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Higher Education Institutions (HEIs) have an enormous potential to better contribute to their cities, regions, and nations through *calling upon the society, government and businesses to work together*. This can be done through developing future talent to power out economies, supporting employees’ career development and lifelong learning, offering important discoveries to the local community, or fuelling the societal and entrepreneurial development of a region to name a few. As the Higher Education Institutions can be seen as the key ‘knowledge creators’, *there is a need to further integrate engagement with external partners* in the research and educational missions of universities. Right now, the efforts are often scattered across technology transfer and external engagement offices.

To support the HEIs in further realising this potential, we need a deeper understanding of the *means and factors that enable engagement with SMEs*. The measurement methods that are in being used now focus mostly on quantitative outcomes, while ignoring other forms of engagement and mechanisms that need to be in place.

The Engagement Readiness Monitor project goal is to increase universities’ readiness to engage with business and ultimately provide them with the means to become “engagement ready” and “engaged” universities. To achieve this goal, we aim to develop tangible and open-access tools and materials.

In this first biannual issue of the Engagement Readiness Project E-zine, we will give you a dive into engagement readiness, and introduce you to our project and partners. Enjoy your reading!
Project Results

Engagement Readiness Investigation Report

The report will provide HEIs across Europe with a comprehensive understanding of the university readiness to engage with business. It will present the insights from benchmarking and serve as the basis and initial cornerstone for the creation of the self-assessment framework and the toolkit.

Engagement Readiness Self-Assessment Framework

His framework will provide an overview of the validated and weighted scales to measure university engagement readiness and their ability to cooperate with business. This will serve as the basis for the online self-assessment tool.

Engagement Readiness Toolkit

The toolkit will support HEIs to increase their engagement readiness and effectively help them become more engagement ready. The toolkit will consist of different engagement tools and models, and a roadmap outlining concrete steps to become engagement ready supported by bite-sized case studies. One of the core tools as part of this toolkit will be the self-assessment online tool that will be converted into an online survey from the self-assessment framework.
Dive into Engagement Readiness
The university is not an institution that could live alone in society, separated from the other actors. Universities generate impact, and at the same time are influenced by the public and private sectors, at both local level and national-international one. The awareness about this mutual relationship has been growing over the last decades. Nowadays, universities recognise that they have a third mission, other than education and research: “the generation, use, application and exploitation of knowledge with external stakeholders and society in general” (Secundo et al., 2017). The promotion, management and strengthening of cooperation between universities and businesses is a crucial part of this mission.

The Engagement Readiness Monitor project aims to increase universities’ readiness to engage with businesses. For this reason, a deep understanding of how business and university cooperate is needed. The first part of the project’s desktop review focuses on Why and How cooperation occurs.

The Why describes the motivation drivers that encourage universities and businesses to collaborate, which benefits they earn in the short and long term. Businesses become more competitive, improving their production activities and quality, but also improving their knowledge absorptive capabilities. Universities can apply their theoretical knowledge to real-world cases, improving their skills, and acquiring more resources (funding, but also data and equipment).

Furthermore, the collaboration creates a contaminated environment in which new ideas, new knowledge and new research questions arise.
The How describes the forms in which collaboration occurs, exploring channels and mechanisms. University-business cooperation occurs through a continuous interaction in which both actors learn from each other, sharing already existing knowledge and obtaining new one. The interaction can be direct or indirect, formal or informal, institutionally or individually driven. It can occur through bi-directional channels (such as joint R&D projects), commercial channels (such as patents and incubators), service channels (such as consultancy and training staff) or traditional channels (such as conferences and publications). Cooperation occurs in three possible forms: educational collaboration, university entrepreneurship, and research related collaboration. For each of them, universities and businesses need mechanisms that enhance trust and boundary spanning. Otherwise, their differences in purposes and management cannot be bypassed.

Many possible barriers can hinder university-business collaboration, affecting both the Why and the How. A really common motivation related barrier is the lack of incentives from the university’s side: collaboration does not help academics in career advancement. There are many misalignment barriers due to the cognitive and cultural distance between university and business: they have different goals, expectations, time management and priorities. Sometimes, it does not even exist a network between local actors and researchers, or there is a lack of acknowledgement about the value generated by university-business collaboration (contextual barriers).

