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E-learning course 4

Strengthening the Regional Economic Development

Theme 3
Higher Education Institutions as Centers of Regional Development and Innovation

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Course structure

	Strengthening the regional economic development			
	Theme 1: EU, regional and national context: challenges, policy context, recommendations	**Theme 2:** Business environment	**Theme 3:** Higher Education Institutions as centres of regional development and innovation	**Theme 4:** RIS3/Smart specialization
Session 1	Analysis of the regional context, challenges	Policy context, incentives barriers	Regulatory frameworks, policy mechanisms, incentives, barriers	Definition of RIS3, policy context, potential
Session 2	National policy responses	Challenges	Regional role of Higher Education Institutes (Connecting Universities to Regional Growth)	HEIs leading role in regional development and innovation strategies e.g. for smart specialisation
Session 3	EUSDR strategic context	Policy recommendations: Increasing labour force participation, Increasing the quality of existing workforce, addressing skills mismatch etc.	Policy recommendations on institutional, national and EU level	Creation of innovation friendly business environment
Session 4	Contribution and vision of EDU-LAB: Facilitate interaction between actors	Best practices (based on output 3.1)	Best practices (based on output 3.1)	Best practices (based on output 3.1)

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Session 2

REGIONAL ROLE OF HIGHER EDUCATION INSTITUTES (CONNECTING UNIVERSITIES TO REGIONAL GROWTH)

RIS3 is about growth through innovation.

HEIs play a central role in the innovation ecosystem – from human capacity building through to generation of knowledge and innovation. Apart from basic research, typically researchers in HEIs produce innovation to the point of proof of concept, while researchers in ROs may produce innovation to the point of demonstration and/or prototype development. HEIs (and Ros) which have at least some pockets of excellence will influence in a positive manner the environment in which they operate, attracting and nurturing talent, including entrepreneurial talent. An average department or research group in an institution with a ‘brand name’ associated with excellence benefits from what can be called an “aura-effect”. Simultaneously, the same effect attracts businesses and entrepreneurial activity, all of which contribute to RIS3.

Based on their origin, we may identify three major types of innovation:

- Scientific innovation, based on knowledge generated by scientific and/or scholarly research.
- Empirical innovation, based on intuition and previous practical experience. Empirical approaches are usually very focused and specific but may have useful economic consequences.
- Social innovation, originating from social needs and experiences (e.g. working conditions, immigration, distance learning, community development and health). Social innovation can generate indirect economic benefits by countering the costs associated with acute and/or chronic societal problems.

Although HEIs may address the full spectrum of innovation types, their main contribution is in scientific innovation. In this context we may distinguish three types of scientific innovation:

- Innovation produced as a result of demand driven research, which is primarily transactional and covers current needs of society, companies, and markets (e.g. methodologies for improving existing manufacturing processes). This is commonly understood as market-based innovation and, being readily identifiable, usually attracts the bulk of attention. Ample mechanisms exist in promoting the role of HEIs and ROs in this type of innovation.

Although HEIs may address the full spectrum of innovation types, their main contribution is in scientific innovation. In this context we may distinguish three types of scientific innovation – cont.:

- Supply-side innovation, including that resulting from curiosity-driven research, basic (blue sky) or applied. This has a potential transformational character that may define and/or address needs and delineate future markets for products and services. The potential economic impact of this type of innovation may not be immediately obvious. Recent history, however, shows that exploitation of this innovation creates the ‘protagonists’ of tomorrow. For example, the origins of the Internet lie in supply-side innovation developed at CERN in the interests of particle physics research.

Although HEIs may address the full spectrum of innovation types, their main contribution is in scientific innovation. In this context we may distinguish three types of scientific innovation – cont.:

- Innovation resulting from policy-led research (regional, state, EC) aiming to resolve major societal challenges (e.g. demographic problems, climate change) or to meet specific goals (e.g. innovative spin-offs from space programmes).

The innovation chain comprises a dynamic linking between basic and applied research. Examples include advances in quantum physics, electromagnetism and nuclear physics that had pronounced economic impact in microelectronics, telecommunications, and the nuclear power sector. More specifically, concepts of quantum physics developed early in the last century, of no direct use at that time, led to the creation of lasers and the thriving field of photonics (displays, solid state lighting, sensors) which have multiple applications of high market value nowadays (e.g. mobile phone technologies). Along these lines, the Key Enabling Technologies (KETs) (nanotechnology, photonics, biotechnology, advanced materials and manufacturing processes) as well as ICT, play prime roles in contemporary scientific innovation.

