



R3 RESPONSIBLE REGIONAL RESEARCH

INTEGRATING RRI AND SMART SPECIALISATION IN EUROPEAN REGIONS

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THE ISSUE

- Many regions struggle to respond successfully to ongoing transitions.
 - grand challenges such as climate change, migration, digitalisation, increasing regional disparities and uneven economic growth.
- The ability of regions to diversify into new fields of knowledge and to develop new sustainable growth paths remains very unevenly distributed.
- Regional diversification is a process characterized by past and place dependence.
 - New activities tend to emerge and develop in a region in fields closely related to existing local activities.



KNOWLEDGE GAP

- Shaping the territorial dimension of future policies for sustainable growth requires understanding the territorial diversity – key challenges and development perspectives – of different places as well as formulating policy approaches and implementation tools that can help to maximise their development potentials.
- Each region has a unique perspective on global developments



OBJECTIVES

- We propose a regional RRI that combines the two approaches into a responsible and regionally embedded research and innovation policy.
- This approach recognises the regional community's role in defining what RRI means.
- We develop an approach that may assist policymakers in designing and implementing RIS3 strategies that not only promote smart (i.e. competitive) but also inclusive and sustainable regional economic development.



RRI AND SMART SPECIALISATION



SIMILARITIES

- Both RRI and Smart Specialisation (RIS3) share some similarities, arguing for a broad stakeholder involvement in the development of research and innovation policy and of innovations.
- Likewise, both these approaches emphasise the need for research and innovation to be oriented towards solving grand societal challenges.
- Both started as a policy concept rather than a theoretically motivated framework



DIFFERENCES

- RIS3 policy is primarily oriented towards regional competitiveness and therefore does not fully incorporate local institutions and notions of social value or choice.
- Neither the theory, policy nor practice of RRI pays attention to the spatial dimension of innovation processes (central in RIS3 approaches).
- RRI ignores the various ways in which regional context affects not only the development of innovation but also the perception of what is responsible and socially desirable.
- From the innovation studies literature, we know that innovation processes are socially and spatially embedded, as the regional context creates conditions for knowledge acquisition and learning
 - knowledge and resources which are necessary for innovation, labour mobility, R&D collaboration are all regional



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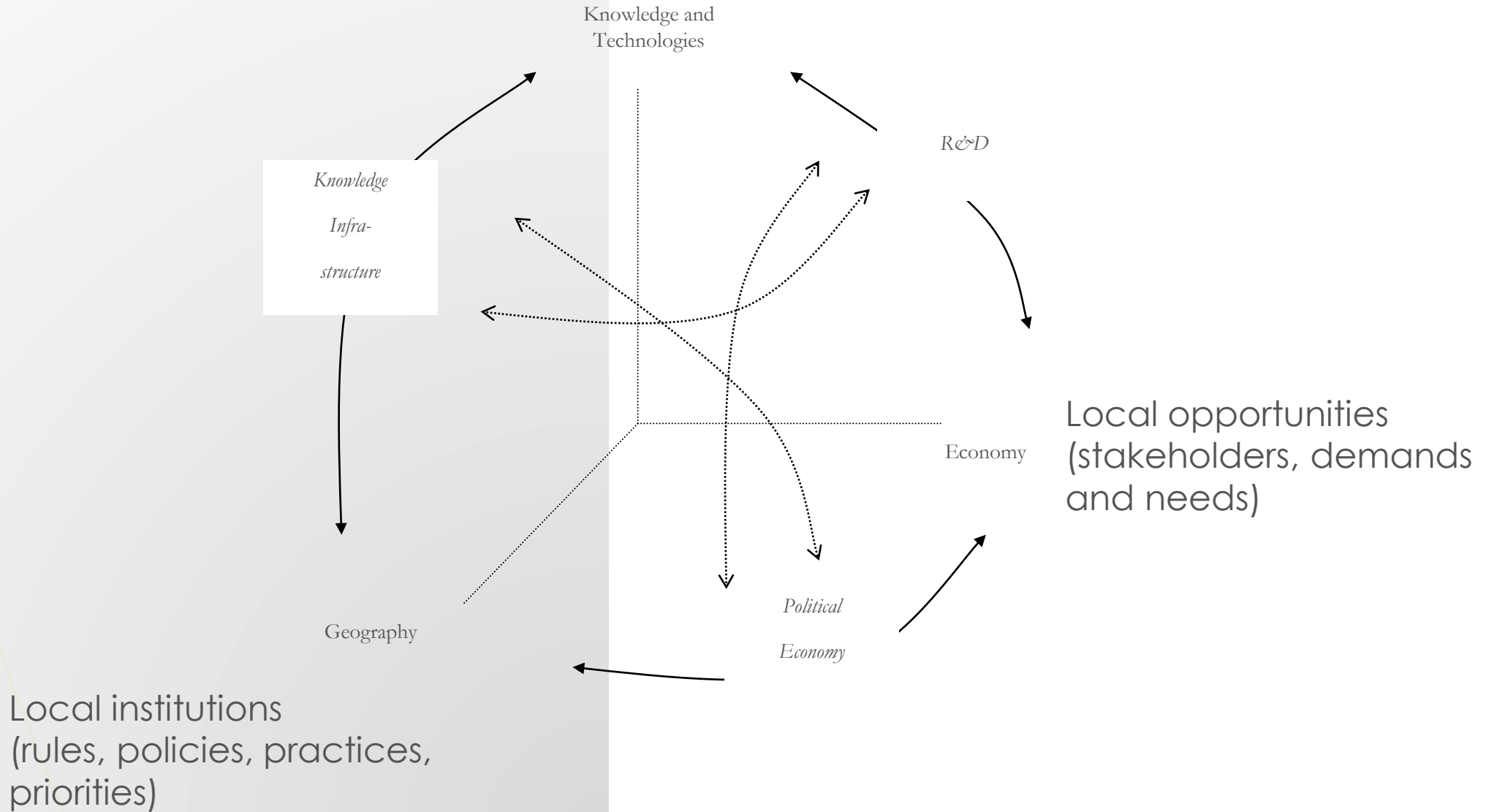


PATTERNS OF SCIENTIFIC SPECIALISATION IN EUROPE

An analysis of diverse regional knowledge spaces in Europe



Local knowledge (topics, fields)