Governance related barriers are important too: they can delay decision making, generate communication problems, or do not support enough the third mission itself. Even when all the above-mentioned barriers are removed, collaboration could be obstructed by the lack of funds, time or skills (capability related barriers).

To bypass these barriers, universities, businesses and state governments have to actively mitigate the cognitive gap and reduce the social and geographical distance, promoting an entrepreneurial culture to foster engagement, improving the bureaucracy flexibility and providing incentives and resources. Crucial actors that can facilitate this process are Knowledge Transfer Offices (KTOs), university incubators or accelerators, Collaborative Research Centres and Hybrid Autonomous Organisations.

**Authors:** Silvia Poli, Elisa Villani, Rosa Grimaldi

**Reference:**
Technology Readiness Measuring Tools and Their Potential for Measuring Engagement Readiness

Technology readiness in literature is discussed from two different standpoints.

Firstly, it could mean the readiness of individuals to adopt new, cutting-edge technology in their work or other everyday life activity. The Technology Readiness Index, developed by Parasuraman and Colby, is a psychometric scale often used in marketing. It is a licence tool that could be used as such or with slight adaptation.

Technology readiness may also refer to the widely used Technology Readiness Level scale, which measures the maturity of a technology or a product. It was first developed by NASA and later introduced to different DoD organizations. In recent years it has been used as an innovation policy tool by the European Commission, especially in the Horizon 2020 program, but not without criticism. Although there has been an effort to adapt the TRLs to use in different areas of innovation and research, its benefits are most pronounced in the space and weapon industry and when it comes to the development of a single technology.

Technology readiness index

Technology readiness refers to the predisposition of people to embrace and use new technology in their everyday life, both in regard to work and free time. It is constructed by mental enablers and inhibitors, which determine a person’s tendency to use new technologies (Parasuraman 2000). Technology readiness has four independent dimensions: optimism, innovativeness, discomfort, and insecurity, from which the first two are enablers and the last two are inhibitors of readiness. Thus, an individual may simultaneously possess contradictory beliefs. (Parasuraman & Colby 2001) However, technology readiness is a rather stable characteristic for an individual and it does not change easily affected by a stimulus (The Technology Readiness Index Primer 2021).

The TRI 2.0 scale used today contains 16 attributes (Parasuraman & Colby 2015). It addresses the pace of technological change with its advances such as high-speed Internet access, mobile commerce, social media, and cloud computing, as well as contemporary themes such as distraction or becoming socially disconnected, which affect the adoption of cutting-edge technology. This technology revolution affects the behaviour and decisions of managers, customers, and employees. (Parasuraman & Colby 2015). The index measures technology readiness overall, as well as its four dimensions separately, and in addition it provides a segmentation classification. The segmentation typology describes different combinations of beliefs and is extremely relevant for the marketing of cutting-edge technology products and services (The Technology Readiness Index Primer 2021).
Technology readiness level

Technology readiness level is a concept of measuring the maturity of a technology in its acquisition phase. It was first developed by the American National Aeronautics and Space Administration (NASA) in the 1970’s and applied to various military organizations around the world. Later it was adopted by the European Space Agency (ESA) and eventually it found its way to the European Union (EU) as an innovation policy tool. In its transition from one organization to another and into different fields, it was remodelled, and in some cases lost some of its crucial features or was underdeveloped to fit particular context (out of the original space technology context) (Heder 2017).

It terms of historical development stages it is important to notice that the purpose of TRL scale remains relatively unchanged before its transition to Europe. Until then its development and evolution follow a consistent path. The adoption of the concept outside of the space context and as an innovation policy tool has been widely criticized and in many cases is related to more risks than benefits (Heder 2017). It is also important to mention NASA’s and DoD’s strategy for successful handoff of technologies from a lower TRL to a higher one utilizing an overlapping of responsibilities between the different actors on the critical TR levels of development.

