

Intermediaries

Mutual Learning Exercise on Knowledge Valorisation - Focus on Skills, Intersectoral Cooperation and Incentive Systems

Third thematic report

PSF CHALLENGE

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Report



Intermediaries. Mutual Learning Exercise on Knowledge Valorisation - Focus on Skills, Intersectoral Cooperation and Incentive Systems

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Intermediaries

Third thematic report

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EXECUTIVE SUMMARY

As recommended by the EU Guiding Principles, knowledge valorisation policy involves all categories of research & innovation ecosystem actors and requires enhanced collaborative environments. Intermediaries have a key role in the process of connecting researchers and knowledge actors to industry and society. It is about matching the offer and the demand for knowledge, promoting the co-creation of solutions, and reaching potential users of knowledge across pathways and business models which generate added value for all R&I actors involved.

This thematic report defines what is meant by knowledge and innovation intermediaries, summarises the rationale behind the role given to intermediaries in an open ecosystem and multi-actor perspective, describes the role of intermediary organisations as knowledge valorisation actors, maps and analyses the landscape of established intermediaries, identifies new approaches, practices, and models adopted by conventional and novel intermediaries, and discusses the main policy implementation challenges.

Boosting knowledge valorisation through the support of intermediaries is confronted with various challenges which concern the following aspects of implementation: (a) the funding model and the relevance of public financial intervention supporting intermediaries, (b) the business and ownership model of intermediaries, (c) the monitoring and evaluation of intermediaries, (d) the complexity of skills and competences required to act as an efficient intermediary, including the adoption of a true intellectual asset management (IAM) approach, (e) the capacity to act between R&I actors, especially engaging industry (particularly SMEs) and society, (f) the networked organisational model of intermediaries, and (g) the importance to tackle emerging considerations such as inclusivity, sustainability, sovereignty, and a demand-driven approach.

The report also emphasizes the reasons why entrepreneurship capabilities are so important for catalysing knowledge valorisation, as well as the territorial dimension of intermediaries.

Based on the lessons extracted from the testimonials provided by knowledge valorisation stakeholders during the workshops and survey, the report formulates seven recommendations to policymakers on how to make best use of intermediaries for implementing efficient knowledge valorisation strategies, illustrated by fifteen selected good practices.

1. Introduction

1.1. Policy background

The European Union (EU) intensively and consistently fosters research and innovation (R&I) activities through its Framework Programmes, and the European Research Area (ERA) policy is instrumental in developing the EU's scientific excellence, the quality of its research and its impact, contributing significantly to socio-economic developments and solving complex societal demands and challenges.

Knowledge Valorisation is one of the key objectives of the EU R&I policy. It aims to create social and economic value from knowledge by linking different areas and sectors and by transforming data, know-how, and research results into sustainable products, services, solutions, and knowledge-based policies that benefit society. Boosting knowledge valorisation is essential to deliver new responses to the challenges and opportunities currently faced by the EU, in particular the twin climate and digital transition but also security, social and economic issues, all aspects impacting the competitiveness of the EU.

This powerful definition says a lot about the expected impact of a dynamic, efficient, and multi-stakeholder knowledge valorisation strategy, linking various objectives and ERA core actions. The expectations are high, namely, to improve the valorisation of knowledge (ERA action 7) and to promote attractive and mobile research careers (ERA action 4), in an integrated way, by avoiding silos, as these matters are interdependent and conducive to accelerating the emergence of a highly competitive European knowledge-based economy.

Amongst others, one of the key challenges is the paradigm shift in the approach to intellectual assets and the expected more active role of the relevant stakeholders of the innovation ecosystem. As recommended by the EU Guiding Principles¹, knowledge valorisation policies should involve all categories of R&I ecosystem actors such as universities and other higher education institutions (HEIs), research and technology organisations (RTOs), research and technology large-scale infrastructures, enterprises/SMEs, spin-offs and start-ups, investors and funding bodies, policymakers and public authorities, citizens and civil society organisations (CSOs), standardisation bodies and intermediaries such as knowledge and technology transfer professionals.

1.2. Scope of the topic

Reinforcing knowledge valorisation requires enhanced collaborative environments, bringing together and connecting key actors (researchers, universities and higher education institutions, industry, public administration/policymakers, intermediary organisations, not-for-profit associations, standardisation bodies, and civil society representatives). This is imperative for enabling and expanding the valorisation (and commercialisation) of knowledge. The pathways and connections are complex and take various formats.

The distribution and valorisation of the knowledge generated by R&I producers should interact with and reach out to the whole ecosystem, and be co-created, absorbed, translated,

¹ [Council Recommendation \(EU\) 2022/2415 of 2 December 2022 on the guiding principles for knowledge valorisation](#)

transformed, adapted, applied, and valued by users. This can be enabled, facilitated, and enhanced through the support of intermediaries and the leverage effects they may produce.

1.3. Purpose of the thematic report

This thematic report aims to define what is meant by knowledge and innovation intermediaries, to summarise the rationale behind the role given to intermediaries in an open ecosystem and multi-actor perspective, to describe the role of intermediary organisations as valorisation actors, to map and analyse the landscape of established intermediaries, to identify new approaches, practices and models adopted by conventional and novel intermediaries, and to identify the main policy implementation challenges.