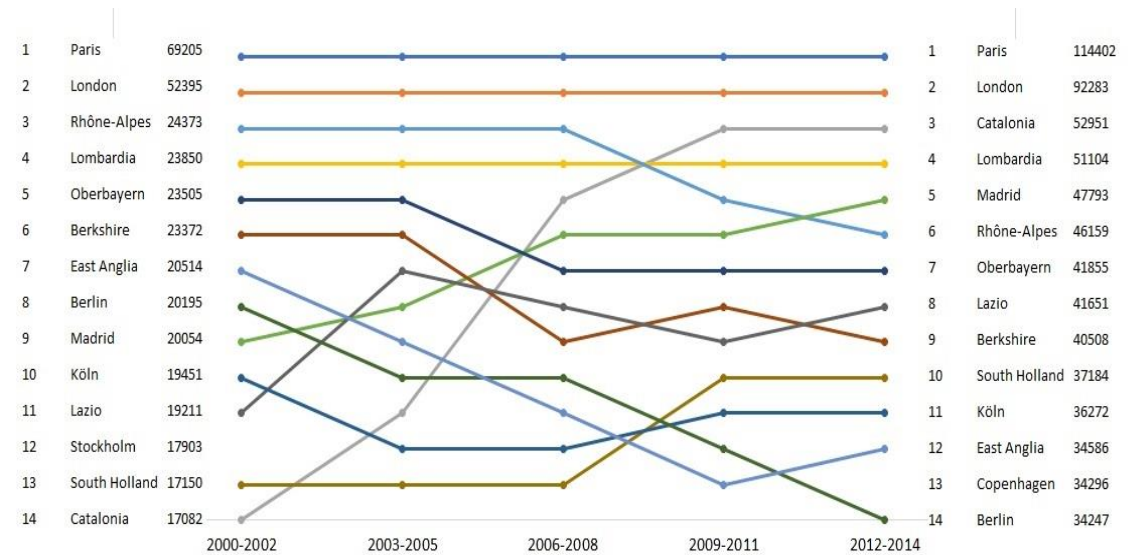


SMART SPECIALISATION

- ‘Smart Specialisation’ – an innovation policy concept intended to promote the efficient and effective use of public investment in research - was an instant hit with European policy makers.
- Its goal is to boost regional science and innovation in order to achieve economic growth and prosperity, by enabling regions to focus on their strengths.
- Smart specialisation understands that spreading investment too thinly across several frontier fields risks limiting the impact in any one area.

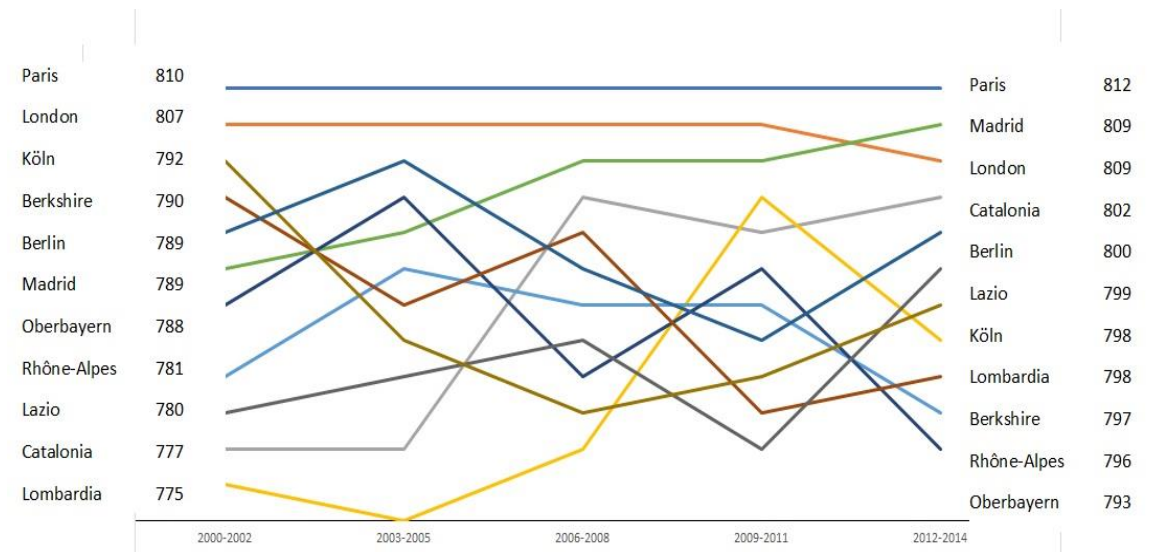
RESULTS

- The regional landscape in scientific knowledge production is very spiky.
- Most regions produce a modest amount of publications (less than 10k per annum), while a few regions are very productive.
- Two Spanish regions, Catalonia and Madrid moved up the ranking considerably since 2000, while Rhones-Alpes, Berkshire, East Anglia, and Berlin show a relative decline.
- However, all the most important regions substantially increased their publication output in the period under study. Paris and London remain the knowledge production powerhouses of Europe (figure 2).



DIVERSITY OF TOPICS

- The most productive regions are generally also the most divers in terms of the number of topics covered.
- Metropolitan areas are increasingly important drivers of our knowledge-based economy (Florida, 2002).
- Large capital regions in the EU15 dominate the diversity ranking.

