Welcome @ TUCLab

Wir bringen Start-ups weiter.

How to Foster Entrepreneurship in the Local Innovation Ecosystem with Different Approaches (I)

Jens Weber

Technologiecampus Chemnitz

&

Dr. Anja Herrmann-Fankhänel

Chemnitz University of Technology

TUClab:

Stimulator

Multiplier

Accelerator

Basics

- Part of the strategy to strongly connect economy and science
- Strengthen the university's competitive advantage & the regions' economic growth by innovative organizations
- Started in 2018

Annual Competition

- To support entrepreneurs and starting their businesses
- Win: equity capital from a local holding company, accelerator programme, time and space to work and develop (TUClab)
- Prerequisites: link to the topics of CUT, organization not older than 18 months, degree from a university (in Saxony)

TUClab:

Some Winners

CYNIO

CUCUMBER COMPANY

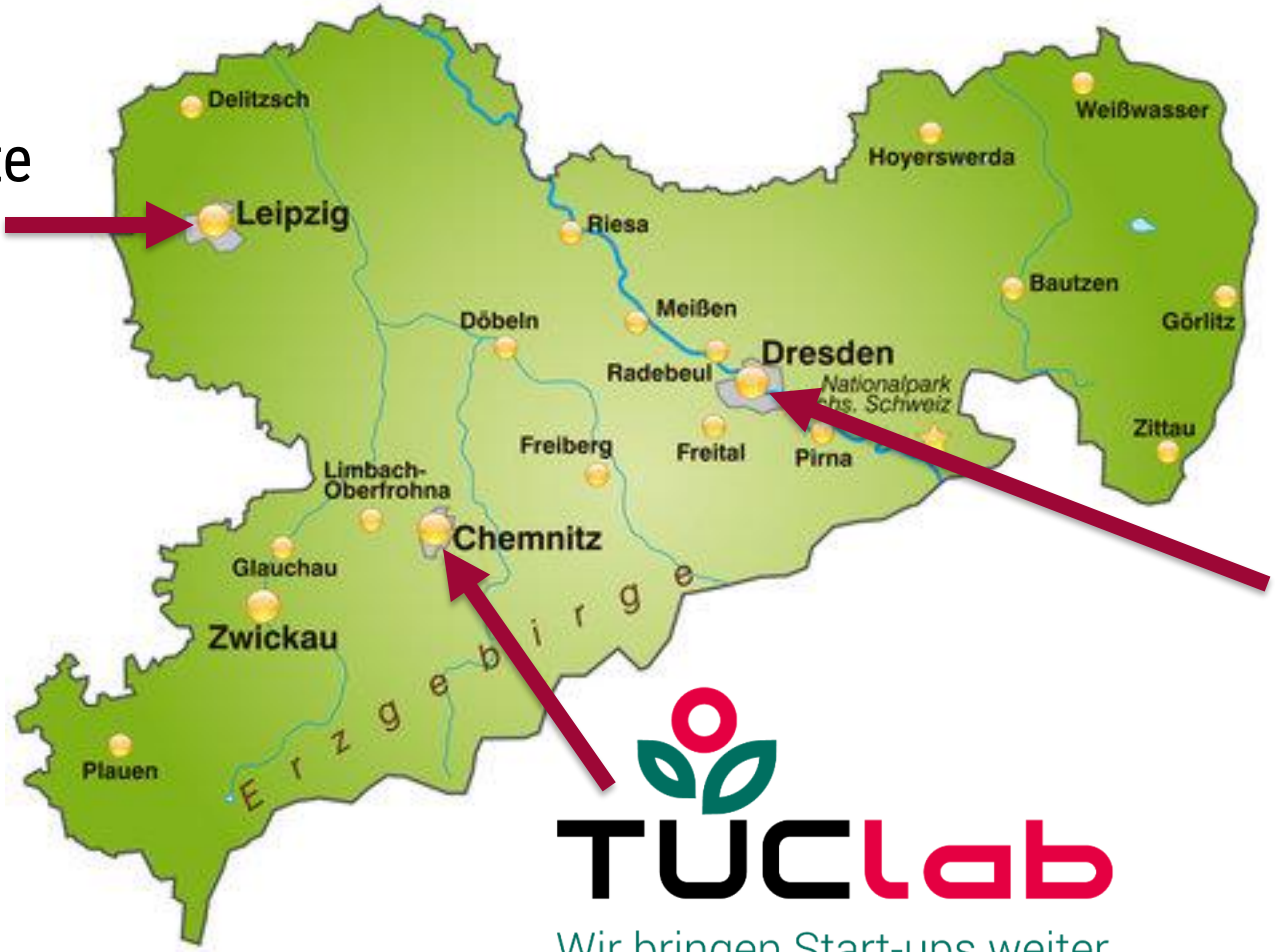
LIGENIUM
HOLZ IM MASCHINENBAU

NANOSEN

TUClab:

Role Model

BioInnovate by Smile, 2024



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Wir bringen Start-ups weiter.

Dresden Exist Competition, 2024

Question for you

WHAT IS ENTREPRENEURSHIP?

