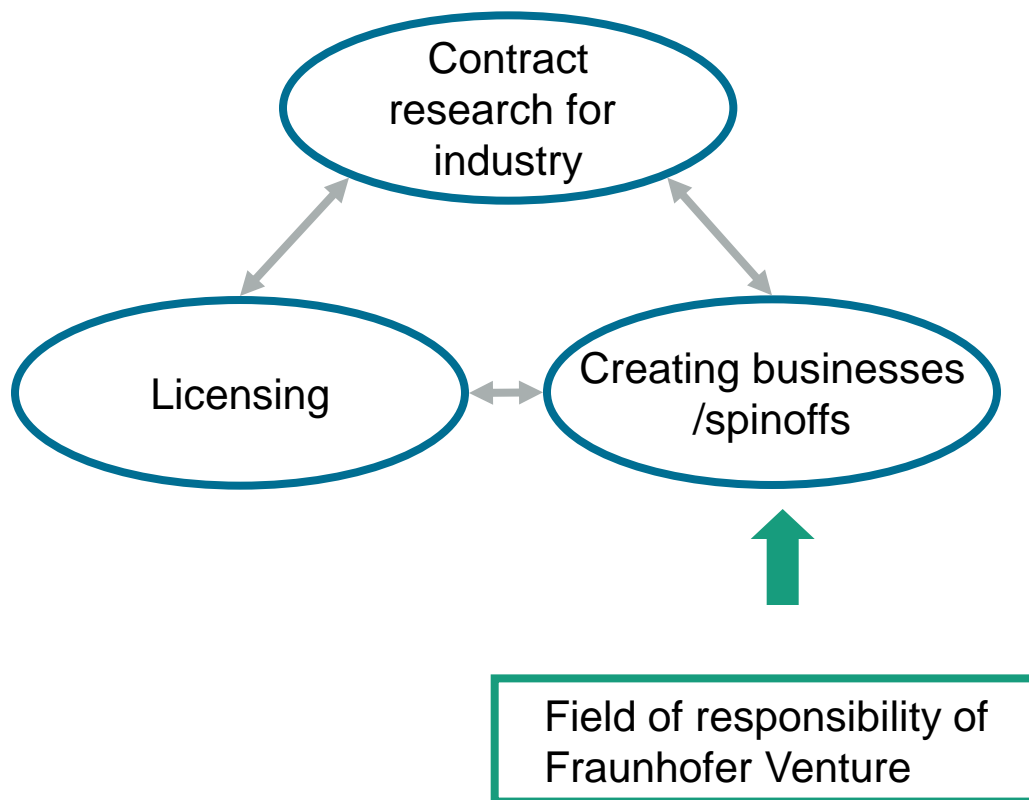
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- 90:10 split between the German federal government and the *Länder*
- “Performance-based” - annual negotiations between the Fraunhofer-Gesellschaft (Executive Board) with sources of funding (Policy Committee of the Fraunhofer-Gesellschaft)
- The basic funding is provided first to the Executive Board. The distribution of these funds among the Fraunhofer Institutes is exclusively the jurisdiction of the Executive Board (autonomy, no individual control from outside)
- Management principles are in effect

# Fraunhofer Venture

- 1999  
Created as a working group within the legal department of the Fraunhofer headquarters
- 2001  
Establishment in the new Executive Board area “CIO and International Business Development” of the Fraunhofer headquarters
- 2006  
Transfer to the Executive Board area for “Research Planning”



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# Strategy and Audits

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- Each institute has to develop its own strategy → continuous strategy process
  - Core competences
  - Business fields
  - Logic to connect core competences and business fields
  - Goals
  - Environment
  - Culture!
  