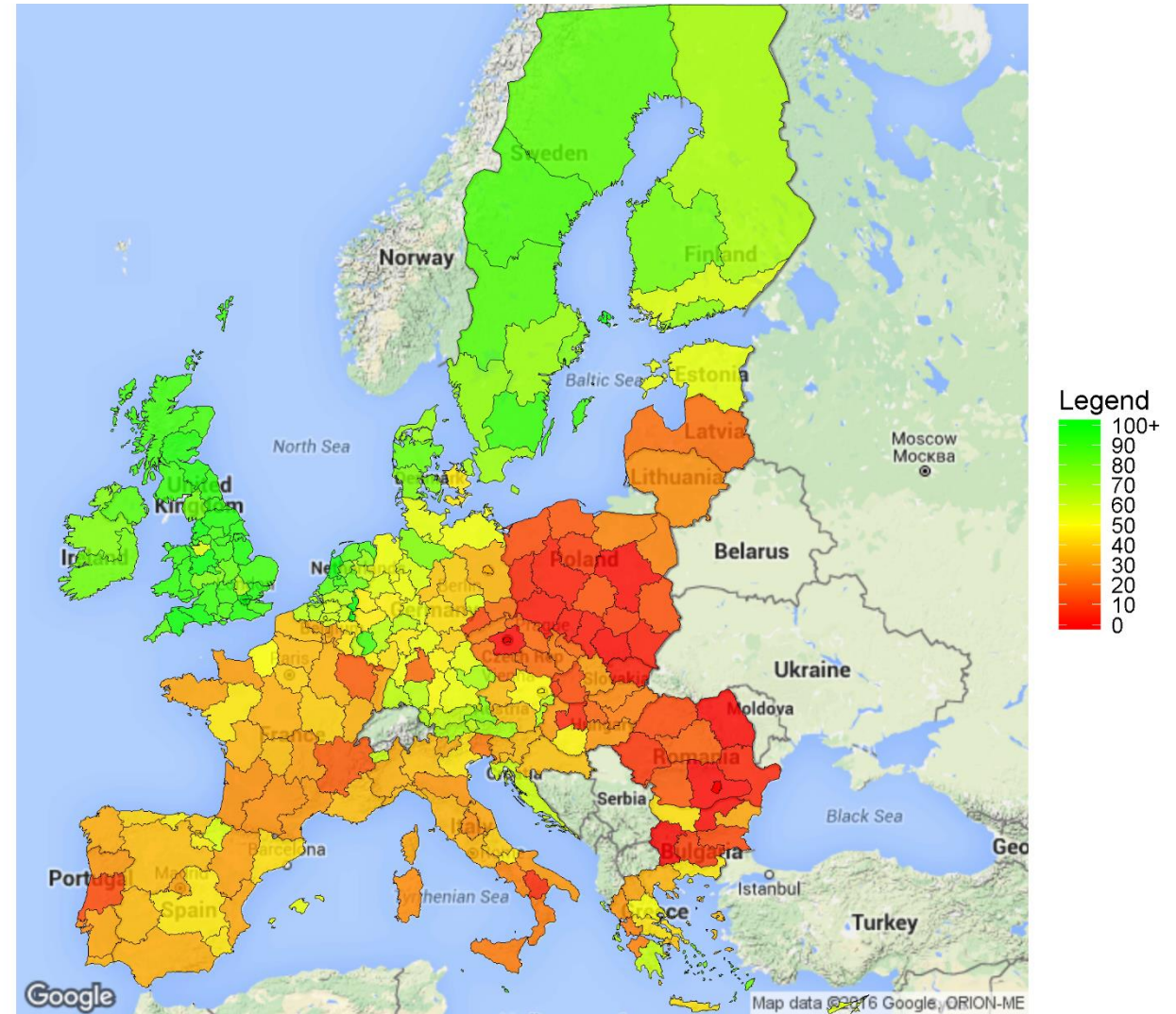




COMPLEXITY (UBIQUITY AND DIVERSITY)

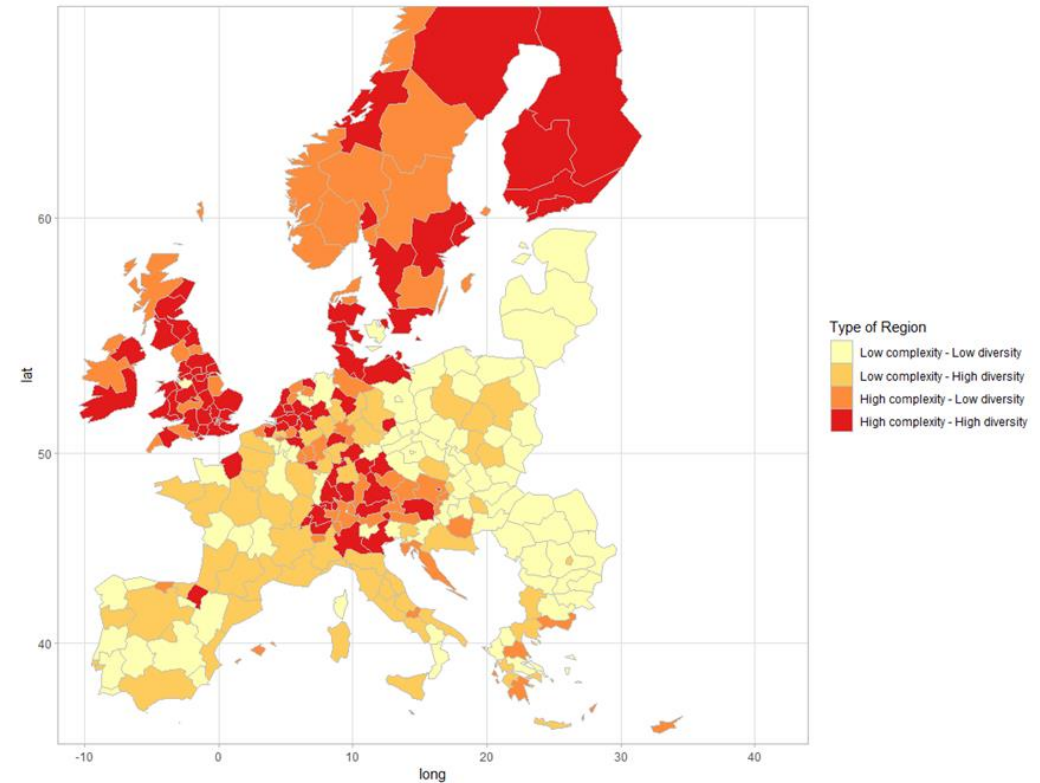
- Relatedness density has a positive and significant effect on the probability that a region specializes ($RCA > 1$) in a new scientific subfield
- The effect of relatedness density is strong
 - an increase of 10% in relatedness is associated with a 28% relative increase in the probability of entry.
- Regions are more likely to enter complex scientific subfields related to their existing scientific knowledge base.

Complexity (2000-2014)



WHAT STRATEGIES FOR DIFFERENT TYPES OF REGIONS?

Entry of new topics clearly shows different patterns among those four types of regions. The results are presented in Table 4a and Table 4b. The coefficients of relatedness density are significant and positive in almost all models of entry. However, the coefficients of scientific complexity are significantly negative in regions with low overall complexity level (Table 4a), significantly positive in regions with high overall complexity level (4b). The coefficients of the interacting term are significantly positive in all types of region except regions with low complexity and low diversity. However, the coefficients of the interacting term are larger in regions with high knowledge diversity.





CONCLUSIONS

- Each region has a unique portfolio of knowledge
- Very skewed distribution of fields over regions
- Complex topics -that require more capabilities- are accessible to fewer locations
- Regions that have more capabilities can contribute to more topics (more diversified)
- Relatedness explains patterns of diversification (entry and exit)
- Regions with a low level of complexity and a low level of diversity, should focus on scientific subfields related to their existing scientific knowledge base to develop capabilities for future diversification into complex subfields.