Company Environment

Resource Dependence Approach

Pfeffer & Salancik (1978 + 2003)

Basic assumptions about a company and its environment

- Every company is part of its environment.
- There are individual and collective actors in the environment.
- They are connected through the exchange of resources.
- Each actor pursues its own individual interests.
- In the long term, the aim is to ensure the survival of an actor, e.g. a company.
- This only works through interaction with the actors in the environment, e.g. through collaboration over resources.
- Whoever owns, controls and/or uses a resource has power.
- Resources are tangible and intangible.

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Jens Weber

Please,

tell us who you are, where you work and what your task is!

Jens Weber:

- 47 years old
- Managing Director of Technologie Centrum Chemnitz GmbH since2016
- Previously 10 years of start-up support at the TU Bergakademie Freiberg

Technology Centrum Campus:

- Part of the City of Chemnitz Economic Development Agency (municipal company)
- Provides start-ups with infrastructure (offices, workshop and laboratory space) for setting up their company
- Assistance for companies with consulting services and network support
- Objective: to create a good environment for the consolidation and growth of young companies

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Company Environment

Aspects of the environment

Mirco Perspective

Porter (2008)

The Five Forces That Shape Industry Competition



Business Ecosystems

Business Ecosystem

Weltgen (2019)

Although the focus of the business model is primarily on the focal company and not on competitors or the corporate environment, the **stakeholders** (customers, suppliers, partners, etc.) of the company are also a component of the business model...

...The extension of the business model to include the stakeholders in the ecosystem of the focal company does not only refer to value creation. Rather, the stakeholders can also be **involved in the value proposition or the absorption of value added.**

Business Ecosystems

Business Ecosystem

Moore (1996)

Biological ecosystem refers to the community of living organisms and their interaction as well as the non-living components that influence the shared environment → Analogy for the business world:

„the business ecosystem is defined as an economic community supported by a foundation of interacting organizations and individuals – the organisms of the business world"

Depending on the boundaries:

Geographical, temporal, permeability, content-related

→ Business ecosystems, innovation (eco)systems, knowledge ecosystems

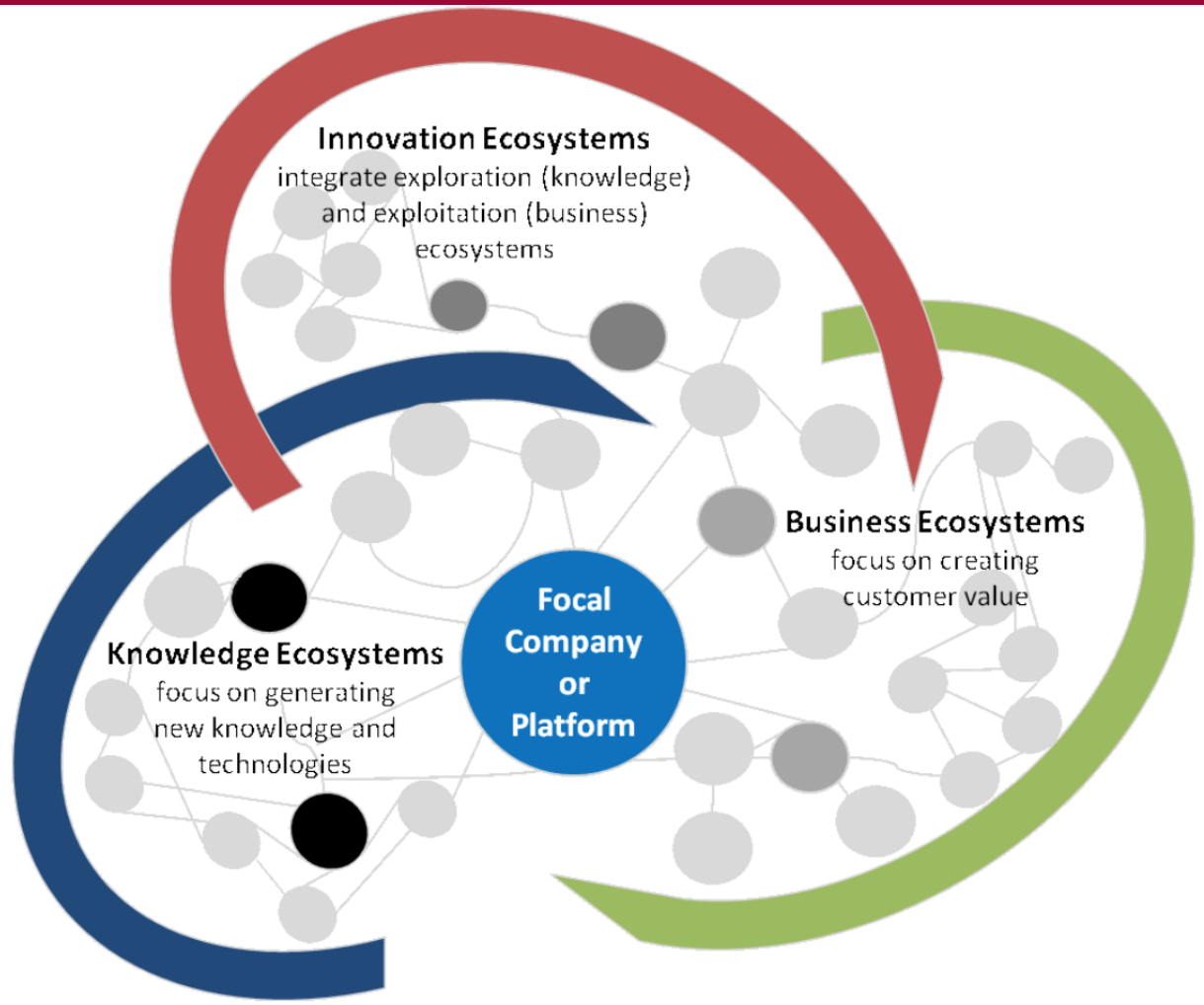
Business Ecosystems

Types of Ecosystems

Valkokari, K. (2015).

