



Research-based Spin-offs in Structuring of NSI



Methodological issues of study

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Story-line: Relevance and actuality of research

Subject, objects and aim of research

2

Methodology and tools

Theoretical rationale

Empirical background

Context study

3

Path of research and hypotheses examined

Shaping technological structure

Networking NSI in dynamics

Advancing innovation culture

Conclusions: Policy implications

Early 90-ies...

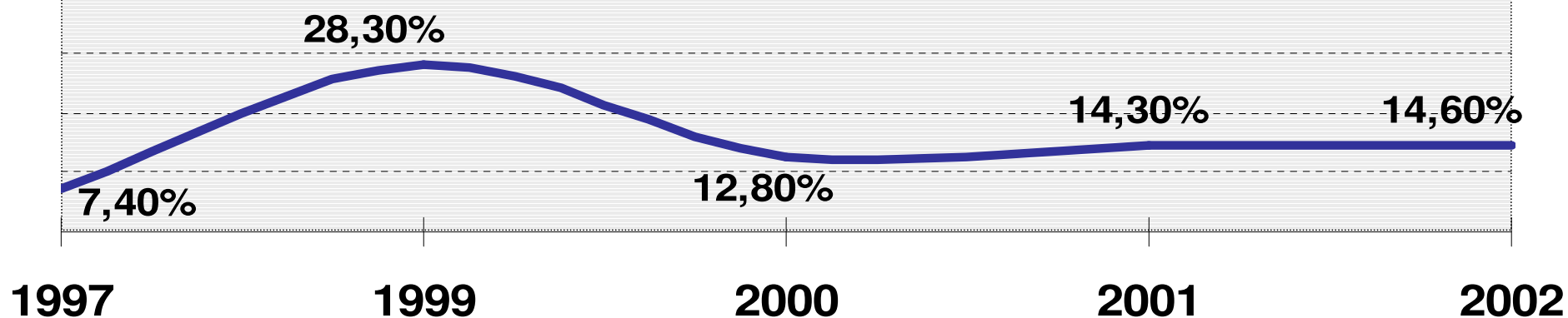
Public Research Institutes

Getting disaffiliated from USSR subordination

Breakage of scientific and production linkages

Shortened financing of R&D from budget funds

Share of own funds of organisations in expenditures on science



Relevance and actuality of research

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Objects of research:

- **R&D-based companies,**
 - **launched by (formerly) researchers of public research institutes**
 - **or with the share of equity of it,**
- oriented on commercialisation of academically developed technologies
(*Research-based spin-off companies, RSO*)

Core cases: RSO around Physical-Technical Institute of the National Academy of Sciences of Belarus (PTI)

Network: High-tech sector of machinery and metalprocessing industry in Belarus

Comparative analyses: European Spin-Off firms and organisations supporting innovative SMEs



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Subjects of research:

The processes of:

- **institutional transformations & structural changes** of S&T sphere of former Soviet countries,
(scientific potential, budget, thematic directions of R&D..)
- **emergence, organisation, performance, & operation** of RSO,
- **schemes of their cooperation** with parent institutions,
- **networking** (incl. technological cooperation) in science and industry.

Aim:

examine the transforming **role of RSOs in a National System of Innovation**
by its formation from the stately-ordered S&T sphere
in a transitive economy



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Conclusions: Vision of the Future

System approach: study of a system in a system (RSO in NIS), p.10

Principles of

<i>Structural organisation</i>	consistency of elements
	structural hierarchy
	coordination and subordination of production goals
<i>Functional organisation</i>	coordination and subordination of functions
	structural and functional volatility (changeability)
	neutralisation of dysfunctions (malfunctions)
<i>Progressive development of a system</i>	progressive differentiation of functions (functional specialisation)
	progressive iteration
	unification & standardisation
	social expansion

