

# **The Role of Universities in Regional Innovation Ecosystems**

Dr. Sybille Reichert

EUA Annual Conference

Sorbonne University, Paris 11 April 2019

# Overview

I: Focus and Methodology of the Study

II: Drivers & Concepts of Innovation

III: Transformation of Roles

IV: Emerging Forms of Co-creation

V: Nurturing Innovation Culture – Success  
Factors for Central Role of Universities

# I. Focus and Methodology

## Focus:

- Interaction between universities and their partners in regional innovation systems, across institutional, sectoral and disciplinary boundaries
- Transformation of roles of triple helix actors: univ., government agencies, businesses, new emphasis on quadruple helix incl. users, citizens, students
- Multi-dimensional connectivity: leadership, cultural identities & narratives, strategy development, organisational forms and infrastructures – innovation cultures

## Methodology:

- Qualitative Study : 9 Case Studies in diverse EU regions with high or rising innovation indicators according to Eur. Reg. Comp. Index
- 9 x 3-day visits à 15+ interviews (university leaders, researchers, students, big and small companies, govern. & intermediary agencies)
- Site visit reports for each visit, overarching analysis of methods for developing connectivity, key features of dynamic regions

# Aalto University, Finland

## Infrastructural Development

- Very supportive city development that aligns its infrastructural development with idea of triple helix co-creation
- Major investment in campus development of Aalto at Espoo to bring business and art schools to campus

- Student entrepreneurship society with Start-up Sauna, Slush, Junction hackathon
- Design Factory gathers interdisciplinary challenge projects, business development and teaching innovation
- VTT applied research center for university/business co-creation

- Attention to co-creation spaces
- Investment in iconic architecture
- Investment in subway connection from Helsinki city centre

## External Opportunities

- Merger of three leading complementary institutions strongly supported by national government
- Financial crisis as opportunity to emphasise new innovation policy and entrepreneurial opportunities
- Weakened role of Nokia lets more diverse interdependent network with dynamic start-up scene emerge in the sector

- Aging society
- Sustainable development
- Divide between remote areas and Helsinki capital region

## Societal Challenges

## Funding Framework

- TEKES (now Finland Innovation) important innovation support agency which incentivises business-university collaboration
- In relative terms declining basic research funds
- Merger with new university facilitated by substantial public investment and donations

- Emerging fund-raising culture
- Fast growing Venture Capital

- New university act introduced possibility of universities as foundations
- High degree of university autonomy (staffing and financial)

## Government Regulations

## Leadership

- Triple helix leadership, with university, city, companies well aligned
- University leadership strong strategic actors
- Highly cooperative communication
- Entrepreneurial leadership by students, student associations

## Innovation Brokers & Facilitators

## Strategy Development

- University merger itself a major strategic project that is at the same time the showcase of Finnish innovation policy
- Close alignment between urban and university strategic development
- University leadership strong strategic actors

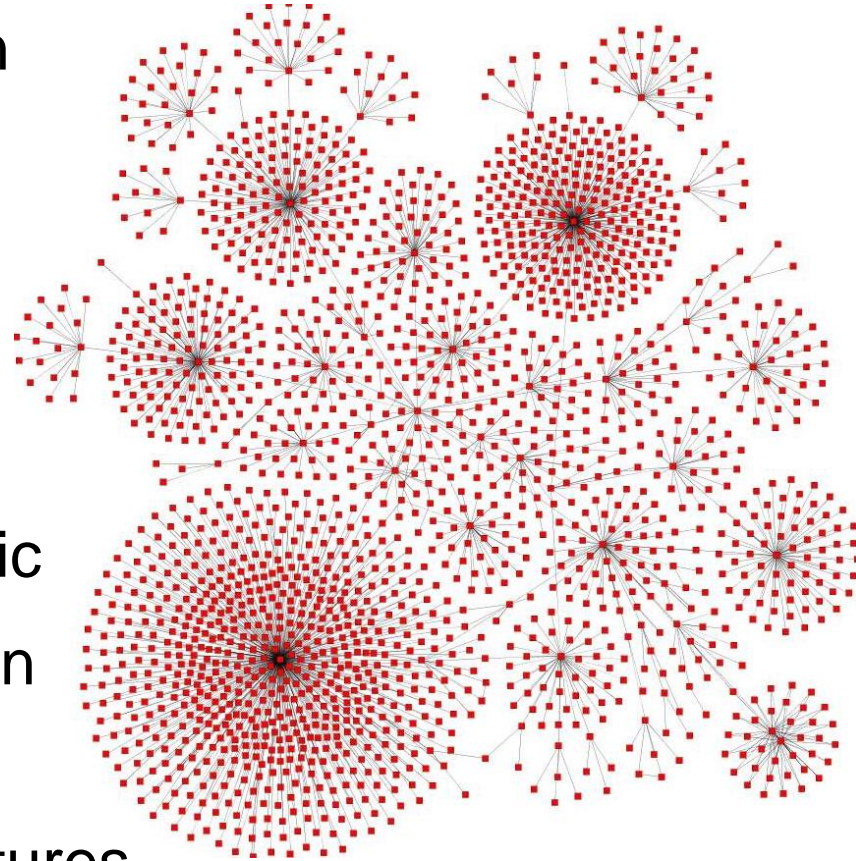
High trust,  
low hierarchies,  
highly cooperative,  
strong student  
empowerment