- Audit every five years
  - Auditors
  - Critical feedback
  - Processes (ISO)



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# Die Steinbeis Stiftung

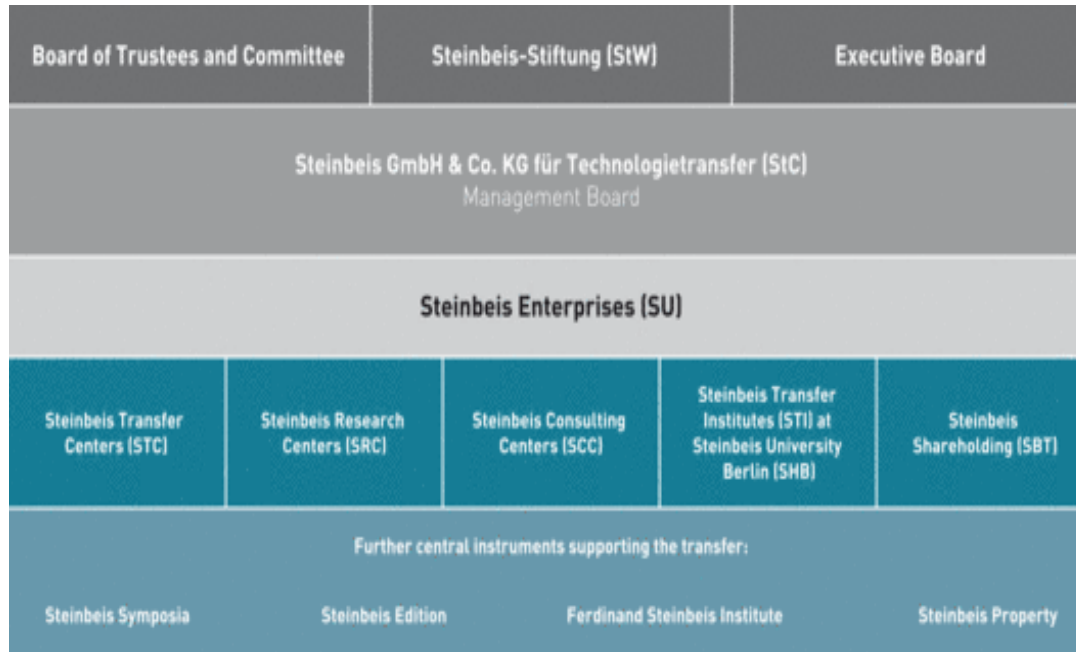
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The Steinbeis-Stiftung für Wirtschaftsförderung (StW) is the umbrella organization of the Steinbeis Transfer Network. The non-profit foundation and its subsidiary the Steinbeis GmbH & Co. KG für Technologietransfer (StC), which is responsible for all commercial activities involved in knowledge and technology transfer, are headquartered in Stuttgart, Germany.



- Founded in the State of Baden-Wuerttemberg
- Established in 1971
- Global service provider in terms of knowledge and technology transfer
- >750 Transfer Centers/ ~700 professors
  
- Named after Ferdinand von Steinbeis (1807-1893)
  - Advocate of Technology Transfer
  - Founder of Dual Education

# Die Steinbeis Stiftung



## Research and Innovation

**Centers** (SRC, SIC) are specialized in several kinds of research: market, transfer-oriented, commissioned, development, transfer-network research as well as projects of a charitable nature.

**Consulting Centers** (SCC) are experienced, insightful points of contact for business consulting, evaluation and training.

The Steinbeis University Berlin provides, in its **Institutes** (STI), transfer-oriented research as well as competence-oriented training and employee development.

**Steinbeis Beteiligungs-Holding** oversees the Stiftung's majority holdings and several company equity holdings. Steinbeis properties are used to bolster the knowledge and technology transfer process by providing the network with a suitable infrastructure.

**Board of Trustees:** lays down the fundamental working practices for the foundation. The Board of Trustees has 22 ordinary as well as 22 alternate members.

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# Steinbeis-Stiftung

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## Transfer Network

In 2011, **855** Steinbeis enterprises made up the Transfer Network. Depending on their aim and assignment, the experts work in legally dependent Steinbeis Transfer Centers, Steinbeis Research and Innovation Centers, Steinbeis Consulting Centers, Steinbeis Transfer Institutes or legally independent organizations. In 2011, Steinbeis founded **88** new enterprises.

