

Innovationsökosysteme in/für NRW

Workshop I: Intelligenteres Europa in Nordrhein-Westfalen

Peter Haring Bolívar

peter.haring@uni-siegen.de

Prorektor Forschung und wiss. Nachwuchs, Universität Siegen

Sprecher EUA Expertengruppe „Innovation Ecosystems“

Ausschussmitglied „Innovation“ HRK

SDG ESIF Delegierter der EUA in EC/EP

HSBC 
Global Research

Global Economics
January 2011

The world in 2050



Quantifying the shift in the global economy

- ... emerging economies will increase x5
- ... 19 of the 30 largest economies will be from emerging world.
- ... marked decline of many small population, ageing, rich economies in Europe

By Karen Ward

Emerging markets will dominate the world's top 10 economies in 2050 (GDP at PPPs)

| | 2016 | 2050 | |
|-----------|------|------|-----------|
| China | 1 | 1 | China |
| US | 2 | 2 | India |
| India | 3 | 3 | US |
| Japan | 4 | 4 | Indonesia |
| Germany | 5 | 5 | Brazil |
| Russia | 6 | 6 | Russia |
| Brazil | 7 | 7 | Mexico |
| Indonesia | 8 | 8 | Japan |
| UK | 9 | 9 | Germany |
| France | 10 | 10 | UK |

 E7 economies  G7 economies

Sources: IMF for 2016 estimates, PwC analysis for projections to 2050

The US and Europe will steadily lose ground to China and India

Share of world GDP (PPPs) from 2016 to 2050...



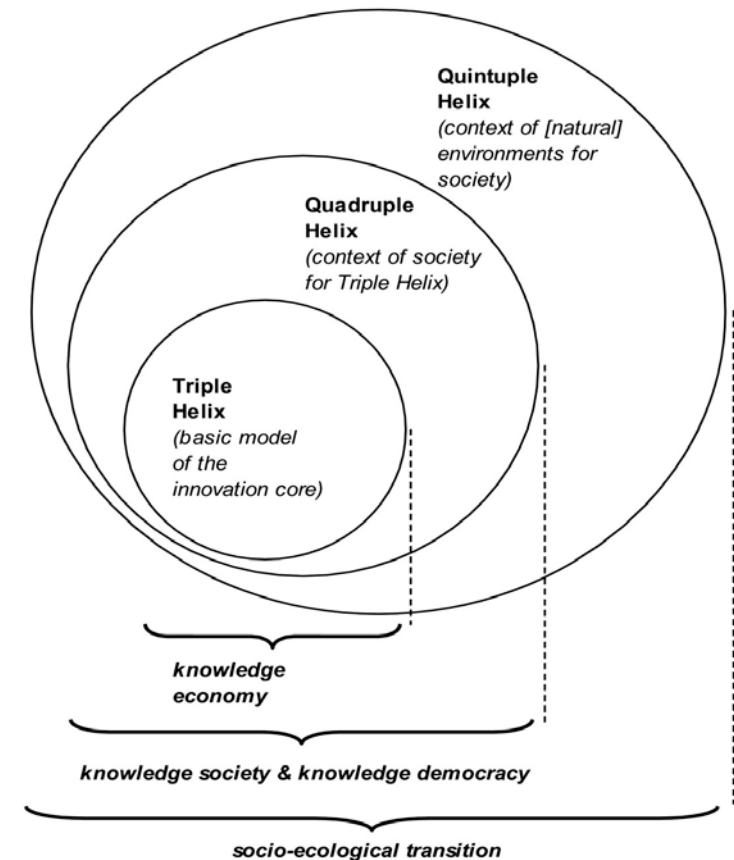
Sources: IMF for 2016 estimates, PwC analysis for projections to 2050

- ➔ Europe (NRW) is in danger of loosing relevance
- ➔ Delivery of tangible innovation impact needed
- ➔ Investment is restricted → innovation efficiency is key

- General concepts date back to “The National System of Political Economy” by G. F. List a 19th economist.
- System of innovation are defined as “all important economic, social, political, organizational. and other factors that influence the development, diffusion, and use of innovations.”¹⁻³
- Multifaceted functions and multiple actors⁴ required for innovation:
 - Knowledge Development
 - Knowledge Diffusion
 - Entrepreneurial Activities
 - Guidance of the Search
 - Market Formation
 - Resource Mobilization
 - Support from Advocacy Coalitions
 - ...