# II. Driving Forces of Regional Innovation Systems Development

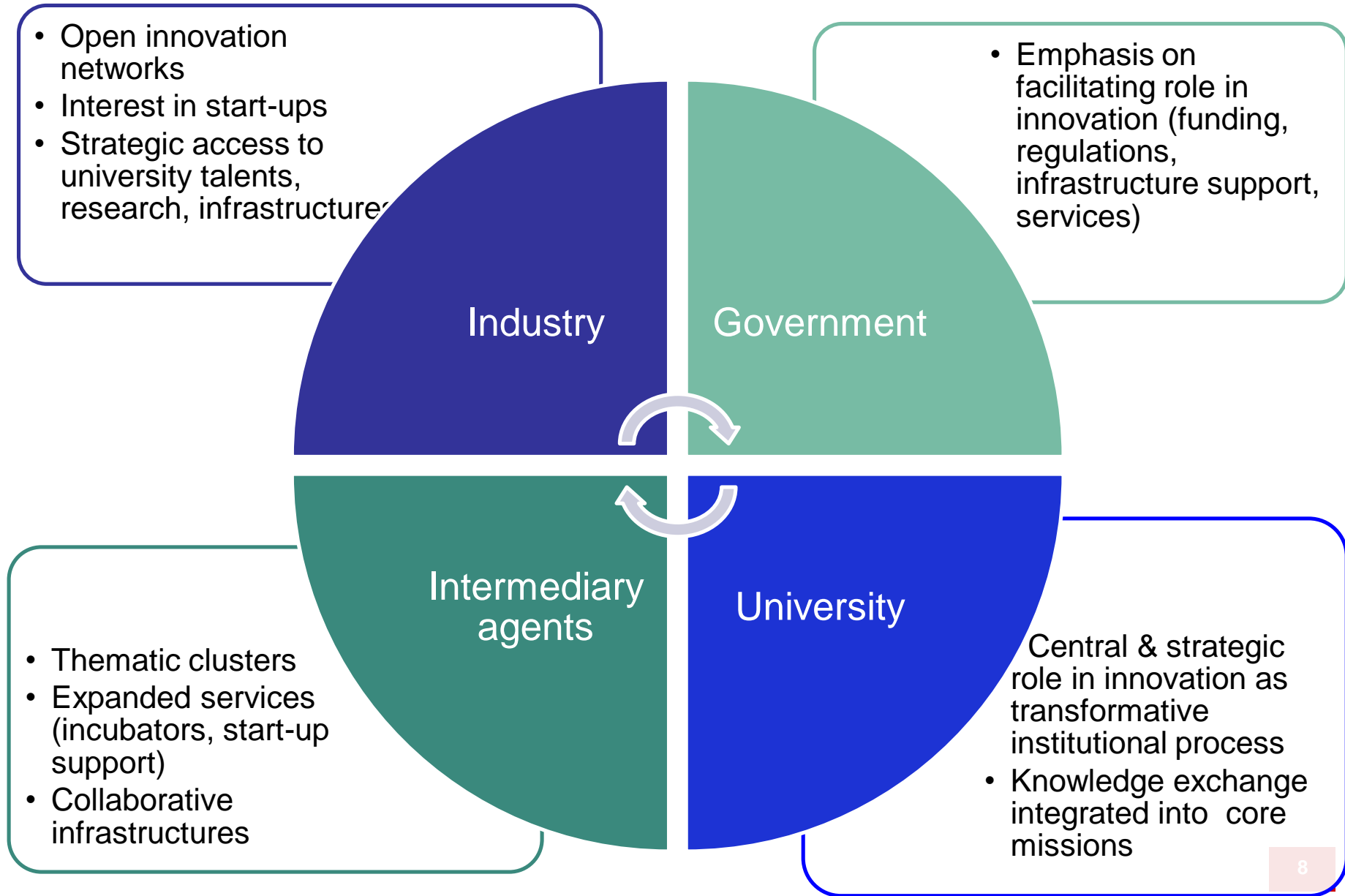
1. **Radical transformations** - digitalisation, globalisation, climate-change - global societal challenges → need for systemic multi-actor solutions
2. Increasingly “**hybrid**” **research & innovation**: disruptive innovation and scientific breakthroughs most often occur at interfaces between disciplines and different actors’ perspectives → open innovation networks
3. Emphasis on knowledge economy in post-crisis Europe - value creation highest in knowledge intensive sectors with dense connectivity between university & industry, facilitated by national, regional, city governments
4. Financial Incentives for collaborative research funding
5. Accelerated pace of innovation → demands on agility of businesses and adaptability of universities in building research networks, nurturing talents
6. Regional strategic awareness and analysis and/or common vision / agenda to help to align regional actors (Smart Specialisation Strategies)
7. **Generational change of culture**: longing for impact and social presence in an increasingly disorienting and disembodied world

