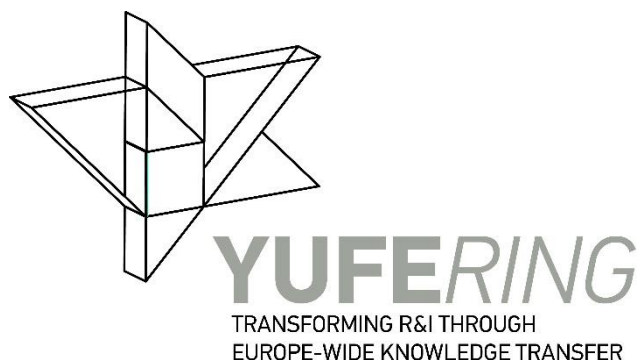


YUFERING Project

YUFE TRANSFORMING R&I THROUGH EUROPE-WIDE KNOWLEDGE TRANSFER



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D 3.1: YUFE Vision and Transformation Strategy on Flipped Knowledge Transfer

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Deliverable leader:	Barbara Tan, RTTP, Policy Advisor Knowledge Transfer University of Antwerp
Author(s):	Barbara Tan, RTTP, Policy Advisor Knowledge Transfer UAntwerp Eugénie Delzenne, Phd-candidate UAntwerpen Carlos Ruiz de León, UC3M Saša Zelenika (UNIRI) Dorian Hayes (UEssex)
Contributor(s):	Anastasia Constantinou, (UCY) Elena Christodoulou (UCY) Pantelitsa Eteokleous (UCY) Francesco Scafarto (UNITOV) Jeroen Langejan (UBremen), Tomi Tuovinen (UEF) Maria Pietilä (UEF) Riikka Pellinen (UEF) Adrianna Czarnecka (NCU) Tea Dimnjašević (UNIRI) Lea Perinić (UNIRI) Martina Vižintin (UNIRI) Maria José Herrero Villa (UC3M) Virgilio Díaz Gomez (UC3M) Andreas Bressler, (UM) Jurgen Joossens (UAntwerp)
Reviewer(s)	Prof. Aldona Glinska-Newes (NCU)



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List of Abbreviations and Definitions

AI	Artificial Intelligence
CERI	Community Engaged Research and Innovation
EC	European Commission
ERRIN	European Regions Research and Innovation Network
EU	European Union
EUI	The Erasmus+ European Universities Initiatives
FKT	Flipped Knowledge Transfer
FTE	Full-Time Equivalent
I&E	Innovation & Entrepreneurship
INROBICS	Intelligent Robotics for Rehab
IP	Intellectual Property
SI	Servicio de Investigación
KE	Knowledge Exchange
KT	Knowledge Transfer
KTO	Knowledge Transfer Office
KV	Knowledge Valorisation
MSCA	Marie Skłodowska-Curie Action
NCU	University of Nicolaus Copernicus in Toruń
NGO	Non-Governmental Organisation
PR	Public Relations
R&D	Research and Development
R&I	Research and Innovation
REO	Research and Enterprise Office
RTTP	Registered Technology Transfer Professional
SBA	Societal Business Actor
SEI	Innovation and Entrepreneurship Support Service
SHAPE	Social Sciences, Arts and Humanities
SME	Small and medium-sized enterprises



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SS&I	Support Service & Innovation
SSH	Social Sciences and Humanities
SWOT analysis	Strengths, Weaknesses, Opportunities and Threats analysis
TRL	Technology Readiness Level
TTO	Technology Transfer Offices
UAntwerp	University of Antwerp
UBREMEN	University of Bremen
UC3M	Universidad Carlos III de Madrid
UCY	University of Cyprus
UEF	University of Eastern Finland
UESSEX	University of Essex
UK	United Kingdom
UM	Maastricht University
UNIRI	University of Rijeka
UNITOV	University of Rome 'Tor Vergata'
UZA	Universitair Ziekenhuis Antwerpen
WP	Work Package
YUFE	Young Universities for the Future of Europe
YUFERING	YUFE Transforming Research and Innovation through Europe-wide Knowledge



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YUFE Vision and Transformation Strategy on Flipped Knowledge Transfer

Executive Summary

The initial conclusions of the Young Universities for the Future of Europe (YUFE - <https://yufe.eu/>) European University alliance activities in fostering a vision for a more demand-driven approach to Knowledge Valorisation (KV), as developed within the Work Package 3 (WP3) of the YUFERING project (YUFE Transforming Research and Innovation through Europe-wide Knowledge), are presented in this report. YUFERING WP3 aims to explore routes to enhance an outside-in, demand-driven approach to KV within the Quadruple Helix innovation model. How can effective stakeholder engagement and co-creation facilitate KV and impact? What can universities do to foster this transformation? To assess such issues, YUFE conducted pilots at three member institutions (University of Antwerp, University of Essex, and Universidad Carlos III de Madrid) with the aim to gain insights on how to implement such a transformation strategy in real-life scenarios. The gained insights are shared herein.

- **The process**

A methodology with distinct steps has been followed to develop the YUFE strategy for a more demand-driven KV process:

1. Establishing a shared understanding of "Flipped" or (outside-in) Knowledge Transfer (FKT) principles, which resulted in seven key elements: demand-driven, solution-oriented, involving the engagement of societal and business actors (SBAs), bi-directional transfer, inter-and trans disciplinary, focus on value creation and impact, and incorporation of both tech and non-tech innovations.
2. Conducting the mapping of current KV Processes at the 10 YUFE universities and performing a SWOT analysis.
3. Performing a gap analysis: identifying barriers and challenges for a demand-driven KV approach.
4. Integrating the identified critical success factors into the transformation process as an integral part to YUFE approach.
5. Implementing pilots at three different YUFE universities. Each pilot performed then a self-assessment and a peer assessments of KV professionals within the YUFE-alliance.
6. Formulating future ambitions based on insights gathered throughout the process.

In all these steps, the driving force was the YUFE Knowledge Transfer Expert Network, established during the project, comprising 29 KV professionals from diverse YUFE institutions.



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- **The conclusions**

Based on the performed gap analysis, 4 pillars were identified for the transformation towards a more demand-driven approach to KV:

1. Talent management.
2. Focus and specialization.
3. Funding & investment.
4. SBA needs capture.

A more demand-driven approach to KV requires a combination of "pull" and "push" strategies, the top-down support (leadership) and a bottom-up coalition of the willing of researchers, KV professionals and societal business actors (SBAs). Some of the lessons learned in the YUFE Alliance can be summarized as:

- Cultivate long-term partnerships to **establish trust with SBAs**, focusing on university strengths and local ecosystem collaborations for place-based innovation.
- Empower KV managers and invest in **team and talent** development for success.
- Strengthen **Public Relation (PR) and communication** strategies to regularly showcase technological offerings, research potential, and success stories.
- Build strong connections with external partners, utilizing existing talent and **breaking down silos** for tailored KV.
- Raise awareness of the **university's strengths** and foster demand-driven collaboration with SBAs through **entrepreneurship and innovation training**.
- Prioritize identifying new **funding** opportunities, expanding **investor networks** internationally.
- Expand academic networks, promoting **interdisciplinary** collaboration and coordination between bottom-up and top-down approaches.
- Implement **challenge-based initiatives** for **co-creation** with SBAs to address real-world challenges.
- Ensure **adequate resources** to support the proposed demand-driven approach.



1. Introduction: from inside-out to outside-in: towards a (flipped) demand-driven Knowledge Valorisation

Initially, Technology Transfer Offices (TTOs) were primarily established within universities to manage intellectual property (IP) assets and facilitate knowledge and technology transfer to industry (inside-out/technology push). In the past two decades, however, a shift can be observed, with university-industry collaborations becoming more common and formalized, aiming to bridge the gap between industry and academia. YUFERING aims to **explore routes to enhance an outside-in, demand-driven approach to KV within the Quadruple Helix innovation model**. How can effective stakeholder engagement and co-creation facilitate knowledge valorisation and impact? What can universities do to foster this transformation? How can we build bridges to connect with the outside world and capturing the needs of companies and other ecosystem stakeholders and seeking solutions together?

These questions are at the core of the YUFERING Work Package 3: “**YUFE as a Catalyst for Flipped Knowledge Transfer and Deployment in Society**”. The overall objective of YUFERING WP3 is to develop an integrated perspective on Knowledge Valorisation with the objective of contributing to **the development of the YUFE Alliance's vision and transformation strategy for implementing a more demand-driven, or so-called "Flipped," Knowledge Transfer (KT) approach**. This vision has been elaborated and substantiated thanks to insights gained from the various tasks within WP3, as outlined below:

- **Task 3.1:** Developing the YUFE vision on FKT (UAntwerp)
- **Task 3.2:** Developing a transformation strategy to implement the YUFE FKT vision (UC3M)
- **Task 3.3:** Piloting the YUFE vision and transformation strategy on FKT (UC3M)
- **Task 3.4:** Building the YUFE KT Expert Network (UNIRI)
- **Task 3.5:** Developing a common profile and career development path for KT professionals (UAntwerp)
- **Task 3.6:** Researchers' training on FKT (UNIRI)

In this report, we finalize Task 3.1 and Task 3.2, which will result in Deliverable 3.1, serving as the culmination of WP3. Here, we integrate the insights from all our collaborative prior work in the various tasks, which have already resulted in several Deliverable reports (D3.2, D3.3, D3.4). From this integration, we derive lessons on how to actualize our aspirational scenario of transitioning to a more demand-driven KV (FKT approach). This entails **a bi-directional process that encompasses not only knowledge originating from the University (researchers) but also from Societal Business Actors (SBAs)**. By combining both, innovation and solutions will emerge.



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2. Environmental Analysis: Setting the Scene

Before delving into the various steps we have taken to develop our YUFE vision to achieve a more demand-driven KV, let's first contextualize this inquiry within a broader environmental analysis. Firstly, within the European policy context, there is a strong emphasis on the importance of the quadruple helix in addressing significant societal challenges facing our communities and the role that universities can play in this regard. Secondly, we will explore the mission statement of the YUFE Alliance, in which the commitment to fulfilling this responsibility is expressed.

2.1 European Policy context: the European strategy for universities

On January 18, 2022, the European Commission (EC) released a Communication titled "**A European Strategy for Universities**" and a Proposal for a Council Recommendation on "**Building Bridges for Effective European Higher Education Cooperation**." These policy documents form part of an extensive 'higher education package' aligned with other EC priorities, underscoring the pivotal role universities can play in society.

Amidst a rapidly changing world and pressing societal challenges such as climate change, biodiversity loss, digital transformation, and an aging population, the higher education sector is deemed essential for Europe's post-pandemic recovery and the establishment of sustainable and resilient societies and economies. The EC emphasizes that "**Excellent and inclusive universities are a condition and foundation for open, democratic, fair and sustainable societies as well as sustained growth, entrepreneurship and employment.**"

The European Strategy for Universities, developed in tandem with other Commission priorities, outlines four overarching objectives:

1. Strengthen the European dimension in higher education and research.
2. Support universities as lighthouses of our European way of life.
3. Empower universities as actors of change in the twin green and digital transitions.
4. Reinforce universities as drivers of the EU's global role and leadership.