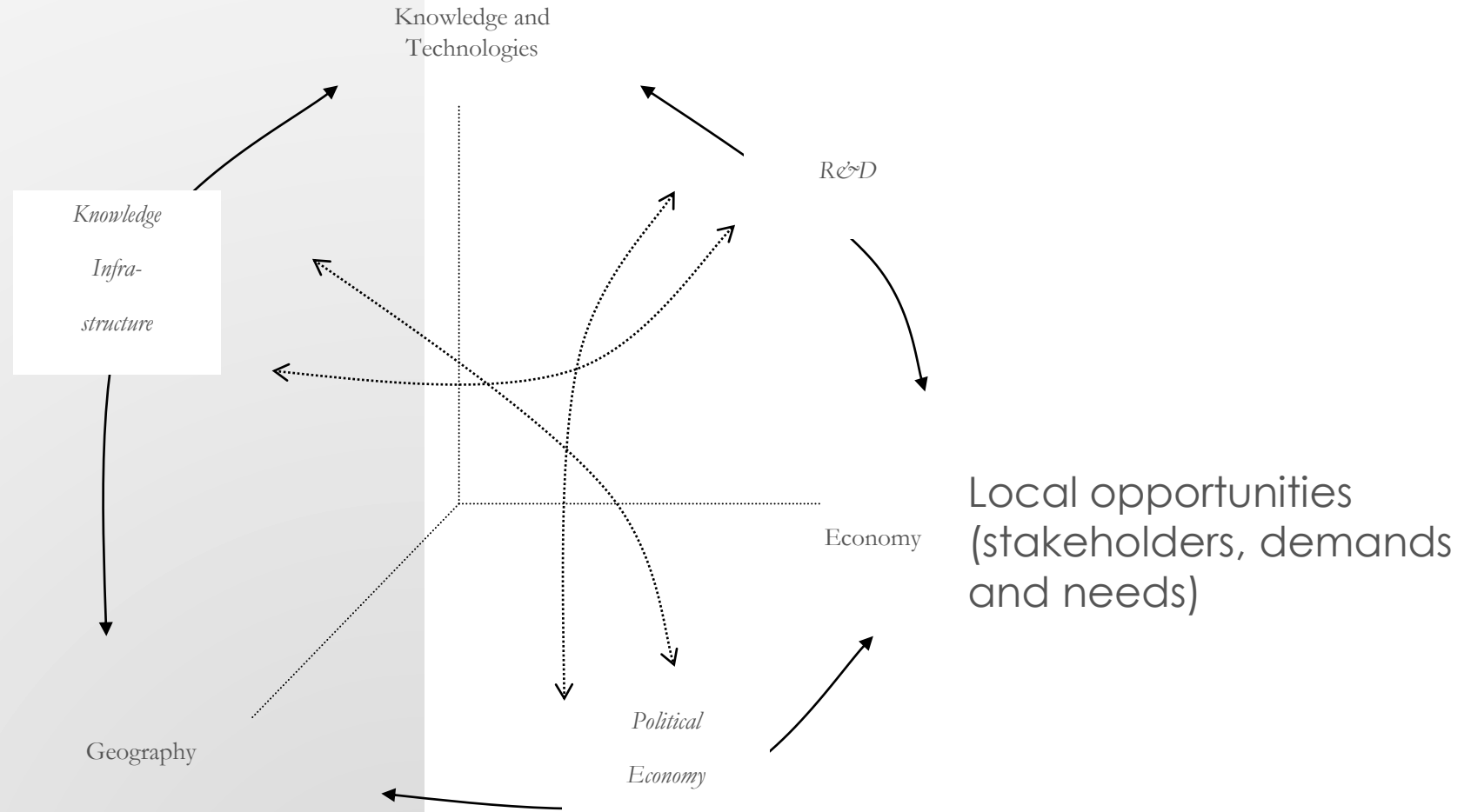


DO REGIONAL INSTITUTIONS MATTER FOR KNOWLEDGE PRODUCTION?

TIM WILLEMSE



Local knowledge (topics, fields)



Local institutions
(rules, policies, practices,
priorities)

Local opportunities
(stakeholders, demands
and needs)



- Knowledge is the fundamental engine driving new inventions, economic growth, and the ability to address grand societal challenges.
- Yet, new knowledge has contributed much less to societal progress in the last decades than almost anyone expected (especially in lagging regions).
- Currently, we lack insight in the institutional mechanisms that enable and constrain the development of new knowledge. How can we understand the ability of geographic regions, economic sectors and scientific fields to solve problems, to innovate, and to develop new ideas?



INSTITUTIONAL THEORY

- Formal (rules and laws) and informal (relationships and norms)
- Structure the environment in which knowledge development takes place
 - Two-way relationship
- Differ for every region due to their tacit and cultural nature