## II. Innovation: New Concepts & Approaches

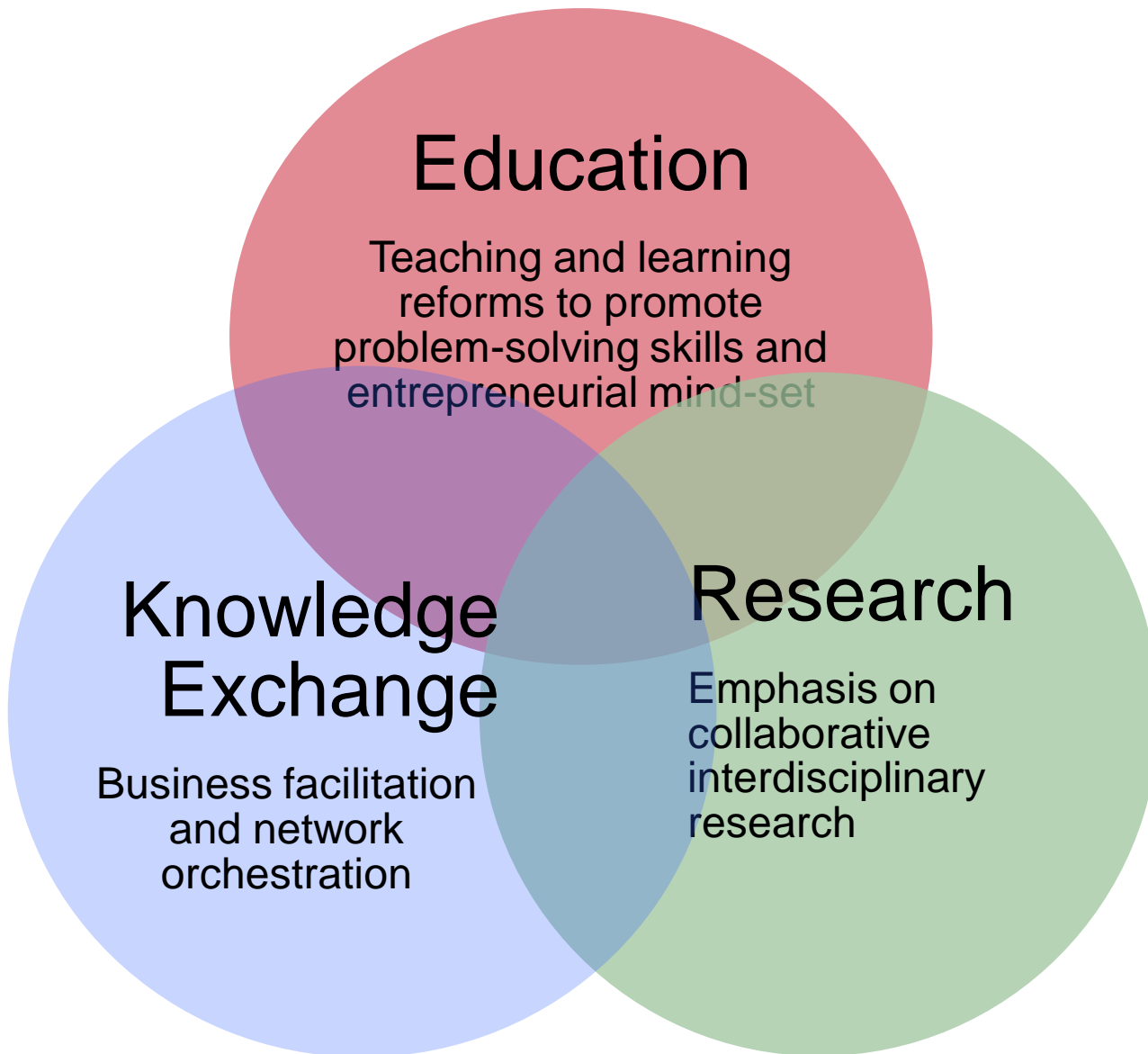
1. From linear to reiterative innovation
2. From closed to open innovation
3. From technological to systemic challenge-driven
4. From individual to collaborative interdisciplinary innovation
5. From spontaneous to systematic
6. From exchange to co-creation in innovation spaces
7. From projects to innovation cultures



# III. Transformation of Roles



# III. Transformation of Roles: Innovation as a Core Mission of Universities





# III. Transformation of Roles: Innovation as a Core Mission of Universities

## Education

Teaching and learning reforms  
to promote:

Independent learning, problem-  
solving research competences  
and entrepreneurial mind-set

- Promoting ability to address interdisciplinary problems in teams
- **Project-based learning**
- Research project exposure
- Teaching as coaching
- “Challenges” as new format to promote **self-organisation and independent learning**
- Emphasis on entrepreneurial attitudes, skills and start-up culture
- *Professors of practice* and external mentors bring real-life cases to study experience
- Integrated internships

# Examples:

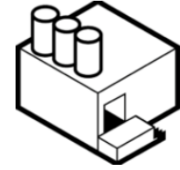
## Aalto Design Factory

## TU/e Challenge Projects

## Manchester Univ. Stellify

## TUMentreprenurship

## education/ StarTUM



### WHAT IS DF

Aalto Design Factory (ADF) is an interdisciplinary product design and learning hub uniting students, teachers, researchers, and industry. We aim to build a new kind of passion-based learning culture for Aalto University. You are welcome to join us!