The **Erasmus+ European Universities Initiatives (EUI)** stands out as a flagship initiative to advance these objectives by fostering increased European cooperation in higher education. The concept behind EUI is that universities can more effectively address significant societal challenges through transnational cooperation.

The shared European values and transnational cooperation form a solid foundation for enhancing the quality of learning, teaching, and research, contributing to the strengthening of democratic societies. Universities are encouraged to assist partner countries in transforming their education systems, facilitating mobility of students, staff, teachers, and trainees, and strengthening cooperation in research and innovation. Through sharing experiences, exchanging talents, building bridges, and promoting academic and European values, universities become part of Europe's soft power.



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Another important EU policy we like to mention is the **EU directive on Smart Specialization (S3)**, which is the strategy aimed at European regions, employing a **place-based approach** that **capitalizes on regional assets and resources**, addressing specific socio-economic challenges to identify unique opportunities for development and growth. We will show in the results of this YUFERING-project that European University Alliances, exemplified by our **YUFE Alliance**, can also serve as **driving forces to foster inter-regional cooperation and link regional, place-based innovation ecosystems** in a complex collaboration landscape. This viewpoint of a good collaboration within a complex landscape was also articulated during the recent S3 Forum on November 28, 2023, in Madrid, Spain, as illustrated in Figure 1 from the presentation by Pirita Lindholm, Director of European Regions Research and Innovation Network (ERRIN).

ECOSYSTEMCOLLABORATION-COMPLEXLANDSCAPE

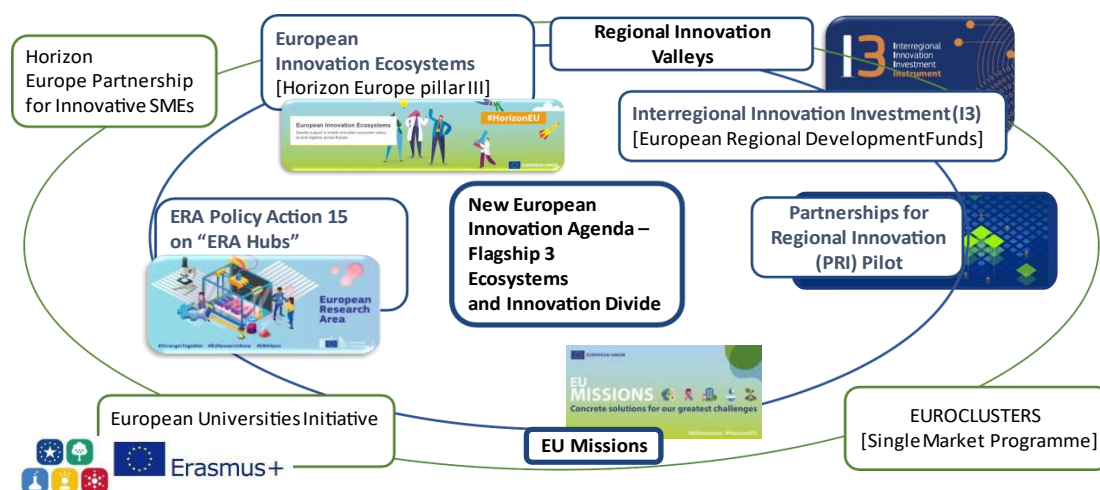


Figure 1 Source: Presentation by Pirita Lindholm, Director ERINN during the S3 Forum on November 28th, 2023, Barcelona.

2.2. Core Values of the YUFE Alliance

YUFE aims to embrace its role as a 'Lighthouse'. YUFE is an open and inclusive European Universities alliance, based on the cooperation of universities and students with the whole surrounding ecosystem composed by citizens, businesses and (local/regional) government. This quadruple-helix approach will be reflected and incorporated into the way the quality of our alliance is assessed.

The **YUFE Mission statement** emphasizes:

“We will break down barriers between academia and society. We will collaborate with local, regional and national governments, citizens and businesses to build a modern higher education ecosystem, equipping Europe with the human capital needed to lead the world in resolving its most difficult challenges.”

The YUFE Alliance defined **4 Focus Areas**:



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1. European identity and responsibilities in a global world
2. Citizens Well-being
3. Digital Societies
4. Sustainability

During the first phase of the YUFE-alliance, the foundation was already laid for a more demand driven approach and with stakeholders in different domains (Quadruple Helix approach). In YUFERING, we go deeper in a common community engaged research agenda and the deployment of a Flipped Knowledge & Technology transfer approach.

3. Iterations and Results for the Vision and Transformation Strategy

In this section, we briefly explain the process that the WP3 team followed to develop the YUFE KT vision and transformation strategy, along with the methodology employed. We have identified numerous interconnections between the tasks. The work within WP3 started with an **initial brainstorming session** and a shared understanding of the concept of “*Flipped Knowledge Transfer*”.

3.1 Concept Note and the 7 Core Dimensions of Flipped Knowledge Transfer

This initial brainstorm phase resulted in a concept note that already defined the **seven core dimensions of FKT** shown in Figure 2.

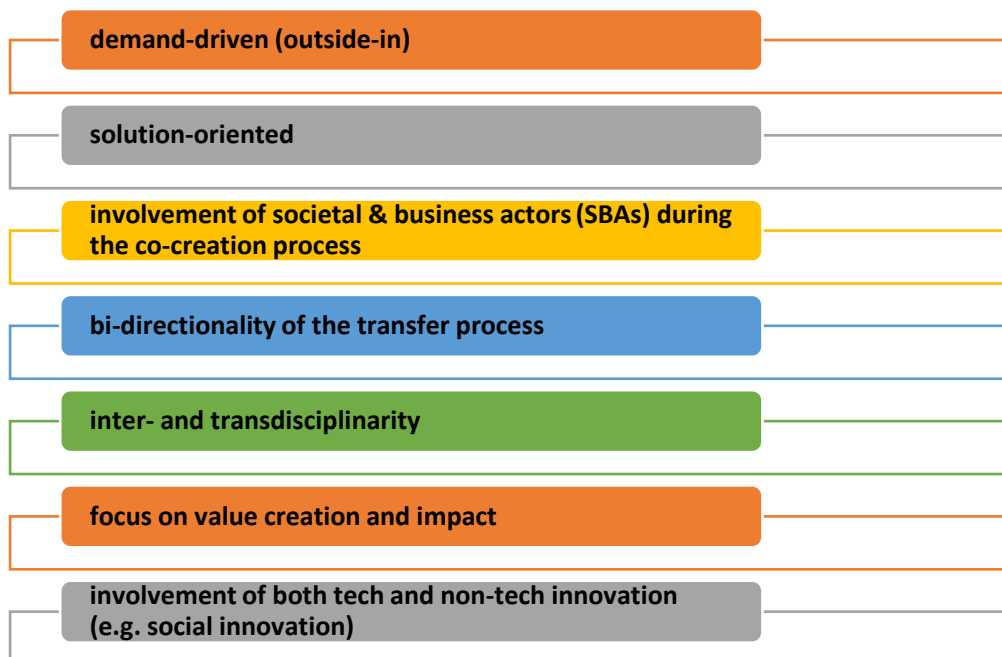


Figure 2 seven core dimensions of Flipped Knowledge Transfer

The 7 core dimensions of FKT:

1. **Demand-Driven (Outside-In):** The KT process is shaped by external demands and needs, ensuring a responsive approach that aligns with external requirements.



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2. **Solution-Oriented:** The focus is on practical solutions, emphasizing the application of knowledge to address specific challenges or problems.
3. **Involvement of SBAs During Co-Creation:** Collaboration includes active participation from both societal and business actors throughout the co-creation process, fostering diverse perspectives and expertise.
4. **Bi-Directionality of the Transfer Process:** Knowledge flows in both directions, allowing for a reciprocal exchange between the provider and receiver, enriching the learning experience for all parties involved.
5. **Inter- and Transdisciplinarity:** The transfer process spans multiple disciplines, promoting a holistic understanding and integration of knowledge from various fields.
6. **Focus on Value Creation and Impact:** Emphasis is placed on generating tangible value and real-world impact, ensuring that the transferred knowledge contributes meaningfully to the intended goals.
7. **Inclusion of Both Technological and Non-Technological Innovations (e.g., Social Innovation):** The transfer encompasses a wide spectrum of innovations, including both technological advancements and non-technological innovations like social innovations, fostering a comprehensive approach to knowledge dissemination.

Once we had this common understanding of the concept of FKT, we converted the Tasks 3.1, 3.2 and 3.3 into different “Steps” in order to streamline our efforts and developed a Spiral methodology (Figure 3).



Figure 3 Spiral methodology: steps linked to the tasks and sub-tasks of the development of the YUFE/YUFERING FKT approach



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As illustrated in Figure 3, **a methodology with distinct steps has been followed** to develop the YUFE strategy for a more demand-driven "*flipped*" or (outside-in) KT:

- Conducting the mapping of current KT processes at the 10 YUFE universities (3.2) and performing a Strength, Weaknesses, Opportunities and Threats (SWOT) analysis (3.3).
- Drawing insights from two case studies at the project level within innovation ecosystems linked to the partner institutions, such as the BlueApp in Antwerp (Belgium) and Leganés Tecnológico in Madrid (Spain) (3.4).
- Performing a gap analysis at institutional level: Technology Transfer Office (TTO) to identify barriers and challenges for a demand-driven KT approach (3.5).
- Concluding with defining the four core pillars as working areas in which we need to fulfill our transformation process (3.6).

3.2 Mapping Current Approaches of Flipped KT at YUFE Academic Institutions and SWOT

The activities within WP3 YUFERING commenced with conducting a comprehensive assessment of the existing KT support systems across the 10 YUFE universities. This mapping exercise was based on inputs from various sources:

- A survey conducted at the 10 YUFE universities, complemented by in-depth interviews with key personnel within the Technology Transfer Offices (TTOs), such as the Head of TTOs;
- Input obtained through the KT Expert Network, a network comprising 29 KT professionals from different YUFE universities.

The KT expert network was established in October 2021 under the leadership of the University of Rijeka (UNIRI) and marked the achievement of the first Deliverable 3.2 within WP3 YUFERING. Over the course of three years, this network has played a pivotal role in sharing best practices and expertise, collecting necessary data and information for our final vision.

During the inaugural Annual Meeting of the KT Expert Network held in Madrid at UC3M on November 29, 2021 (hybrid format), presentations by Heads of TTOs provided a valuable overview of the current KT systems and practices at YUFE partner universities. This information, detailed in Annex 1 for the conference report, allowed for a fruitful exchange of insights.

Additionally, data were collected through surveys. UNIRI conducted a survey in all ten YUFE partner institutions in September 2021, receiving responses from all of them. The information was further refined through in-depth interviews (by UC3M and UAntwerp), and for a comprehensive overview, refer to Annex 2.

Key Conclusions:

- YUFE's KT support systems vary widely in age and size, ranging from those that just started in 2021 (NCU) to those established already in 1985 (UBremen). Significant differences exist in TTO/KTO size, ranging from 1.5 to 20 Full-Time Equivalents (FTEs), with an average size of 8.55 FTEs.