Focal organization at the center

- Business Ecosystem for the use of resources and customer added value
- Innovation Ecosystem for co-creation and innovation
- Knowledge



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Jens Weber

Does this environ-mental perspective influence your job and what is your job about?

Definitely! → Environmental perspective influences own work

How:

- Often “mediator” between the different perspectives
- Start-ups/foundations from academia switch through the different perspectives when building the company:

  The way from Knowledge → Innovation → Business
- Support with the “role change”

Innovation System

National Innovation System

Freemann (1987, 1995)



Definition: „**The network of institutions in the public and private sectors whose activities and interactions initiate, import, and diffuse new technologies**“

“Contrary to some recent work on so-called 'globalisation', this paper argues that **national and regional systems of innovation remain an essential domain of economic analysis**. Their importance derives from the **networks of relationships** which are necessary for any firm to innovate. Whilst external international connections are certainly of growing importance, the influence of the national education system, industrial relations, technical and scientific institutions, government policies, cultural traditions and many other national institutions is fundamental.”

Innovation System

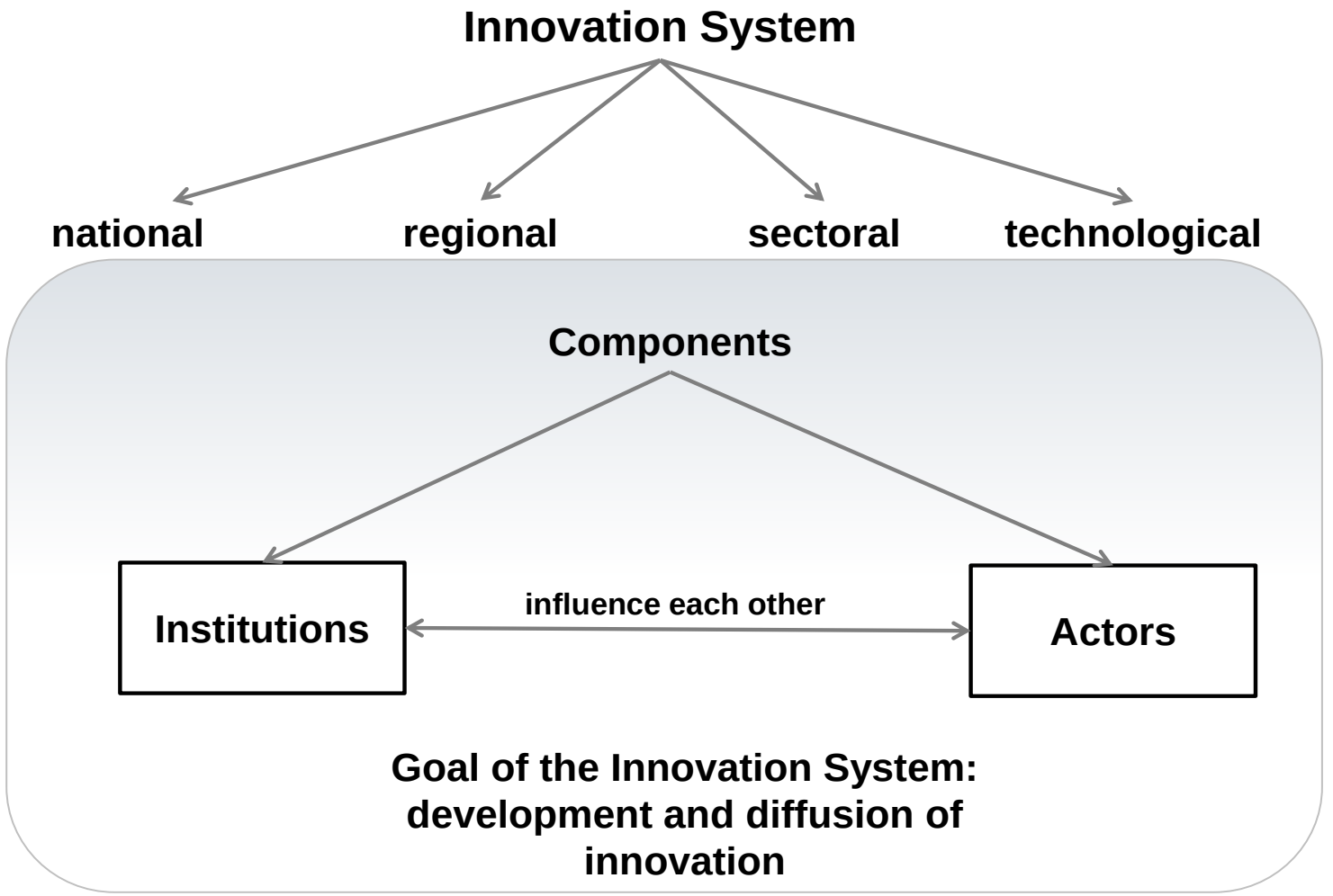
Innovation System Approaches

- Moving beyond the linear concept of innovation - systemic understanding
- Innovations are not only created in or by individual companies, and not in isolation
- Collaboration and interdependencies with other organizations (suppliers, customers, competitors, universities, research institutes, etc.)
- Behaviour is influenced by institutions (e.g. laws, rules, norms and routines)