## Turnover

With services in research and development, consulting, training and employee development, as well as evaluation and expert reports, Steinbeis achieved a total turnover of **134 million euros** in 2011.

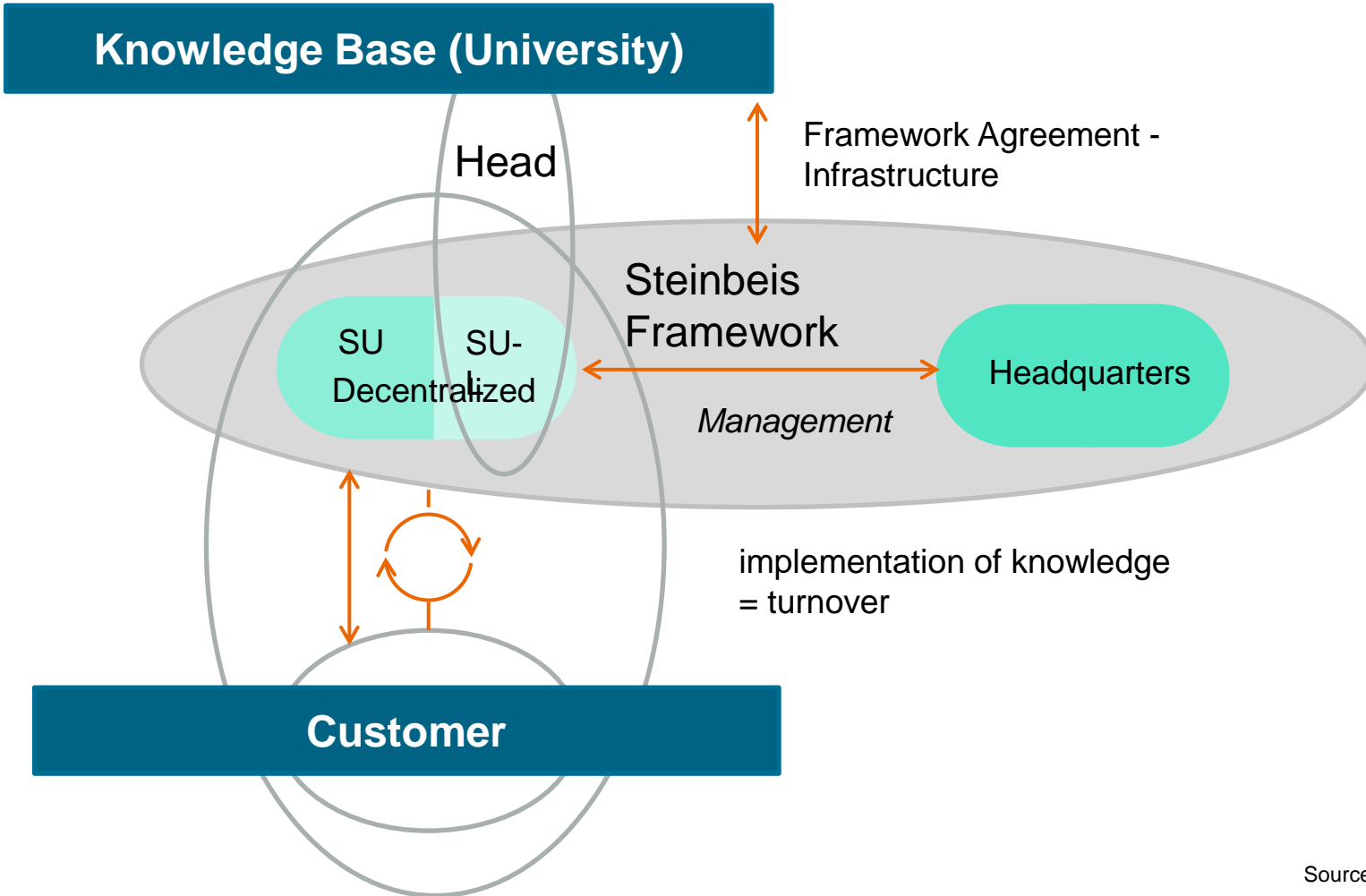
## Employees

In 2011, Steinbeis' directors worked alongside **1,462** employees and **3,631** contractors. Steinbeis employed a total of **697** professors in 2011.