## DESIGN FACTORY

Educating the world's best product designers

MANCHESTER  
2024  
The University of Manchester

## STELLIFY



OUR UNIVERSITY About the University Departments Library University Fund Eindhoven Calendar Community

HOME / OUR UNIVERSITY / ABOUT THE UNIVERSITY / FACILITIES / TU/E INNOVATION SPAC...

### TU/e innovation Space

TU/e innovation Space is a community and facility that supports interdisciplinary hands-on education, engineering design and entrepreneurship.



#### TU/e innovation Space

Students

Projects

Industry

Blog Tom Seften and Bas Verkaik

Events

Our people

Contact us

#### WELCOME!

TU/e innovation Space is a community and facility that supports interdisciplinary hands-on education, engineering design and entrepreneurship.

It's a place where students learn to deal with complex societal and industrial challenges, create prototypes and develop innovations in collaboration with researchers, businesses and each other.

Furthermore, it provides a space and support for lecturers that develop and offer hands-on courses and want to contribute to innovation in education.

COMMUNITY PLATFORM →

# TU/e

## iINNOVATION SPACE

STEL•LI•FY (VERB)

TO CHANGE, OR BE CHANGED, INTO  
A STAR

The University of Manchester gives you the opportunities to do more and be more. We call it Stellify. It's about broadening your horizons, understanding the issues that matter, and stepping up to make a difference to the local and global community.

Stellify enables you to do more and be more during your time at university, with a select package of activities containing some of Manchester's most exciting and transformational student experiences – and the chance to earn a prestigious University award.

Start your Stellify journey.

# III. Transformation of Roles: Innovation competences as Motor and Reflection of Teaching and Learning Reforms

**Table 2** Learning and teaching: needs, responses and framework conditions

New needs and concerns related to universities' role in innovation	Institutional responses of universities	Necessary framework conditions
<p>Qualitative aims:</p> <ul style="list-style-type: none"> <li>• Prepare for disruptive innovation</li> <li>• Promote systemic understanding and competences</li> <li>• Create game-changers</li> <li>• Extend students research-related competences</li> <li>• Promote digital skills</li> <li>• Foster entrepreneurial mind-set and skills</li> </ul>	<p>Teaching reforms:</p> <ul style="list-style-type: none"> <li>• Extend interdisciplinary, project-based learning</li> <li>• Support student self-organisation</li> <li>• Improve teaching innovation services</li> <li>• Extend mentoring, including by external stakeholders</li> <li>• Provide entrepreneurial modules, as extra offer or integrated into curriculum.</li> <li>• Develop digital skills modules</li> <li>• Encourage and support start-ups</li> </ul>	<p>Regulatory:</p> <ul style="list-style-type: none"> <li>• Sufficient academic autonomy of universities for introducing new study programmes and design their content</li> <li>• Sufficient academic autonomy of universities for the selection of students to study programmes</li> </ul> <p>Financial:</p> <ul style="list-style-type: none"> <li>• Sustainable funding for low student/ staff-ratios to allow for project-based learning, orientation in diverse learning paths, and mentoring</li> </ul>

# III. Transformation of Roles: Innovation as a Core Mission of Universities

## Research

Importance of collaborative  
research

Interdisciplinary “incubation”

- New formats: **strategic partnerships**, less contract research, more long-term development of new technologies, long-term framework agreements for research collaboration; joint infrastructures
- **Independent, disinterested public interest-oriented, curiosity-driven attitude important for univ. role as network orchestrator**
- **Tension or win-win between curiosity-driven research and user-driven applied research?**
- Research excellence supportive of collaboration with big industry and long-term orientation – but SME collaboration often more short-term solution oriented

# Strategic Business-University Collaboration

Cooperation instrument/ Interaction format	Function for businesses, universities, students
Joint Institutes or Labs	<ul style="list-style-type: none"><li>• helps address long-term challenges which are of mutual interest to academia and industry</li><li>• helps support state-of-the-art infrastructure and thereby enhances international competitiveness</li><li>• co-funding (companies/public funds) alleviates public budget pressures</li></ul>
Long-term framework agreements for university-company collaboration	<ul style="list-style-type: none"><li>• lowers transaction costs for individual cooperation projects</li><li>• creates transparency and reliability with respect to IP arrangements, preventing mistrust</li><li>• helps justify long-term research infrastructure investments for companies and universities</li></ul>
Strategic partnerships	<ul style="list-style-type: none"><li>• helps companies address long-term ambitions by giving them access to scientific and technological frontiers</li><li>• scan future technologies, problems and opportunities which may require early positioning</li><li>• helps universities develop long-term research directions with high demand from external stakeholders</li></ul>



# Strategic Business-University Collaboration

## New needs and concerns related to universities' role in innovation

## Institutional responses of universities

## Necessary framework conditions

### Produce relevant knowledge:

- Short-term: concrete solutions to current innovation problems
- Long term: scanning horizon of scientific, technological and user developments
- Co-creating knowledge by connecting different actors to address common innovation challenge in knowledge-intensive areas