In addition to the experts' inputs, this report has been made possible thanks to the contribution of:

- a) a two-day workshop, zooming in on the Swedish ecosystem, organised on 20 and 21 September 2023 in Stockholm with the support of Vinnova and with the participation of numerous key actors (Ministry of Climate and Enterprise, KTH, Chalmers, SISP, RISE, Almi, Uppsala University, Gothenburg University, Swedish Patent Office (PRV), Astra-Zeneca, Synerleap (ABB), BrainZell, SNITTS, Compare, Konsert, Stockholm School of Entrepreneurship, IHubs, and the Confederation of Swedish Enterprises);
- b) a survey organised in October 2023 on the topic of intermediaries in Knowledge Valorisation, with the valuable contributions of Austria, Belgium (Flanders), Bulgaria, Croatia, Estonia, Finland, Greece, Hungary, Malta, Poland, Slovenia, and Spain.

2. Intermediation - what are we talking about?

2.1. General definition

Intermediation corresponds to *"the act of carrying messages, making connections or processing transactions between organisations, people or things that are unwilling or unable to meet"* (Cambridge dictionary), or that require a pro-active approach in establishing, stimulating, and supporting the relationship.

In some sectors, intermediation is a vital function without which no transactions would easily take place, such as in the retail, logistics, and financial sectors, both in business-to-business and business-to-consumer contexts. Intermediation has equally become a necessity in the areas of education, research & innovation, and socio-economic development, within a perspective of public interest and sustainable prosperity.

Intermediation is a critical function of the knowledge valorisation process, which needs to connect researchers and knowledge actors to industry and society. It is about matching the offer and the demand for knowledge, promoting the co-creation of solutions, and reaching potential users of knowledge across pathways and business models which generate added value for all R&I actors involved.

2.2. The knowledge ecosystem context

The knowledge ecosystem can be defined as a complex, self-organising system of people and organisations interacting with each other and with their knowledge and technical environments, to grow collective intelligence and capabilities.

The valorisation of knowledge takes place within an open, continuously evolving, multi-actor environment, with challenging business models and within changing ecosystems.

Ecosystems thinking has become the standard on how to design vibrant business, innovation, and knowledge support systems, for both public and private interests, at both territorial and business model levels. It improves the capacity of organisations to position and interact with stakeholders and to drive their development, economic and societal resilience, and business journey with a 360° multi-dimensional approach.

Ecosystems thinking is very much inspired by various powerful theories and concepts, such as the Smart Specialisation Strategy (S3) developed by the European Commission, the Triple and Quadruple Helix movements, the rise of open innovation and collaborative R&I, the development of valorisation theories, models and practices, and perhaps also by the way biological and natural ecosystems interact for surviving, adapting, evolving and growing. Ecosystems thinking is now considered a core competence for public and private smart organisations – including knowledge valorisation actors - recognising this is vital in an increasingly complex world.

Ecosystem thinking is about (a) economics: sustainable prosperity and wealth creation, (b) collaboration: networking and partnerships (c) openness: open collaboration, open innovation, open source, open market, open data, etc.

However, the knowledge ecosystem is not the only relevant ecosystem that knowledge valorisation should be aware of and connected with. Knowledge valorisation should also be connected to the innovation ecosystem, the industrial ecosystem, the various industrial value-chains' ecosystems, the socio-economic ecosystem, the territorial ecosystem, etc. The ecosystem mainly refers to an approach of the environment and stakeholders in which a project or an organisation operates, rather than anything else.

The generation of knowledge is naturally fed by individuals (persons or organisations), but it is generally accepted that collective and collaborative processes provide a better leverage effect and an augmented added value to the generated knowledge. The same goes for knowledge valorisation. This is a collective process involving various actors in the ecosystem(s) producing, transmitting, decoding, transforming, and absorbing knowledge. As indicated in the EU Guiding Principles, *“the focus is on the whole R&I ecosystem and its connections on co-creation between actors and on the creation of societal value”*.

2.3. Specific roles and core functions of Knowledge Valorisation intermediation

2.3.1. Efficient intermediation

Efficient intermediation requires (spatial) proximity to and engagement of users and markets (place-based stakeholders), credible thematic and/or functional specialisations, a good degree of technical independence, the availability of significant and recurrent resources (funding), reliable and agile governance (controlling), excellent connections to industry and citizens (connecting), dynamic entrepreneurial culture (behaving), and adequate and advanced capabilities (skilling). It, therefore, requires operational capabilities to access and serve relevant actors (industry and/or others), while valorising the produced knowledge at its optimal strategic and monetary value.

The importance of operating across territories leads to the concept of intermediaries operating in a network mode or as a collective group of organisations, rather than as single,

isolated organisations. The art of intermediation is therefore centred on coordination and orchestration, initiation and guidance, rather than individual (and fragmented) “soloist” service delivery. Several other determining factors include the degree of centralisation/decentralisation of intermediaries’ systems, the degree of openness of technology transfer players, how widespread the knowledge valorisation culture is for intermediaries, and finally the business, entrepreneurial and networking skills of the intermediaries’ teams.