The history and use of TRL scale indicate that the more physical the nature of an industry is, the better TRL concept fits to it. In contrary, industries with more abstract, virtual or dynamic technologies benefit less from the use of TRLs. A weakness of TRL is the difficulty of measuring the overall readiness of products, consisting of different components. On the other hand, the undisputed strength of the TRL scale lays in its way of facilitating communication between different and even multicultural actors (Heder 2017).

An EARTO report (2014) discusses the need for more complex innovation process than the linear one used in TRL

“Technology readiness has four independent dimensions: optimism, innovativeness, discomfort, and insecurity”
scale, where there is lack of attention towards setbacks in technology maturity, and the process of technology development progresses from basic research to applied development, engineering and manufacturing. As a contrast, the Chain Linked Model of innovation is suggested, which contains complex feedback loops between the stages (Kline 1985). The feedback leads to further research on higher TR levels, which is needed because an increase in maturity requires additional research.

It has to be noted that in literature there is yet no review of the use of TRLs in Horizon 2020, which has recently ended. However, there is some information, that TRL scale will be used again in the starting Horizon Europe program as an indicator for positioning of the projects (Enspire.Science 2021).

Implications for the Measuring of Engagement Readiness

Although neither of the reviewed scales fits the Engagement Readiness concept perfectly, some of their characteristics may be useful for the planning of the Engagement Readiness Self-Assessment Tool:

- By measuring the Engagement Readiness, most or all the relevant factors have no physical dimension, and TRL scale’s benefits in this case would remain rather small.
- The linear development model of TRL should be complemented by the feedback loop idea, introduced by EARTO.
- The overlapping of responsibility of different actors across the levels is very important for the communication of results and setting up targets.
- A nine-level scale (such as TRL) may be too granular for measuring the Engagement Readiness of HEIs.
- A “Valley of Death” could be defined in the context of Engagement Readiness, recognizing the most vulnerable stages in developing of the readiness, and coming up with good practices and examples for overcoming it.
- The issue of the cost of achieving a readiness level is relevant in the case of Engagement Readiness and should be further investigated (which levels are the most cost-consuming).

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Rositsa Röntynen works as a project manager, tourism and R&D specialist at Jyväskylä University of Applied Sciences, Finland.
References


Voices from experts: Jan Axelsson

In conversation with Engagement Readiness Monitor partners, Jan Axelsson offered his insights on “engagement readiness” and contributed his valuable knowledge on the topic.

Jan Axelsson is the Director of Collaboration at Linköping University and has worked in numerous roles and in different organizational forms, both within and outside of the university. Jan has worked to strengthen the processes of collaboration, innovation and utilization within the university and the region of Östergötland. One of the activities that Jan has been involved in include his work to increase the professionalism of these processes. Jan is motivated by his drive and passion for the value-building interaction between academia and society. Jan has built up a comprehensive network of contacts and his research has been carried out largely in the business sector. He has continually applied newfound knowledge through his work in consultancy.

What makes a university ready to engage?

A university that is ready to engage has a culture open to engaging, especially with the challenges faced by society. Linköping University conducts its activities under three pillars: research, education and valorization. The university has had a culture of co-operation for some time and, as a relatively new institution, has been engaged with the actors surrounding it from early on. Furthermore, the university is focusing more on impact that is created by engagement in both the short and long term, and not only in a narrow, financial sense. Government policies in Sweden stating that universities should engage in research and education for the benefit of society, also ensured the university fosters a culture of engagement.

In general, to increase readiness for engagement, a university should have relationships with the surrounding society, be that industry or other stakeholders, and should be willing to enter into dialogue with societal stakeholders. To be ready to engage, the university should also understand the societal challenges that need to be dealt with. Furthermore, only once a university can collaborate internally, is it possible for a university to collaborate externally. Thus, the university needs to have the ability to internally co-ordinate research and education and create interdisciplinary research. This is especially important because challenges facing society are not of a single discipline, and thus universities also require research centres and education that can focus on these different disciplines.
What makes an academic ready to engage?