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- KT systems cover tasks related to KT commercial management, outreach, and entrepreneurship development, with links to internal or regional incubators/accelerators. Nine partners have such links.
- Financing for KT support systems is primarily from public funds allocated to the parent university. Variations exist in revenue streams, with some reliance on project-based funding, EU funding, contract research, and IP transactions. Industrial income varies across the consortia due to factors like KT resources, university size, national legislation, TTO age, and research focus.
- Societal relevance is a core objective across YUFE partner universities, indicating a strong awareness of KT's contribution to the Third Mission.
- KT professionals in YUFE typically hold PhDs, and teams are multidisciplinary, encompassing various expertise. Strengths include effective engagement, governance, project management, strategic and business insight, and entrepreneurial leadership.
- Challenges include knowledge transformation, management, and legal, scientific, and technical know-how.
- For KT skills, interviewed members of the KT Expert Network emphasize the importance of competencies like entrepreneurial leadership, strategic insight, and effective engagement. Relevant training topics include increasing academic motivation for KT, identifying demand for innovative solutions, and improving effective engagement skills of KT specialists.

3.3 SWOT Analysis

YUFE Alliance members conducted SWOT analyses on their institutions' transition to FKT. Despite being well-connected to local ecosystems and observing a gradual cultural shift towards FKT, universities encounter significant obstacles. Most of them lack sufficient KT resources and deem their current KT systems inadequate for managing FKT interactions. Internally, motivating researchers for KT remains challenging, and externally, meaningful engagement with SBAs is difficult. Insufficient investment in KT staff and turnover undermine relationships with SBAs. Table 1 provides a summary of the performed SWOT analysis.

Table 1 YUFE Alliance Flipped Knowledge Transfer SWOT analysis

Internal	Strengths	Weaknesses
	<ul style="list-style-type: none"> - Some aspects of the KT ecosystem are well-developed (90% of YUFE universities); - Highly-qualified current KT staff (80%); - Already emerging FKT practices and strategies (70%); - Research excellence (50%) 	<ul style="list-style-type: none"> - Having limited KT resources, including time (90%); - Issues related to the current organisation of KT hindering FKT development (80%); - Traditional KT being insufficiently developed (60%); - Difficulties motivating researchers to engage in KT (40%); - Issues related to internationalisation (lack of strategy, weak connections with international SBAs) (20%);



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		- Negative perception or lack of awareness of collaboration opportunities with universities (20%).
External	Opportunities	Threats
	<ul style="list-style-type: none"> - Observing a gradual cultural change allowing for the emergence of FKT (80%); - Building an institutional framework for effective FKT (60%); - Capitalising on existing connections with SBAs at various levels (60%); <ul style="list-style-type: none"> • Contextual enablers such as funding and human capital availability (40%); • Participating in relevant international networks, including YUFE and YUFERING (40%) 	<ul style="list-style-type: none"> • Difficulties creating meaningful engagement with SBAs (80%); • Institutional obstacles, including culture and HR policy (60%); • Unfavourable national R&I environment (60%)

3.4. Case Analysis: Biocatcher (UAntwerp) and Inrobics (UC3M)

3.4.1 BIOCATCHER, a case of FKT collaboration in the context of BlueApp

This case study constitutes an in-depth investigation of a (FKT) collaboration conducted at the University of Antwerp (UAntwerp) in the field of environmental biotechnologies (Biocatcher). It examines **both the institutional context** (situated in the innovation hub BlueApp), in the framework of which this FKT collaboration took place, and **the mechanisms** which supported the respective **co-creation process**.

The **Biocatcher case** was chosen as it serves as a prime example of an existing collaborative project between researchers at UAntwerp and companies. It exemplifies **a bi-directional KT process** where both parties contribute knowledge and expertise through a **co-creation process** to collectively find optimal solutions with impact. Additionally, the project received support within BlueApp, an Innovation Hub that fosters an infrastructure and innovation ecosystem outside UAntwerp's premises, specifically for high TRL (Technology Readiness Level) research in sustainable chemistry. At BlueApp, collaborative efforts focus on developing carbon-neutral solutions for the future by uniting startups, companies, and the expertise of the University of Antwerp. This neutral environment outside the university enables startups and scale-ups to advance and showcase promising technologies with the provision of space, academic knowledge, and services. Companies receive assistance in addressing challenges related to sustainable chemistry through collaborative projects.

One such collaborative project within BlueApp is the **Biocatcher use case**, representing **a family of environmental biotechnology projects aimed at nitrogen capture and conversion**. It stems from a longstanding collaboration in the **Triple Helix**, involving the research group from the Department of Bioscience Engineering at the University of Antwerp, the Netherlands-based company Colsen, and the participation of Flemish and Dutch governments.

Biocatcher stands out as an **exemplary case of the Flipped approach, encompassing all seven core dimensions**. Refer to Figure 4 below for a summary of the case's conclusions across each dimension. For a more detailed explanation of the use case, please see Annex 3.



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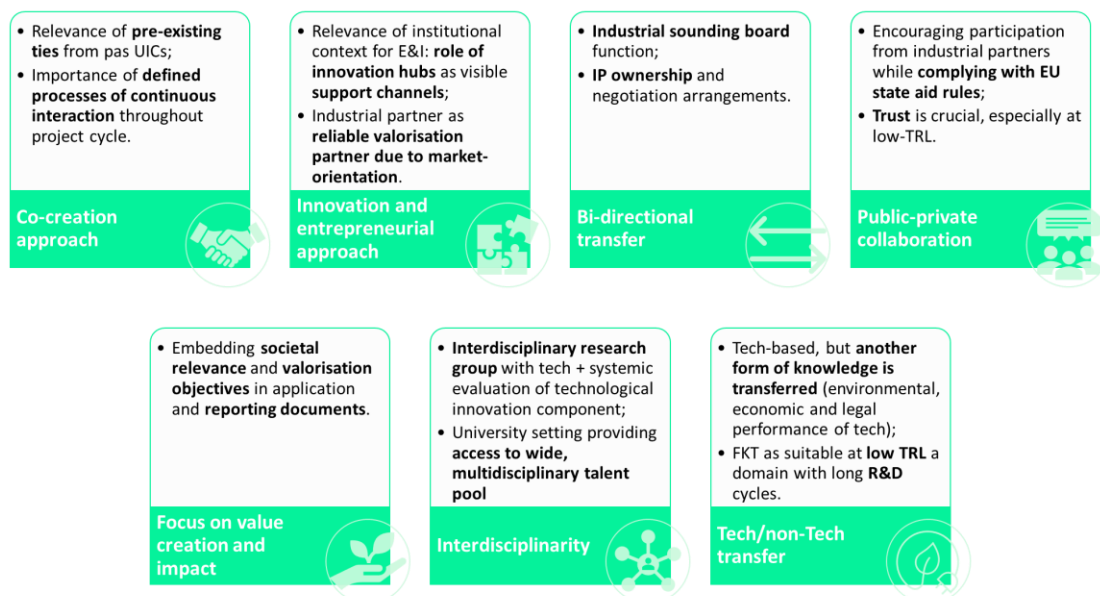


Figure 4 Summary of the findings of the Biocatcher case study

In this context, it's important to note that we, along with YUFERING's WP3 members, conducted a site visit to the innovation hub BlueApp on September 20, 2022, to explore the operations of this pre-incubation hub. The visit was part of a two-day program, including visits to three Innovation Hubs in Antwerp: the Beacon, Vaccinopolis, and BlueApp. During the visit to BlueApp, Eugénie Delzenne presented the Biocatcher case, which she compiled as a Ph.D candidate through in-depth interviews (see Annex 3 for the full case study). Following the case presentation, a panel discussion aimed at enhancing our understanding of mechanisms supporting or hindering FKT collaborations, exemplified by the Biocatcher case study. The panel brought together key stakeholders from KT, industry, and academia.

- Dr. Jurgen Joossens, Head of the Valorisation Unit, *UAntwerp*
- Quinten van Avondt, Manager, *BlueApp*
- Dr. Anastasia Constantinou, Head of Innovation Management Unit, *UCY*
- Dr. Marc Spiller, Biocatcher co-promotor *UAntwerp*
- Bert Bundervoet, Team leader, *Colsen*

Moderator: Barbara Tan, RTTP, Policy advisor KT, *UAntwerp*

Some of the main conclusions of this panel discussion were:

- Trust is crucial for successful FKT collaboration, requiring time and positive past experiences to develop.
- Sustaining trust involves consistent delivery on allocated tasks and meeting mutual expectations.
- Co-funding challenges may deter smaller companies with limited R&D budgets from engaging in collaborative projects, especially at lower TRL levels.
- Implementing the flipped approach is challenging without strong industry-academic ties, suggesting the importance of pre-existing relationships and



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previous collaboration projects. Starting with smaller, defined projects can build trust over time.

- Co-creation raises questions about IP allocation, with the optimal framework for fair compensation remaining an open question. Trust plays a key role in mitigating uncertainty over future IP negotiations.
- Skills required for KT-professionals managing flipped interactions include a strong scientific background, excellent soft skills, and a readiness to learn on the job, including legal aspects
- Support from experienced colleagues who have dealt with complex cases is essential.

3.4.2 INROBICS, a case of Flipped KT collaboration in the context Leganés Tecnológico in Madrid (Spain)

The second use case is INROBICS, best practice of (FKT) collaboration at the University Carlos III of Madrid. The initiative, born from the collaboration between the university and health sector partners, resulted in the creation of INROBICS—a venture proposing a groundbreaking "Play-based Therapy" rehabilitation model using AI and social robots (see figure 5 below). INROBICS aims to tackle the shortage of home care professionals and address rehabilitation challenges for neurological limitations.

About the project itself



Inrobics, intelligent robotics for Rehab. (<https://www.youtube.com/watch?v=Bc1oL9ufSuY>)

- **Problem:** Rehabilitation treatments are long and continuous, leading to low frequency, dropouts and even to depression:



- **Objectives:** Inrobics proposes a **disruptive rehab solution** through a digital health AI platform embodied in social robots to improve the quality of life of people with functional or neurological diversity.
- Inrobics has received **multiple awards** (e.g. Madrid Impacta (2022); MICINN Innovative SME (2021); Mobile World Capital The Collider (2019); La Caixa Caixaimpulse (2019); National Geographic Documentary (2017)).

Figure 5 About the project Inrobics, intelligent robotics for Rehab

This FKT case study exemplifies an outside-in, demand-driven methodology, emphasizing the importance of **interdisciplinary collaboration**. Key partners, including the Virgen del Rocio Hospital, the LA SALLE Institute for Functional Rehabilitation, the European University of Madrid, and the German company United Robotics Group, contribute diverse expertise. INROBICS integrates this expertise, spanning computer science, robotics, healthcare, and rehabilitation. The collaboration emphasizes a **bi-directional flow of knowledge**, with **industrial and healthcare partners** providing crucial insights.

Funding, sourced from both public and private channels, played a pivotal role in transitioning the project from research to a viable company. The case study



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underscores the necessity of trust and commitment between the involved industrial partners and the research groups, particularly during the early stages with a low Technology Readiness Level (TRL).

INROBICS stands as a model for successful FKT, showcasing the integration of technology and social robotics to improve the quality of life for individuals with functional or neurological limitations. The initiative not only **addresses real-world challenges in the healthcare sector** but also highlights the importance of **external demand**, interdisciplinary collaboration, and bi-directional knowledge flow. The success of INROBICS is attributed to its innovative "Play-based Therapy" model, demonstrating the transformative impact of FKT in healthcare. For a more detailed explanation of the use case, please see Annex 4.