There is no intermediary ecosystem that fits all countries or regions, as it depends on the maturity of the system, the performance and skills of innovation transfer professionals, the dynamics of interactions between public, academic, and private sectors, the entrepreneurial character and collaboration culture of key stakeholders, the importance given to knowledge valorisation by overarching R&I policymakers and institutional strategies’ owners (at national, regional, and even local, and organisational levels).

The mobility of qualified staff and talents across the ecosystem of intermediaries is equally an important factor for efficient intermediation, linking new research career paths with a stop-over within this very dynamic environment of innovation and knowledge valorisation intermediaries.

The art of knowledge intermediation is confronted with various challenges (see also § 6 below) which are described in the Guiding Principles and which concern the following aspects of implementation: (a) the funding model and the relevance of public financial intervention supporting intermediaries, (b) the business and ownership model of intermediaries, (c) the fundamental capacity to act between R&I actors and other actors, especially industry (particularly SMEs) and society, (d) the networked organisational model of intermediaries.

More specifically, new challenges are arising which raise several questions, namely: (1) the way the sustainability imperatives are taken on board as a criterion for the intervention of intermediaries, (2) to what extent intermediation contributes to an inclusive approach of knowledge valorisation, valorising all potentials (matters, people, organisations), and (3) how intermediaries can accelerate the adoption of demand-driven innovation and the exploration of innovative public procurement schemes.

2.3.2. Functional roles of intermediation

Knowledge intermediaries might be characterised by several key words, revealing what could be their role and contribution to the generic challenge of valorising knowledge, such as: enabler, facilitator, connector, collector, translator, accelerator, adaptator, collaborator, supporter, multiplier, transmitter, catalyst, trendspotter, reality-checker, negotiator, mediator, match-maker, change-maker, broker.

From a more concrete perspective, intermediation may fulfil the following functions:

- Improved identification of use cases;
- Improved identification of potential users;
- Open scouting of transfer opportunities;
- Managing intellectual assets;
- Standardisation support;
- Connecting with industry and civil society;
- Interacting with the public sector;
- Reality-check of knowledge transfer usefulness;
- Collecting data and benchmarks;

- Accelerated pre-market screening;
- Catalyst for relevant collaboration and critical partner search, at national, EU, and international levels;
- Accessing business and technology intelligence;
- Facilitation the climbing of the TRL (Technology Readiness Levels) scale;
- Discovery of on-site demonstration possibilities;
- Advanced business modelling and planning;
- Sharing the risks with other entities;
- Connecting research teams with business talents;
- Checking intentions and monitoring feasibility of potential spin-offs;
- Fostering uptake in policymaking at different levels;
- Citizen engagement;
- Etc.

2.4. How Knowledge Valorisation intermediation contributes to the development of Intellectual Assets Management (IAM)

2.4.1. IAM - Intellectual Assets Management

While the conventional knowledge transfer strategy of universities is based on an intellectual property (IP) approach and follows patenting/licensing, collaboration, and/or venture creation models, the concept of Intellectual Assets Management (IAM) is cross-cutting and supports the transformation of technology and knowledge into current and new forms of knowledge valorisation, in a proactive, integrated and responsible way.

Intellectual assets are defined by the EU Code of Practice on the management of intellectual assets for knowledge valorisation² as “*any result, services or products generated by any R&I activities, such as patents, copyrights, trademarks, publications, data, know-how, prototypes, processes, practices, technologies, software or business models*”.

The same document defines *intellectual assets management* as a “*set of strategic processes to handle intellectual assets in all stages of their life, from their creation to market, including the identification of potential assets created or acquired, the evaluation of the technical, legal and market advantages of the potential asset, the decision making on the available forms of protection, the determination of marketing and technology transfer strategy, the identification of the best partners for their management, in accordance with the business goals and socially responsible policy of the organisation*”.

It means these are practices that foster the management and use of intellectual assets resulting from research, science, and innovation in a broad sense, whether the assets are tangible and legally enforceable, intangible, and linked to strategic management aspects, or even tacit knowledge. The IAM approach enables one to transform unspecified, diffuse and intangible knowledge into well-defined and manageable intellectual assets (IPR and knowledge assets).

According to Professor U. Petrusson (Gothenburg University, SE), intellectual assets generate value through four key functions: (1) *capturing* (intellectual assets as resources);

² [Commission Recommendation \(EU\) 2023/499 of 1 March 2023 on a Code of Practice on the management of intellectual assets for knowledge valorisation in the European Research Area](#)

(2) *organising* (intellectual assets as capability); (3) *positioning* (intellectual assets as a market position); and (4) *leveraging* (intellectual assets as value propositions).

Intellectual assets are to be managed - this is IAM - and this requires the availability of several skills and specific capabilities: (a) intellectual property-based claiming, (b) trade-secrets based claiming, (c) organisational and contractual claiming, (d) compliance-based claiming, and (e) management of the intellectual assets portfolio. These aspects will be detailed in the thematic report dedicated to IAM.

Corresponding to the four key functions of intellectual assets highlighted above, the *IAM model framework* includes the following key roles: (1) *capture* (which research result do we have to utilise?); (2) *organise* (how shall we develop our capability?); (3) *position* (how does the external environment look like and how should we be positioned?); and (4) *utilise* (which social responsibility shall we take on?).