→ Incentives and barriers to innovation

Innovation System

Innovation System Approaches



Innovation System

Innovation System Approaches

National

- Innovation activities in national innovation systems (NIS) take place within geographical, national borders
- Examples: Germany, Switzerland, etc.: Country comparison (e.g. Innovation Union Scoreboard)

Regional

- Innovation activities in regional innovation systems (RIS) take place within geographical, regional boundaries
- Examples: Silicon Valley (best-known RIS study by Saxenian 1994), Emilia-Romagna: Terra di Motori (Land of Motors)

Transnational?

Innovation System

Innovation System Approaches

Sectoral

- Sectoral Innovation Systems (SIS) for the classification of industries
- Analysis of the development of specialization in different sectors
- Focus on knowledge base and learning processes
- Examples: Computer, biotechnology or semiconductor industry

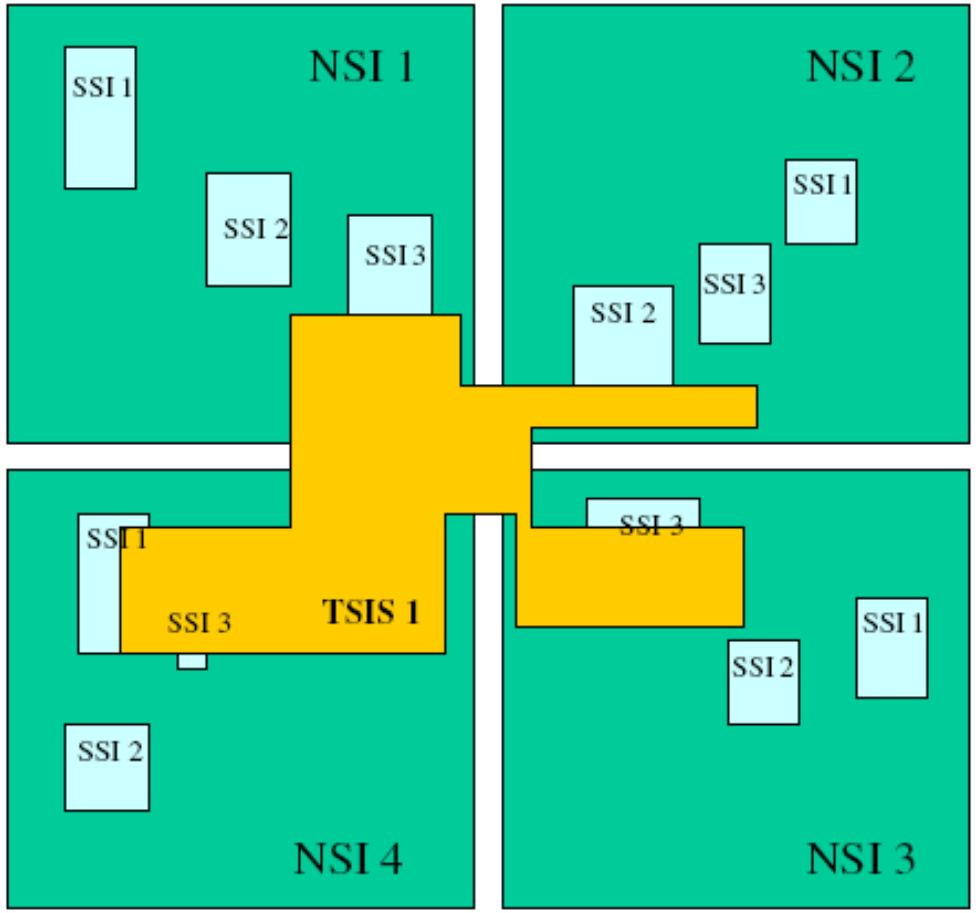
Technological

- Technological Innovation Systems (TIS): Analysis of the emergence, improvement and diffusion of a new technology
- Level of analysis: Technology emerges within a specific TIS
- TIS evolves with the maturity of the technology
- Examples: Offshore wind, photovoltaic thin film or thick film, etc

Innovation System

Innovation System Approaches

(Hekkert et al. 2007)



Boundary relations between National (NSI), Sectoral (SSI), and Technology Specific Innovation Systems (TSIS)

→ No clear separation: innovation systems complement each other and can exist side by side

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Jens Weber

In which of these field of innovation systems do you work and why?