3.5. Gap Analysis

The performed Gap Analysis study constitutes an in-depth investigation of (FKT) gaps found in the YUFE Universities. It was carried out under Task 3.2 under the leadership of the University Carlos III of Madrid in collaboration with the UAntwerp.

The common Gap analysis aimed at identifying gaps between existing KT processes and those required by a community engagement-based research and innovation model with a (FKT) approach. The institutional context (Barriers & Challenges) and mechanisms (Processes & Means) are compared herein with the 7 key elements of the FKT approach, **revealing differences (deltas) that guide each university in launching transformation pilots and implementing new FKT processes.**

Qualitative interviews with TTO managers from nine universities provide insights into perceptions, alignment, barriers, and challenges related to FKT. These interviews offer answers to crucial questions, including how universities perceive the FKT approach, their alignment on the seven main dimensions, and the main barriers and challenges faced.

The Gap Analysis yielded **five main conclusions** regarding gaps between traditional one-way KT and a FKT approach:

- **Conclusion 1:** YUFE Universities advocate the Quadruple Helix approach but currently lean toward the Triple Helix, lacking engagement with civil society. This suggests the need to improve researchers' engagement with civil society for a more relational (flipped) KT approach.
- **Conclusion 2:** Barriers to FKT include a lack of CERI/FKT training (89%), difficulty involving people in CERI/FKT, and a lack of strategic intelligence platforms (56% each). This emphasizes the importance of trained personnel and effective tools over funding or applicability of research results.
- **Conclusion 3:** Challenges include a perceived cultural change (67%), corporate culture (67%), and building effective long-term partnerships or engagement (67%). Institutional leadership involvement and the design of social engagement mechanisms are crucial for success.
- **Conclusion 4:** Regarding processes, universities collaborate extensively with private companies, but fewer have processes for engagement with other public and private research centers. "University – University" and "University –



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Research/Tecnological Center" relationships for joint research occur naturally without the need for ad-hoc processes.

- **Conclusion 5:** International relationships primarily involve private/public companies, emphasizing the need to promote university connections with stakeholders beyond national borders. This highlights the desirability of a structural collaboration between KT experts at YUFE level and a shared FKT training programs for researchers and support staff, along with creating international nodes of researchers with a shared strategic research agenda.

The Gap Analysis refines therefore the previous SWOT analysis on FKT, offering insights into barriers, challenges, and differences found in the FKT approach, guiding universities in their transformation toward effective KT. For the complete report we refer to Annex 5.

3.6. Concluding Remarks: Identification of Pillars for Successful Transition to Flipped Knowledge Transfer (FKT)

Based on the available data collected during our mapping exercise and the SWOT & Gap analyses, we identified **four key areas** to streamline our efforts towards developing a transformation strategy. These will also serve as a template for further elaboration of the three FKT pilots (see further in Chapter 4). Within these areas, we then **identify the 'Deltas' for the desired transformation:**

1. Talent Management
2. Smart Specialization
3. Funding & Investment
4. Societal Business Actors (SBA) Needs Capture

Concluding remarks: four pillars identified as crucial for a successful transition towards FKT

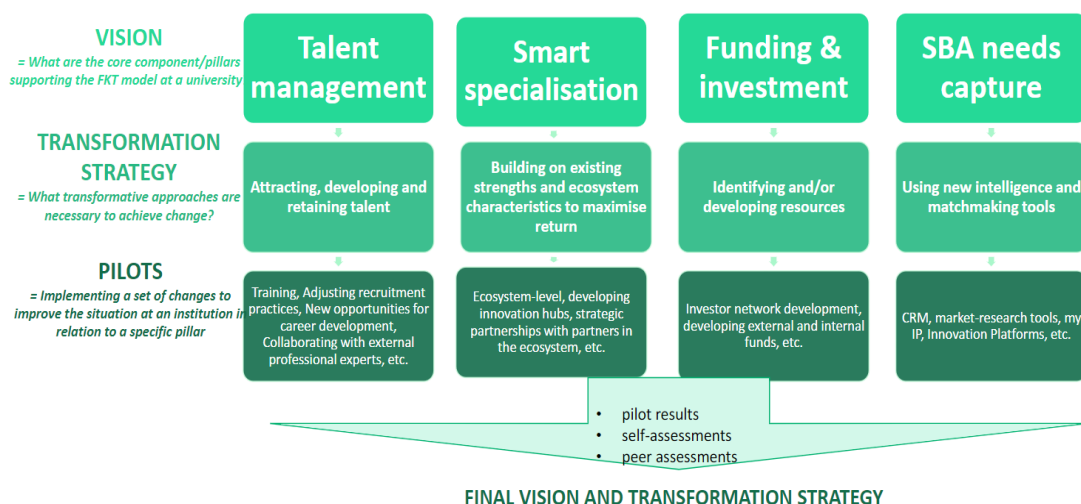


Figure 6 Four pillars for a successful transition towards FKT



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4. YUFE Vision and Transformation Strategy Pilots

Based on the key findings of the analyses described in Chapter 3, in Chapter 4, we present a summary and key findings from the three FKT pilots conducted to extract valuable insights for shaping the joined YUFE/YUFERING vision and transformation strategy, focusing on a more FKT. To ensure consistency across all pilot activities, a standardized structure was followed, including a description of the context and current situation, specific gap analyses within each pilot, **identification of necessary changes (the deltas)**, and **their connection to the four working areas** as determined in Section 3.5. Each pilot also underwent a **self-assessment** and a subsequent **peer review**. The complementary strengths and insights from the three pilots contributed to the formulation of the final vision.

4.1 University of Antwerp Pilot

The University of Antwerp is committed to adopting a more demand-driven (flipped) approach to KV. In the current rectorate's memorandum for 2020-2024, valorisation holds a prominent position in the University of Antwerp's policy plan: "The role of the university has broadened to become a *'driver' for innovation: our university is also becoming an innovative regional force. The university does this by delivering well-trained people and generating knowledge and insight. It also does this by responding to the specific needs of the innovation ecosystems in which the university is embedded. In this new, knowledge-driven approach, the University of Antwerp takes on a role as a driving force in innovation ecosystems that develop solutions to create economic and social impact.*"

Building on the existing strength of the university in relation to its local ecosystem, the UAntwerp has chosen to **focus on three multidisciplinary domains** with a high valorisation potential: 1) sustainable chemistry & materials; 2) infectious diseases & environmental health; and then also 3) the cluster on metropolitanism, smart city, mobility & logistics. For each of these valorisation domains, three **open Innovation Hubs** were also developed, each with infrastructure located outside the university (namely BlueApp, Vaccinopolis, and The Beacon). These hubs serve as collaborative spaces where researchers, startups, spin-offs, scale-ups, corporates, and other stakeholders can work together in multidisciplinary and entrepreneurial teams, addressing the needs and inquiries arising from the ecosystem.

Through the **strategic plan 2024-2028** of the Valorisation Office of the UAntwerp, a **set of "deltas"** were identified with the following key elements for future transformation:

- Enhancing collaboration with internal and external stakeholders.
- Building efficient and diverse valorization teams.
- Broadening the scope of demand-driven KV.
- Strengthening communication and PR strategies.
- Expanding networks for funding and investments.
- More internationalisation / international networks.
- Improved databases and intelligence tools.



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The pilot identifies several challenges, such as the time-intensive nature of establishing long term trust relations with SBAs and the need for diversified **valorisation manager profiles** to effectively handle the 'demand driven' approach. The University's response includes developing a **distinct profile of domain valorisation managers as liaisons** for each prioritized valorisation domain, alongside an adjusted valorisation structure. The pilot also emphasizes the importance of training staff and researchers in developing a more entrepreneurial mindset to an openness towards innovation and to embed a demand driven mindset across all universities activities. For more detailed information regarding the FKT Pilot of the UAntwerp we refer to Annex 6.

4.2. Universidad Carlos III de Madrid Pilot

The University Carlos III of Madrid (UC3M) actively embraces a demand-driven ("Flipped") approach to Knowledge Valorization, initiating a KT process transformation pilot to integrate seven key elements defining the FKT approach. The objective is maximal inclusion of FKT key elements in transfer processes, currently managed within the UC3M Entrepreneurship and Innovation Support Service (SEI), with select sub-processes from the "Servicio de Investigación" (SI) considered for the pilot. The pilot is executed by following the different steps shown in the figure below:

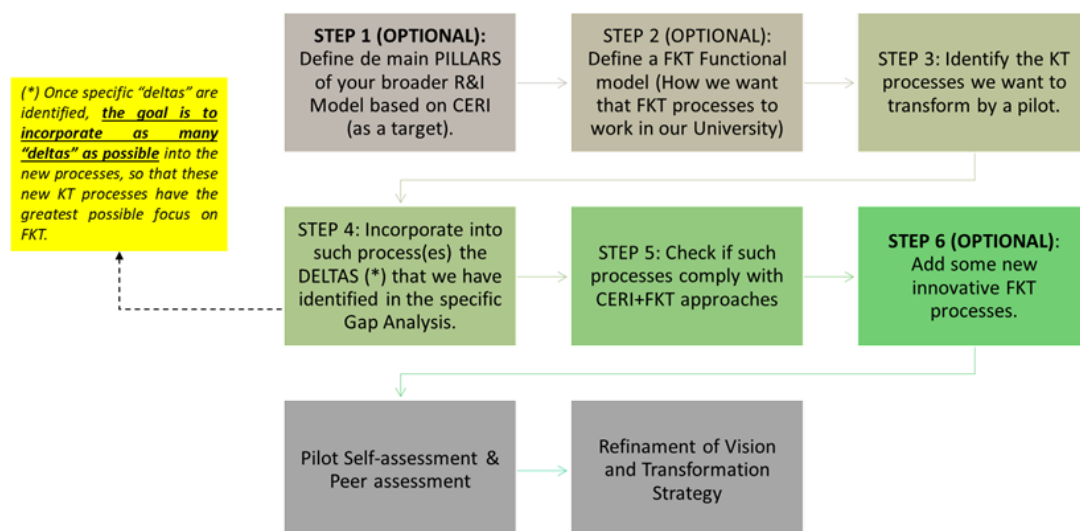


Figure 7 Steps of the pilot Universidad Carlos III de Madrid

The pilot follows the outlined steps, utilizing a new R&I functional model consistent with the FKT approach, represented as functional flowcharts for the transformed KT process. Simultaneously, common gaps identified in a recent "common gap analysis" at UC3M were reaffirmed, leading to the identification of five specific UC3M "gaps". These gaps translate to ten UC3M "Deltas" linked to the seven FKT key elements:

D1. Transit from a triple helix to a quadruple helix approach: The pilot aims to strengthen researchers' engagement with civil society, introducing new means for long-term connections.

D2. Use of external help: The pilot contemplates building a network of knowledge & technology integrators.



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D3. Motivation and training of Researchers and Support staff: The pilot considers a Researcher & Support Staff Training Program on CERI/FKT.

D4. Technological surveillance and market intelligence tools: The pilot indicates that it is important to further invest and initiates the building of an SS&I Platform at UC3M with external partners.

