

The Role of Universities in Regional Innovation for Global Challenges

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ACA Conference

*The Engaged University. Linking the Global and
the Local.*

Bled, Slovenia, 17 October 2019

Overview

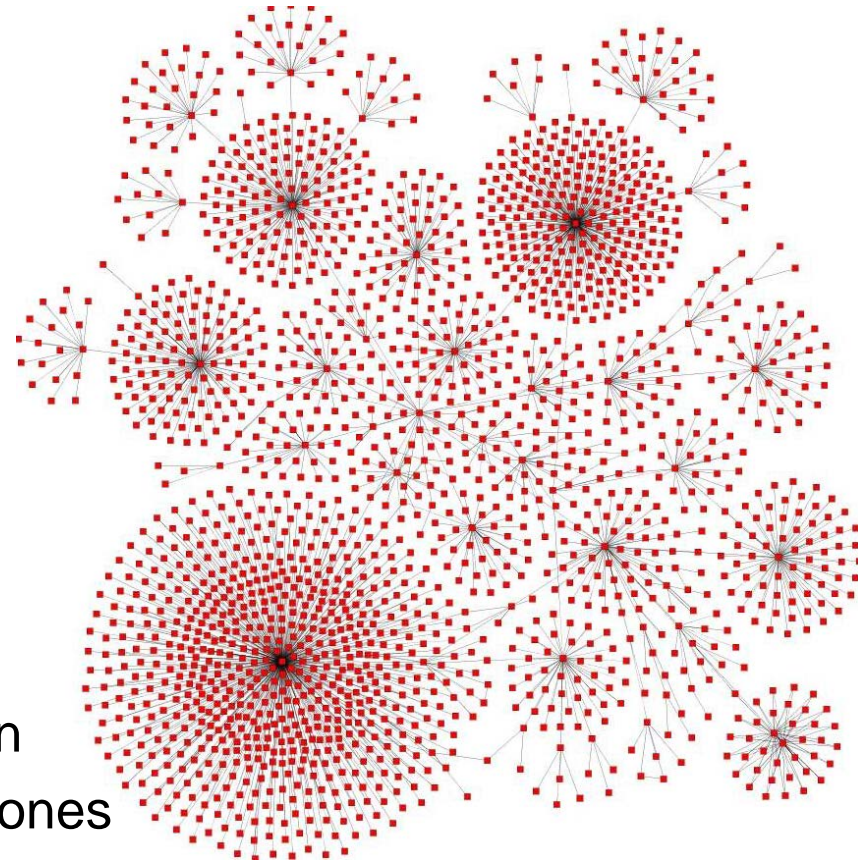
1. New approaches to innovation: the need for systemic solutions and game-changers
2. Emerging forms of co-creation: searching social, organisational, infrastructural coherence
3. The Global Dimension of Regional Innovation: why universities are ideally suited to go glocal

1. New Approaches to Innovation: Driving Forces

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**: search for impact and social presence in an increasingly disorienting and disembodied world

1. New Approaches to Innovation

- From linear to reiterative innovation
- From closed to open innovation
- From technological to systemic and challenge-driven
- From individual to collaborative interdisciplinary innovation
- From spontaneous to systematic
- From knowledge exchange between independent partners to co-creation in innovation spaces of interdependent ones
- From projects to innovation cultures
- From incremental change to disruptive transformation driven by game-changers



Educating Game-changers:

Aalto Design Factory

TU/e Challenge Projects

Manchester Univ. Stellify

TUM Entrepreneurship education/ StarTUM



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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

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Blog Tom Selten and Bas Verkaik

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WELCOME!

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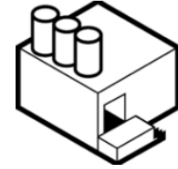
It's a place where students learn to deal with complex societal and industrial challenges, create prototypes and develop innovations in collaboration with researchers, businesses and each other.

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



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



STELLIFY

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.