- The **starting point** is usually work in the **regional ecosystem**:
  → mentored start-ups usually come from Chemnitz and the surrounding area and require local infrastructure for consolidation and growth

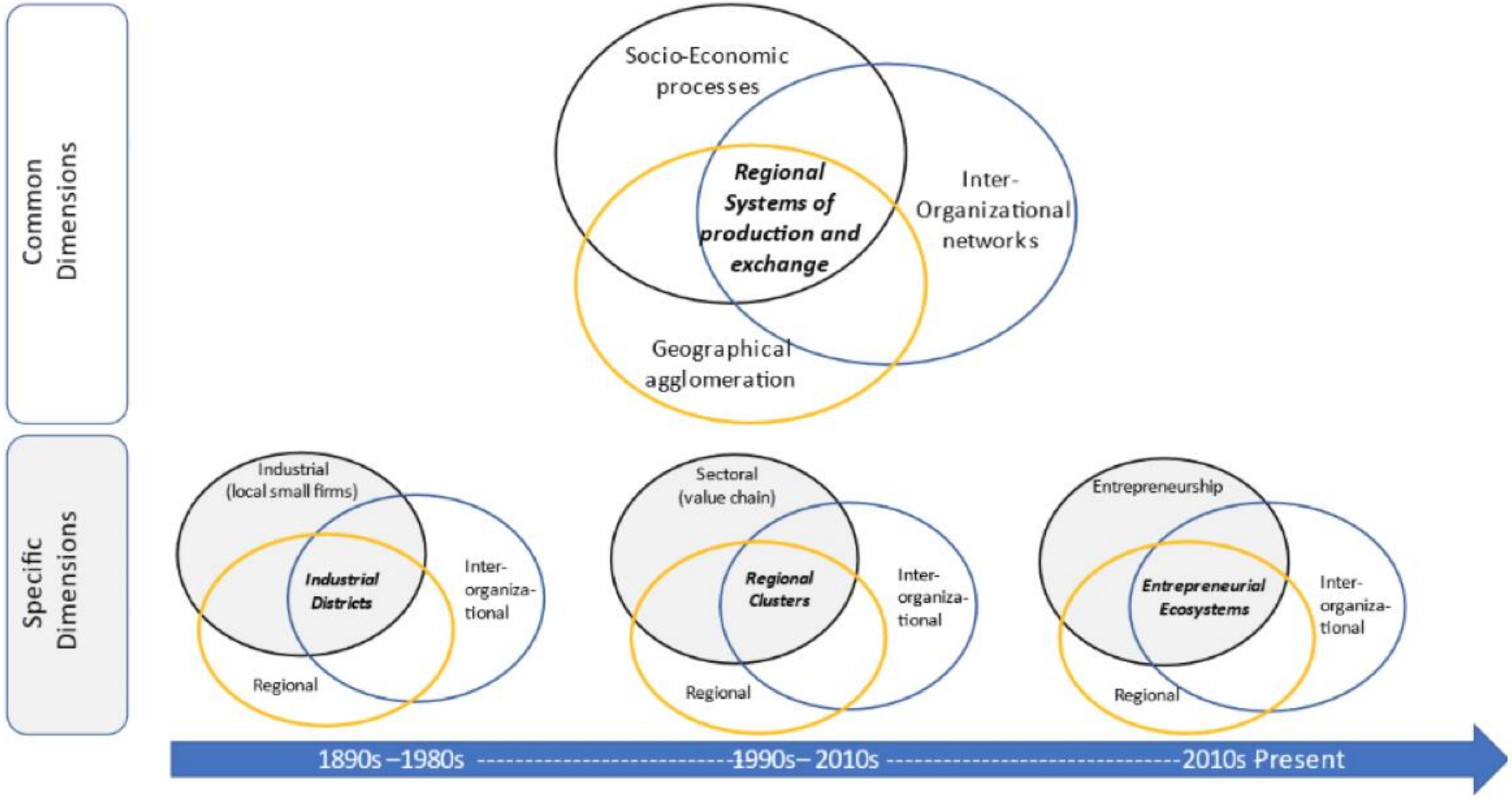
- Here, too, **mediation between the different systems** often takes place:
  → technological excellence promotes contact and exchange between national (NSI), sectoral (SSI) and technology-specific ecosystems (TSIS)

- **Networking** is created, for example, through regional and sector-specific start-up competitions and support services (like sector-specific incubators or accelerators)

Regional Focus

From industrial districts to entrepren. ecosyste ms

Rocha & Audretsch, 2022



Regional Focus

Cluster, RIS & Entrepreneurial Ecosystems comparison (1/2)

Autio et al., 2018

	Industrial and Marshallian districts	Knowledge clusters, innovative milieus, systems of innovation	Entrepreneurial ecosystems
View of the cluster	Flexibly specialized production system	Localized system of learning and innovation	System of entrepreneurial opportunity discovery, pursuit, and scale-up
Cluster-level economic benefit	Manufacturing productivity, pecuniary advantages, process, and product innovation	Product and process innovation, "technology-push" innovation, non-pecuniary advantages	Business model innovation and the diffusion of radical new business models in the economy
Dominant knowledge spillovers	Vertical and voluntary (user-producer relationships)	Vertical and voluntary (user-producer relationships, linear technology translation) and horizontal and involuntary (competitive emulation)	Horizontal and voluntary (sharing of experiences from business model experiments)
Role of entrepreneurs	Participants in regional production system, shapers of cluster institutions	Participants in regional knowledge and learning system, shapers of cluster institutions, champions of technology-based innovation	Business model experimenters, scalers-up of successful business models

Regional Focus

Clusters, RIS & Entrepreneurial Ecosystems comparison (2/2)