Georg Friedrich List (1789 – 1846)

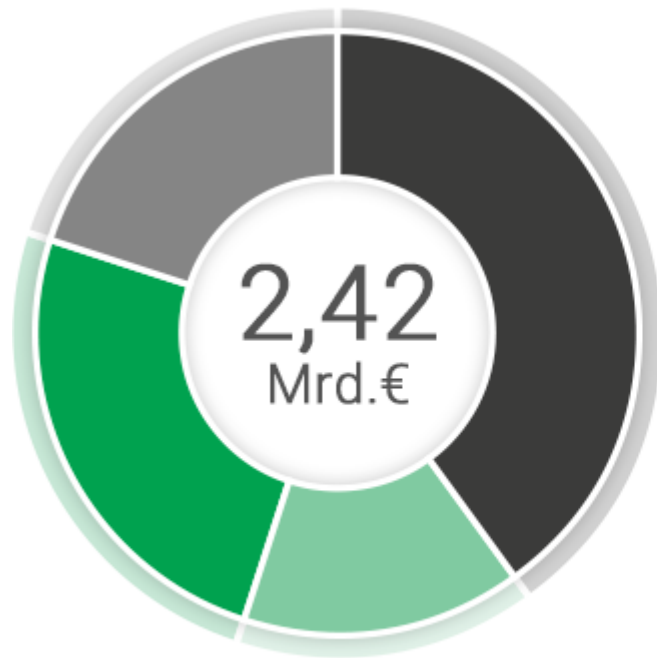


¹ Lundvall, B.-A. (1985) ‘Product innovation and user-producer interaction, industrial development’, Aalborg University Press.

² Freeman, Ch. (1995) The “National System of Innovation” in Historical Perspective. Cambridge Journal of Economics

³ Edquist, C. (1997) ‘Systems of innovation approaches - their emergence and characteristics’, London: Pinter/Cassell .

⁴ Carayannis, E.G., Barth, T.D. & Campbell, D.F. J Innov Entrep (2012) 1: 2. <https://doi.org/10.1186/2192-5372-1-2>



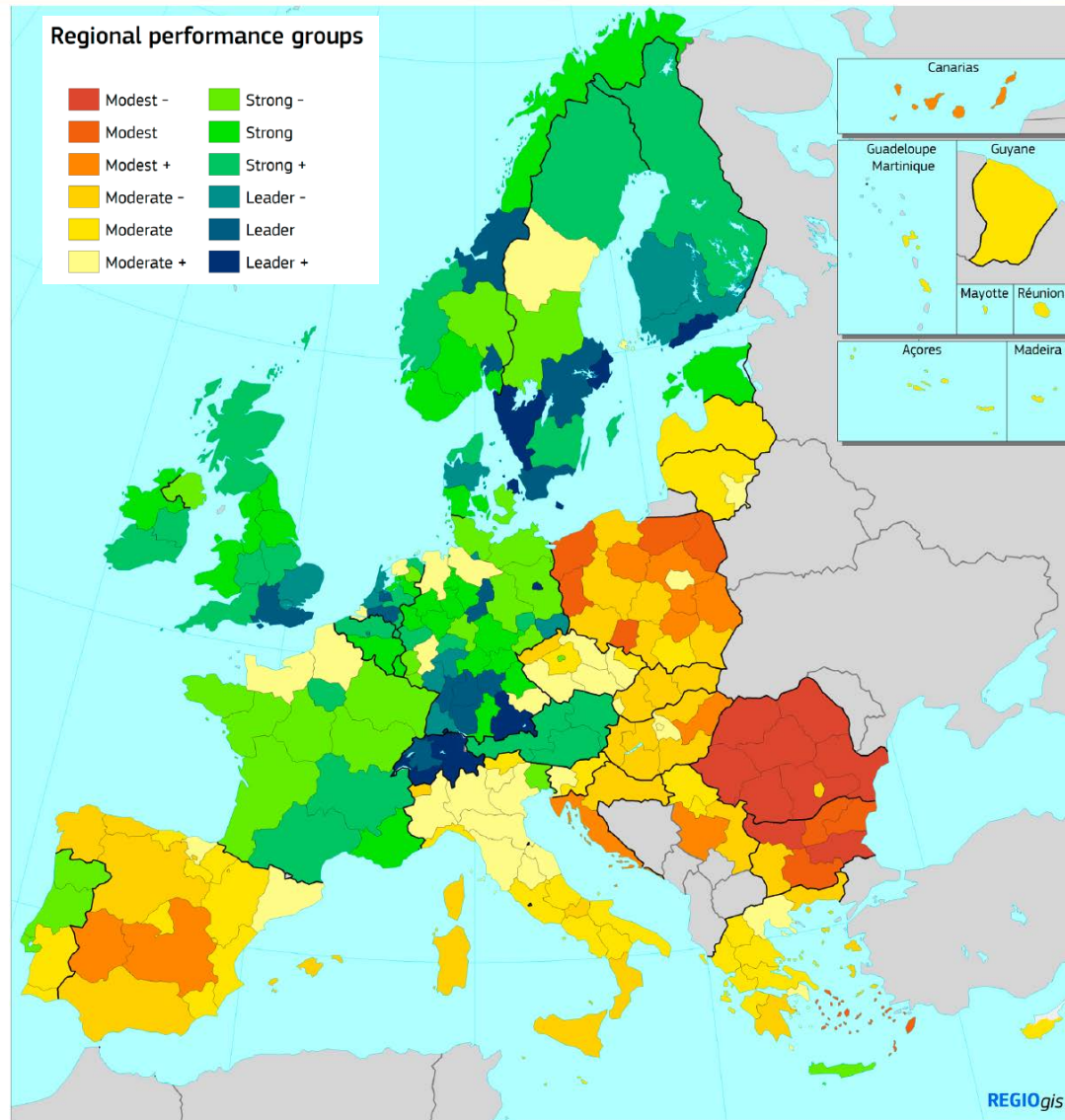
Gesamtvergabevolumen
50% davon stammt aus EU-Fördergeldern