- Support curiosity-driven research with long-term perspectives
- Adapt hiring policy to combine research excellence and impact criteria
- Strategic partnerships with few companies, organisations, including foresight function
- Contracted research for specific solutions
- Research support and business facilitation service as contact point for businesses
- Promote interdisciplinary networks
- Create and moderate thematic clusters bringing together diverse disciplines and institutions



### Regulatory:

- Sufficient organisational and academic autonomy of universities to allow for flexible, strong interdisciplinary units

### Financial:

- Support curiosity-driven research with sufficient core funding
- Support schemes for university-business collaboration
- Provide medium-term competitive grants for thematic cluster development

### Access to research infrastructures:

- Sharing expensive large state-of-the-art infrastructures
- Access to technical facilities and equipment with technical support staff



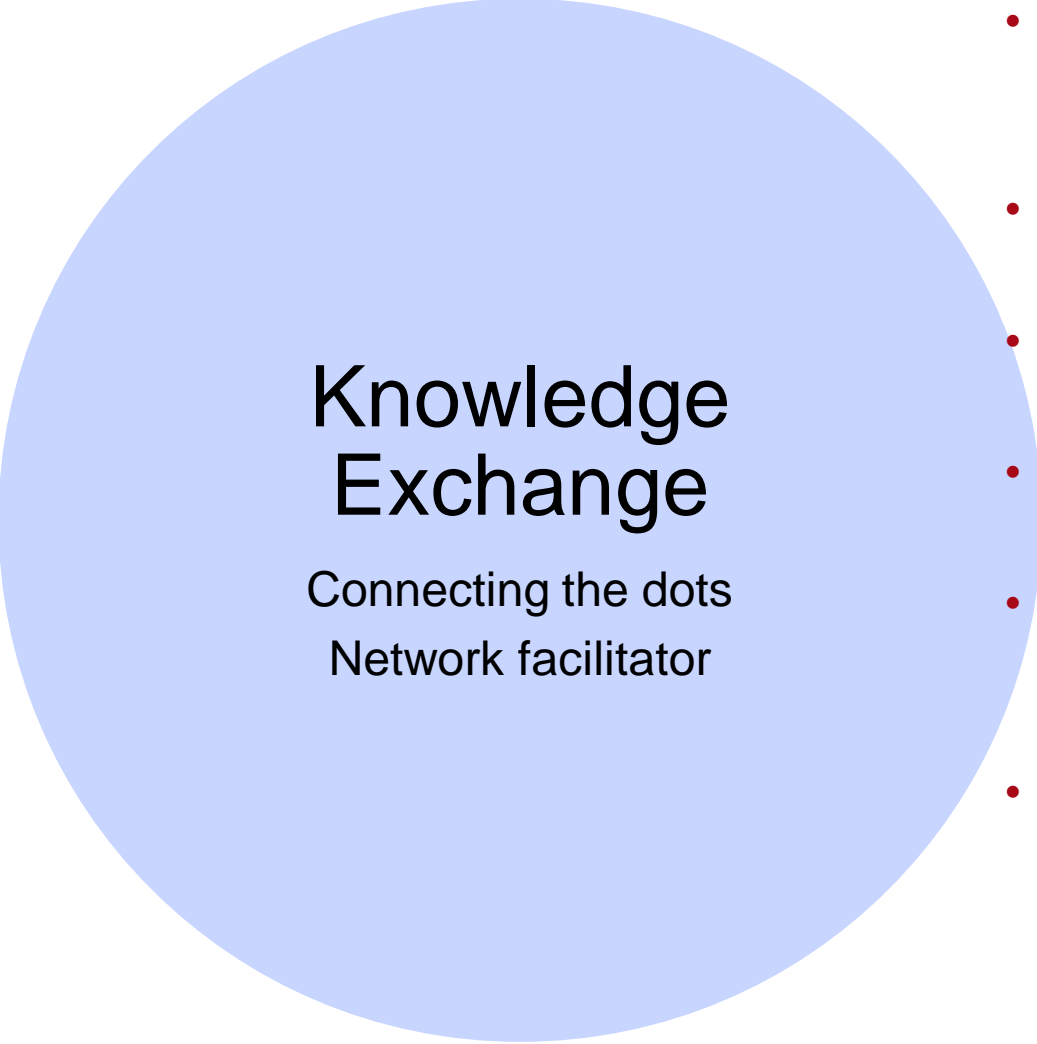
- Strategic investment in large research infrastructures, also as public-private partnerships
- Provide long-term technical staff for infrastructures
- Establish co-creation spaces and access to research facilities for externals



### Financial:

- Provide sufficient institutional core funding for infrastructural investment, maintenance, technical staff
- Provide special competitive funds for large-scale research infrastructures