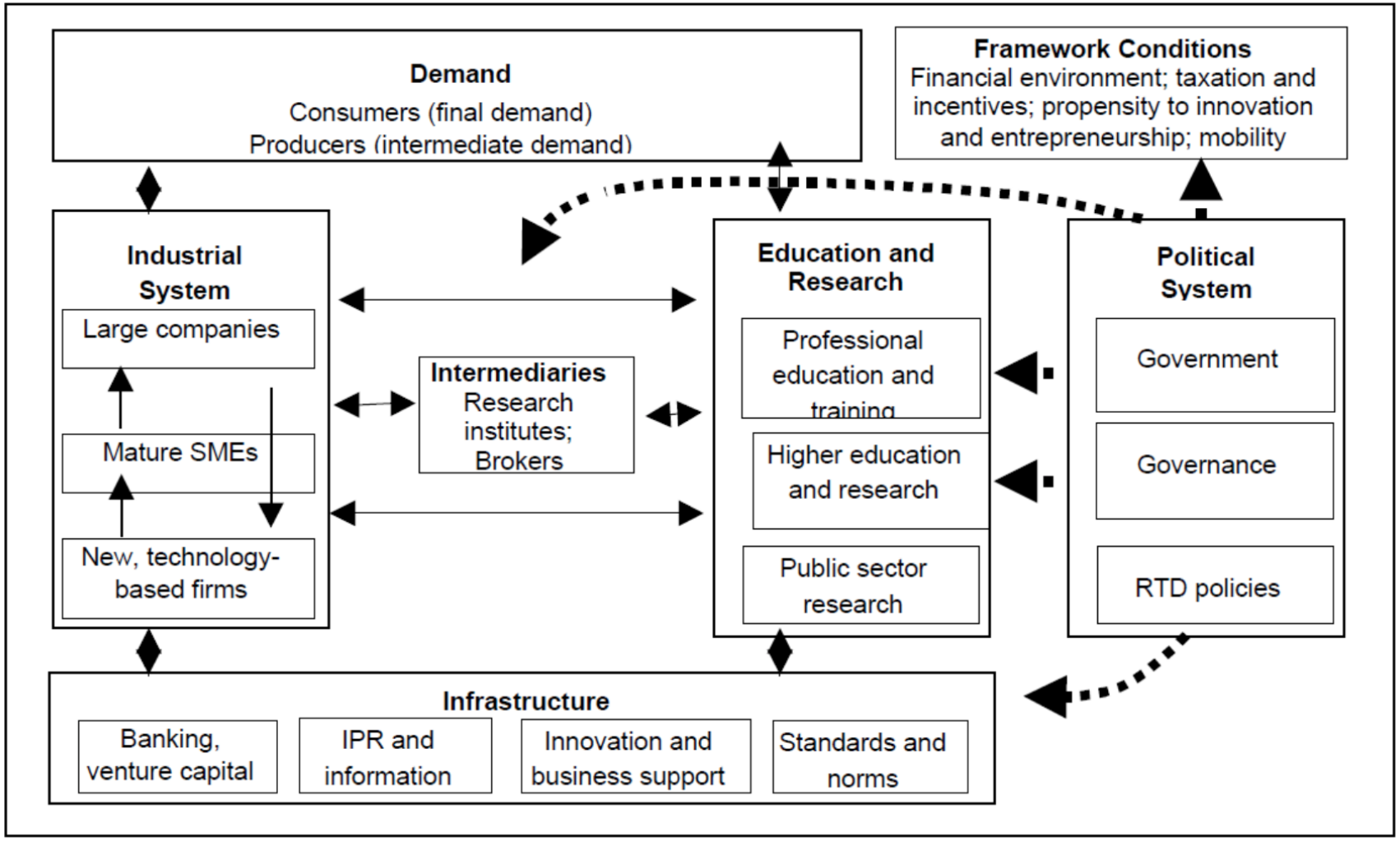
Autio et al., 2018

	Industrial and Marshallian districts	Knowledge clusters, innovative milieus, systems of innovation	Entrepreneurial ecosystems
Drivers of entrepreneurial opportunity	Market concentration, value chain specialization, specialized resource agglomeration, transaction cost economization through relational trust	Voluntary vertical knowledge spillovers, voluntary and involuntary horizontal knowledge spillovers, spillovers of generic research knowledge	Digital and spatial affordances to business model innovation
Locus of opportunity drivers	Internal to the cluster	Internal to the cluster	Largely external to the cluster
Characteristic structural elements	Chambers of commerce, industry associations	Chambers of commerce, industry associations, science parks	New venture accelerators, coworking spaces, makerspaces, networking events, innovation challenges (e.g., hackathons)
Function of cluster-specific structural elements	Facilitate flexible coordination of distributed production processes	Facilitate knowledge creation, transfer, and combination, as well as "technology-push" innovation	Facilitate business model experimentation and associated experience sharing, rapid scale-up of successful business models and new ventures