A researcher must want to find causes to collaborate. An academic ready to collaborate will have an open mind towards engagement, in terms of cooperation, co-learning, and co-creation. The internal systems of academic merit and research funding in collaboration are both a large motivation to collaborate. At Linköping University, engagement is counted within its internal system of merit and academics, where researchers or teachers are evaluated on three points: research, education and the impact of their collaboration/co-creation. Thus, there are incentives for engagement, in terms of career progression and financial benefit. Besides this merit system, engagement has a clear connection to successful funding. 60% of Linköping University’s research funding is from external, co-creational research projects. Linköping University also fosters a mentality among researchers and their communities, that encourages working and learning together, as well as creating with others to bring knowledge forward.

How to monitor engagement activities?

Linköping University uses a simple system which measures key performance indicators (KPIs) on an institutional level. There are three overall KPIs that measure engagement, and additional impact case studies are reviewed by national agencies that analyze the impact of engagement activities. The three KPIs are as follows:

1. Ability to attract external funding – this is the overall measure of the activity.

2. Mobility between academia and social stakeholders - for example how many external stakeholders are employed at Linköping University and how many academic staff are employed externally.

3. Ability of students to find employment after their studies – this indicates how relevant the education at Linköping University is to society and industry.

In terms of using case studies the different departments, education programs and research environments are required to provide impact case studies on a regular basis. Thus, engagement and outputs are measured from these cases as well. Case studies allow for a more qualitative analysis of the engagement activities compared to the more quantitative nature of the KPIs. A number of impact case studies have been published on university’s website.

A final word on readiness

From the information presented, it is clear that having a culture conducive to engagement is an important precursor for engagement success for universities.
Furthermore, incentivizing academic staff through university merit systems that include engagement in their assessments for career progression can further demonstrate the value that engagement activities hold at the institution. In terms of monitoring and evaluation, the use of case studies of impact and KPIs in conjunction allow for a broad range of measurement and are valuable in determining the extent of engagement with businesses and other societal actors.
Meet our Consortium
UIIN: advancing the future of university-industry engagement

UIIN is an international leader on university-industry engagement, entrepreneurial & engaged universities and knowledge transfer. We are dedicated to advancing the future of higher education institutions and supporting our global community of university-industry professionals. We conduct research, organise events and provide training and consultancy services to our community of 80+ organisational and 500+ individual members.

Founded in 2012, UIIN responded to a developing need within university-industry interaction moving away from the linear process of technology transfer and a shift towards a more holistic and strategic approach by all stakeholders involved. Our mission is to enable and enhance university and industry engagement across education and research, through providing insights from research and practice, upskilling and supporting individuals and institutions, and creating a global community for sharing best-practice.

With our consulting offerings, professional training and events, we actively convert research into practice and support universities, business and government in developing stronger...
and more strategic relationships, more future-oriented institutions and ultimately building a knowledge society for a better tomorrow. We have a proven experience of successfully leading international events, undertaking the implementation of European research projects and developing strategic partnerships with relevant stakeholders. We have a track record in leading and participating in research-heavy international projects, focussing on university-business collaboration (see Spanning Boundaries and The State of UBC in Europe).

We are delighted to be leading the Engagement Readiness Monitor project. We aim to scale the work of this project onto a European level and allow for dissemination and exploitation of the project outputs across universities in Europe and beyond. We will lead the development and delivery of IO2 Engagement Readiness Self-Assessment Framework, and will be highly engaged in the delivery of the other two intellectual outputs. We are an experienced partner in developing assessment and we will use our expertise to develop scales and a framework to measure the engagement readiness of higher education institutions (HEIs). Furthermore, we will support the development of the Engagement Readiness Self-Assessment Framework that will ultimately allow HEIs to fulfil their potential, and make more meaningful contributions to their cities, regions and nations by becoming ‘engaged’ universities.

The Engagement Readiness Monitor project will contribute to our further strategic initiatives to drive university-business collaboration. As we are working on this project, we will also kick off our three new pilot programs for cohorts of universities in the first half of 2021. These pilot programs will support the participating universities in accelerating their partnerships, entrepreneurship and impact, with an ultimate aim to help them become engaged and entrepreneurial institutions.