INSTITUTIONS: COORDINATION & INTERACTION



QUALITY OF GOVERNANCE

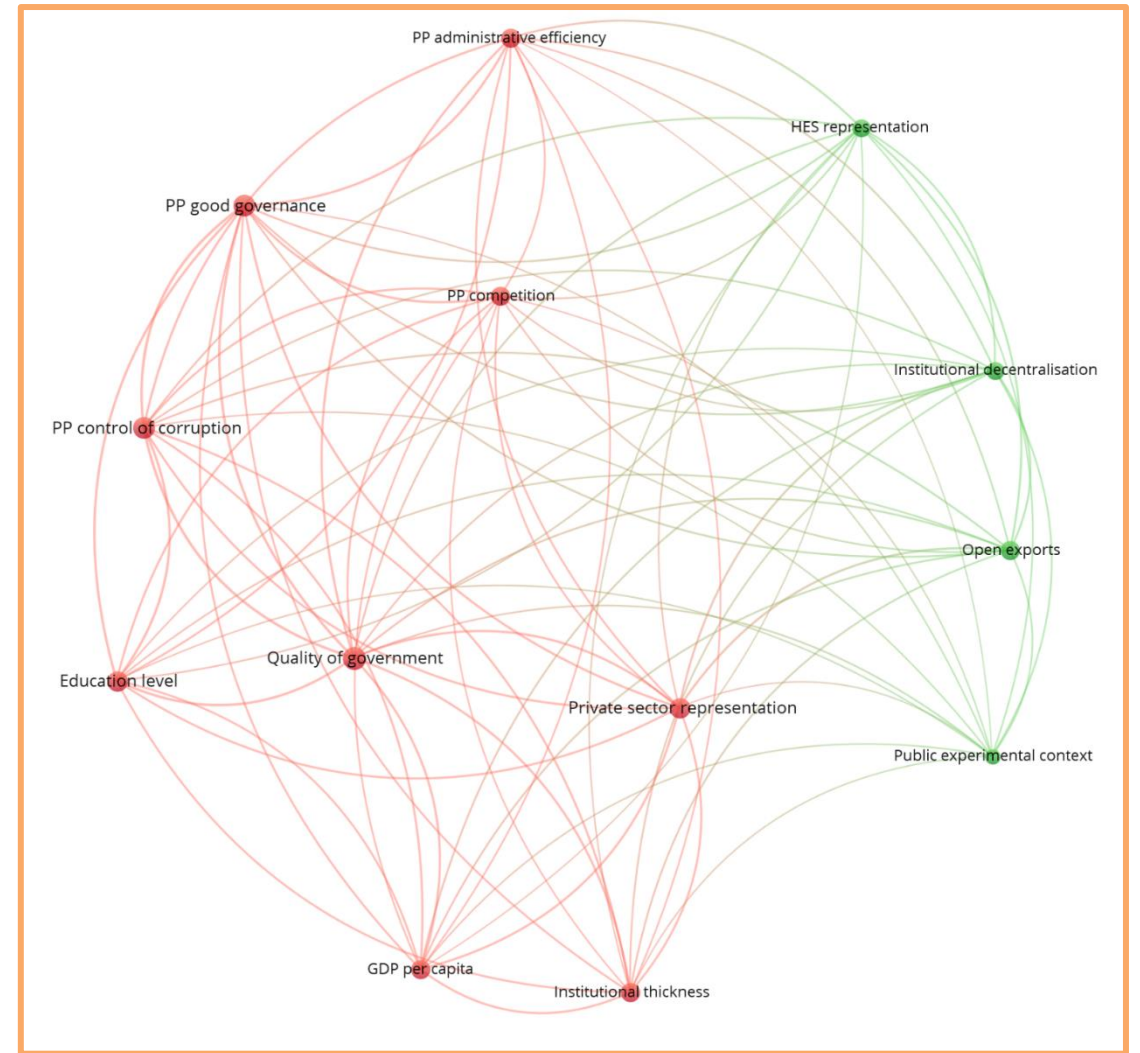
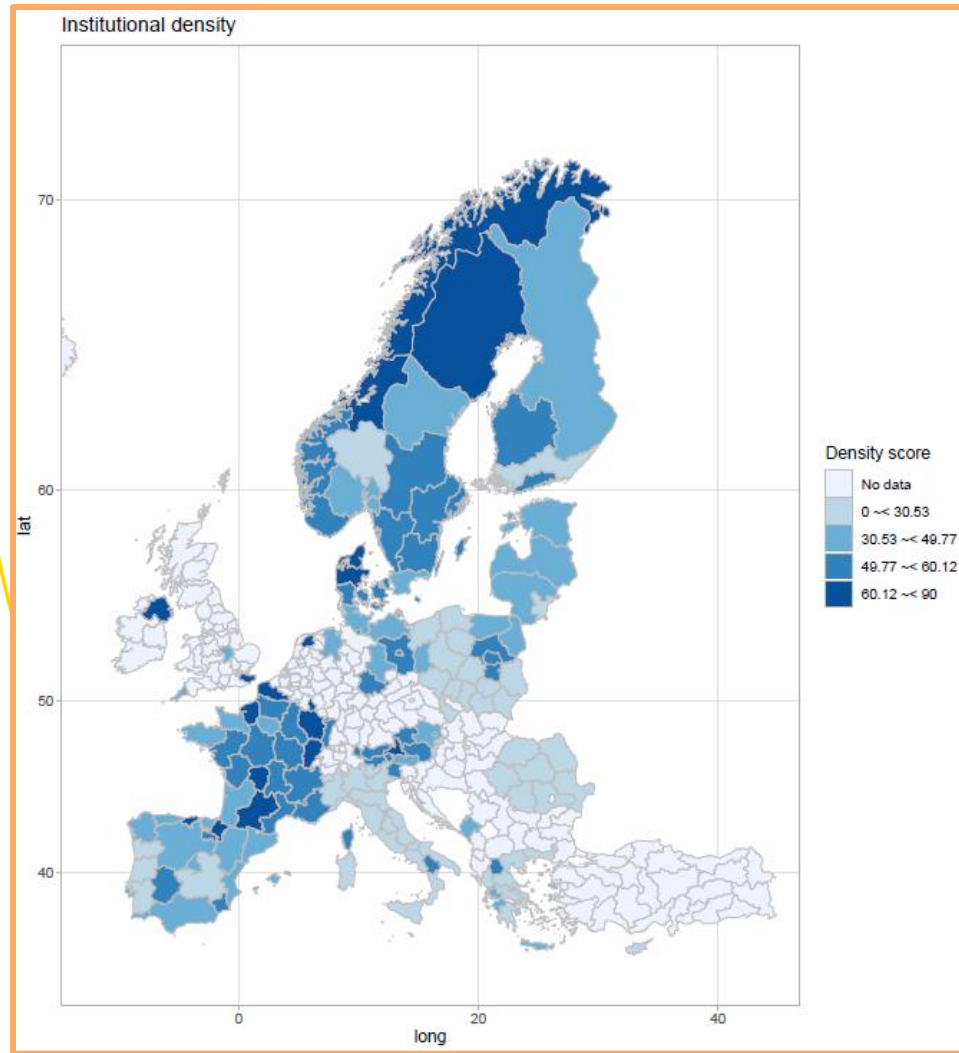
- Unique overarching position
- Responsible for guiding, initiating and regulating knowledge development

INSTITUTIONAL THICKNESS



- The presence and clustering of learning actors important
- Regional interlinkages allow knowledge exchange and mutual learning
- Provides flexibility and understanding of regional context