D5. Full support of institutional leadership: The pilot requests increased dissemination activities within UC3M to overcome cultural barriers. The Pilot is requesting the institutional leadership of UC3M for more CERI/FKT dissemination activities inside UC3M at high level positions.

D6. Design of mechanisms and tools for social participation: The pilot introduces new mechanisms for SBA participation in research and co-creation initiatives.

D7. Transformation not solely dependent on researchers: The pilot increases outreach activities on CERI/FKT to SBA's.

D8. Weak international engagement: The pilot promotes an international approach to UC3M transfer activities, suggesting a collaboration on the YUFE level e.g. a YUFE International KT Network.

D9. Researchers' understanding of the need for change: The pilot proposes workshops on CERI/FKT, showcasing success stories of universities transitioning to a relational model.

D10. Insufficient resources and know-how: The pilot learns from Spanish "use cases" where SBAs and researchers collaborate efficiently to identify challenges and solutions.

Inevitably, the desired changes will also require time to be implemented in practice. While the transformation process was initiated during the pilot itself, the period is too short to monitor the results. For more detailed information regarding the FKT Pilot of the UC3M refer to Annex 7.

4.3. University of Essex Pilot

The FKT pilot at the University of Essex underscores the institution's commitment to actively promote and implement a demand-led or 'bi-directional' approach to Knowledge Exchange. This approach has long been synonymous with effective Knowledge Exchange in the United Kingdom (UK), particularly in the domains of Social Sciences and Arts and Humanities (SHAPE) disciplines. In these fields, there has been a sustained push to move away from a 'technology-push' or 'inside-out' approach to knowledge exchange / Knowledge Valorisation, as highlighted in the widely-circulated lecture to the Royal Society of Arts in Leeds by Prof. Geoffrey Crossick in May 2006, titled '*Knowledge transfer without the widgets: the challenge of the creative economy*'. This lecture sparked a far-reaching debate.

Within the University of Essex, Knowledge Exchange (KE) is centrally supported as a function of the Research and Enterprise Office (REO). The REO, currently consisting of approximately 90 Professional Services staff members, oversees various dedicated



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teams responsible for Research Development, Pre-Award, Post-Award, Research Impact, Contracts, Ethics and Governance, Data and Insight, and Enterprise.

In response to the UK policy context, the University of Essex has developed a new Enterprise and Innovation Sub Strategy for 2025. Three key workstreams within this strategy focus on:

- People (develop our capacity and culture to deliver excellence in KE).
- Knowledge (optimise KE to maximise the impact of our research and innovation).
- Communities (diversify and amplify our partnerships with non-academic partners through KE).

The University of Essex engages extensively in KE with public and third/voluntary sectors, civil society, government (national and local), policy organizations, business, and industry, as well as creative and cultural industries. Noteworthy initiatives within the four identified pillars for a successful transition to FKT include the "**Making a Difference**" program, explicitly **targeted at developing the capacity and skills** of the research base at all career stages in KE, innovation, and commercialization, particularly within Pillar 1 focused on Talent Development.

A cornerstone of the pilot is the **Challenge Lab**, an innovative practice designed to workshop **responses to industry and public sector problems** with funding available to trial solutions. These Labs, along with the Ideas Labs and Impact Dialogues, form a significant part of the university's strategy to engage with, capture the needs and creating impact for the stakeholders in the quadruple helix: academia, industry, government and civil society (in line with Pillar 4: SBA Needs Capture)

However, the university faces challenges in adapting to new knowledge exchange models and effectively utilizing market intelligence tools. The SWOT analysis also emphasizes the need for enhanced communication strategies, diversification of partnerships, and addressing policy changes affecting resource allocation. The University of Essex is committed to engaging in demand-led KE/FKT in a more international/Europe-wide context. In this regard, there is emphasis on the recent announcement about the UK's agreement to associate with Horizon Europe under a new 'bespoke' agreement, particularly with Horizon and Copernicus. This agreement resolves uncertainty following the UK's departure from the EU, underscoring the importance of European collaboration for the UK's research and innovation ecosystem. The university aims to further collaborate on FKT practices within the YUFE Alliance.

For more detailed information regarding the FKT Pilot of UEssex we refer to Annex 8.

4.4. Self and Peer Assessments

Each of the 3 pilots in FKT performed a self-assessment, followed by peer reviews from other YUFE colleagues with extensive experience in leading KT processes (see Annex 9 for the overview of peer reviewers and their reports on the FKT pilot). On November 24, 2023, a KT Expert Network was organized, facilitating brainstorming with a broader group of KT professionals regarding the 3 FKT pilots, considering both peer and self-assessments. This brainstorming session resulted in an adjusted SWOT



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analysis for each FKT pilot, as well as the formulation of common 'lessons learned,' crucial for the further development of a forward-looking vision to achieve a broader and more demand-driven Knowledge Valorization (refer to point 4.5 for details). In tables 2, 3 and 4 below we present the final SWOT for each FKT pilot.

Table 2 Overview of the SWOT-analysis of the FKT Pilot of the UAntwerp

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • Aligning the KT with the local ecosystem's strengths • Well-developed internal KV structure • Strategic plan 2024 – 2028 • Well-developed infrastructure • Focus on 3 multidisciplinary sectors • 3 Innovation Hubs • Good support for transformation towards a demand-driven approach of innovation • University Leadership: vision, strategy, support • Persuasive examples of how simultaneous 'top-down / bottom-up' model works • Key institutional assets and mechanisms offer a strong portfolio to generate an increase in CERI FKT and 'bi-directional' KT activity • Entrepreneurship and Innovation Support Service is well-established to enable future engagement with relevant SBAs 	<ul style="list-style-type: none"> • Implementing the demand-driven approach and establishing the Innovation Hubs is capital and time consuming and the return on investment will be visible in the longer term. This can be a weakness if the university's future leadership wants quicker results • Improving communication and PR strategy: we must better showcase and celebrate our successes • Need of matchmaking & networking tools • Motivation of research staff • Challenge-based/co-creation need further exploring • Capturing the right needs
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> • More reaching out to SSH domains • Being in the centre of Europe, good connectivity, strong partnerships in regional innovation ecosystems, the economic strength of the region • Experience to tap into more sectors within the region/international • More targeted use of initiatives like the "<i>Best Social Engagement Initiative Award</i>", complementary to existing initiatives which are now only focused on the mere economic aspects of innovation (not on social innovation). 	<ul style="list-style-type: none"> • The internal and external gap: difficulties and lack of awareness of the importance of Knowledge Valorisation (KV) both of academics and SMEs • The strong competition on the labour-market to get-access to the scarce pool of talent (eg. competence profile of valorisation professionals) for the specific capabilities described in the assessment • The unsecure outcome of political elections (June 2024) with potential impact on the priority given to the domain of innovation/Knowledge Valorisation, which can lead to (un)stable funding on Flanders level • Competition from larger universities in reaching out to the same target group of companies/stakeholders in the Flanders region



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Table 3 Overview of the SWOT-analysis of the FKT Pilot of UC3M

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • Commitment and support from the University leadership • Flexible decision-making process • Strong connections with the SBAs at the local, regional, and national level (e.g. strong ecosystem Leganes Tecnologica) • Good response to the challenges (shifting institution towards the FKT model) • Focus on a demand-driven approach and a good understanding of the processes and elements needed to build it • Deep specific GAP analysis • Strong methodology in place to improve the CERI/FKT approach 	<ul style="list-style-type: none"> • Academic/ Administrative /Research personnel Culture and inherent resistance to change • Weak connections to international SBAs • Low engagement with civil society at Research level • Lack of CERI/FKT training, low involvement from researchers in the CERI/FKT approach • Lack of strategic intelligence platforms weakens the FKT approach
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> • Utilisation of YUFE/YUFERING findings into KT process and YUFE network • Increase of income and resources from improved KT activities • Key institutional assets and mechanisms offer a solid portfolio to generate an increase in CERI / FKT and 'bi-directional' KT activity • Scope for more targeted use of initiatives like the Best Social Engagement Initiative Award • Location – regional ecosystem • More quadruple helix approach • Engagement of researchers with civil society • Involvement and training of the support staff and access to strategic intelligence tools • Engagement with SBAs outside the national borders 	<ul style="list-style-type: none"> • Established connections with SBAs by private universities • Resistance to change • Rigid corporate culture at research level • Lack of experience in internal and external (at the SBA) resources to build effective long-term partnerships



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Table 4 Overview of the SWOT-analysis of the FKT Pilot of the UEssex

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • Broad range of stakeholders • The use of concept and principles of the CERI/FKTO activity • Strong use of expert facilitators • Good tools for social participation and engagement in place (i.e. Challenge Lab and Ideas Lab events) • Enterprise and Innovation strategy to 2025 • The contribution and alignment with the regional ecosystem is evidenced through UEssex's institutional engagement with a range of local authorities (e.g. Essex, Suffolk, Norfolk County Councils, various Borough Councils, Local Enterprise Partnerships), all of which has provided ready access to key stakeholders in the region and beyond, and will continue to do so • 'Making a Difference' training programme for UEssex research staff at all levels • Clear strategy with 3 workstreams 	<ul style="list-style-type: none"> • The indicators to capture the value of the activity • Improvements needed in market intelligence tools and a deeper description of the multidisciplinary approach in practical terms • Weak and infrequent relationship (engagement) of UEssex with SBAs outside the UK (internationalisation) • Motivation of researchers • Specialisation not explicit
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> • Improving Communication • Increasing the impact - broaden to new disciplines or market sectors; increase the number of startups from the Challenges Labs and ACTUATE programme of commercialisation training • The internationalisation of KV and taking different initiatives towards international partners • Involvement and training of the support staff (UEssex) new Enterprise & Innovation Sub Strategy) • More use of market intelligence tools for horizon-scanning and opportunity-prospecting • Commitment to KE / FKT and institutional support at the Pro-Vice-Chancellor / Vice-Chancellor / Rector level, as reflected in the new Sub Strategy • Funding instruments at disposal 	<ul style="list-style-type: none"> • Potential gap between UK policy and the EC and consequential effects on University activities and resources • Access to talent • Lack of awareness of opportunities might suggest a perceived resistance to culture change among researchers in general (not restricted to UEssex) • Lack of internal and external (at the SBA) resources to build effective long-term partnerships • Change of leadership • Currently weak interaction with international stakeholders in KE / FKT, although much of our research base is highly international in focus and impact, which suggests great potential if supported by appropriate mechanisms

4.5. Lessons Learned from the 3 FKT Pilots

Valuable insights have been gained from the three FKT pilots, providing us with complementary perspectives on the Critical Success Factors that fuel our final Vision. Each pilot has its specific strengths, and it is this complementarity that enables us to draw valuable lessons for a more comprehensive vision.



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Reflecting on the four identified pillars for a successful transition to FKT (see figure 6), it appears, for instance, that the University of Antwerp excels in pillar 2, "Smart Specialisation," by **building further on its own strengths in combination with those from the Antwerp ecosystem**. This deliberate **strategy** by the Vice-Rector for Valorization recognizes that a demand-driven approach does not emerge overnight but is time-intensive. Hence, the **focus** on three key areas (sustainable chemistry & materials, infectious diseases & environmental health, and smart city, logistics & mobility), building on long-term partnerships with companies and stakeholders in the Antwerp ecosystem. **State-of-the-art infrastructure** was developed for each of the three domains, functioning as **Innovation Hubs** where researchers, KT professionals, startups, corporates, and other stakeholders collaborate on innovative projects. The SWOT analyses also indicate that this bold policy choice has the potential for substantial returns in the long run but remains risky, considering the return on investment may take time. Ongoing support from the leadership, both within UAntwerp and at the regional/Flemish level, remains crucial.