- 40% - Prioritätsachse 1**
Stärkung von Forschung, technologischer Entwicklung und Innovation
- 15% - Prioritätsachse 2**
Steigerung der Wettbewerbsfähigkeit von kleinen und mittleren Unternehmen (KMU)
- 25% - Prioritätsachse 3**
Förderung der Bestrebungen zur Verringerung der CO2-Emissionen
- 20% - Prioritätsachse 4**
Nachhaltige Stadt- und Quartiersentwicklung / Prävention

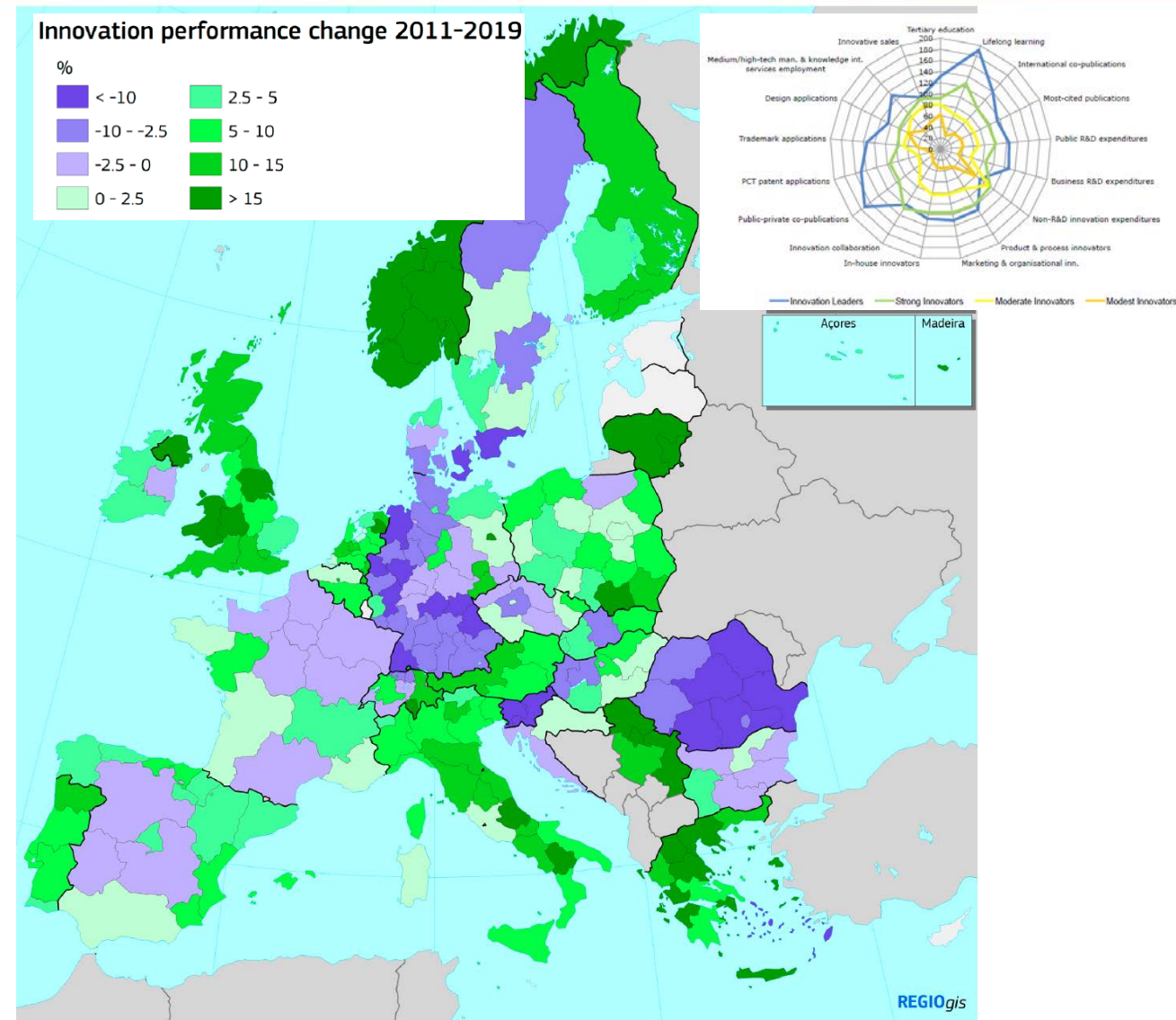
Erfolgsfaktoren

- ✓ Kooperative strategische Beteiligung und Transparenz
- ✓ 7 Leitmärkte mit genug „Luft“ für inhaltliche Anpassung
- ✓ Klare Ausschreibungen mit langer Vorankündigung
- ✓ Flexible Verbundprojektstruktur
- Sehr gute Plattform für lineare, punktuelle Innovationsprojekte