INSTITUTIONAL CONTEXT



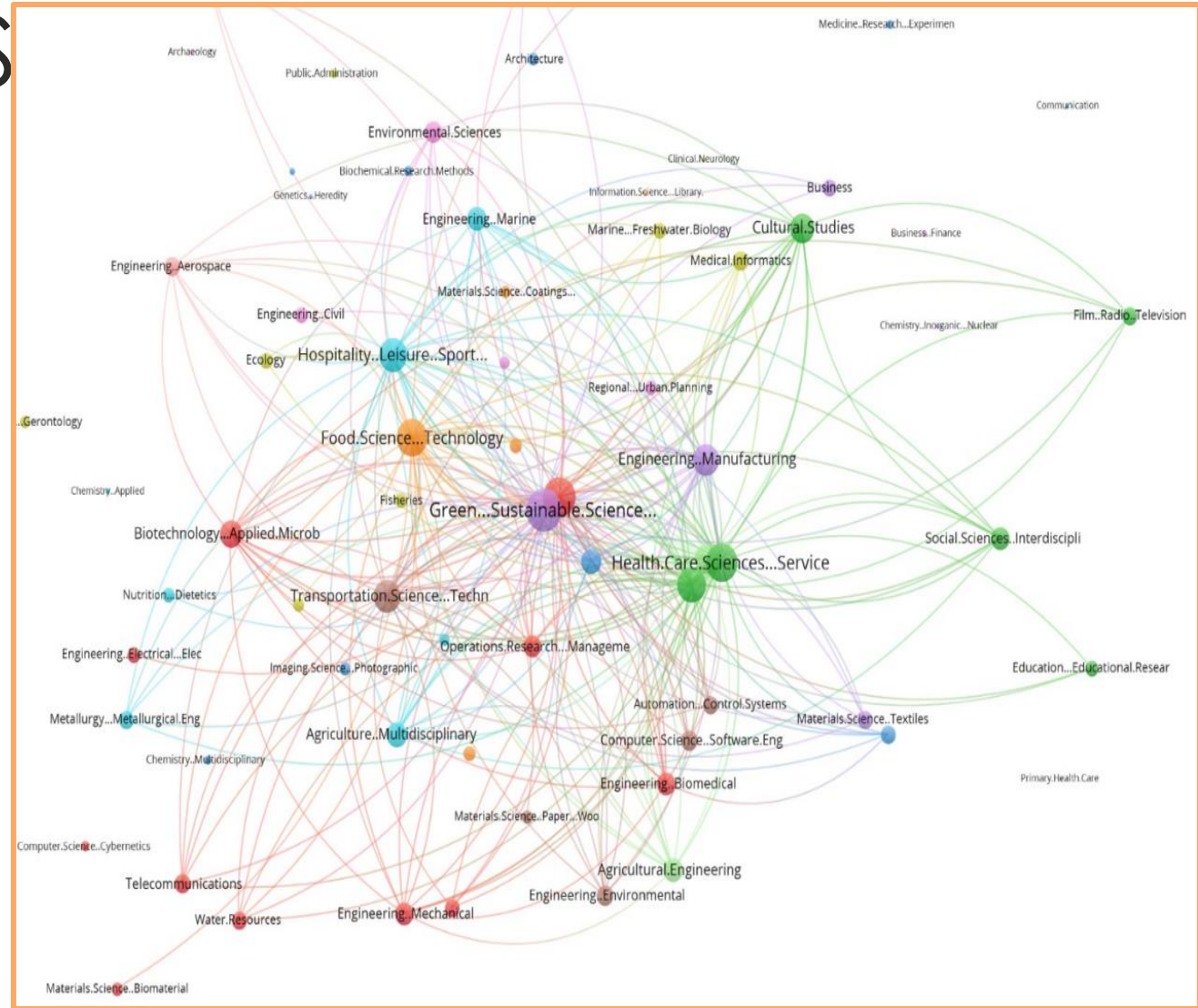
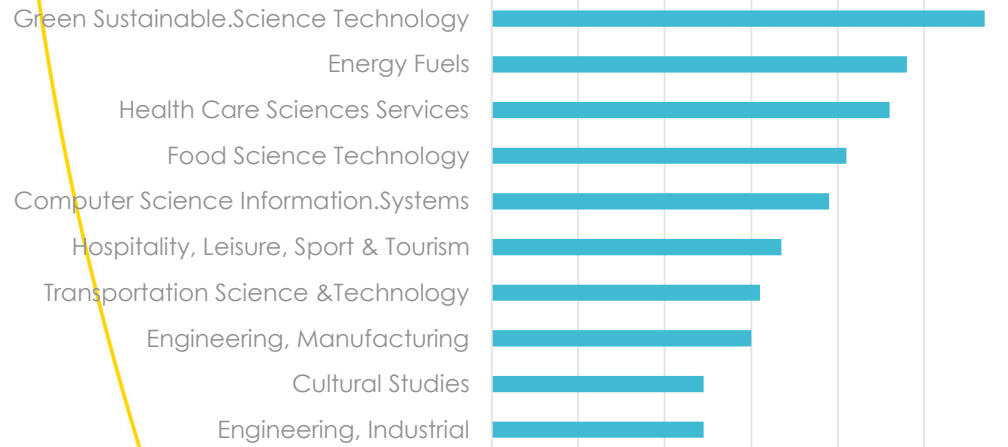


PRIORITISED FIELDS

Top 10 selected priority fields

Scientific subfield

Number of times selected by a region
0 20 40 60 80 100 120





CONCLUSION

- In addition to knowledge capabilities, the institutional context plays an important role for further knowledge development
- The patterns in knowledge capabilities and institutional elements could aid regions in selecting fitting priorities
- Knowledge capabilities and institutional features influence the types of RIS3 strategies pursued