The strategic nature of the IAM process also implies an A-to-Z approach (along all stages of the knowledge life cycle), a close-to-market perspective, contradictory valuations of assumptions (mirroring peer-review methods), an alignment with the value and vision of the organisations, a multi-form protection mix, and a comprehensive spotting of potential collaboration and partnerships.

2.4.2. Contribution of intermediation to IAM development

The interaction between intermediaries and other R&I actors accelerates and widens the scope of the valorisation process. Four contributions of intermediation to the development of the culture of IAM are provided below:

2.4.2.1. *Strategy development capabilities*

The integration of intermediaries into the valorisation landscape and its process pushes knowledge actors, and particularly the academic ones, to initiate strategic thinking and to develop more global, open, and collaborative strategies which inevitably produce a wide range of intellectual assets, interacting with pragmatic end-users and hands-on intermediaries.

2.4.2.2. *Entrepreneurship skills*

Collaboration with intermediaries can contribute to stimulating entrepreneurship culture, promote entrepreneurial discovery ("The entrepreneurial discovery process – EDP - is an inclusive, evidence-based process of stakeholder engagement that produces information about the potential of new activities, enabling effective targeting of R&I policies", JRC, 2021), stimulate the engagement with users and early-adopters, and inevitably create the appropriate conditions for the development of further skills. This is especially true for intermediaries strongly involved in business creation and spin-off generation, and closely connected with dynamic entrepreneurs and entrepreneurial ecosystems.

2.4.2.3. *Access to data and observation*

Data are essential building blocks of IAM and constitute critical knowledge assets. Intermediaries contribute to accessing a wide series of data and field observations, already structured or not, and potentially useful for drawing assumptions and analysis, especially when intermediaries themselves have adopted an IAM mindset and practice.

2.4.2.4. Collaborative spirit and collective intelligence capability

Intermediation generally stimulates the emergence of a collaborative culture by all parties involved, at both strategic and operational levels. It paves the way for the deployment of collective intelligence practices and the generalisation of open networking behaviour. These effects might be more limited in cases where Tech Transfer Offices or Knowledge Transfer Offices (TTOs/KTOs) protect the interests of universities instead of behaving as truly open and collaborative agents.

3. intermediaries - who is doing what?

3.1. Intermediaries, R&I actors and stakeholders

Available definitions show that there are nuances between intermediaries, R&I actors, and stakeholders as three types of actors that are important in the knowledge valorisation process.

Stakeholders are defined as very general ecosystem actors. According to the Techtarget website (www.techtarget.com), "a stakeholder is a person, group or organisation with a vested interest, or stake, in the decision-making and activities of a business, organisation or project. Stakeholders can have a direct or indirect influence on the activities or projects of an organisation, and can be affected by its business or activities. Typical stakeholders are investors, employees, customers, suppliers, communities, governments, trade associations, competitors, R&I actors and intermediaries".

R&I actors are defined in the Guiding Principles as "all categories of ecosystem actors involved in R&I activities", such as academia, public and private innovation and technology organisations, CSOs, private investors, individuals (innovators, entrepreneurs, researchers, scientists, teachers, students), industry, national and regional/local authorities and policymakers, research infrastructures, technology infrastructures, standardisation bodies, and ... intermediaries.

Intermediaries are firms, agencies, and individuals that facilitate transactions by providing support services like bridging and brokering, understanding the challenge and providing solutions, and leveraging the knowledge transfer necessary to achieve successful innovations and valuable results. Intermediaries are needed to bring organisations and knowledge together to build supply networks and develop new markets for new products, processes, and services. The Guiding Principles provide a non-exhaustive list of examples of intermediaries: "knowledge and technology transfer professionals, incubators, science parks, Union, national and regional innovation hubs or clusters, IP experts, consultants, and innovation support professionals, science communication and policy engagement teams, knowledge for policy/science advice organisations, and citizen engagement professionals".

To structurally develop and implement knowledge valorisation, it is crucial to understand the variety and typology of intermediaries that support these processes, as well as their role as key knowledge valorisation actors. It is also important to make a distinction between the long list of generic R&I/Knowledge actors, and the short list of R&D&I/Knowledge intermediaries.

One of the observed trends is the novel notion of a system of intermediary organisations, and how this systemic/networked approach could facilitate coordination and improve the efficiency of intermediation, while ensuring missions' deployment over time and spatially across the concerned territories.

3.2. Mapping and typology of relevant intermediaries

Intermediaries are often numerous present in knowledge ecosystems. Relevant intermediaries, however, do not only include current and already operating ones, but also those actors which have or might have in the future a potential role in channelling, accelerating, improving, and diversifying the valorisation of knowledge. The list of examples of intermediaries provided by the Guiding Principles (Recital 21) indicates who are the various organisations having a role in knowledge valorisation.

Intermediaries can take different legal forms (public, private); they can be organisations or individuals offering integrated or specific services and support.

Intermediaries can be (fully or partially) independent (legally and/or financially) from R&I actors, or they can be part of the R&I actor's organisation (department, business unit, specific project/scheme, subsidiary). They can also sometimes be affiliated to several R&I actors, co-owners, and co-funders.