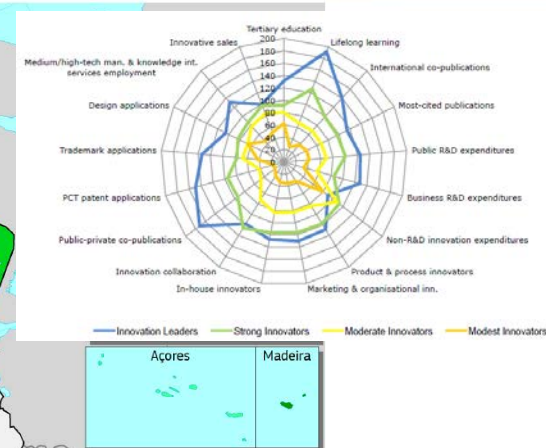
Regionale Entwicklung



Regional innovation scoreboard 2019

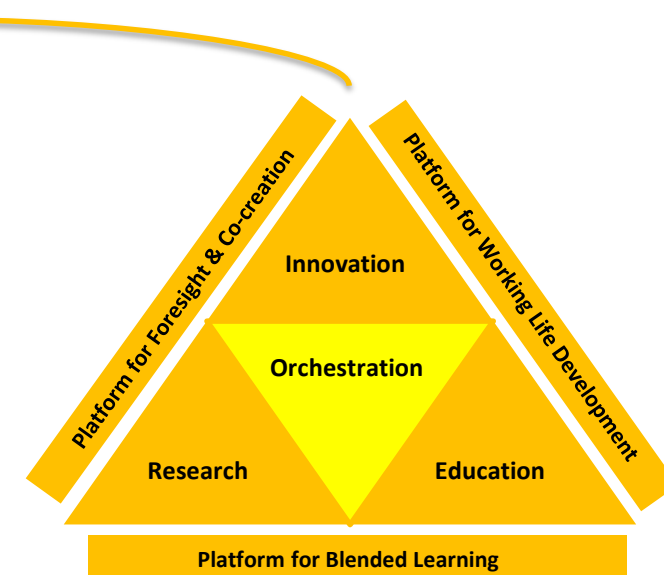


Change from 2011 to 2019



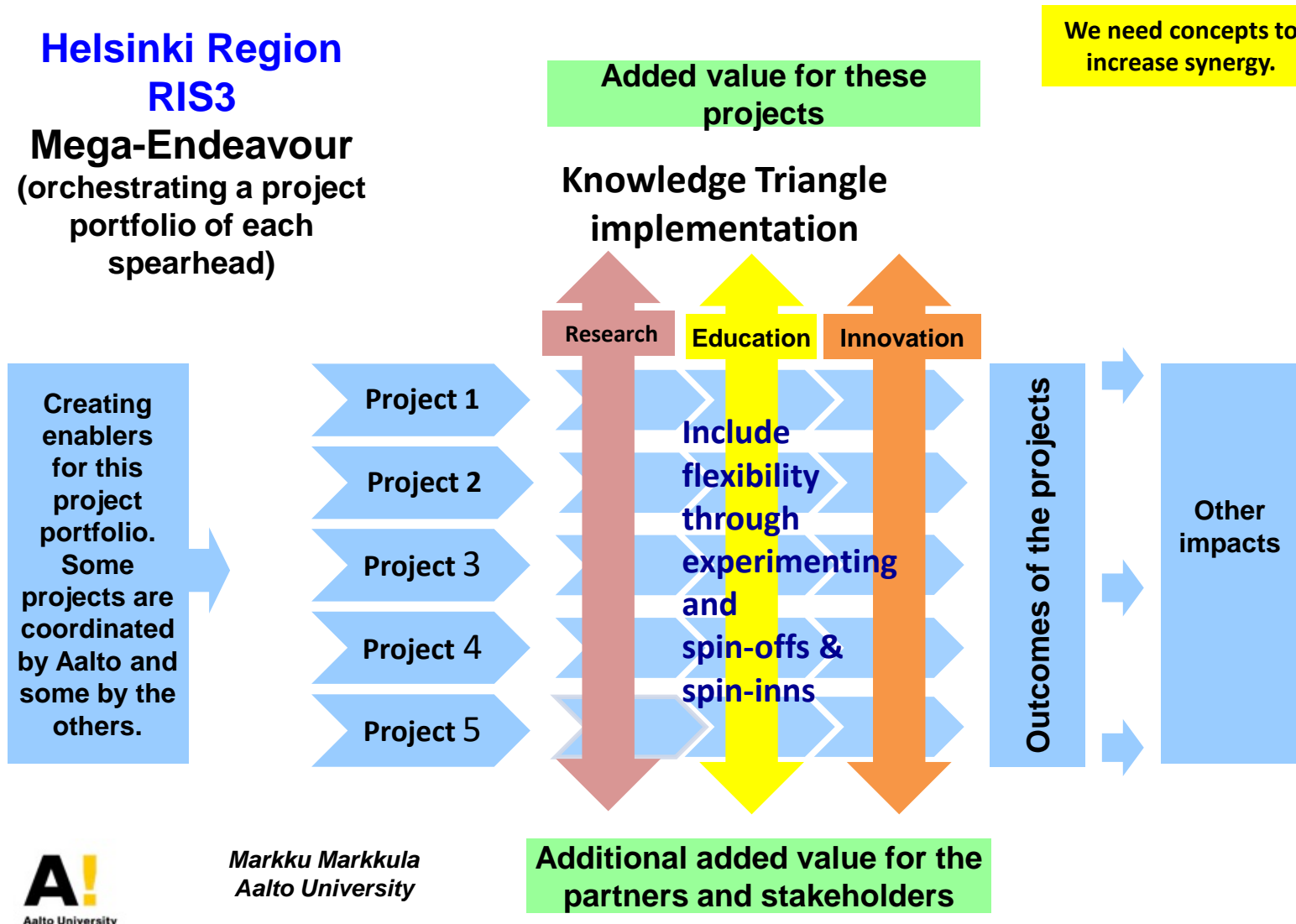
Linear innovation in isolated projects not sufficient