Source: <http://www.stw.de/en/about-steinbeis/facts-figures.html>

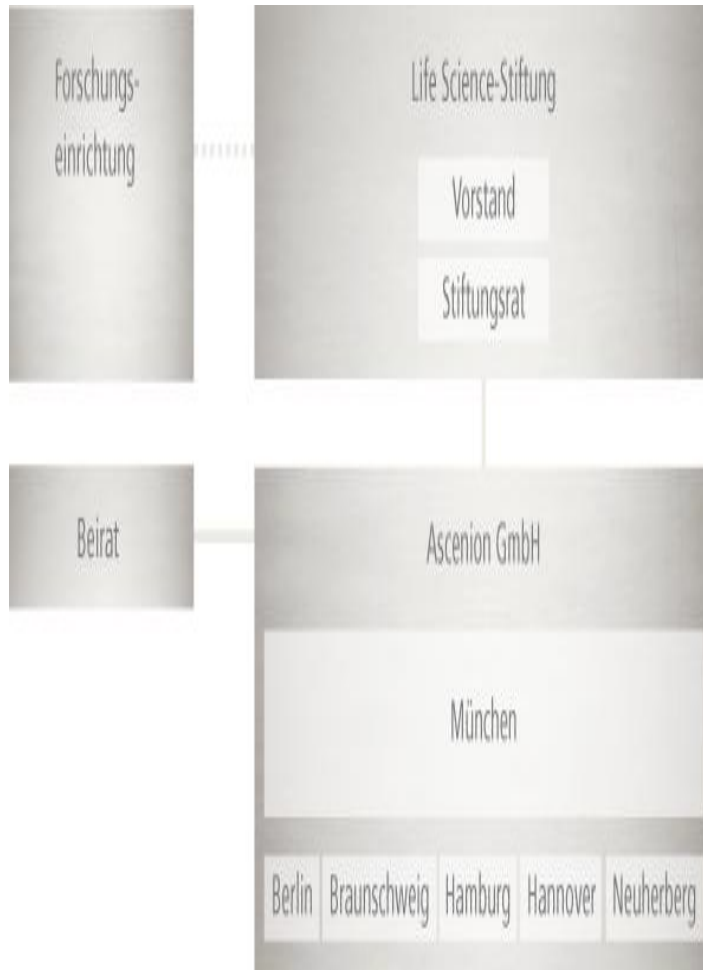
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# Steinbeis-Stiftung



Source: Steinbeis-Stiftung

# LifeScience Foundation – ASCENION GmbH



In 2001, four life-science institutes of the Helmholtz Association established the LifeScience Foundation for the Promotion of Science and Research, with Ascenion – an independent central service company for technology transfer – as its 100% subsidiary.

Advantages: First, they receive from Ascenion the expertise and experience required to exploit their research results more efficiently. Second, the foundation structure allows them to maximize profits from the proceeds of successful technology transfer initiatives. Profits made by Ascenion flow via the Foundation back to research (to date 6,3 Mio. €). Since 2003, the partner institutes have received more than 30 million € from contracts negotiated by Ascenion.

## Open to all life-science institutes

Since 2001, the original four endowed institutes have been joined by the Hannover Medical School and institutes of the Leibniz Association. Endowment is not, however, a precondition for a collaboration with Ascenion.