R&I actors may develop an intermediary function either on an ad-hoc basis, or as a complementary function. This is particularly the case for RTOs, research institutes, spin-off programs' management bodies, public sector organisations, and funding bodies, and even investors and investment funds.

The intermediation can also sometimes be carried out by a project that is operating as a separate unit, as an experimental scheme, or – as in the case of universities – throughout individual research teams, scientific consortia, or individuals acting in a rather independent capacity, somewhat disconnected from TTOs/KTOs.

The motivations, incentives, and funding models are fundamentally different for academia and non-academia intermediaries. This is further explained in the following sections. The Guiding Principles (Recommendation 5-b) calls for Member States to *"consider specific funding schemes to complement research funding in order to ensure that knowledge valorisation is incentivised early on in research, including support to intermediaries."*

3.2.1. Academia-based intermediaries

Academia-based intermediaries include TTOs, KTOs, and university-based incubators that are classically operating at the interface between academic knowledge producers and other R&I actors. Looking at the dynamics of ecosystems, it appears that these instrumental players are in the process of re-inventing themselves to better fit with the new holistic approach of knowledge valorisation.

Not only universities and technical universities have developed knowledge-transfer facilities and instruments, but also research institutes, RTOs, technology infrastructures, universities of applied sciences, business schools, and schools of art and design.

3.2.1.1. Tech Transfer Offices (TTOs) and Knowledge Transfer Offices (KTOs)

TTOs and KTOs are the key actors orchestrating knowledge transfer and valorisation on behalf of universities and other academic institutions. Their experience is backed by decades of practices, and thousands of professionals, who are usually active in national and international professional associations (for instance, ASTP an association of knowledge transfer professionals, and its NAAC – national associations advisory committee - grouping 33 national associations); the processes and methodologies used by TTOs/KTOs in their

practice are well documented by publications, handbooks and tools (WIPO, JRC, UIIN, Chicago University, UCLouvain, just to name a few – see references' section), and can be easily be the subject of peer-learning and replication to academic organisations and territories willing to benchmark with and import structured TTO/KTOs schemes.

Many universities and research institutes are equipped with an in-house TTO/KTO, and they provide an essential role to researchers and research teams but also their external partners. Their mission ranges from R&I scouting, technology maturation and TRL assessment, IPR advice, commercialisation assessment and support, knowledge transfer strategies (spin-off, licensing, contract research, etc.), fundraising, etc. Even though their core mission is to protect the interests of universities and to maximise the return of its IP, their approaches have considerably evolved during the last few years, by notably embracing enhanced collaboration with other actors (outside the Alma Mater) and intermediaries, and by developing dedicated financial instruments (seed-funds).

TTOs and KTOs, sometimes named KTTOs, are by far the most diffused and specialized instruments for knowledge transfer, commercialisation, and valorisation at large. Many KTTOs have developed dedicated Centers - or Programmes – acting as innovation hubs, to deal with the promotion of entrepreneurship within academia (for students and researchers), with the spinning-off and scaling-up of micro-businesses and new promising ventures (see also §3.2.2 below); this is an important trend in the evolution of the role of KTTOs. Their mission also includes supporting "non-for-profit" KT/TT activities and contributing to a positive impact on society, which in practice means increased interaction with public administration, NGOs, and civil society.

Another observed trend is the merge of TTO/KTOs within a common TechTransfer/Research Valorisation platform, jointly operated by several universities (for instance, Société d'Accélération et de Transfert de Technologie or SATT in France, Transfera in the Czech Republic), as an answer to the sometimes too small critical mass of TTOs/KTOs, and the lack of spontaneous collaboration between academic actors.

In many countries (and regions), TTOs/KTOs have formed Networks (for instance, SNITTS in Sweden, Science Agora and Gnosi in Greece, TTO Flanders and LIEU in Belgium, RedOTRI in Spain, Transfera in the Czech Republic, PACTT in Poland, Austrian TT Network, Réseau SATT and Réseau Curie in France, Baltic TTO network, etc.), which have a role in the future development of knowledge transfer and valorisation in their respective countries.

3.2.1.2. University holding and investment companies or special purpose vehicles

Universities and RTOs (see also § 3.2.2 below) set up financial instruments capable of seed funding the proof-of-concept (POC) stage and the launch of spin-off creation. These seed and early-stage funds are usually controlled by the university or the RTO, but often involve other public or private investors. These instruments are integrated into the university or RTO's Tech Transfer and Valorisation toolkits. This activity can be channelled by instruments that can take several forms: holding companies, university seed or venture capital funds, special purpose vehicles (SPV), etc.

A few examples of these players (intermediaries) acting within universities' ecosystems are KTH Holding AB (SE) and VIVES inter-university fund (BE); Estonian, Maltese, and Hungarian universities have also developed Venture Capital branches or holding companies; some TTOs/KTOs have developed thematic investment vehicles, such as the I&I Biotech Fund in the Czech Republic. RTOs similarly developed dedicated financial and investment instruments, such as VTT ventures (FIN), Tecnalia ventures (ES), and Fraunhofer venture

(DE) - just to name a few – acting as key RTO-driven instruments for supporting spin-offs and promising tech start-ups, and pursuing a strategy to build portfolios of novel tech firms.