1. Effective innovation requires human talents
→ Nurturing of talents in **synergetic research/innovation/education** platforms
2. Radical transformations like digitalisation, globalisation, climate-change, global societal challenges, ...
→ need for systemic **multi-actor solutions**
3. Increasingly “hybrid” research & innovation: disruptive innovation and scientific breakthroughs most often occur at interfaces between disciplines and different actors’ perspectives
→ **open innovation** networks
4. Accelerated pace of innovation
→ **agility** demands for businesses and universities in building research networks
5. Regional strategic awareness and common vision to align regional actors
→ local **innovation culture** and strategy
6. Generational attitude longing for impact & social presence in increasingly disorienting and disembodied world
→ **socio-ecological impact**

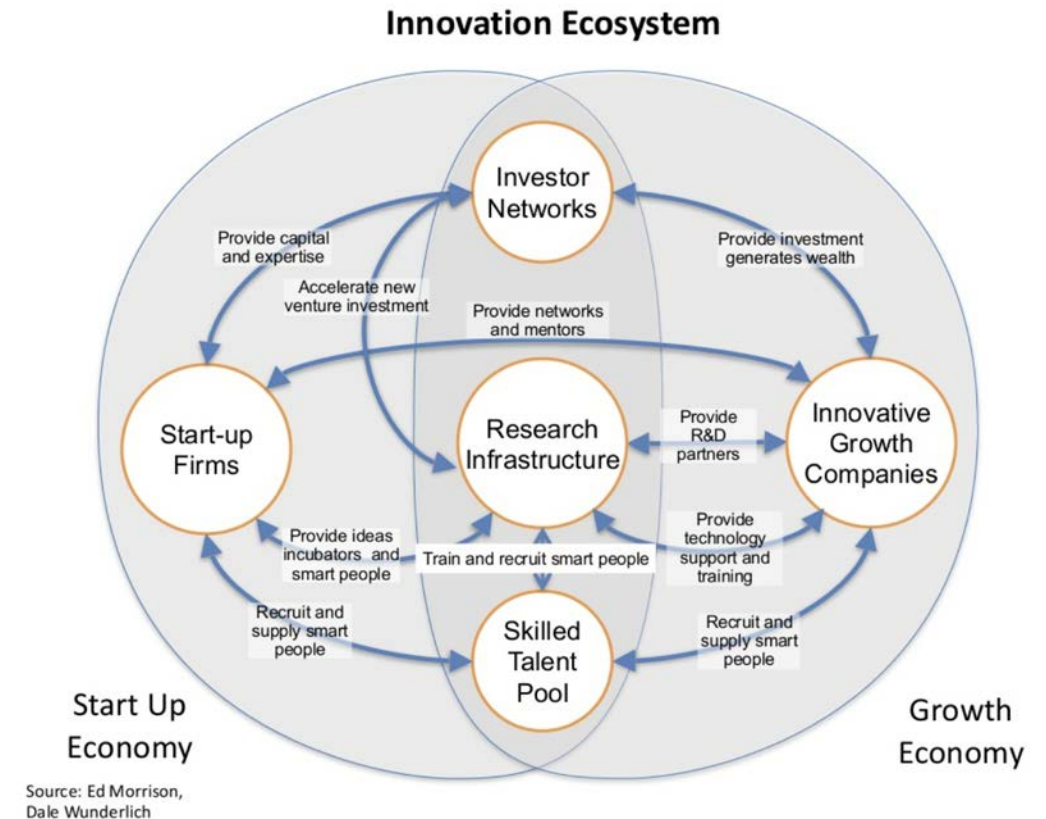


knowledge triangle

Synergy of research education and innovation



- From linear to reiterative innovation
- From closed to open innovation
- From technological to systemic challenge-driven
- From individual to collaborative interdisciplinary innovation
- From spontaneous to systematic innovation
- From exchange to co-creation in innovation spaces
- From projects to innovation cultures
- Do we have the proper funding structure to address these innovation requirements and the enduring build-up of **innovation ecosystems**?