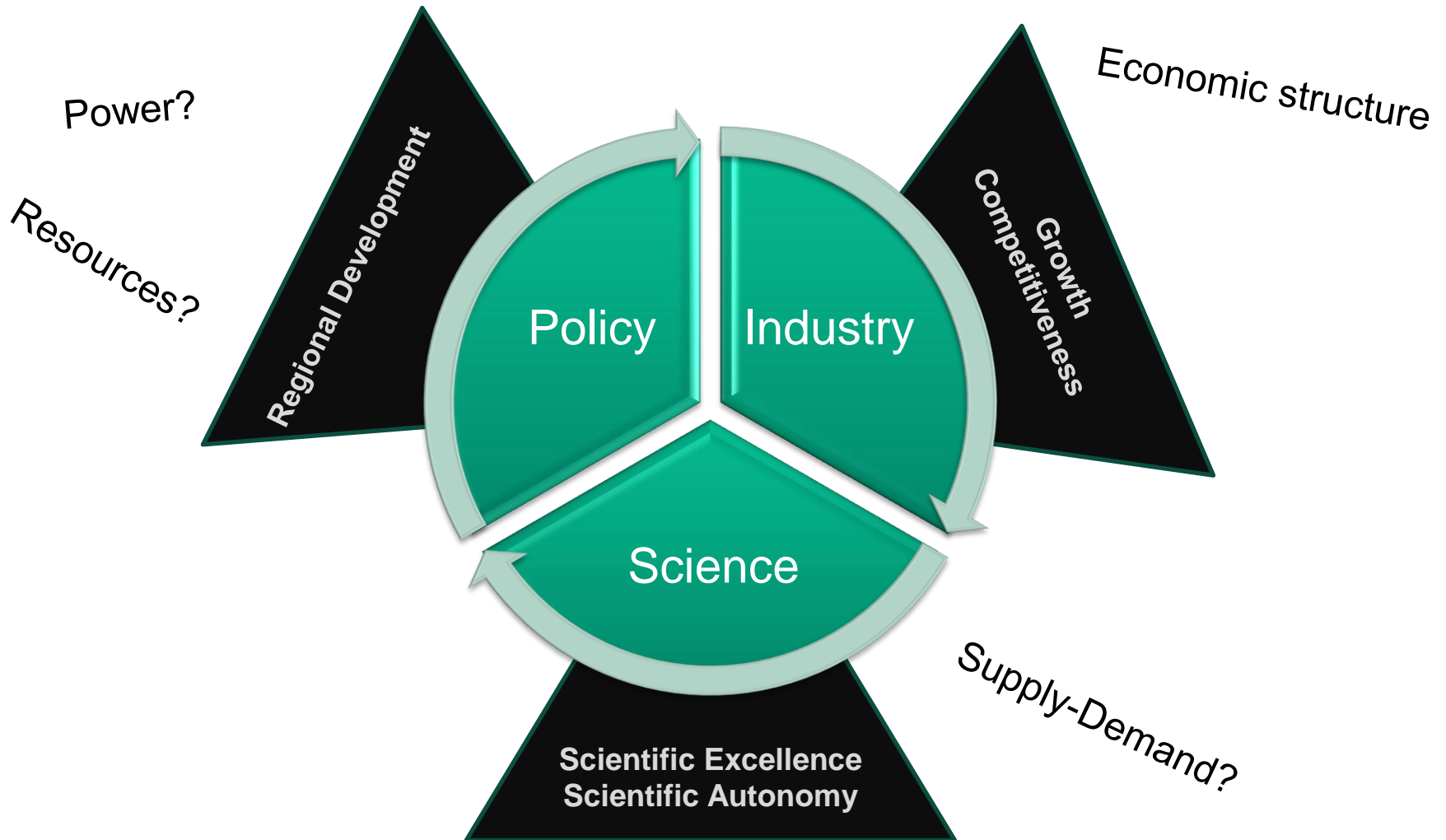
Source: Ascenion GmbH

# Comparison „central vs non-central“

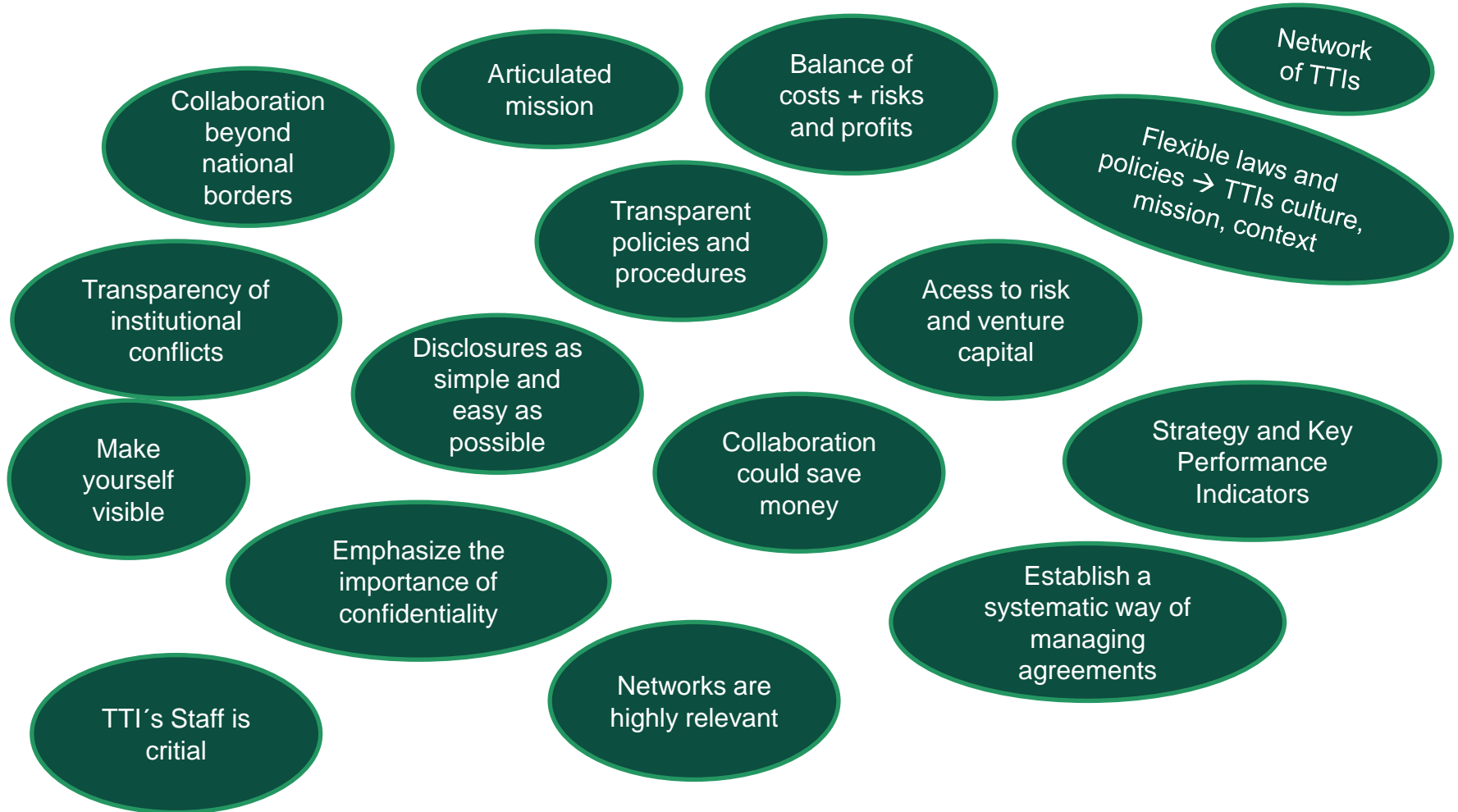
Department-type

Centrally operated national systems for technology transfer	Non-centrally operated national systems for technology transfer
<ul style="list-style-type: none"><li>• High and continuous deal flow</li><li>• Common quality standards</li><li>• Possibility for professionalism (specialization)</li><li>• Visible-to-high potentials</li><li>• Influence the national innovation system</li><li>• Cooperation with similar organizations abroad (internationalization)</li><li>• Balance of power during negotiations</li></ul>	<ul style="list-style-type: none"><li>• Very flexible</li><li>• Dependence on university management</li><li>• Dependence on regional environment (economy, policy)</li></ul>