# III. Transformation of Roles: Innovation as a Core Mission of Universities

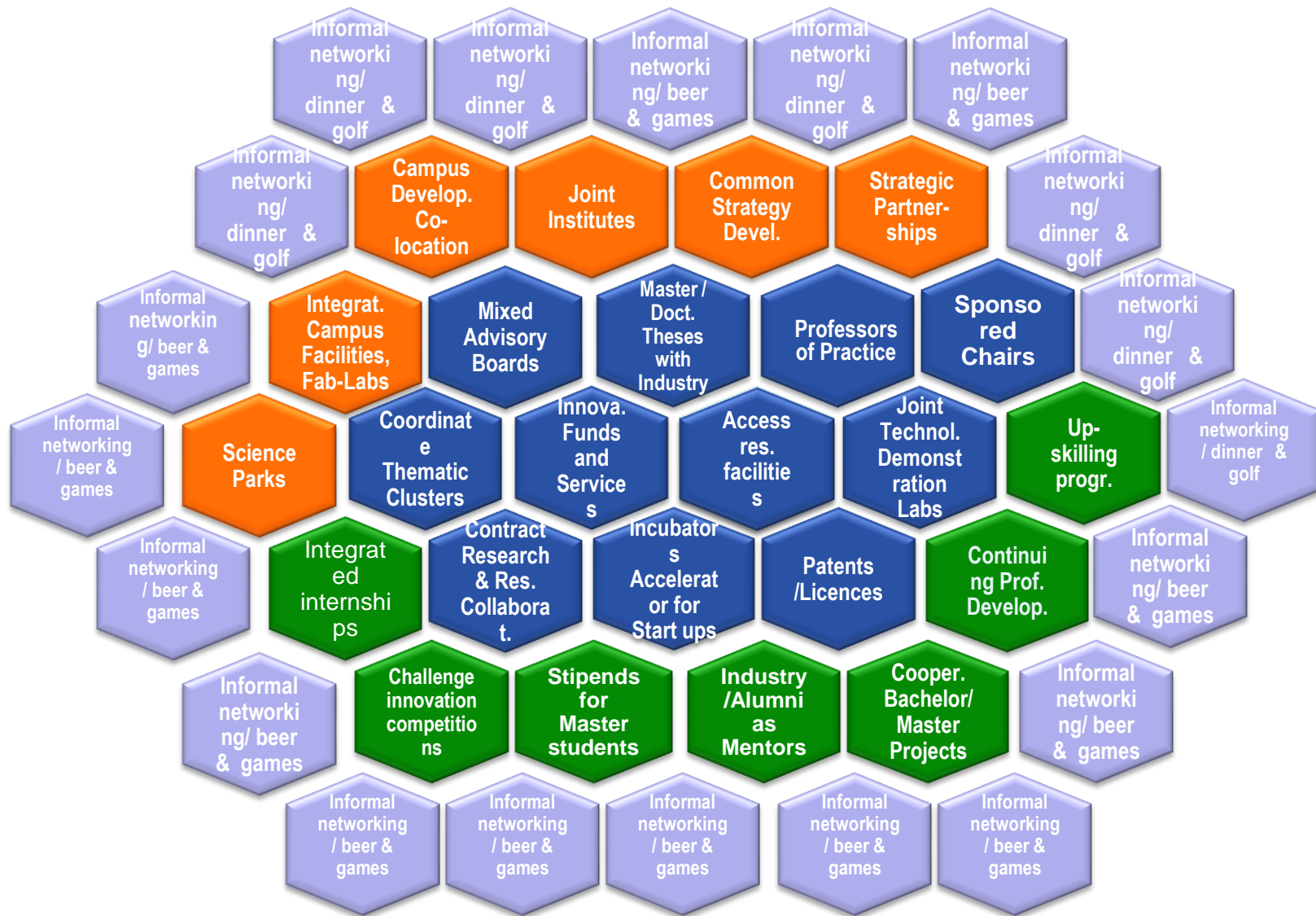


## Knowledge Exchange

Connecting the dots  
Network facilitator

- Knowledge Exchange **not add-on but integrated** into teaching and research programmes
- TTOs expanded, but not as central to strategic agenda
- Increased emphasis on start-up support & entrepreneurial culture
- Business **facilitation** and research networks more central
- Joint thematic clusters = bridges between curiosity-driven research & application
- Infrastructures (start-up hubs, fab labs, maker spaces) as **collaborative spaces** for multi-actor innovation

# Portfolio of University Knowledge Exchange Formats for Joint Regional Development





# IV. Triple Helix Co-Creation Structures

Connective Structures & Infrastructures	University role / contribution	Business role / contribution	Government contribution
<b>University Research Centers with Impact Mission</b>	<p>University research with international visibility attracts national and international funds and talent to the region.</p> <p>Provide researchers and facilities for applied research and prototype development</p>	<p>Companies and public external stakeholders adopt research in their development and cooperate to meet challenges together</p> <p>Funding and expertise for IP and commercialisation</p>	<p>Competitive funding to meet societal/ economic challenges</p> <p>Adapting regulations to meet challenges</p> <p>Co-Funding for Centers</p>
<b>Joint Labs or Industry Labs on Campus</b>	<p>Research expertise</p> <p>Global research partners</p> <p>Researchers (master students, PhD, postdocs)</p> <p>Tech transfer services</p>	<p>Funding for PhDs</p> <p>Funding for research infrastructures</p> <p>IP and prototyping services</p> <p>Venture capital for start-ups/ inventions</p>	<p>Infrastructure</p> <p>Building permit</p> <p>PPP regulations</p> <p>Special framework contract for PPP accounting</p>
<b>Joint Campuses, Science Parks</b>	<p>Openness to external partners, PPP, in research and education to create dynamic campus environments</p>	<p>Infrastructural Investments</p> <p>PPPs with long term perspective</p>	<p>Urban planning and zoning laws allowing mixed use</p> <p>Infrastructural investments</p> <p>Orchestrating use of EU structural funds</p> <p>Lobbying for European and national funds</p>