In Sweden, the valorisation infrastructure is usually organised across two types of interacting structures, both governed by the university: (a) the university's innovation office, providing conventional early-stage innovation and valorisation support to researchers, students, and professors; (b) the university's holding company, investing in IP and funding POCs, and providing pre-seed and seed money to spin-offs. This segregation (and specialisation) between financial and non-financial support is interesting for both legal and technical reasons. The magnitude of financial intervention is unfortunately limited and concentrates on the pre-startup/spinoff phase. This scheme is applied in Swedish Universities such as KTH (Royal Institute of Technology), Uppsala University, Gothenburg University, Karolinska Institute, etc. Only Chalmers University of Technology has an integrated innovation office and investment instrument.

3.2.2. Public-private R&I connectors

3.2.2.1. *Incubators and Accelerators (public, public/private, private)*

Business incubators help start-up companies and individual entrepreneurs to develop their businesses by providing a full range of services, such as business planning and modelling, coaching and mentoring support, technology assessment and market studies, feasibility analysis, management training, financial simulation, and access to early-stage pre-seed and seed finance. It also usually offers shared office space and co-working facilities. Incubators are usually sponsored and operated either by universities and TTOs/KTOs, regional/local development agencies, public/private partnerships, or by large corporates. They are most of the time located within or close to science and technology parks, university campuses, innovation districts, or industrial areas.

Incubators are usually technology-oriented and constitute an important step in the tech entrepreneur's journey and in the researcher's spinning-off trajectory. Incubators are nowadays a mainstream instrument, spread everywhere, within or around almost all knowledge and innovation ecosystems, often attached to universities but also to other key R&I actors (HEIs, RTOs, TIs, Regional Development/Innovation Agencies municipalities, companies, etc). They may be funded by structural funds when they support the transformation of catching-up regions into more innovative and competitive ones (EU-BIC/Business and Innovation Centers).

They are usually sector-agnostic (and concentrate on tech and deep-tech projects), but some are sector- or technology-specific (Fintech, Biotech, Foodtech, Clean/GreenTech, Industry4.0, Digital, Space and Sat-Techs, etc). Some of the leading incubators in Europe are STING, Chalmers Ventures, Ideon Lund (SE), imec, WSL, VIB Bioincubator (BE), IniTS, xista ventures, TU Wien Innovation and incubation center (AU), Barcelona Activa, BIC Euronova (ES), Agoranov, Atlanpole (F), Dublin BIC (IRL) Technoport (LU), Poznan STP (POL), IPN Coimbra (P), JIC Brno (CZ), Citta della Scienza, Trentino Sviluppo (IT), etc.

Incubators are active across national and European Networks (SISP in Sweden, ANCES in Spain, GIN in Austria, RETIS in France, EBN in Europe, etc.), which provide an excellent collaboration perspective to end-users.

A business accelerator is a program designed to help established start-ups (with a minimum viable product) to scale up quickly. By contrast with incubators (supporting start-ups), accelerators support scale-ups (in the making/the growing). They often provide funding in

exchange for equity Business incubators help start-up companies and individual entrepreneurs to develop their businesses by providing a full range of services, such as business planning and modelling, coaching and mentoring support, technology assessment and market studies, feasibility analysis, management training, financial simulation, and access to early-stage pre-seed and seed finance. It also usually offers shared office space and co-working facilities. Incubators are usually sponsored and operated either by universities and TTOs/KTOs, regional/local development agencies, public/private partnerships, or by large corporates. They are most of the time located within or close to science and technology parks, university campuses, innovation districts, or industrial areas.

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3.2.2.2. Science and Technology Parks (STPs)

Usually focused on universities, STPs are spread across Europe and provide the physical infrastructure and location for creating a concentration of innovation players, knowledge producers, and absorbers. They contribute to the animation of the ecosystem and are complementary to the intangible and intellectual support provided by TTOs and KTOs. They are driven by a brick-and-mortar approach, as they make available office spaces, incubation spaces, laboratories, and warehouses as well as a well-connected and high-quality working environment. They host numerous technology centres and facilities. Beyond infrastructure,

STPs generally contribute significantly to the development of a vibrant innovation, entrepreneurial, and technological environment, which in turn generates economic development at local and regional levels.

Some of the leading STPs in Europe are: Ideon Lund, KISTA Stockholm, Umea SP (SE), Otaniemi Espoo, Hermia Tampere (FIN), PTA Malaga, Zamudio Bilbao (ES), Tehnopol Tallinn (ES), Science Park Graz (AU), Symbion Copenhagen (DK), LLN Science Park, Crealys, Arenberg (B), Sofia Tech Park (BG), Attica TP-Leftkippos (GR), Krakow TP (POL), TP Ljubljana (SI), Berlin Adlershof (DE), Sophia-Antipolis (F), Harwell, Warwick, Birmingham (UK), etc.

3.2.2.3. *Support services by technology infrastructures and other facilities*

Technology infrastructures are understood as ‘facilities, equipment, capabilities, and support services required to develop, test and upscale technology to advance from validation in a laboratory up to higher TRLs prior to competitive market entry. They can have public, semi-public, or private status. Their users are mainly industrial players, including SMEs, which seek support to develop and integrate innovative technologies towards commercialisation of new products, processes, and services, whilst ensuring feasibility and regulatory compliance.’³

Technology infrastructures may be operated by not-for-profit research and technology organisations (RTOs), technical universities, or technology centres, but can also be found in large corporates. They can also be shared, i.e. operated by several organisations like Open Innovation Test Beds. Technology infrastructures usually offer expert services for innovation and uptake of R&I results by industry.