IV. Quadruple Helix Co-Creation Network: Challenge-driven Innovation



The image shows a screenshot of the CARNET website homepage. At the top left is the CARNET logo with the tagline 'FUTURE MOBILITY RESEARCH HUB'. To the right is a navigation menu with links: HOME, ABOUT, RESEARCH & INNOVATION, TALENT, HIGHLIGHTS, NEWSLETTER, and CONTACT US. The main content area features a large graphic with the text 'City as Living Lab, Service Facilitator, Funding Agency and Political Lobbyist' and 'NEW IDEAS FOR A DYNAMIC CITY >'. Below this is another graphic with the text 'University as Research Hub, Technology Foresight, Network Facilitator, Provider, State-of-the-Art Research Infrastructure, TechTransfer'. At the bottom left, it says 'WELCOME TO CARNET' with an orange arrow pointing right. At the bottom right, there is a world map with a callout for 'VW Electronic Research USA' and a logo for 'PART OF THE VW RESEARCH NETWORK CARNET'.

CARNET
FUTURE MOBILITY RESEARCH HUB

HOME ABOUT RESEARCH & INNOVATION TALENT HIGHLIGHTS NEWSLETTER CONTACT US

City as Living Lab, Service Facilitator, Funding Agency
and Political Lobbyist

NEW IDEAS FOR A
DYNAMIC CITY >

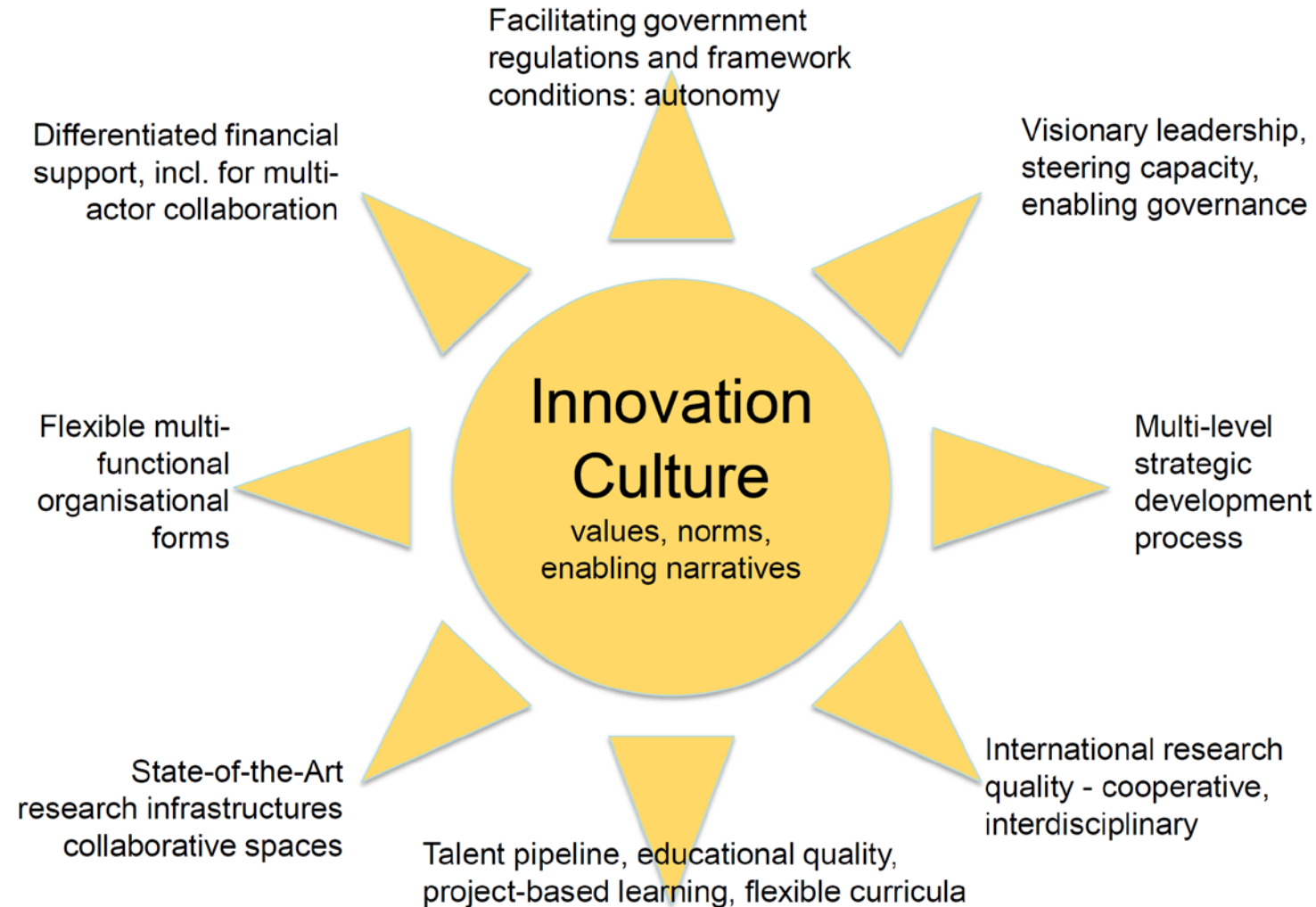
University as Research Hub, Technology Foresight, Network Facilitator,
Provider, State-of-the-Art Research Infrastructure, TechTransfer