Source: after Novikova, 1996, **System methodology in economic studies.**



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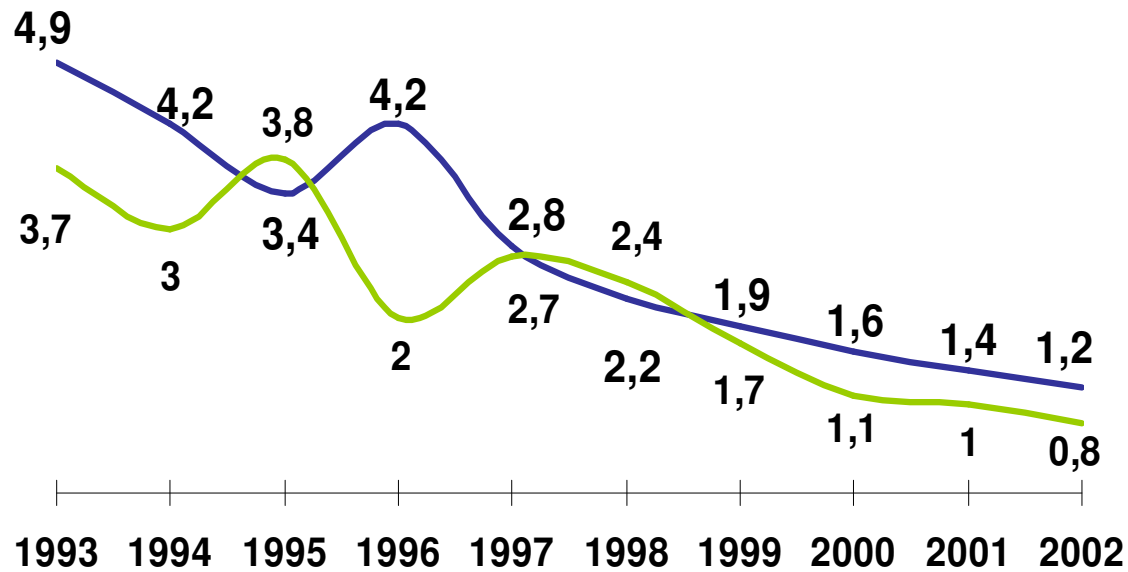
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— Share of small innovative enterprises (SIEs) in total number of small enterprises (SEs)
— Share of employees at SIEs in total number of employees at small enterprises

**30 SIE
from NASB**

601 SIE



317 SIE



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Tools and Strategies

Case studies in conventional sense = 10 + 5

(the interviews and close analyses of the internal processes in organisation)

+ general context study (analyses of demand..)

+ participative research

Case for research aim is an “empirical unit of research, which provides not quantitative, but qualitative insight into information”

(Ragin, Becker, 1992)



Relevance and actuality
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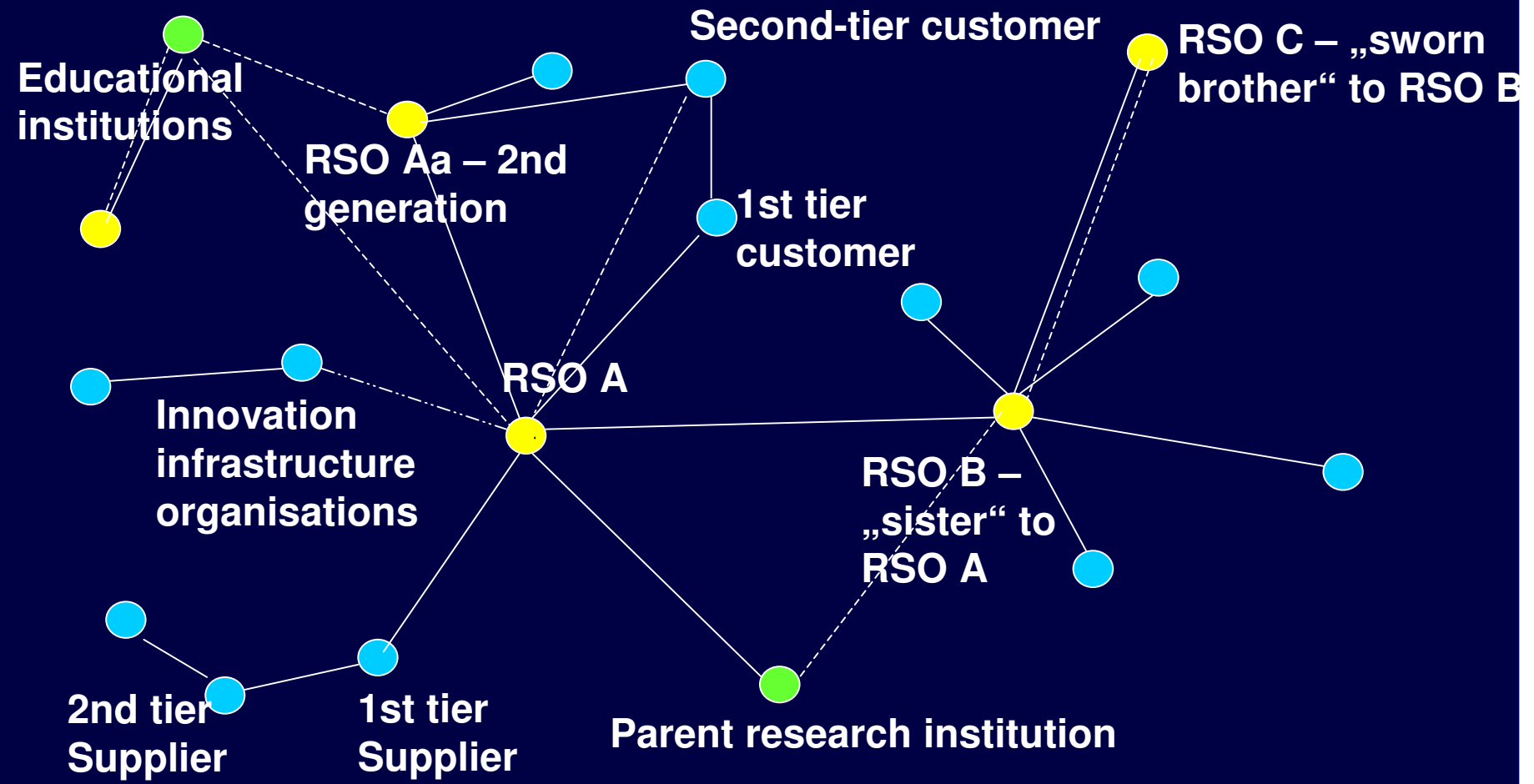
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Opportunistic data collection: respondents