Another lesson from the UAntwerp pilot is that **investing in Valorisation Managers** who support and facilitate the entire KT process is beneficial. UAntwerp serves as an excellent example in this framework due to investments in Valorization Managers at both **central and decentral levels**. They also utilize **dual appointments**, with external partners like the academic hospital (UZA) and the Port of Antwerp-Bruges contributing to the costs of appointing a **liaison manager**. This development aligns with enhancing Talent Management (Pillar 1) and forming complementary teams tailored to specific valorization trajectories, consistent with recommendations from the YUFERING Deliverable 3.3: "*Profile and career development path of Knowledge Transfer Managers*," emphasizing the importance of investing in a **complementary team** of valorisation professionals, further talent development through training, and offering attractive career paths for KT professionals.

The UEssex pilot demonstrates this university is a forerunner in adopting a demand-driven strategy. UEssex engages in extensive **Knowledge Exchange/ Knowledge Valorisation with public and third/voluntary sector, civil society, government (national and local), policy organizations, business and industry, creative and cultural industries**. A clear strategy is in place and supported by the leadership team. The three workstreams in their strategy (**People, Knowledge, Communities**) are excellently chosen. Another inspiring aspect is how they involve external stakeholders in **co-creation** activities through their **Challenge and Ideas Lab** to find solutions together for concrete challenges. What we also learn from this pilot is their use of external help, such as **Tech integrators and Innovation Brokers**, to facilitate the transition to a flipped approach to KT.

Also in the UC3M pilot, they work with with **external specialists** such as **Tech Integrators and Innovation Brokers for supporting collaboration in specific domains**, in which deep knowledge of the sector is important. The UC3M pilot is grounded in an excellent GAP analysis for the UC3M and has formulated a robust methodology to sustainably and structurally embedding the CERI/FKT approach in the future, representing a highly ambitious objective.



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A noteworthy aspect of the UC3M pilot is the organization's structure, revolving around two units. Firstly, the Research Support Service (SI) devoted to supporting research itself. Secondly, the Entrepreneurship & Innovation Support Services (SEI) dedicated to supporting innovation activities, KT, and entrepreneurship activities. This dual-unit structure is a strength, as the SEI provides assistance to both the university community (teaching and research staff, students, other services) and external stakeholders, i.e., entrepreneurs and companies, fostering an entrepreneurial and innovative ecosystem that promotes technological and KT.

The **entrepreneurial mindset at UC3M is already strongly encouraged from the time a student joins the UC3M**, which can undoubtedly have a **positive impact** on fostering an **open mindset for innovation** and valorisation among future generations.

Each of the three FKT pilots has its strengths from which we can draw valuable lessons about realizing more demand-driven Knowledge Valorization. However, it is also noticeable that they identified similar challenges like:

- A change in leadership (a change in government policy and/or rectoral interest in the topic) can pose a risk
- Resistance to cultural change by researchers (but also university leaders, staff).
- The need for structural resources and the risk of unstable funding.
- Competition in the job market for talent access.
- The significant importance of ongoing investment in training and talent development for both researchers and staff.
- Rigid corporate culture.
- Weak/moderate internationalization.

5. Future Actions and Adapted Vision & Transformation Strategy

Based on all the outcomes of the described steps, we have gathered **evidence-based insights**. These insights have enabled us **to formulate overarching lessons** that are pivotal in achieving our ultimate objective of a YUFE/YUFERING more demand-driven Knowledge exchange and valorization, commonly referred to as the "Flipped" approach.

In section 5.1 below, we will synthesize **the fundamental components of our ultimate vision**, which will **serve as our shared “compass” for both YUFE institutions individually and the YUFE Alliance as a whole**. This encourages us to express our aspirations for the future and define our ambition as an **ideal destination or we aim to strive towards**.

Subsequently, in section 5.2, we will delve deeper into the question on how we can translate and actualize this visionary position in practice. This section will provide a comprehensive exploration of the insights from our Transformation strategy. It will also



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put forth concrete proposals and exemplify the means, channels, and tools that can be employed for this purpose.

5.1. Our YUFE vision: ambition on Knowledge Valorisation

In the following text, we first describe **the ambition at the level of individual YUFE partner universities**, acknowledging the significant differences that currently exist among the YUFE partner institutions, as evident from the mapping and SWOT analyses (see sections 3.2 and 3.3). For instance, some universities have been actively encouraging a more demand-led or bi-directional approach to Knowledge Transfer for a longer period (e.g. the 3 FKT Pilots: UEssex, UAntwerp, UC3M) than others. Furthermore, there are substantial disparities in the size KTO (**Knowledge Transfer Office**) and availability of KT professionals within the supporting services. Of course, this historical background and the size of the KTOs at individual YUFE universities also influence the current disparities in their effectiveness.

Nevertheless, despite these existing differences, we dare to prioritize **our shared ambitions that we ideally want to achieve also at our local levels**. This will also support all YUFE partner universities in their efforts to effectively communicate and advocate the importance of KV to their respective top management. It became clear from our transformation analysis that **a more demand-led approach to KT not only requires a bottom-up approach but really needs the support from the university's top-level** and their willingness to support (with time and means) the demand driven KV.

Subsequently, we conclude with **our collective ambition regarding KV at the YUFE Alliance level**. We advocate for **a more integrated approach to Community Engaged Research Innovation & FKT, using the broader and now more commonly used designation “Knowledge Valorisation”** instead of FKT and envisioning the **establishment of a “YUFE Knowledge Valorisation Network”** which could unite the **bi-directional approach as the combined model of both Community Engaged Research & Innovation and Flipped Knowledge Transfer**.

The reason that we propose to use term **“Knowledge Valorisation”** is that it better encompasses the different important aspects we want to emphasize in our final Vision as well as the connection with WP2 YUFERING:

- The connection with the community engaged research.
- The process of KT (conventionally in one direction, from research to society).
- The process of knowledge exchange (bi-directional).
- The importance of creating value and impact for society at large.

Another reason is that the term "Knowledge Valorisation" is being used in recent European policies and forums to shape the future focus and direction of the EU in this framework. We refer here particularly to the the [Guiding Principles for Knowledge Valorisation](#), which aim to maximize the transformation of research and innovation results into solutions that benefit society.

On December 8, 2023, a policy debate was organized in the Competitiveness Council on "Research valorization as a tool for economic and industrial recovery and



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resilience." The Council Conclusions on Knowledge Valorisation are planned for January 2024, to be developed based on this debate. However, we would like to extra emphasize here also the importance of the bi-directional process.

Based on our evidence collected within YUFERING WP3, we came to the following **YUFE-wide definition of Knowledge Valorisation**

Knowledge valorization is a bi-directional process in which researchers and SBAs bring together their knowledge and expertise to address challenges, aiming to co-create social and economic value. This is achieved by connecting various areas, expertise and sectors, transforming data, know-how, and research results into sustainable products, services, solutions, and knowledge-based policies that benefit society.

YUFE has therefore the ambition that:

- *All YUFE-partners engage themselves and strengthen each other in implementing a **combined CERI-FKT model as a bi-directional approach of KV** in order to create **IMPACT** to the benefit of the stakeholders in their local ecosystems: businesses, citizens, governments, NGO's, which will offer also new feedback loops and **INPUT** for future research and innovation activities based on the captured needs of the Societal and Business Actors (SBA's).*
- *All YUFE partners will make the necessary efforts to attract the appropriate means to be able to **invest in the PEOPLE** needed to make this Knowledge Valorisation approach a reality. A **complementary Team of KV Managers** will be set up that will be able to make the connections inside and outside the YUFE institutions and within the YUFE-alliance and the respective stakeholders in the Quadruple Helix.*
- *All YUFE partners will invest in **TALENT Development** by specific **TRAINING** Programs on a more demand-driven KV for their own Staff of KT Professionals as well as for researchers, especially early career researchers (ECRs), i.e., doctoral candidates and postdocs.*
- *All YUFE partners will contribute time to **COMMUNITY BUILDING and NETWORKING** activities, not only to their own local networks with SBA's, but also contributing to the YUFE Alliance communities (YUFE FKT Community, YUFE International Startup Communities, YUFE Innovation Platforms) to increase visibility, and spread expertise outside the YUFE institutions/YUFE-alliance.*
- *All YUFE partners are committed to develop a strategy towards '**MORE FOCUS AND SPECIALISATION**', building further on their own strengths and those of the key-stakeholders in their local ecosystem in order to maximize KV impact. In addition to these local efforts, on a YUFE-alliance level our shared*



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ambition is to link these strong local ecosystems and develop a YUFE-broad strategic partnerships.

- *All YUFE partners will **BUILD their CAPACITIES** on **FUNDING and INVESTMENTS in Quadruple Helix collaborations**. Collaboration with external partners requires funding. It is therefore important to prioritize, identify and explore (new) internal and external funding opportunities and expand our network(s). Within the YUFE-alliance we can share in this framework our expertise and reinforce each other in detecting common funding opportunities and attract funding for linking our (local) innovation ecosystems.*
- *All YUFE partners will actively embrace and integrate or participate in **INNOVATIVE APPROACHES** for KV like Challenge Labs, Challenge Teams, Strategic Intelligence Tools and Databases with AI matchmaking tools.*

The above strategic goals are put forward on the level of the individual YUFE institution as shared values and are at the core of our **Vision towards a more demand-driven approach for KV**. We are convinced that if we work at our local level as individual YUFE universities towards these strategic goals and share our expertise, best practices, and infrastructures, we will also become stronger together as the YUFE-alliance in the domain of KV.

But what are our specific ambitions at the YUFE-level regarding KV? What can we do extra?

YUFE has the ambition that:

- ***the YUFE-alliance as a whole creates IMPACT for their stakeholders in the Quadruple Helix not only at the local level, but also the European, international level.***

It is a significant challenge to bridge the gap between the local level and the YUFE Alliance level. The question about the Quadruple Helix impact is broader than our work within YUFERING WP 3.

During a joint physical meeting of the YUFERING WP2 and WP3 members, as well as the members of the WP7 (Entrepreneurship and Innovation) and WP8 (Community Engagement) of the new YUFE 2030 project, we had an extensive brainstorming session related to how we could integrate all our valuable insights to contribute to the development of cross-links and synergies between KT and community-engaged research and innovation activities.

One of the insights from these discussions, which also emerged from the Gap-analysis and the YUFERING FKT Pilots, is that within the YUFE Alliance we are currently mainly focused on the Triple Helix, rather than the Quadruple Helix. Therefore, ***in the future we need to establish more links with civil society.***

To achieve this, it is essential for YUFE to develop a strategy that focuses more on those topics ***where we can truly make a difference as a YUFE Alliance, emphasizing our unique “selling points” and common strengths.*** As described in section 2.2, our YUFE mission already includes YUFE core values and YUFE Focus Areas, but these focus areas are still quite broad.