Author: Fleur Schellekens
CU: University-Business cooperation

Charles University – CU is the biggest university in the Czech Republic and is a leading academic institution in the Central European region. Being a renowned academic HEI, we also contribute to the solution of urgent social problems and supports the practical application of the outcomes of its research and links to industrial as well as public domain partners thanks to the Centre of Knowledge and Technology Transfer – CPPT. CPPT’s goal is to increase competitiveness and attractiveness of CU to students, staff, and the public, to expand the range of field of cooperation between R&D and the application sphere, and to strengthen CU’s third role. It supports the commercialization of products and services originating in the faculties and other organizational units of CU and it cooperates with science and innovation-oriented SMEs, global companies as well as public sector and NGOs.

Founded in 1348, CU is one of the oldest universities in the world. Yet it is also renowned as a modern, dynamic,
cosmopolitan and prestigious institution of higher education. It is the largest and most renowned Czech university and is also the best-rated Czech university according to international rankings. There are currently 17 faculties at the University (14 in Prague, 2 in Hradec Králové and 1 in Plzeň), plus 3 institutes, 6 other centres of teaching, research, development and other creative activities, a centre providing information services, 5 facilities serving the whole University, and the Rectorate - which is the executive management body for the whole University. Our mission is to enhance our prestigious status as a research university. To achieve this aim, CU focuses strongly on research activities. CU can also boast several outstanding research teams which are involved in close collaboration with international research institutions.

We are delighted to be a partner for the Engagement Readiness Monitor project. CPPT staff will be involved in the project by bringing extensive UBC and knowledge transfer expertise and experience into the development of all IOs. We aim to support the consortium to better understand universities’ engagement with business and their readiness to cooperate in various engagement activities and to measure the readiness of universities to cooperate with businesses.

Author: Serena Mancini
IMTBS: Supporting the engagement of universities with business and government

Institut Mines-Télécom Business School (IMTBS) is one of 13 graduate schools in the Institut Mines- Télécom, one of France’s major educational and research establishments. In addition to IMTBS, the Institute groups many of the country’s key engineering schools and plays a central role in developing both ground-breaking and applied research, innovation and education for engineers, managers, specialists and faculty. The schools of the Institute are acknowledged for their excellence at both national and international levels. Institut Mines-Telecom is a both a major actor in the French research landscape and in European research programmes, accounting for 192 research contracts in FP7, for example. The Institute combines strong academic legitimacy, close corporate relations and a unique focus on four key transformative fields of the 21st century: Digital Technologies, Energy, Ecology and Production.

Developed within the tradition of French Grandes Écoles, IMTBS is an educational establishment internationally renowned in its field with very close engagement with business and government. In addition to
undergraduate and graduate programmes, the school offers over 100 executive programmes annually, and its governing body includes executives from global firms such as Vivendi, BNP, Google, Airbus Group, and Orange. IMTBS students are required to spend at least six months of their educational period on in-company work placements, and the school actively develops research projects with corporate partners and works closely with local networks of SMEs.

Supporting the engagement of universities with business and government in Europe is a key goal for the IMTBS team working on the Engagement Readiness Monitor project, and we are happy to be working with a cohort of distinguished partners towards this goal. Due to IMTBS’ research excellence and close links with local and transnational business, as well as the project team’s extensive experience and expertise in leading highly engaged and collaborative projects on university-business cooperation, IMTBS is leading Intellectual Output 1 (IO1) of the Engagement Readiness Monitor project. IO1 includes designing the methodology and tools for data collection, and ultimately culminates in a synthesis report. This report will provide a foundation upon which a novel framework will be developed to aid universities in assessing their engagement readiness.

Author: Monica Collins
JAMK University of Applied Sciences: forerunner in sustainable entrepreneurship

JAMK University of Applied Sciences is a next generation university that lies on experimentation, innovation, collaboration and proactive mindset. JAMK consists of 8500 students from over 70 countries, and 700 staff members in four campuses around Jyväskylä Region surrounded by thousands of lakes and immense forests in Central Finland. JAMK turns “expertise into competitiveness”, which effectively means active engagement and cooperation of the university with external regional actors including local municipalities and companies in the region (especially SMEs).

“We are in EduFutura co-operation with key education institutes of the era. We are also equal co-owner of the Start-up Factory together with Jyväskylä Municipality and other key education institutes. The service concept is the one-and-only in Finland.”