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Chapter 1	Theoretical and methodological background of research
Chapter 2	Financial and organizational provision of RSO activity
Study of the context	Framework conditions of scientific and technological sphere in Belarus
Internal study of case	Microlevel - insight in organisation of RSO activity, practices and processes
External integratedness	Networks, Relationships between the institutions
Role	Functions in NIS
Chapter 3	Policy implications
Conclusions and suggestions to further research	



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Structuring and Tuning the NIS in dynamics

1. Shaping the **technological profile** of NIS:
Breakage of lock-ins, development of clusters institutionalised
2. **Networks** between science and industry:
‘Situated’ knowledge: mean for existence & impact on environment
3. Advancing **innovation culture**
e.g. technologically acknowledged customers



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Not-repeating-one-another parents from singular Soviet R&D system

Hence, RSO managers in Belarus are the **only or few technological know-how carriers** in this system (Post-Soviet space) and few in world

This provides the **monopolistic position of RSOs** in their technological sphere, or this with only substantial possibility of substitution:

Low risk of competitors:

- rigid entrance capital-related barriers to technological field
- elite researchers with high expertise in the field are famous



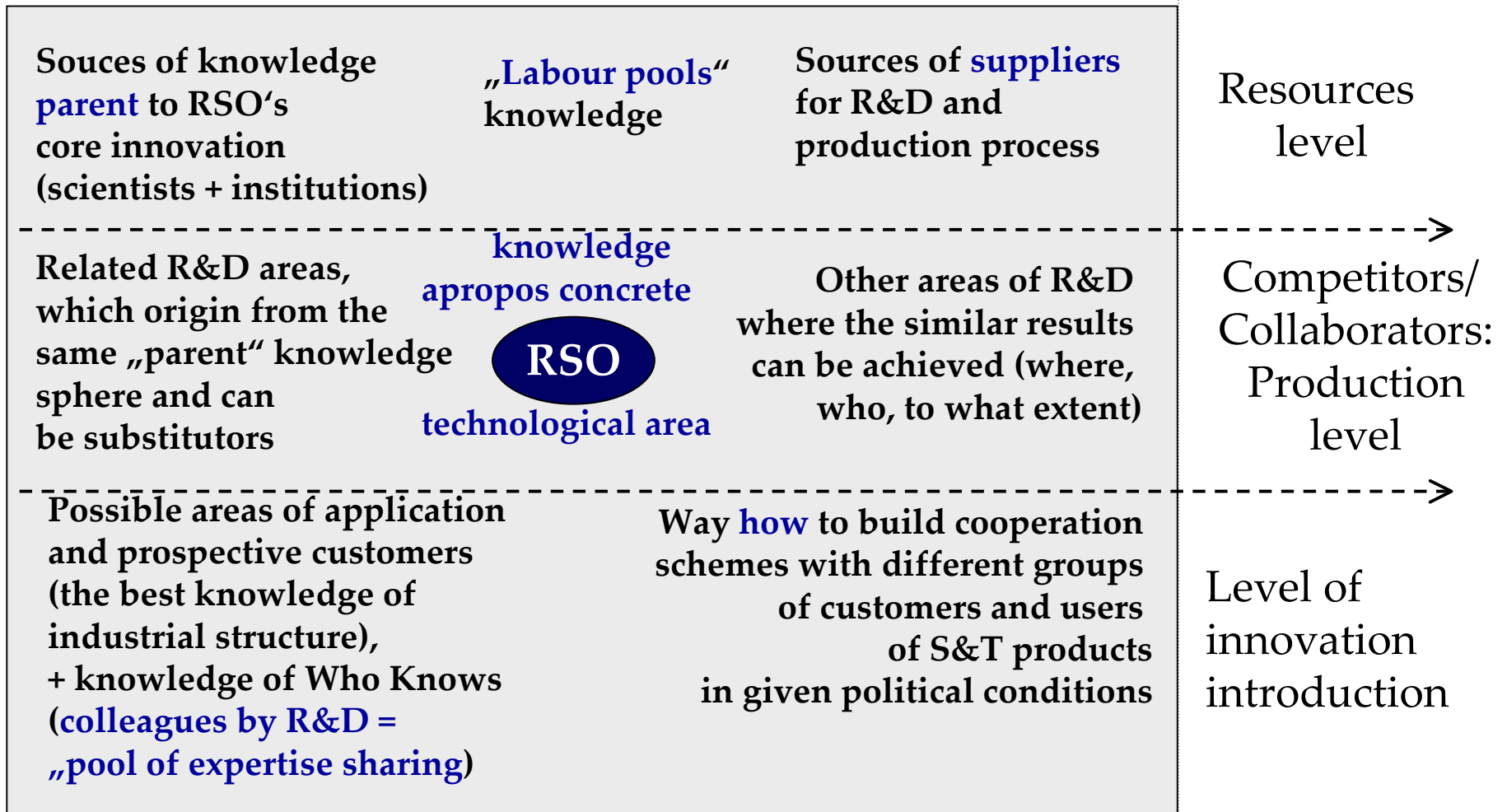
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H 2: Networking NIS: ‚situated knowledge‘