# How to establish a Regional TT-Model?



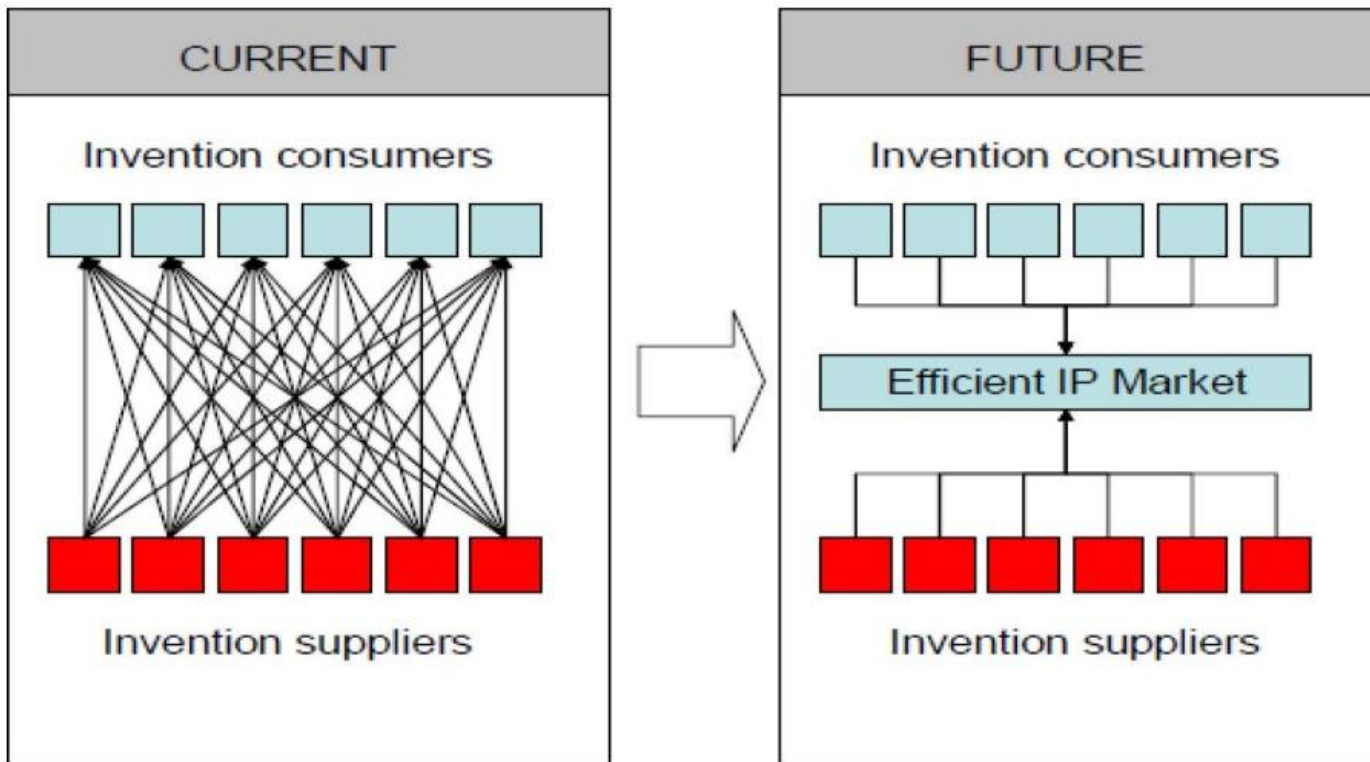
# Recommendations



Source: ipHandbook of Best Practises, own experiences



# The future?



Source: Jaques Darcy, 2011

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# We appreciate comments and discussion!

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