Innovation System

Innovation System & Actors

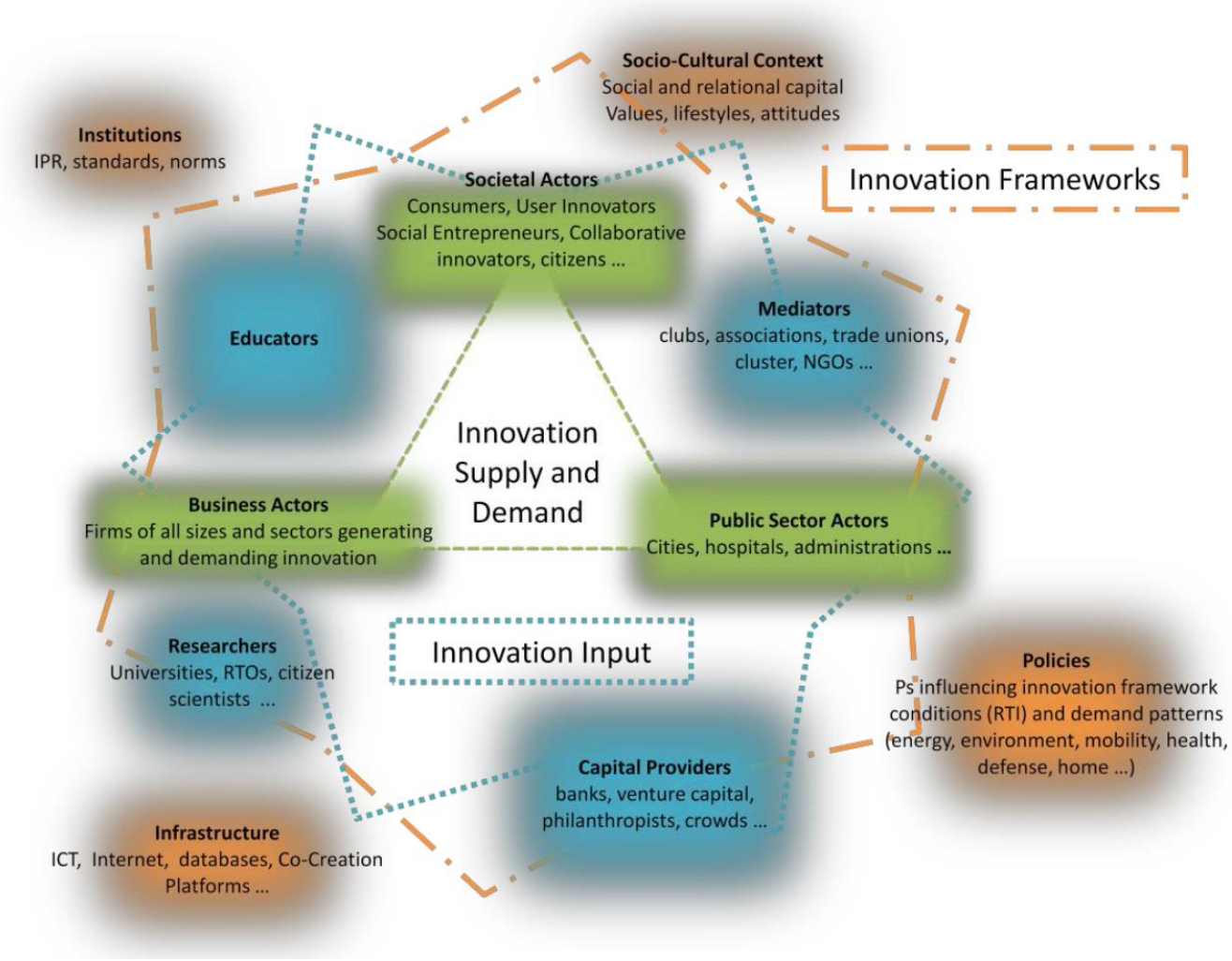
Kuhlmann & Arnold (2001)