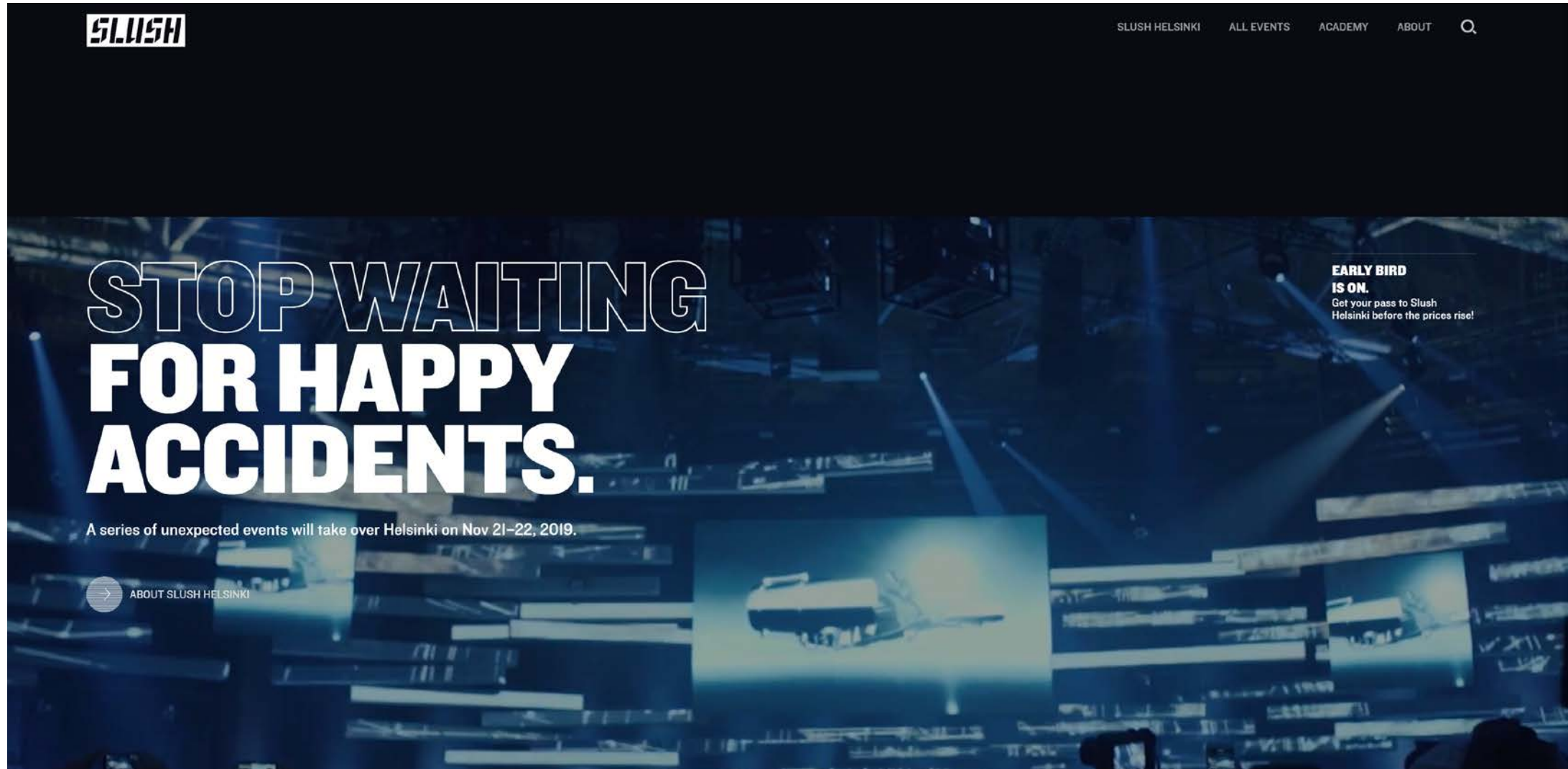
WELCOME TO
CARNET

The **Cooperative Automotive Research Network**, initiated by SEAT, Volkswagen Group Research and the Universitat Politècnica de Catalunya (UPC), is an open hub for industrial and academic partners from the areas of automotive and mobility research & innovation. CARNET is located in Barcelona, and works through project-based collaboration. It focuses on innovation and solutions that close the gap between academic research and industrial innovation in urban mobility.