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



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



Quadruple Helix Cooperation in Regional Innovation Systems creates three-dimensional coherence and builds a common innovation culture

*Connective Leadership*  
*Connective Cultural Norms*

## Organisational Coherence

Common norms,  
values, narratives,  
social glue

Building trust

Collaborative  
disposition

Lasting  
connectivity  
through joint  
institutional  
structures,  
common agenda,  
joint decision-  
making and  
resource  
allocation

*Connective Strategies*  
*Connective Organisational Forms*

## Social Coherence

Provide collaborative co-creation spaces with  
flexible central urban architecture,

Maximising chance encounters, relevant events,  
services, technical facilities

## Spatial Coherence

*Connective Collaborative Spaces*

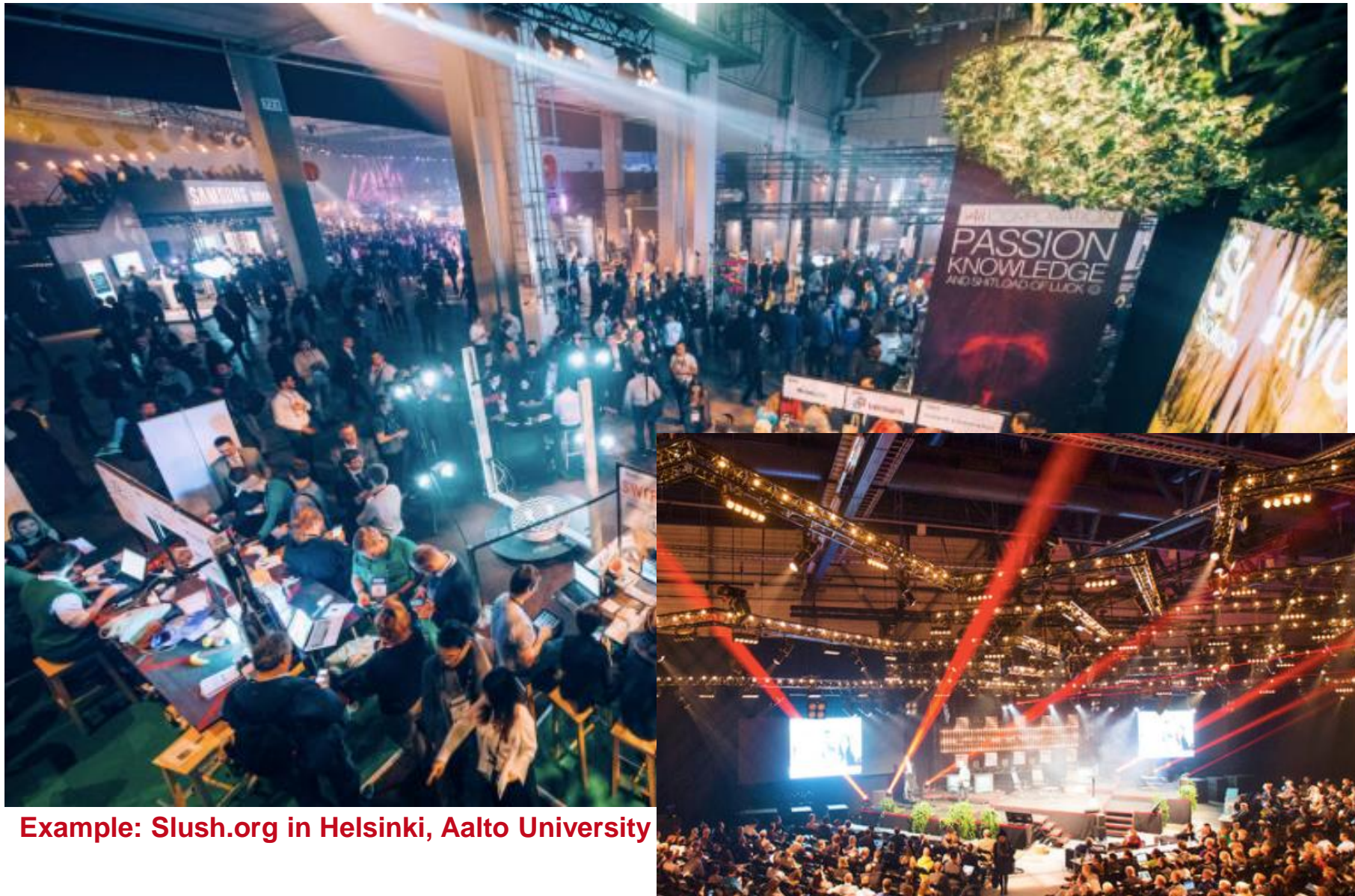
university's new centrality = orchestrating multi-actor innovation networks