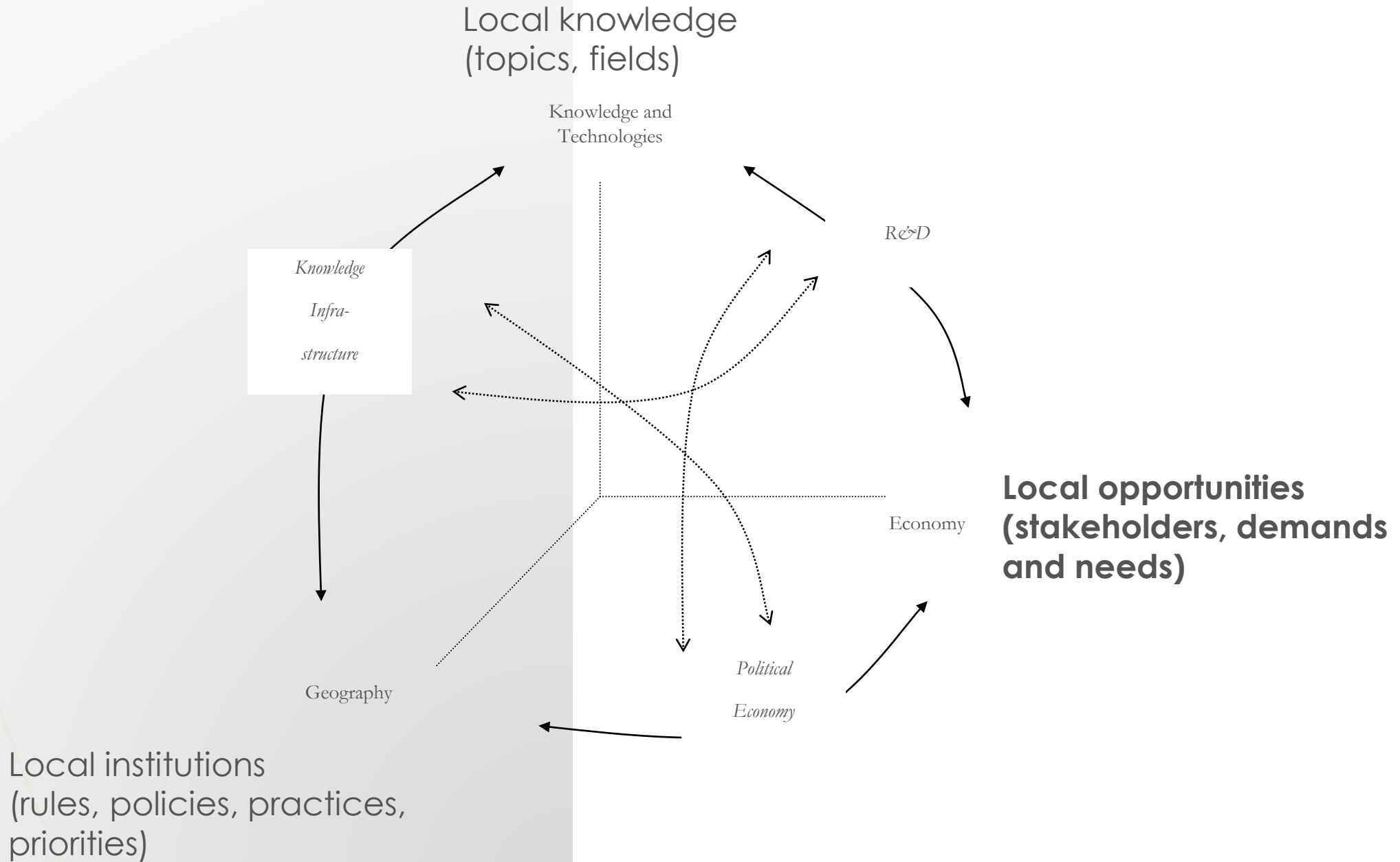


CHERRIES
RESPONSIBLE HEALTHCARE ECOSYSTEMS

- **Territorial mapping:** Connecting stakeholders, policies and priorities in the context of RIS3 and RRI in the Healthcare sector.

- *Sonia Mena*
- *Tim Willemse*
- *Ingeborg Meijer*
- *Gaston Heimeriks*
- *Juan Pablo Bascur*







MAPPING STAKEHOLDERS AND POLICIES

TERRITORIAL MAPPING: STAKEHOLDERS

FROM ORGANIZATIONS DATASETS TO REAL ACTORS IN THE LANDSCAPE

- **Identifying potential actors**
- 4P model: Payor, Provider (Hospitals), Patient, Policy maker (healthcare sector)
- **CWTS address / RISIS / Patent sources**
- *Universities - Research Organizations*
- *Public Research Organizations*
- *Research Hospitals*
- *Companies*
- *Innovation centres*
- *Civil Society Organizations*