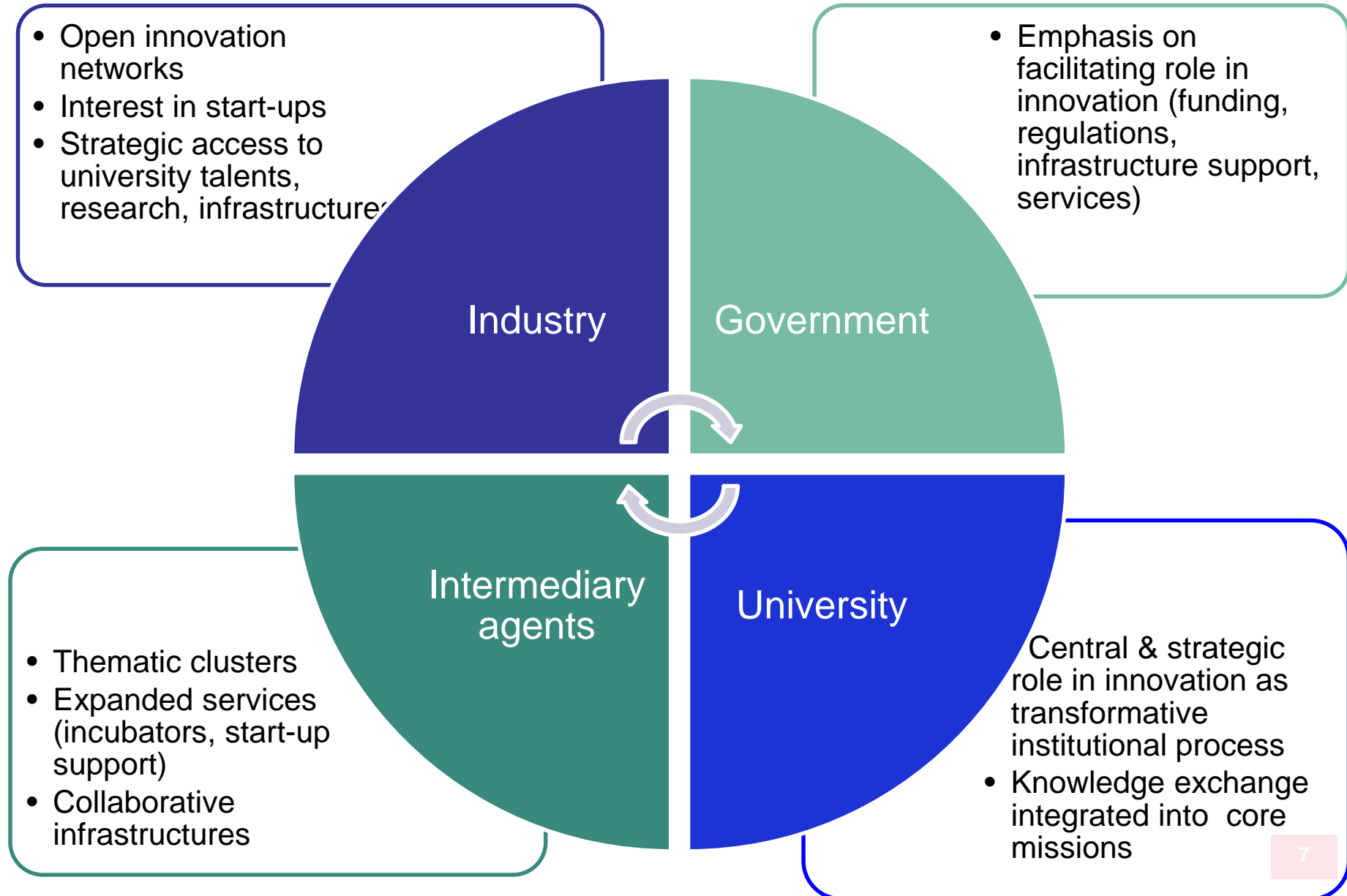
Start your Stellify journey.

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

2. Necessity of New Approaches: Combining Multiple Perspectives in “Triple-Helix” Co-creation



Triple Helix Co-Creation Structures

Connective Structures & Infrastructures	University role / contribution	Business role / contribution	Government contribution
University Research Centers with Impact Mission	<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>
Joint Labs or Industry Labs on Campus	<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>
Joint Campuses, Science Parks	<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>

Triple/ Quadruple Helix Co-Creation Network: Challenge-driven Innovation

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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



3. Global challenges need local solutions and benefit from regional proximity -

- Universities as global pipelines: access to new technology and research frontiers: International research = condition for long-term partnerships with corporations and other external stakeholders interested in addressing global developments and challenges –
- Universities as thematic moderators of research areas to address global challenges: innovation networks and clusters to develop and pool complementary expertise in joint grants, institutes, shared access to large research / tech infrastructures
- Universities as interdisciplinary incubators for systemic approaches
- Universities as talent pipeline: Demand for talent / internationally competent HE graduates with subject knowledge and transferable skills with university attracting talents from outside the region/abroad and educating students to face a global world (student mobility: Internships, international challenge projects, start-up ventures)

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

Connective Leadership
Connective Cultural Norms

Organisational Coherence

Building trust through
Common norms, values, narratives, social glue
Collaborative disposition