Innovation System

Innovation System & Actors

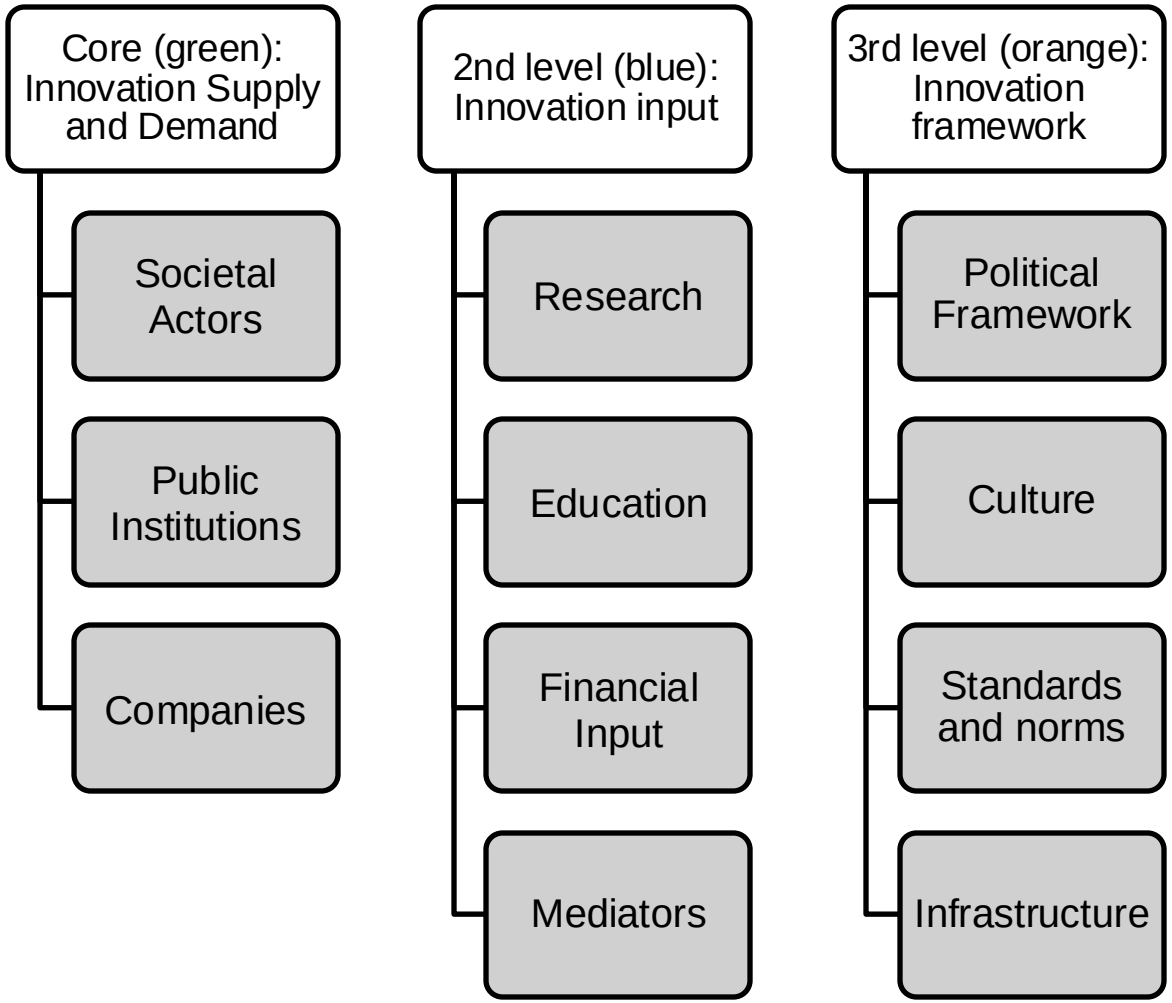
Warnke et al. (2016)



Innovation System

Innovation System & Actors

Warnke et al. (2016)



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Where would you place you and your job within the system and what does that mean?

Core: Partnerships

- Level of organisation: What do they need?

Innovation Input: Mediator

- Networking between supply and demand
- Multiplier for start-ups within the TCC
- PR Management

Innovation Framework: Infrastructure

- Offering flexible solutions for offices and labs to set up companies

Analysis of Innovation Systems

Two Per-spectives

(Hekkert et al. 2007)

Structural

1. Organizations (R&D institutes, companies, customers, governments, NGOs, banks, etc.)
2. Networks (R&D collaboration, lobby networks, etc.)
3. Institutions (laws, rules, standards, routines)
4. Technology

→

Static mapping of the structural innovation system is not sufficient!

Analysis of Innovation Systems

Two Per-spectives

(Hekkert et al. 2007)

Functional

1. Entrepreneurial action
2. Knowledge development
3. Knowledge diffusion and exchange
4. Selection of options
5. Market formation
6. Resource mobilization
7. Creation of legitimacy

→

- Key processes that positively influence innovation are highlighted
- Assumption: Better functioning innovation system → more innovations
- Better evaluation of system functions as an indicator of improved functionality

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Jens Weber

What are your experiences to keep these functions alive in an ecosystem?

Entrepreneurial Action:

- Exchange of experience
- Role models

Knowledge Development and Diffusion:

- Applied research
- Collaborative projects between universities and companies
- Funding options

Resource Mobilisation:

- Support in business model development of science-based innovations
- Access to capital (also beyond regional options like international VC)
- Opportunities to meet and initiate exchange and collaboration

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Take Aways

Implications

For innovation managers

- Not only product development is important
- Supporting system outside the company is important, too

→ Influence/design of the innovation system (innovation politics)

For involved organisations

- Collaboration and relationships with other organizations
- Supportive institutional environment
- Lobbying??

→ Innovation is not an individual, but a joint process

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Take Aways

Question for you

- Business Ecosystem
- Innovation Ecosystem

→ **ENTREPRENEURSHIP**

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Take Aways

Question for you

- Business Ecosystem
- Innovation Ecosystem

→ ENTREPRENEURSHIP???

THANK YOU!

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Barriers in Innovation Systems

Actors

...if they are obstacles

Mirow et al. (2007)

Barriers to innovation are **obstacles** that can occur throughout the innovation process.

- They have an inhibiting effect,
- can also be overcome by themselves or by taking measures step by step and
- thus lead to a delay, change or, in the worst case, prevention of the innovation in question.

Innovation barriers are inevitably related to novel combinations of ends and means, as their causes lie in elementary characteristics of the innovation phenomenon (novelty and change, involvement of many parties, complexity, uncertainty and risk, etc.).

Barriers in Innovation Systems

Actors

...if they are obstacles

Mirow et al. (2007)

Internal Barriers

- Personal resistance
- Organizational and strategic barriers
- Lack of resources within the organization
- Technical feasibility / difficulties

External Barriers

- State regulatory barriers
- Market-related barriers - procurement market
- Market-related barriers - sales market
- Social barriers
- Interorganizational barriers

Barriers in Innovation Systems

Actors

...if they are promotors

Gemünden & Walter (1999)