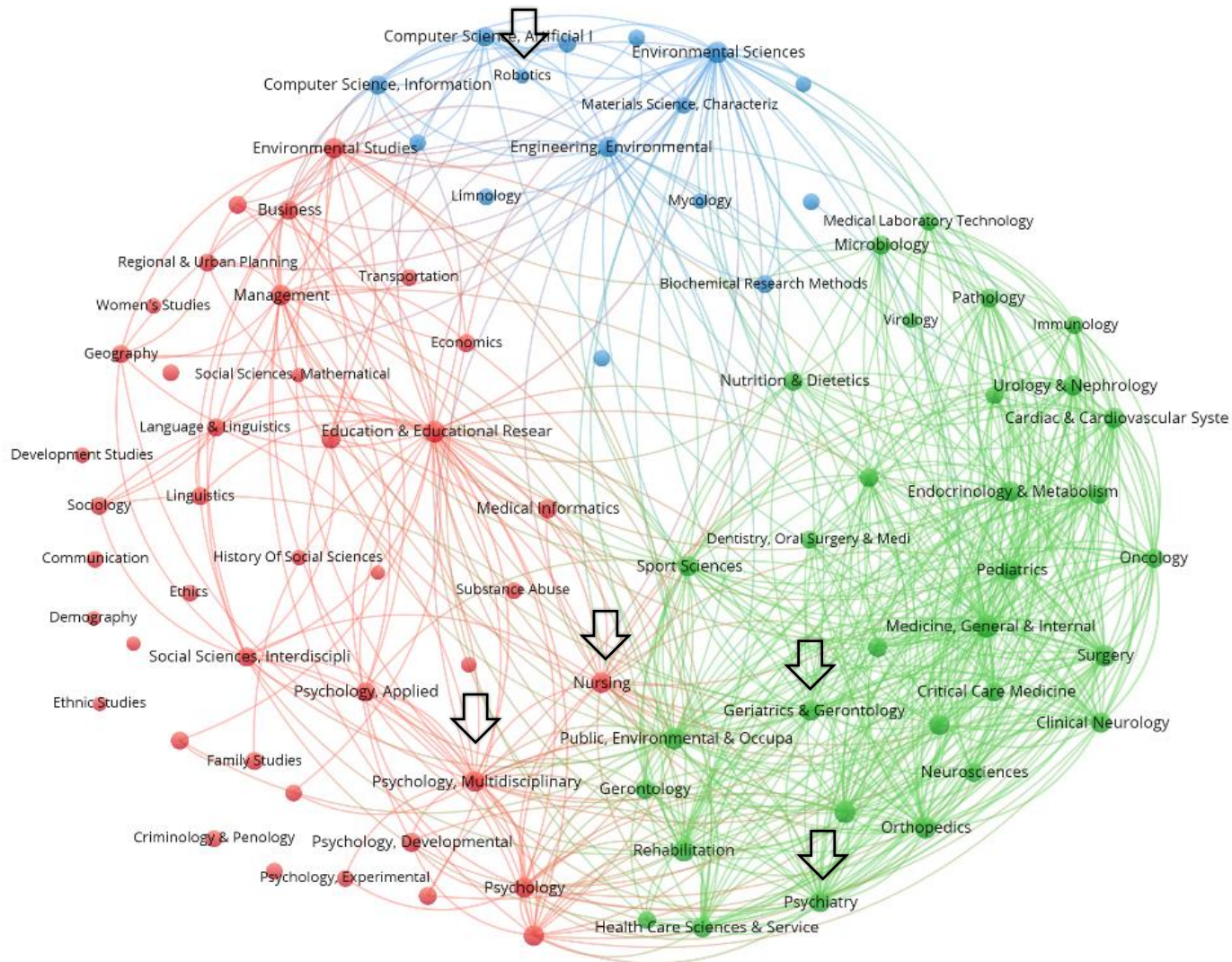
TERRITORIAL MAPPING: POLICIES

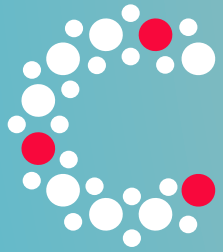
POLICIES IN HEALTHCARE, RESEARCH POLICIES, INNOVATION POLICIES, REGIONAL SMART SPECIALISATION POLICIES AND ALSO IMPACT ORIENTED POLICIES SUCH AS RRI.

- **RRI policy.** Difficult to reach (keys). Mostly national level and differ level of progress in the 3 pilot regions.
- **RRI Key dimensions:** Available Gender and Open Science (Open access – Open Data) policies. NOAD - OpenAIRE).
- **Acts of repetition** in policy (Asdal, 2018): The publishing years are changing, but the title and content stays close to the same (e.g. Murcia).
- **Overton data** for policy: Useful for European and National level policy frameworks (R&I policies). Regional scale – challenging.

Scientific relatedness space Örebro

- The Örebro NUTS3-region has a scientific representation on **Health sciences**
- Region raised fields of interest: **Elderly** (accommodative health care) – **Health robotics**. New: **Mental Health**. ↓
- Region has **RCA** in fields such as *Geriatrics, Gerontology, Psychology, Psychiatry, Artificial Intelligence- Robotics*





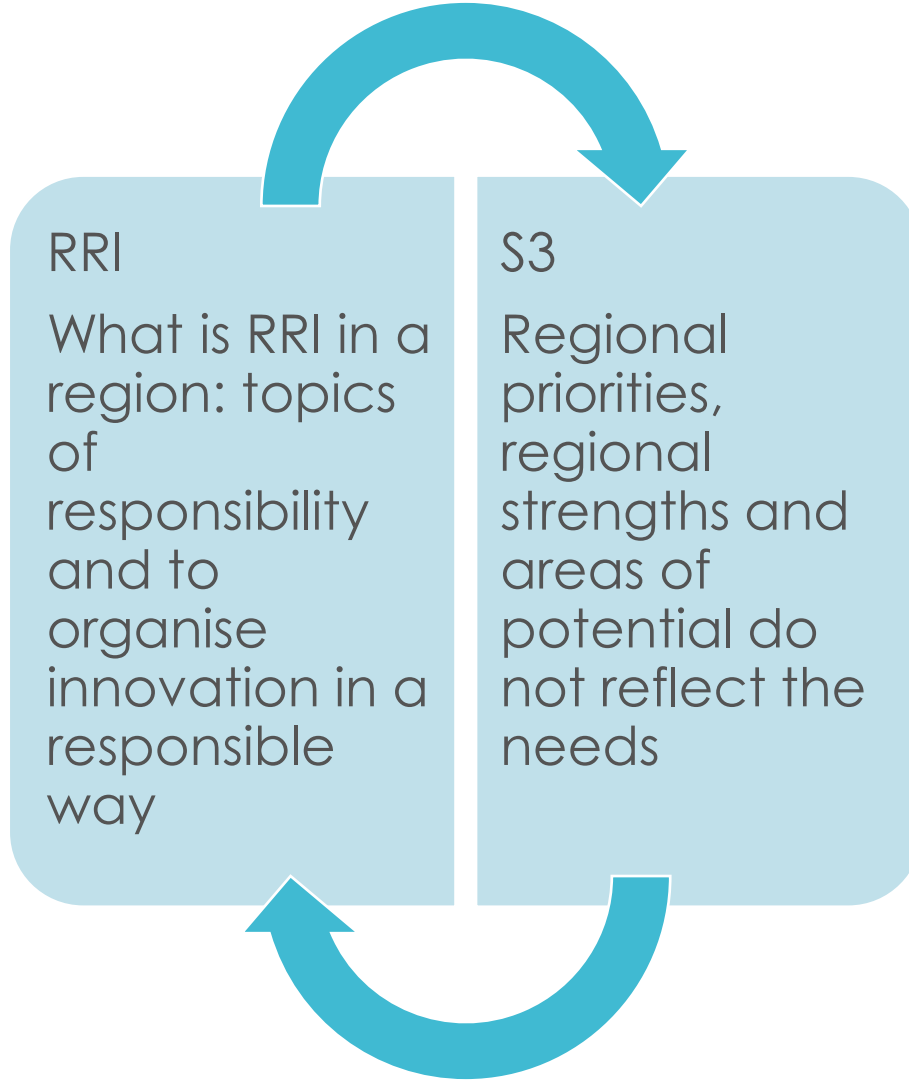
CHERRIES

RESPONSIBLE HEALTHCARE ECOSYSTEMS



Take away messages

- Ingeborg Meijer
- *Sonia Mena*
- *Tim Willemse*
- *Gaston Heimeriks*



The link between regional RRI and Smart Specialisation

- To assess the awareness in science on regional strengths and areas of potential innovation;
- To assess the needs in a regional context with partners;
- To align the topics of potential strengths with the needs;
- To bring stakeholders (e.g. healthcare partners) in contact with research and innovation.



CONCLUDING

- Responsible regional research combines RIS3 and RRI approaches into a responsible and regionally embedded research and innovation policy.
- Regions are very different
 - Knowledge base, institutions and local needs
- This approach recognises the regional community's role in defining what RRI means.
- Policy interventions biased towards supply-side support for business innovation and research system
- Demand side policies can complete the ecosystem and incentivise innovation in the direction of societal priorities including sustainability and health