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To bridge the gap from the local to the YUFE level in terms of KV, it is crucial that, in the upcoming period, we work on **specific topics within these YUFE Focus areas** where cooperation within YUFE, beyond the local level, can make a real difference. These should ***be challenges and topics that cannot be solved at the local level alone but require an international (YUFE) approach to add value*** and to contribute to real solutions.

Examples of such **topics with a clear European dimension**, mentioned during the joint meeting had close links with challenges in the civil society like the integration of refugees, migration and how to cope with intercultural differences and language barriers, the aging of the European population, which poses new challenges on Human Capital, or the War for Talent beyond the borders of European countries. Other topics that were mentioned were the developments in Artificial Intelligence and Ethics. Only during one brainstorm session we were thus able to identify several challenges broader than the local level and where we could also realize successful connections with civil society (from Triple to Quadruple Helix). Of course, this list of topics is not exhaustive.

Another approach to find more insights and inspiration for topics suitable for more focus and specialization is to **examine policy documents from the EU, particularly forecasting policy documents**. The challenge lies in identifying those topics within the broad YUFE focus areas where the YUFE Alliance can genuinely make a difference.

Making more **focused choices on topics will also serve clarifying our narrative**. The YUFE areas have already been chosen from the top-down but remain broad. In the coming period, we recommend a kind of 'smart specialization' within the YUFE focus areas, where we not only focus on the strengths within our YUFE Alliance, but also the strengths and needs of our external stakeholders in the Quadruple helix. Only in such a way could we make the demand-driven approach more complete and **create impact beyond the local level**.

To make these priorities more concrete, **the top-down approach need to be complemented in the next phase by a stronger bottom-up engagement**. We need to **establish connections between the top-down policy choices (e.g., the YUFE Focus Areas) on one hand and the bottom-up coalition of the willing of researchers, Knowledge Professionals and other Staff as well as students**. Where can we find strong bottom-up connections within our YUFE Alliance (e.g., research nodes, experiences from others) within YUFE on which we can build further?

A concrete **good example** is the **BioYUFE pilot**, developed in WP2 YUFERING. We need to **expand such bottom-up initiatives with common research nodes**, which will provide a foundation for further KV activities and connections with external stakeholders. Also, topics where the YUFE level can add value because the challenge extends beyond the local level should be considered.

Adopting a more targeted approach will also make it easier to **promote YUFE externally with concrete impact stories**. Branding YUFE is important, but we need to be clear in our messaging and communicate what we can offer through our outreach and show real impact stories.



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YUFE already has a wealth of initiatives, activities, and instruments, including the YUFE KT expert network, YUFE4postdocs, a wide range of YUFE training programs developed in the different YUFE-projects, YUFE Challenge Teams Call, the YUFE International Startup Community and several more activities to be further developed, like the YUFE Innovation Platforms. We should use these instruments when working on the chosen topics (smart specialization).

Last but not least, to support and integrate all this work at the level of the YUFE Alliance, we express the ambition to establish on a structural basis a **YUFE Knowledge Valorisation Network** with a vast core-team of the YUFE KT colleagues, building further on the valuable YUFE Knowledge Expert Network which was successfully established under the good guidance of Task-leader University of Rijeka. This network was really a driving force for sharing of best practices, expertise, the development of training and feeding the final vision.

5.2. Our Implementation Strategy: from Ambition to reality

In this section we will describe HOW we will try to reach our ambition for a more demand driven KV by implementing a combined CERI-FKT model. We will describe our operational strategies and tactics.

5.2.1 Investing in People to support and manage the KV activities

Our analyses have highlighted that the success of a more demand-driven KT depends on the involvement of KT professionals capable of gaining insights into the needs of stakeholders within the Quadruple Helix.

It is essential to invest in a multi-level team of knowledge valorization managers with diverse competencies, both at decentral and central levels. An interesting example is found in the UAntwerpen pilot, where dual appointments involve liaison managers working partly at the University and partly with external partners, with shared personnel costs.

We also refer to the proposals in Deliverable 3.3 concerning the "*Profile and Career Development Path for KT Managers*." The report describes a comprehensive skillset that KT professionals should acquire to interact and engage effectively with SBAs. For more information, see Annex 10.

The report strongly emphasizes that no single individual can possess all the required skills for the effective management of FKT-processes. Therefore, it is advisable to have a mixed multi-skilled team covering the necessary skillset, focusing on collective competencies rather than individual expertise.

Key strategies include:

- Focusing on collective pools of competencies rather than individual expertise.
- Building skills in-house.
- Creating attractive career paths for KV professionals.
- Maintaining investment in talent development and team building.



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5.2.2 TALENT Development by specific TRAINING

Building on the importance of developing skills in-house, it is crucial to focus on Talent Development and training. Competencies that are currently lacking can be developed, for example, through peer-learning and specialized training.

Each of the YUFE partners offers its own training programs for their staff, KT professionals, and researchers. This offering can be enhanced by the offerings from the YUFE Alliance. Within YUFERING WP3, we have developed a specific training to stimulate FKT - we refer to Deliverable 3.4, titled "*Development of an online training in soft skills and co-creation fundamentals*," centered on blended coaching with workshops consisting of 3 modules:

- *Module 1*: increasing the motivation of academics for KV with SBAs and matching R&I expertise in the innovation ecosystem;
- *Module 2*: enhancing engagement skills with SBAs: communication, marketing, and promotion, as well as brokering, negotiation, and persuasion;
- *Module 3*: managing the demand-driven KV process through co-creation.

If we want to stimulate a more demand-driven KV, KT-professionals must also take responsibility for **reaching out to academics, raising awareness, and motivating them for knowledge valorization**. The SWOT analyses revealed that there is often resistance among academics and a **need for a cultural shift**.

We also refer to training and workshops developed in other work packages of YUFERING, such as, for example, WP2. Task 2.4 focusing on the development of **trainings related to community engagement**.

Finally, in addition to training, other initiatives can contribute to competency growth and making the job of KT-professionals more attractive. **Possibilities for mobility**, job rotation, job shadowing, and study visits, amongst others, can be motivating factors to YUFE partners. We may explore funding options for such mobility periods for KT-experts through the **Erasmus+ Staff Mobility scheme**. The YUFE Knowledge Valorisation network (see also below) can play a significant role in this regard.

5.2.3 Community Building/Networking

Referring to the significance of networking at the local level and showcasing best practices in public relations, and organizing events, each of the YUFE partners conducts its own networking events and awards ceremonies.

Furthermore, at the YUFE Alliance level, there is a need to invest more in a compelling narrative that highlights YUFE's **best practices in Knowledge Valorization**. Expanding our networking efforts and community-building is essential. While we have established a **YUFE International Startup Community** within the Inno4YUFE project, ongoing efforts are required to nurture and connect it with tangible actions and activities.

While branding YUFE is crucial, as mentioned earlier, it is vital to ensure clarity in our messaging, communicate the value we offer through outreach, and present real impact stories.



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In terms of community building, it is pertinent to mention **the ongoing development of a YUFE innovation platform**, focusing on the intersection of Health and IT. This platform is being developed based on the Regional Innovation **Matchmaking Platform** (RIMAP - <https://rimap.uniri.hr/>) established at the University of Rijeka. **Recognized as a best practice example during the EU Knowledge Valorisation Week 2023**, the IT solution for the YUFE Innovation Platform is in progress. The platform will facilitate the insertion of researchers' profiles, portfolios, and research equipment for use in knowledge valorization activities. It will also include profiles of SBAs and their project proposals, along with a section featuring news related to projects and other calls, offering potential funding opportunities for bidirectional collaborations.

The platform's visuals will be aligned with those of YUFE, and its functionality will be upgraded to suit the needs of all YUFE partner universities and SBAs in their regional innovation ecosystems. Additionally, the platform will offer the option of integrating an AI-based upgrade to automate its matchmaking functionality.

What is more, on **May 12, 2023**, YUFERING project leader University of Cyrus organized the first **Stakeholders Info Day**, facilitating **interaction with local stakeholders**. Looking ahead, we may consider hosting a biennial YUFE-Event on KV with rotating physical locations, inviting stakeholders and sharing concrete YUFE impact stories. This event could also include KV Awards, recognizing collaborative projects in various categories for their outstanding contributions. A second Stakeholders Info Day will be organized at the University of Antwerp on February 28th, 2024, where stakeholders of the Antwerp ecosystem, as well as YUFE partners, will be invited.

5.2.4 More Focus and (Smart) Specialisation

The Four YUFE focus areas - *European identity and responsibilities in a global context, Citizens Well-being, Digital Societies, and Sustainability* - were deliberately selected and approved by the YUFE Strategy Council. These areas address crucial societal challenges of our time.

From the Gap Analysis and the Pilots, it became evident that successful implementation of a demand-driven KV requires building upon both our own strengths and those of stakeholders in the ecosystem.

While the YUFE areas were initially chosen from the top-down, they remain broad. We recommend implementing a 'smart specialization' within these focus areas, considering not only the strengths within the YUFE Alliance but also those of external stakeholders in the Quadruple Helix. It's quite important that the specialization is SMART, because the concept of "intelligence" makes the difference between effective and ineffective specialisation.

Disseminating impactful stories within these focused YUFE areas can clarify our narrative. To achieve this, the top-down approach in the next phase needs to be complemented by stronger bottom-up engagement.

A concrete example is the BioYUFE pilot developed in WP2 task 2.3 YUFERING. We should expand such bottom-up initiatives with common research nodes, forming a foundation for further KT-activities and connections with external stakeholders.



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Task 2.3 instructs the development of a research collaboration approach between YUFE partners, defining strategic research lines and the emergence of research nodes. This was addressed through a double strategy: a MSCA Cofund (Marie Skłodowska-Curie Cofund) application to foster research collaboration within the YUFE Focus areas by postdocs and the development of a methodology for alliance-wide research collaboration.

Furthermore, it is crucial to focus on topics where addressing them at the YUFE Alliance level adds value, particularly because challenges extend beyond regions, requiring a European and global approach. Section 5.2.4 delves into Capacity Building and Funding instruments to connect the top-down strategy and bottom-up approaches.

5.2.5 The Capacity Building on Funding and Investment

Collaborating with external partners necessitates funding. We must prioritize identifying new funding opportunities for quadruple helix projects. **Utilizing available instruments and complementary funding schemes within national and European policies is crucial** (see also Figure 1).

As the YUFE Alliance, we should strategically leverage these instruments to connect top-down and bottom-up approaches through funding concrete projects with impact on our stakeholders. Notably, we refer to ambitious Horizon Europe projects, such as YUFE4Postdocs (involving all YUFE universities) and the INNO2MARE project (backed by 2 YUFE partners and numerous external stakeholders). Both projects exemplify capacity building and expanding our investor network beyond existing channels.

YUFE4Postdocs allows postdocs to choose topics (bottom-up) within specific YUFE focus areas, fostering community and stakeholder engagement. The INNO2MARE project, a WIDERA Excellence Hub project worth €5 million, contributes concretely to the broader EC (S3) smart specialization goal of interregional collaboration. This project aims to strengthen the excellence capacity of ecosystems in Western Slovenia and Adriatic Croatia, focusing on the green and digital transition of maritime industries. It serves as a tangible example of a quadruple helix project that unites both top-down strategic planning and bottom-up activities, involving policymakers, researchers, and the maritime industry to address significant challenges.