JAMK has received both national and international recognition for its high quality. JAMK is the third popular University of Applied Sciences in Finland. Team Academy is the best-known brand and the concept of entrepreneurial pedagogy in JAMK.
“We develop online pedagogy and support lifelong learning, and we create human networks in several business ecosystems including cyber security, bioeconomy and e.g. responsible tourism.”

Therefore, we are also committed to be a partner in the Engagement Readiness Monitor project. We will lead the development and delivery of IO3. It is about creating together the data for the toolkit that will “consist of the different engagement tools and models that can be applied in UBC, and a roadmap outlining concrete steps to become engagement ready with case studies.” The most important contribution of our University in lead will be the Online Tool for the frame of Engagement Readiness Self-Assessment.

The Engagement Readiness Monitor project is important for us due to several reasons. Similarly to this project, we encourage our staff co-creating concrete acts in entrepreneurship and use industry relations at work. We support the students in their path towards sustainability and entrepreneurship. How ready we are in our actions? We are looking forward to proceed the project to apply the new self-assessment. We also want to share our competence and experiences to other European HEI’s use. Currently we are in a process of European Universities Initiative (EUI) cooperating in the topics of sustainable entrepreneurship and innovations. All these activities works well together as our targets of the new decade. “JAMK wants to be the best university of applied sciences in Finland, with a strong track record in quality of education, internationalisation and the promotion of entrepreneurship.”

Author: Minna Tunkkari-Eskelinen
University of Bologna: dedicated to entrepreneurship and UBC

The Alma Mater Studiorum, University of Bologna, founded in 1088, is the oldest university in Western Europe. Nowadays, we still remain one of the most important higher education institutions across Europe and a leading research institution, well known for academic engagement, third mission, and university-industry collaboration.

The University, with regard to this project, ranks among the first in Italy in terms of academic engagement and knowledge transfer, since the establishment in the late 1990s of a dedicated office, the Knowledge Transfer Office (KTO). The University widened its span of activities since 2015, thanks to the push of a new Rector and his appointment of a Deputy Rector dedicated to entrepreneurship and relations with companies, and the creation of new organization units, one dedicated to new venture creation and the other to university-industry collaboration. In particular, the following actions are addressed: university-industry collaboration and promoting technology transfer and knowledge via a portfolio of activities in collaboration with industries (including research, traditional education, corporate education, placement, corporate social responsibility and entrepreneurship).
Furthermore, the University is part of the rich research and innovation system of the Emilia-Romagna Region, including six universities, together with branches of the major national research institutes (CNR, ENEA and INFN). Taken together they represent the public contribution to the Regional high-tech research and innovation network, developed during the last twenty years through different Regional policies and with the direct participation of all universities and research institutions, together with several private stakeholders.

The University of Bologna is committed to the values of sustainability, in terms of enhancing and safeguarding the territory, improving community wellbeing, promoting a knowledge-based development economy, social equity, and the ability of those involved to work effectively together for the common good. Faithful to its mission, and thanks to a history that has consolidated over time, the Alma Mater Studiorum is fully aware that its activities can produce significant impact, both direct and indirect, on the community and on the region. Therefore, it continues to invest in the quality of training and research, related to the needs of society, as well as in a valuable organizational, institutional and multicampus structure, allowing its members to operate over a vast territory.

The participation at the Engagement Readiness Monitor project is part of these efforts to pursue sustainability and collaboration between the university and territory. Indeed, we believe that to be effective with industry engagement, it is essential to create institutional conditions, a framework providing (on the one hand) directions to individuals willing to be involved and (on the other hand) maximising interrelations across several activities and man-aging them in a central, coordinated way.

We aim to better understand how we are positioned vis-à-vis other leading institutions in Europe. We believe these metrics could be very important for a proper assessment of universities’ ability to attract additional funding, both from the private context and from the public government (part of the public funding, at least in Italy, will be based on universities’ third mission engagement). Moreover, a strong emphasis is put on the need to consolidate the dense network of relationship with universities all over the world, but also to become a greater laboratory of ideas to be made available to and to be exchanged with the subjects acting on the local territory, including industry, business and cultural investment.

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