A THEORETICAL VIEW ON PUBLIC-PRIVATE PARTNERSHIPS IN RESEARCH AND INNOVATION IN GERMANY

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Introduction and objective

- Public-private partnerships (PPP) are a way to organise long-term oriented strategic research between universities and industry
- A PPP is a public service and/or a private economic activity, which is jointly financed and operated by the public sector and industry on the basis of a contract which regulates financing and operation.

Objectives

- Integration of the funding initiative of the German Federal Ministry of Education and Research (BMBF) "Research Campus - partnership for innovation" (Forschungscampus - Partnerschaft für Innovationen) in the theoretical context of research cooperations between academia and industry
- Analysis of significant characteristics of the 'Forschungscampi' in their build-up phase with regard to a theoretical framework

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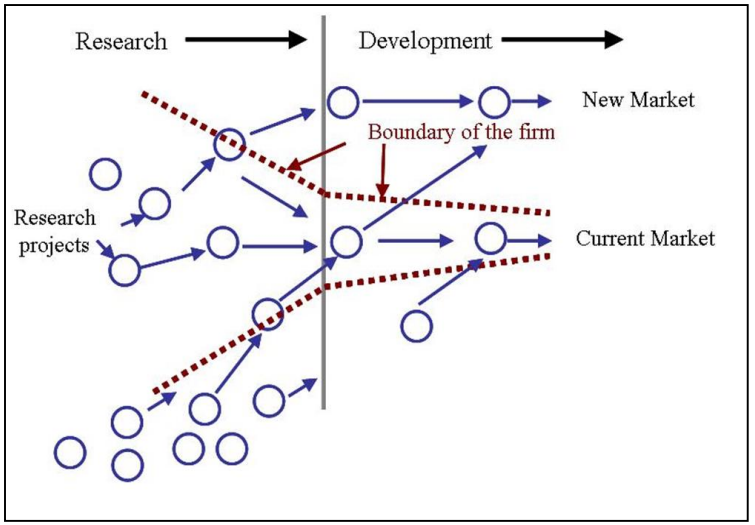
Theoretical framework: Transaction costs

Transaction costs approach (Williamson 2002):

- Circumstances under which are cooperation agreements are most efficient form of organization (transaction cost efficiency)
- Science-industry linkages: with increasing vertical disintegration, necessity for exchange processes increases and thus the number of required transactions
- Network and partnership structure is a form of coordination (flexible access to external resources, saving internal resources (Hunt/Morgen 2000, Aldrich/Zimmer 1986, Becker/Dietz 2004)).
- Transactions include: risk of fraud and opportunistic behaviour (IPR) → coordination, control and regulation.

Theoretical framework: Innovation economics

- Innovation: non-linear, interactive and systemic process that creates novelties
- Major aspects: **complexity** and **uncertainty**
- Strategy: **collective technological and financial risk minimization.**
- Distributed knowledge sourcing and combining process between different agents (Coombs et al. 2003) → **Open innovation** (Chesbrough et al. 2006)
- **Integration** of customers, users, external experts in all phases of the innovation process = coordination of **distributed partners**
- Joint search for a solution; **interactive value creation** (Reichwald/Piller 2009)
- **Substitution effects** by external research
- Joint **capacity and competence building** (Dahlander/Gann 2010)



Source: Chesbrough et al. 2006

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Theoretical framework: Economic geography

Economic geography (Boschma and Martin 2010):

- **Proximity** is a relevant factor in knowledge generation and innovation (Boschma 2005, Carrincazeaux and Corris 2011).
- Geographical and social proximity are the most relevant. **Geographical proximity** = spatial or physical distance between economic actors; **social proximity** = embeddedness of economic relations in a social context (Boschma 2005: 66-69)
- No strict rule about the importance of each proximity dimension
- Depending on the content of innovation processes (technological, social, incremental, and radical) and the used and newly generated knowledge, **different proximity configurations emerge**

Heuristic approach: Analytical aspects

Approach	Analytical focus			
Transaction cost economics	coordination, control, governance, regulation	hierarchy versus market, cost efficiency	trust, opportunistic behaviour	absorptive capacity
Innovation economics	distributedness, open innovation, interactive process, uncertainty	knowledge generation and exploitation	human resources	market orientation
Economic geography	spatial and social proximity	kind of knowledge, relevance of face-to-face contacts	regional potential and attractiveness	local/regional impacts and visibility