In the future, a more focused approach on such projects, aligning with bottom-up research nodes where the YUFE Alliance excels, would be beneficial.

However, in addition to these EU-subsidy instruments, we should also explore less well-known investment opportunities. Furthermore, for valorisation and spin-off projects, we need to investigate the European business investment networks available in the ecosystem. But innovation also encompasses social innovation. We need to collaborate with NGO's, cities, intermediary organisations representing civil society and extend our network with Impact funds that could support us.

5.2.6 The Adoption of Innovative more Challenge-Based Approaches for Knowledge Valorisation

A more demand-driven KV requires an innovative approach, emphasizing co-creation with stakeholders and a challenge-based approach. Not all partners are equally



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advanced in this regard. Notable examples include the comprehensive and established approach at the University of Essex with the Challenge Labs and at Maastricht University with the Challenges. At the YUFE Alliance level, instruments and best practices have already been developed to encourage such a challenge-based approach, including the YUFETHON and the YUFE Challenge Teams.

In the future, we aim to continue leveraging these instruments to better address societal challenges. Additionally, we will focus on exploring Strategic Intelligence Tools and Databases with AI matchmaking tools, as we have yet to build significant expertise in this area.

5.2.7 The Establishment of a YUFE Knowledge Valorisation Network

The pilots have revealed that it is important to invest heavily in talent development and in building a team of knowledge valorization managers at four levels (decentralized, centralized, domain managers, and liaison managers). We can add a level to this, namely at the YUFE Alliance level. During the YUFERING project, we have gained very positive experience with initiating a YUFE KT expert network, which has truly served as a driving force for all our diverse activities.

To structurally embed this in the future, we propose to **permanently establish the YUFE KV Network**, organized in line with the following core objectives:

1. Focus on demand-driven KT to foster Quadruple Helix collaborations and a challenge-based approach.
2. Promote an entrepreneurial mindset, responding to the needs of external actors/SBAs (industry, entrepreneurs, startups, NGOs, public sector, and other stakeholders) among students, researchers, non-academic staff, and SBAs to raise awareness and build expertise among all target groups.
3. Support the coherence and quality of YUFE and YUFE 2030 Innovation & Entrepreneurship (I&E) activities by performing a liaison function and connecting relevant YUFE communities, such as the International Startup community or the Challenge Teams.
4. Become a network/hub for exchanging best practices between decentralized KTO offices and provide support for less experienced KTOs with specific queries.
5. Build bridges between partners and stakeholders of the regional innovation ecosystems of the different YUFE partners by organizing networking, matchmaking, and outreach events with partners from the Quadruple Helix (cf. International startup community).
6. Perform an advisory function in the area of I&E to enhance strategic coherence and clarity regarding I&E activities under the YUFE Alliance.
7. Foster open innovation practices by promoting activities connecting researchers and students with SBAs, thus building innovation capacities.



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8. Identify and explore new funding opportunities for activities related to knowledge valorization and new joint valorization projects between YUFE partners.

6. Final conclusions and policy recommendations

YUFERING W3 aimed to develop a vision for a "Flipped" approach to KT. Over nearly three years, we worked intensively on this, collecting substantial evidence-based material through surveys, best practices in the form of use cases, and pilots. Based on all this evidence, we concluded that the so-called "Flipped" demand approach cannot be separated from academic networks and the broader research and innovation communities. **Creating more demand-driven structural partnerships among academia, industry, and external stakeholders requires not only a top-down approach** from the university's central policy but **also a bottom-up approach**. Daily efforts are needed from academics, businesses, external stakeholders, and KV Managers **to achieve a more purpose-driven approach to KV**.

The active involvement of academics is just as crucial as that of KT Professionals, companies, and external stakeholders, highlighting the importance of a bi-directional approach. Instead of solely focusing on the "Flipped" approach, we prefer to talk about demand-driven KV (bi-directional approach). We advocate a combination of inside-out and outside-in approaches.

In WP3 YUFERING, we have arrived at **a renewed definition of Knowledge Valorization**.

Knowledge valorization is a bi-directional process in which researchers and SBAs bring together their knowledge and expertise to address challenges, aiming to co-create social and economic value. This is achieved by connecting various areas, expertise and sectors, transforming data, know-how, and research results into sustainable products, services, solutions, and knowledge-based policies that benefit society

Our main conclusions:

- Cultivate long-term partnerships to establish trust with SBAs, focusing on university strengths and local ecosystem collaborations for place-based innovation.
- Empower KV managers and invest in team and talent development for success.
- Strengthen PR and communication strategies to regularly showcase technological offerings, research potential, success stories.
- Build strong connections with external partners, utilizing existing talent and breaking down silos for tailored KV.
- Raise awareness of the university's strengths and foster demand-driven collaboration with SBAs through entrepreneurship and innovation training.



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- Prioritize identifying new funding opportunities, expanding investor networks internationally.
- Expand academic networks, promoting interdisciplinary collaboration and coordination between bottom-up and top-down approaches and a combination of inside-out and outside-in.
- Implement challenge-based initiatives for co-creation with SBAs to address real-world challenges, which reinforces not only research but education as well.
- Ensure adequate resources to support the proposed approach. All the intellectual assets have to be carefully nurtured along the “never-ending” journey.
- The European University alliance brings capacity and great opportunities. Integrating demand-driven approaches across all university activities.

Policy Recommendations:

- **Invest in efficient networks of liaison managers that can build bridges and break down silos between the research world and innovation/valorization towards society**

In the current ongoing policy discussion on KV within the EC, there is rightful emphasis on the role of research managers and their importance in laying the foundation for further innovation. Hence, proposals are being made to refer to them in the future as *Research & Innovation Managers*.

However, our YUFERING project reveals that **KV-managers also need specific competencies**. We developed a Competence profile for KT professionals based on the existing competence framework for Registered Technology Transfer Professionals (RTTP), adding competences to foster a more demand-driven approach to KT. One added competence is knowledge of R&I funding channels. However, finding all essential competencies in one person is often not feasible. Therefore, we emphasize the **importance of supporting a team with complementary specializations**. Research managers and KT professionals each have specific technical competencies, and what's needed are individuals who can serve as liaisons bridging these roles.

Our policy recommendation to the EC is to **invest in efficient networks of liaison managers that can build bridges and break down silos between the research world and innovation/valorization towards society**. A good example at YUFE level is the "YUFE - KV Network" developed in YUFERING, **which function as a complementary team at international level**. Supporting such networks would be beneficial, as our mapping also showed that not all universities have the same resources and critical mass and need to take up this task on top.

- **Advocating for earmarked and stable (i.e., not exclusively project-based) national funding for HEI staff dedicated to knowledge valorization is recommended.**

From the UAntwerpen FKT pilot, we learned about the Flemish policy of providing universities with an earmarked budget called "The Industrial Research Fund,"



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specifically designed to stimulate academic valorisation. These **earmarked and stable funds** can be utilized by Flemish universities for **'IOF research projects'** related to valorisation, as well as **for appointing Valorisation managers** at central and decentral levels. These managers serve as liaisons between the university and SBAs in the ecosystem. This model has proven to be a significant stimulus for KV. However, not all YUFE partners have such a policy environment.

In this context, EC policies/directives that would encourage nations/regions to allocate earmarked, stable (not exclusively project-based) budgets for 'innovation support' at universities could **be a real leverage for KV and create impact**. Additionally, investing in small grants, such as Proof of Concept (POC) grants, is crucial, as they have demonstrated their significance in fostering KV. Including POC or similar grants across the EU Research and Innovation Framework Program (EU R&I FP) should be considered. This conclusion is also evidence based on the positive experiences and impact on KV we could envisage at YUFE universities that already have such small POC at their disposal. The European University alliance showed us some critical success-factors for capacity building on KV and we hope that our insights and conclusion can also contribute to further policy development.



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References

- Ankrah, S., & Al-Tabaa, O. (2015). Universities-industry collaboration: A systematic review. *Scandinavian Journal of Management*, 31(3), 387-408.
- Carayannis, E. G., & Campbell, D. F. J. (2009). "Mode 3" and "quadruple helix": Toward a 21st-century fractal innovation ecosystem. *International Journal of Technology Management*, 46(3/4), 201–234.
- Carayannis, E. G., Campbell, D. F. J., & Grigoroudis, E. (2022). Helix Trilogy: The Triple, Quadruple, and Quintuple Innovation Helices from a Theory, Policy, and Practice Set of Perspectives. *Journal of the Knowledge Economy*, 13(3), 2272–2301.
- Debackere, K., & Veugelers, R. (2005). The role of academic technology transfer organizations in improving industry science links. *Research Policy*, 34(3), 321–342.
- De Cleyn, S., & Gielen, F. (2016). "Flipping the knowledge transfer model using start-ups: how entrepreneurs can stimulate faster adoption of academic knowledge." In: *Academic Spin-offs and Technology Transfer in Europe*.
- De Cleyn, S., Meymans, J., Gielen, F., Braet, J. (2014), "How engaging start-ups in research activities can lead to more effective technology and knowledge transfer from public research organisations" paper presented at *RENT Conference 2014*.
- Etzkowitz, H., and Leydesdorff, L. (1998) 'The endless transition: a 'triple helix' of university-industry-government relations', *Minerva*, Vol. 36, No. 3, pp.203–208.
- European Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the regions: "On a European strategy for universities". Strasbourg, 18.1. 2022.
- Proposal for a COUNCIL RECOMMENDATION on the guiding principles for knowledge valorisation, COM/2022/391 final
- Gerbin, A., & Drnovsek, M. (2016). Determinants and public policy implications of academic-industry knowledge transfer in life sciences: A review and a conceptual framework. *The Journal of Technology Transfer*, 41(5), 979–1076. <https://doi.org/10.1007/s10961-015-9457-0>.
- Lockett, A., & Wright, M. (2005). Resources, capabilities, risk capital and the creation of university spin-out companies.
- Markman, G. D., Gianiodis, P. T., Phan, P. H., & Balkin, D. B. (2005). Innovation speed: Transferring university technology to market. *Research Policy*, 34(7), 1058–1075. <https://doi.org/10.1016/j.respol.2005.08.001>.
- Szoka, P. (2006). FROM DOING RESEARCH TO MOVING RESEARCH (pp. 177–188). <https://doi.org/10.1016/B978-012589376-3/50044-9>.



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- The Smart Specialisation (S3) Forum 2023, organized by the European Commission's DG REGIO in collaboration with the Generalitat de Catalunya and the S3 Community of Practice Secretariat, November 28th, 2023.

Annexes

- Annex 1: Minutes first hybrid Annual Conference of the FKT Expert Network, 29.11.2021
- Annex 2: Mapping of the current KT support systems at YUFE-universities
- Annex 3: Biocatcher case study
- Annex 4: Pilot use case INROBICS
- Annex 5: Gap-Analysis-Final Report Task 3.2
- Annex 6: YUFERING WP3 Pilot FKT UAntwerp
- Annex 7: YUFERING WP3 Pilot FKT UC3M
- Annex 8: YUFERING WP3 Pilot FKT Uessex
- Annex 9: Report of the FKT Pilot Peer assessment results
- Annex 10: Deliverable 3.3 (Task 3.5) Profile and career development path of Knowledge Transfer Managers, March 2023



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