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Industry-led initiatives for **Open Innovation**, leading to open and interoperable solutions that exploit ICTs and drive value creation across all sectors are supported by the EC. Open Innovation is defined as “the use of internal and other companies' ideas to develop new businesses”. ICTs catalyse changes in the innovation chain by facilitating early involvement of end-users and Open Innovation.
Five key elements in the Open Innovation process could be observed, namely: **networking**; **collaboration** among all stakeholders; **corporate entrepreneurship** (e.g. through start-ups and spin-offs); proactive **Intellectual Property Management** and creating markets for technology; and **R&D** as a means to achieve competitive advantage. HEIs which are deeply involved in this process can better serve the regional and national development through RIS3 design and implementation.

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Open Innovation accelerates the exchange of knowledge and technology transfer not only between HEIs, ROs and companies, but also among the regions. For instance, the ultimate goal of the inter-regional cooperation programme EURIS was to help regions to embrace Open Innovation, to provide specific regional recommendations for the improvement of RIS3 and to draw general policy recommendations dedicated to regional, national and EU policy makers.

Open Innovation is a core concept embedded in a number of current innovation infrastructures, such as: **Living Labs, Smart Cities, Clusters, Technology/Science Parks.** As an example, Living Labs provide an open innovation infrastructure embracing all innovation stakeholders (end-users, companies, HEIs, ROs, community, developers, local and regional authorities) that are involved in the whole innovation chain for development of innovative products and services. Within the new networked economy, communities and local innovation infrastructures are supposed to play a substantial role.

HEIs and ROs enable advanced knowledge creation and dissemination through their scientific interactions and networking activities. The exploitation of newly created and often advanced knowledge enhances the probability of innovation and may have strong economic impact at its intersection with selected growth axes (e.g. agrofood, tourism and culture, energy, etc.) of regional economies. Furthermore, this knowledge may itself produce new axes for regional development. This is part of the design of the “entrepreneurial discovery process” for RIS3 as well as its successful implementation.

In conclusion, the transformational impact of RIS3 on regional economies relies to a large extent on the central role of HEIs, supported by ICTs, in the full range of the innovation chain.

Existing EU initiatives for R&I capacity building offer significant bridgeheads for HEIs and ROs in RIS3 as well as synergies between cohesion and research funding. Notable among these are (European) Research Infrastructures (RIs) and RPFs, which can be hotspots facilitating the formation of regional hubs where good science, technology, talent and entrepreneurship may cluster and have a significant socio-economic regional impact, thus promoting the goals of RIS3 as well as linking regional and European R&I resources. Those HEIs or ROs which form the nuclei of RIs therefore have key roles in RIS3. Other capacity building initiatives which may provide bridgeheads for HEIs and ROs in RIS3 are the Research Potential (REGPOT) and Regions of Knowledge programmes under FP7, which dovetail with new initiatives under Horizon 2020 aimed at upgrading existing or creating new high quality research institutions in low performing RDI Member States and regions: ERA Chairs, Teaming and Twinning. A critical element for successful synergy between the above initiatives with RIS3 is the impact of recent developments in ICTs and the emerging digital research and innovation environment. HEIs and ROs are well placed to act as enablers in utilising ICT tools and the associated transformational potential of knowledge and information flows from and to the region.

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… Investment in people development within the university and its regional partners will be critical, as the kinds of skills needed to undertake these transformational programmes are often in short supply, especially in less favoured regions. Leadership and boundary spanning skills are essential, as well as capacity to critically assess progress (both internally through self evaluation and externally through expert peer review processes)…

Why universities are important for regional development?