In particular, RTOs operate technology infrastructures acting as agents which conduct “extra-university research and applied research” at the boundary between industry and science, with a clear industrial impact, and by providing a wide range of R&I, and valorisation services across most of the industry sectors and technology areas.

RTOs include both large actors such as CEA (FR), VTT (FI), TNO (NL), imec (BE), RISE (SE), Tecnalia (ES), Fraunhofer Gesellschaft (DE), Lukasiewicz Research Network (POL), as well as smaller regionally based players and sector-specific organisations such as AINIA, ITENE (ES), INL, IPN (P), Materia Nova, VITO (BE), VEBIC (FIN), Josef Stefan Institute (SI), etc.

In Sweden, RISE (Research Institutes of Sweden) is an interesting example of how a national network could be designed, marketed, and organised to offer a broad thematic and geographical coverage. The functioning of the RISE network is not only possible thanks to a transparent and shared Customer Relationship management (CRM) system, but also thanks to the adoption of a shared pattern describing the process of “the client journey” (Creating trust + analysing needs + defining action plan + allocating the right expertise + providing real support (in cooperation with other intermediaries) + solving specific problems + generating outcome).

³ [Technology infrastructures - Publications Office of the EU \(europa.eu\)](https://publications.office.europa.eu/)

3.2.2.4. *Other instruments*

A lot of other players are behaving as valorisation intermediaries on an ad-hoc basis: Fablabs, Living Labs, Design Thinking platforms, Open Innovation initiatives, R&I foundations, large-scale research infrastructures, matchmaking platforms, innovation districts, regional and local innovation agencies, digital platforms and hubs, foundations and philanthropies, etc.

Spin-off programme implementation bodies are influential multipliers, as business creation generated by spin-off programmes has grown significantly in recent years, and it therefore constitutes both a vehicle and a catalyst for knowledge valorisation through start-ups, SMEs, and investors.

3.2.3. *Intermediaries linked to private sectors and corporates*

Private enterprises (industry, from start-ups and SMEs to large corporates) are not only critical stakeholders but can also build up capacities as valorisation accelerators or intermediaries.

3.2.3.1. *Corporate accelerators, corporate venturing and co-labs*

The development of a dedicated innovation ecosystem, at the service of the research, knowledge (and business) expansion of corporates is now a common practice. This trend has been enhanced by the emergence of Corporate Social Responsibility (CSR), and Environmental and Sustainability Governance (ESG) obligations. Large tech corporates are considered important knowledge valorisation players. Many implement their innovation strategy through their corporate accelerators, corporate venturing units, challenge-based competitions, and other Venture and Innovation Hubs.

The following names are well-known references in the field: SAP (Start-up Focus), P&G (Connect & Develop), Microsoft (Sparks), Adobe (KickBox), Orange Fab, Engie Fab, Beiersdorf (Pearlfinder), Lilly (Open Innovation Drug Discovery programme), BASF Innovation Hub (DE), Pfizer Start4health (GR), etc.

In Spain, open innovation practices are progressing and large corporates engage in knowledge valorisation processes, such as Telefonica (Wayra), Iberdrola (Perseo start-up), Mondragon Corporation (Business Development Centre), Repsol (Technology lab), AgBar (GoSeeds) and Banco Sabadell (S-startup).

Some of these initiatives evolve into true co-innovation campuses, where an industrial leader deploys a co-working, co-incubation, and co-lab physical infrastructure, usually located within or next to the R&D headquarters and concentrated on the corporates' core businesses or not. This is for example the case of the AstraZeneca Bio Venture Hub (SE), the Wartsila Smart Technology Hub (FIN), the High-Tech Campus Eindhoven (Philips, ASML - NL), and the Bosch IoT campus (DE). These physical connecting places are ideal intermediation catalysts. Some of these operations are intangible and do not provide dedicated physical infrastructures but a powerful network, such as the ABB Synerleap platform (SE, CH).

3.2.3.2. *Consultants and KT/KM professionals and their associations*

Knowledge transfer and knowledge management consultants, IP experts, technology brokers, and innovation consultants are also very important catalysts and intermediaries supporting industry and particularly SMEs, who might not have the capacity to internalise

these competences. Internalising all needed competences and expertise is a mirage, and no leading knowledge valorisation actor can operationalise its activity without outsourcing to external professionals.

Associations of knowledge valorisation professionals and service providers operate at national level (such as SNITTS in Sweden, NETVAL in Italy, PRAXIS-Auril in the UK, Transfer Allianz in Germany, etc) and internationally (ATTP, ASTP, AUTM), and they contribute to shape, professionalize and standardize the profession and its methodologies. The question of competence development is central to the strategies of these organisations of knowledge valorisation intermediaries.