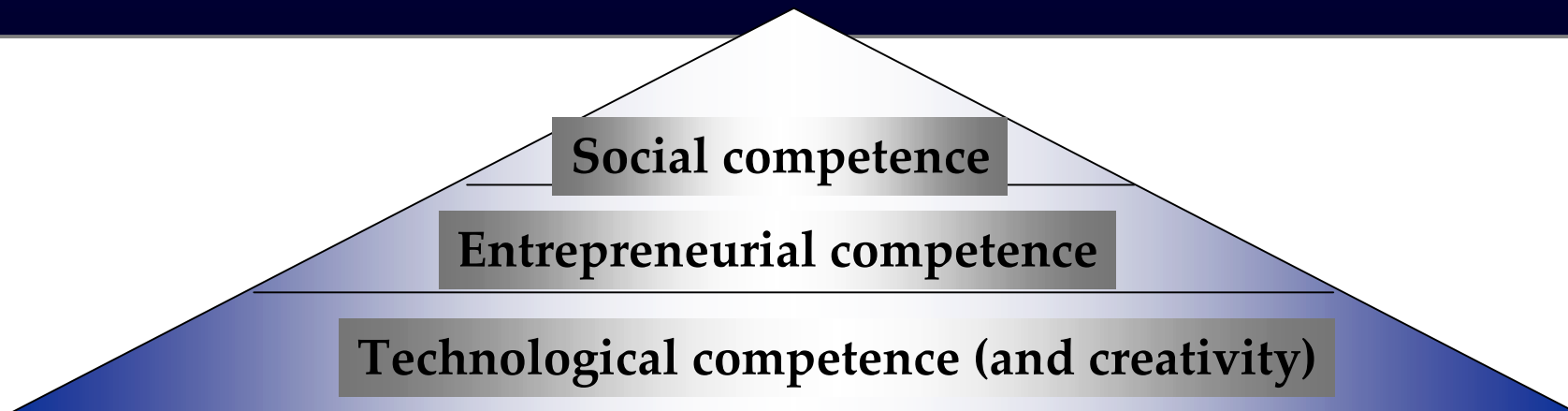
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SOCIALLY COHERENT NATIONAL INNOVATION SYSTEM



New organisational schemes cause:
*specific inherent norms, values, basic assumptions and perceptions,
and convictions of appropriate behavioral schemes*



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Conclusions: Policy implications

- 1. Cluster and Industrial Policy**
- 2. Entrepreneurship and Education**
- 3. Network Policy**
- 4. Institutional Policy (Framework)**



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Thank you!

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