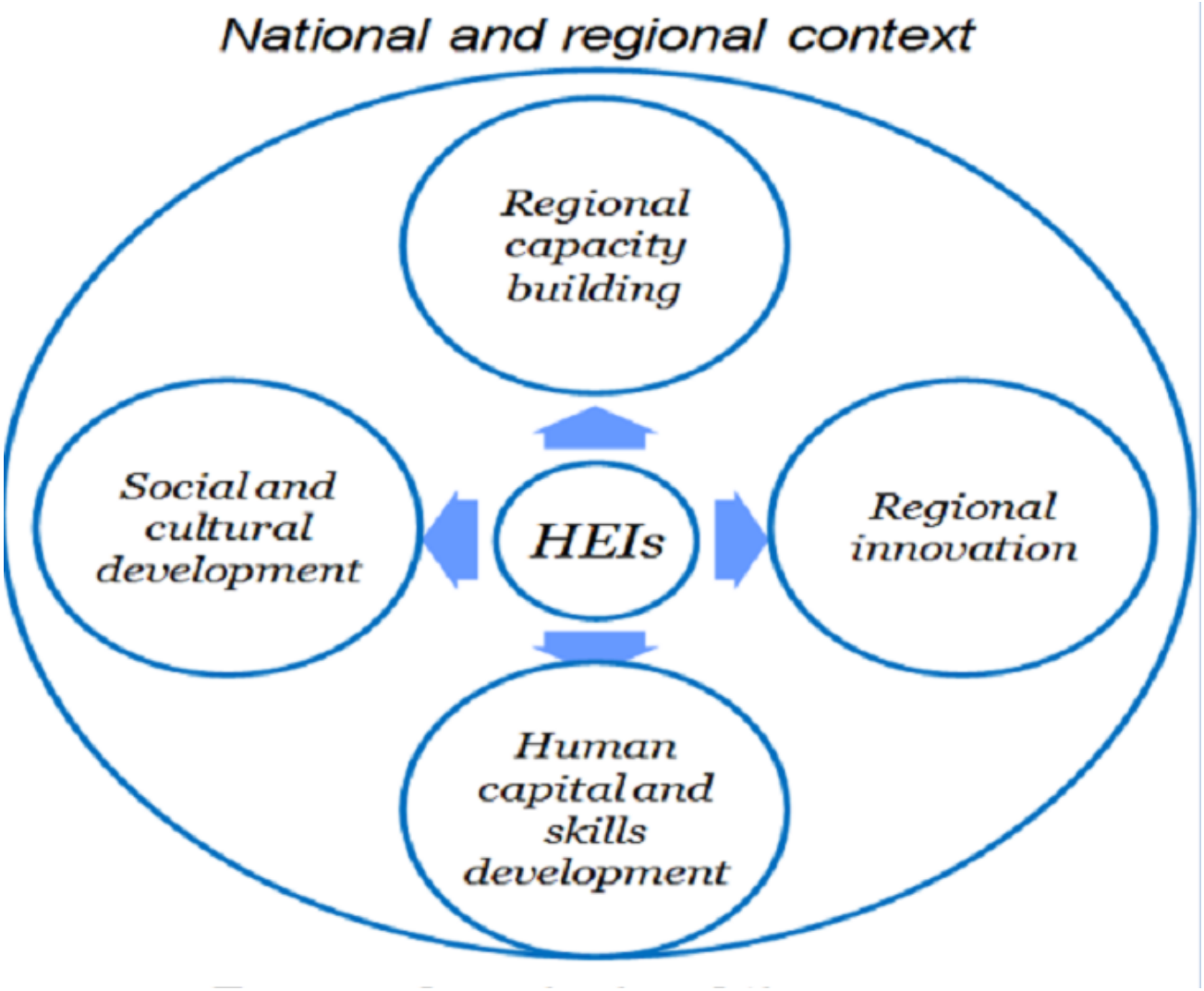
At the most basic level, universities can be anchor institutions in local economies as major employers across a wide range of occupations, purchasers of local goods and services, and contributors to cultural life and the built environment of towns and cities.

Regional investment in the infrastructure of a university to support its core business of research and teaching can therefore have a significant passive regional multiplier effect even if the university is not actively supporting regional development.

What of the more active contributions that universities can make?

This can be broken down into four areas:

1. Business innovation which is closely linked, although not exclusively, to the research function of the university;
2. Human capital development linked to the teaching function;
3. Community development linked to the public service role of universities;
4. The contribution of the university to the institutional capacity of the region through engagement of its management and members in local civil society.


National and regional context
Regional capacity building
Social and cultural development
HEIs
Regional innovation
Human capital and skills development

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Main sources (pdf available):

1. Guide to Research and Innovation Strategies for Smart Specialisation (RIS 3) May 2012
2. The role of Universities and Research Organisations as drivers for Smart Specialisation at regional level, EUROPEAN COMMISSION, Directorate-General for Research and Innovation, Directorate B — Innovation Union and European Research Area, Unit B5 – Spreading Excellence and Widening Participation, Brussels, 23 January 2014
3. The role of universities in Smart Specialisation Strategies, European University Association asbl · Avenue de l'Yser 24 · 1040 Brussels, Belgium, EUA Publications 2014

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Thank you for your attention!