VW Electronic Research USA

PART OF THE VW RESEARCH NETWORK
CARNET





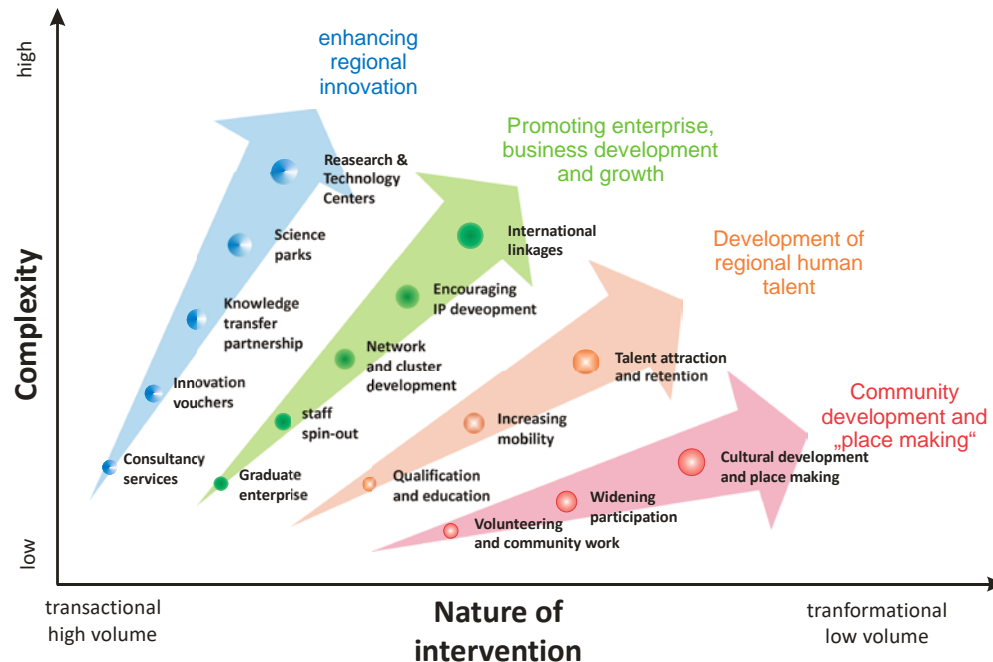
The screenshot shows the Slush Helsinki website homepage. At the top left is the 'SLUSH' logo. The top right navigation bar includes links for 'SLUSH HELSINKI', 'ALL EVENTS', 'ACADEMY', 'ABOUT', and a search icon. The main content area features a large, bold headline: 'STOP WAITING FOR HAPPY ACCIDENTS.' Below this headline, a sub-headline reads: 'A series of unexpected events will take over Helsinki on Nov 21-22, 2019.' To the right of the headline, there is a call-to-action box titled 'EARLY BIRD IS ON.' with the text: 'Get your pass to Slush Helsinki before the prices rise!'. At the bottom left, there is a circular button with a right-pointing arrow and the text 'ABOUT SLUSH HELSINKI'. The background of the page is a dark, blue-toned image of a stage with spotlights and a large screen displaying a ship.

20000 participants, 3100 startups, 1,800 investors representing 200 billion U\$ (2018 figures).

Multiple HEI contributions

Higher education institutions are a key actor of innovation ecosystems¹ with a plurality of intervention capabilities²:

- Developing the **human talent** to address the knowledge economy,
- Promote **regional attractivity**, for people and industrial investment,
- **Knowledge creation** and its equitable distribution, access and sharing,
- **Poles of knowledge**, bringing global knowledge to regional use
- Active promoters of a **innovation culture**, increasing synergy among education, research and innovation.
- HEI are **powerful network builders**, bridging the gap between political decision, governance and industries.



¹ M. Kitson, et al. „The Connected University Driving Recovery and Growth in the UK Economy“ NESTA Research report (2009)

² P. Haring Bolívar, Fostering regional competitiveness – why and how to build up enduring partnerships? EUA Annual Conference, Antwerp (2015)

- Enhanced innovation intensity and efficiency required to cope with global challenges in NRW
- NRW has a well developed platform to develop and support cooperative projects → **evolutionary innovation**
- Three aspects need increased attention to enable efficient **transformational innovation**:
 - Synergetic support and strategic inclusion of talent education, research and innovation activities
 - New funding instruments required for build-up of enduring innovation ecosystems
 - New mechanisms needed for the creation of a coherent innovation culture
- Higher education institutions are a key actor, eager to interact deeply with other partners to enhance NRW's innovation capabilities

“Nothing is more difficult than the art of maneuvering for advantageous positions”

Sun Tzu (544 BC – 496 BC) military general, strategist, and philosopher