# Regional Innovation “Ecosystems”

- Density of knowledge production – opportunities connected to geographic proximity, but such proximity is being used systematically
- **Interdependence of actors (& awareness thereof)**, actively looking for synergies, mutual reinforcement – “local buzz”
- Interlinked aligned set of leaders, alignment through cultural norms, history, common narratives, strategies, structures, infrastructures
- Quest for coherence or systematic approach to regional development (in smaller regions, or different sectors of larger regions)
- All dimensions of development addressed, with search for synergies
- Making use of each others’ facilities, networks and “global pipelines”, mutual access, through targeted events and collaboration
- **“Eco” = life, nutrition (external inflow of ideas, people, resources), adaptation to changing conditions, organic growth, open eco-systems: exchange of energy and matter with outside**

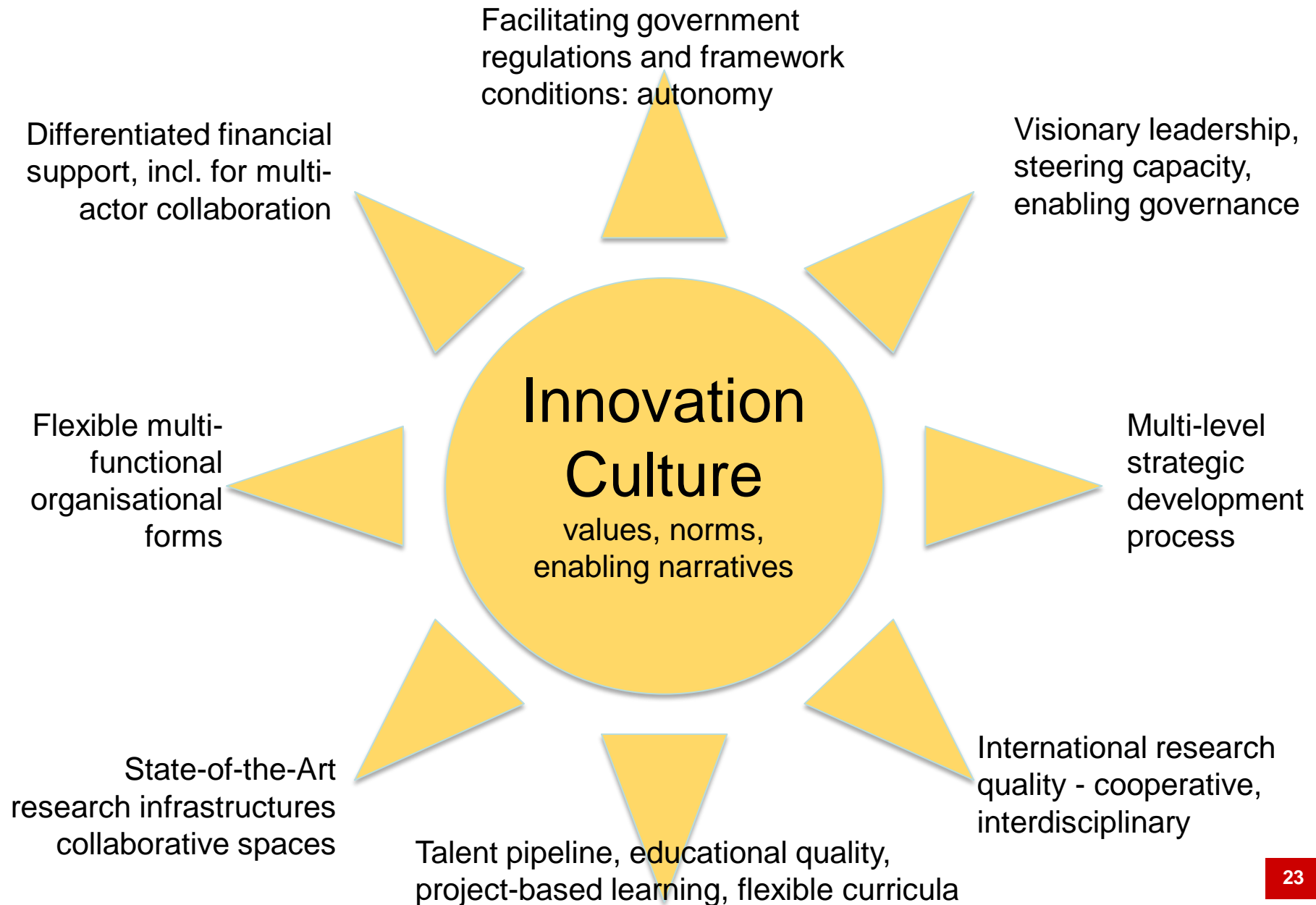


# V. Nurturing Innovation Cultures



Example: Slush.org in Helsinki, Aalto University

# V. Success Factors of Regional Innovation Dynamics



# The Role of Universities in Regional Innovation Ecosystems

Thank you for your attention!  
Questions are welcome...

*sybille@reichert-consulting.de*  
*www.reichert-consulting.de*

By Dr Sybille Reichert

March 2019