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

Connective Strategies
Connective Organisational Forms

Social Coherence

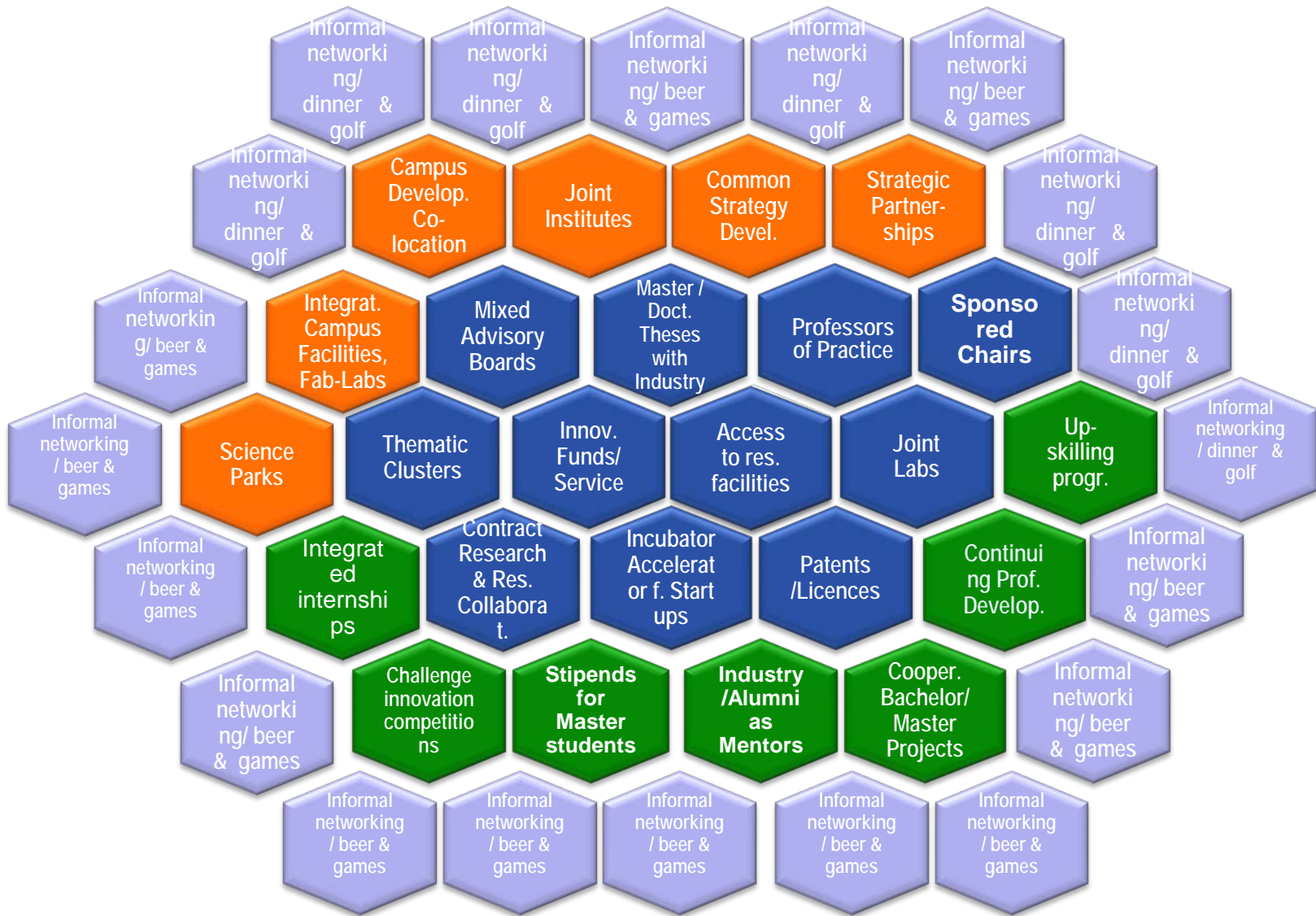
Provide collaborative co-creation spaces with flexible central urban architecture,
Maximising chance encounters, relevant events, services, technical facilities

Spatial Coherence

Connective Collaborative Spaces

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

Geography matters in a globally networked world: Regional density of university knowledge exchange



Strategic Business-University Collaboration

New needs and concerns related to universities' role in innovation

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

Institutional responses of universities

- 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

Necessary framework conditions

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:

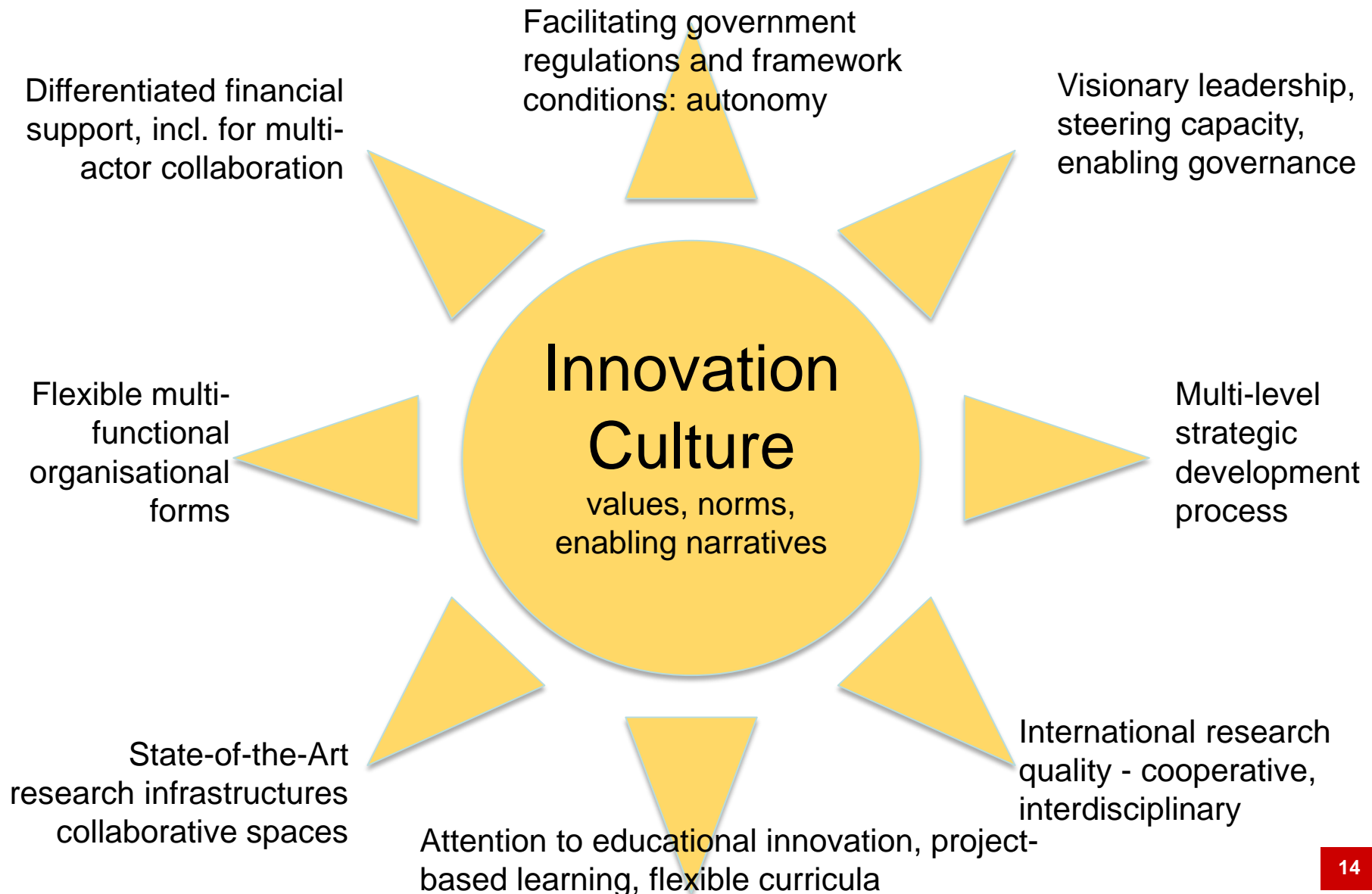
- Sharing expensive large state-of-the-art infrastructures
- Access to technical facilities and equipment with technical support staff

- 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

Universities are ideally suited as hinge between the global and the local – but only if...



The Role of Universities in Regional Innovation Ecosystems

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

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By Dr Sybille Reichert

March 2019

EUA Study on Regional Innovation Eco-Systems: 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 and key actors, cultural identities & narratives, strategy development process, funding frameworks, 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:
- Barcelona, Manchester, Munich, Helsinki/Espoo, Paris, Warsaw, Brno (South Moravia), Braga (Northern Portugal), Eindhoven
- More than 160 interviews (university leaders, researchers, students, big and small companies, govern. & intermediary agencies)

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

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**