Source: own draft

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Research Campus

FORSCHUNGS CAMPUS

- **Central characteristics:** mandatory public-private partnership, development of new research fields, pooling of activities in one place
- In September 2012, **10 Research Campus projects** were selected
- Most entered **main phase at the end of 2014**. **Nine** are still operating.
- **Preparation** and up to three **main phases of five years** will be supported up to altogether **15 years** with a maximal amount of 2 mill. Euro per year
- Public funding must be **complemented by private contributions**

Source: own figure

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Theoretical perspectives on "Forschungscampus"

Transaction costs perspective

- Long-term mandatory partnership based on reliable, contractually regulated relations
- Coordination is regulated, but differently (campus offices, board of directors, campus coordinators)
- Hierarchy exists, depending on scientific excellence and financial abilities
- Organisational status is different (association, limited liability company, non-profit company)
- Trust through previous cooperation experiences and common objectives with binding investments
- Increased absorptive capacities through partnerships between firms and academic organisations

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Theoretical perspectives on "Forschungscampus"

Innovation economics

- Knowledge flows openly between the partners, even though it is regulated by confidentiality agreements
- Inherent tendency to focus on the stabilisation of the existing network and not to open it up too quickly to other organisations, especially possible competitors
- Objective is to generate innovation in new (technological) fields
- Human resource development is a major objective: teaching, master theses, Ph.D. students involved in project work
- Creation of new markets and applications is an overall objective

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Theoretical perspectives on "Forschungscampus"

Economic geography

- Geographical proximity ("under one roof") is a mandatory funding principle
- Majority of partners is confident that close personal exchange in one laboratory or one building is a success factor
- Social proximity complements geographical proximity because of close personal exchange and collaboration in mixed project teams
- Other proximity dimensions are gaining in importance: cognitive proximity (common knowledge base), institutional proximity (experiences with joint regulations)
- Face-to-face contacts are necessary because of sensitive character of newly created knowledge
- Research campuses are attractive for researchers, students, firms and increase attractivity potential and visibility of regions

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Conclusions regarding analytical approach

- **Transaction costs:** Partner constellations differ, although not too much. Explicit governance modes are a necessary element of the PPP. Absorptive capacities of the partners are sufficiently developed. Trust is essential and present. Hierarchy and power are obvious.
- **Innovation economics:** Open innovation is a core assumption in all PPP-models. Tasks are distributed among the partners. Degree of openness depends on the interests of all partners. Human resource development, learning and qualification are key elements. New markets should be created.
- **Economic geography:** Spatial proximity is important, but not always. Social and institutional proximity matters and develops further. PPP have a high regional or sometimes national visibility. They are used as policy instrument to support organisational reorientation and regional specialisation.

Conclusions regarding 'Forschungscampus'

- Forschungscampus as a **new form of spatially focused collaboration in strategic networks**
- **Diverse organizational models** and forms of partner involvements
- Different regulations of cooperation, but realised at **"eye level"**
- **Implementation of open innovation processes** in the context of partner constellations
- **High transaction costs** in the preliminary phases in anticipation of subsequent efficiency and competitive advantage
- **Large companies** (absorptive capacity, human and material resources) currently dominant among core partners in the networks
- **Network hierarchies** in the Forschungscampi with strong governance function of the central partners
- **Geographical and social proximity** are regarded as important success factor by the partners

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Thank you for your attention!

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Subjects of the Research Campus

Campus	Subject	Location
ARENA 2036	Development of multifunctional composite materials	Stuttgart
Digital Photonic Production	3D-printing and construction of composites	Aachen
Electrical Nets of the Future	Direct current voltage for power transmission	Aachen
EUREF	E-mobility and mobility and urban concepts	Berlin
INFECTOGNOSTICS	Efficient and rapid on site proof of infection agents	Jena
M2OLIE	Medical intervention environment regarding cancer	Mannheim
MODAL AG	Mathematical optimization of complex processes	Berlin
Open Hybrid LabFactory	Hybrid light construction for automobiles	Wolfsburg
STIMULATE	Screening of minimal-invasive methods in medicine	Magdeburg

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