3.2.4. Non-Governmental Organisations and Civil Society Organisations

Non-governmental intermediation entities ensure an efficient outreach to citizens and Civil Society Organisations (CSOs), closing in this way the loop of the quadruple helix. This outreach is a way to share knowledge and stimulate its exploitation by CSOs through, for example, science communication and policy engagement teams, knowledge for policy/science advice organisations, or citizen engagement professionals.

3.3. Sector-specific and cross-sectorial intermediation

Knowledge valorisation requires – at some point - the intervention of qualified thematically-specialised intermediaries. This is required to enable appropriate technology development and to provide an acute understanding of the demand, of the reality, challenges, and perspectives of the various sectors and related markets.

An example is the important role of cluster organisations in the dissemination and valorisation of knowledge to industry. This is due to the fact that clusters' core mission is to promote research, innovation, and collaboration between ecosystems' players in a given sector. Their access to the private sector, especially tech firms and innovative SMEs is excellent, and they constitute an ideal complement to generalist and academic-based intermediaries. Examples of flagship clusters which are active in the field of knowledge valorisation include: Food Valley Wageningen (NL), Atlanpole Biotherapies Nantes, Minalogic Grenoble (FR), Spearhead Clusters in Flanders, Competitiveness Clusters in Wallonia (BE), Medicon Valley (SE/DK), Spring, AFIL Milan (IT), Cleantech Alps (CH), BioCat, Hegan (ES), EcoPlus, Silicon Alps Cluster, LISAvienna (AT), Corallia (GR), ICT Cluster, Defense and security cluster (EE), Energy Vaasa (FIN), SRIPS (SI), etc.

In Sweden, cluster organisations are grouped within the “Clusters of Sweden” network, which includes inter-alia Automation Region, Paper Province, Packbridge, Smart Textiles, and Compare (Digital health), just to name a few. To avoid too much fragmentation, regional isolations, and vertical segregations within the Swedish ecosystem, Compare has developed the iHubs platform so that national “superclusters”, acting as “national intermediaries” can contribute to systemic changes, with a European and international perspective.

A series of sector- or technology-specific intermediaries are well connected or are even participating in partnerships that deploy EU-thematic R&I instruments, such as the EIT-KICs (Knowledge and Innovation Communities by the European Institute of Innovation and Technology), and the eDiHs (European digital innovation hubs).

3.4. The territorial dimension of intermediaries

Efficient knowledge valorisation often requires proximity to marketplaces, potential clients, and territorial ecosystems. This is needed to enable a better understanding of the needs of enterprises and society, as well as of the opportunities offered by the market. Intermediation should be as decentralised as possible and be fed by both bottom-up and place-based approaches, complementarily to top-down ones. Paying attention to the decentralised character of networks of intermediaries is justified for the simple reason that a decentralised place is where industry and knowledge are concentrated, but also because regional ecosystems are rich environments full of cases, models, data, experiments, stakeholders, resources, and innovation governance.

The emergence of the regional dimension of R&I, and the acceleration of the implementation of the S3 by European regions has increased the importance given to the regional (and sometimes sub-regional) factor, including regional (and sometimes sub-regional, i.e. local) intermediaries.

This local dimension usually corresponds to urban areas with a significant concentration of knowledge institutions, tech companies, innovative start-ups, academic spin-offs, and specific types of intermediaries, such as living labs, innovation districts, and smart city initiatives. These are usually conducive to connecting knowledge with urban smart communities and citizen-entrepreneurs, aiming to behave as change-makers, very often with a sustainability drive.

4. Why and how: entrepreneurship as a methodology

4.1. Why and how can entrepreneurship become a pillar of knowledge valorisation policies

The Guiding Principles significantly emphasize the importance of “*fostering transversal skills such as entrepreneurship...*” on the education agenda, and of “*entrepreneurial practices, processes, competences, and skills... as necessary components of successful knowledge valorisation initiatives*”.

Developing entrepreneurship skills, entrepreneurial practices, efforts, approaches, processes, and methods are promoted by the Guiding Principles, together with references to discovery-driven methods, creativity and critical thinking, engagement with citizens and civil society, understanding of large societal challenges, and how knowledge development might bring solutions, eventually through novelties and entrepreneurial entities (start-ups, spin-offs, scale-ups, etc).

The benefits of teaching entrepreneurship not only apply to candidate or potential entrepreneurs, spin-offs, and start-ups, it applies to every student, researcher, teacher, employee, civil servant, and official, and of course to anyone having responsibilities for innovation, operation, and management of economic entities (enterprises and NGOs). The entrepreneurship mindset is a fundamental competence, which is anchored on the ways and means through which knowledge is spotted and valorised to generate business and societal impact.

Entrepreneurship education is not a new subject and has progressed significantly since the beginning of the 2000s but was not always spread across all types of stakeholders and ecosystems. It was sometimes more a business school matter, but programmes are

nowadays in place in almost every circle: technology-based academia, business-oriented academia, social innovation communities, gender-specific entrepreneurship initiatives, etc.

In Sweden for example, the Stockholm School of Entrepreneurship collaborates with six established universities to design and deliver teaching programmes aiming at disseminating entrepreneurship as a knowledge valorisation method. Many initiatives of this kind are deployed everywhere in Europe by many actors, for different target groups (students, researchers, candidate entrepreneurs, etc); it is recommended these initiatives be (a) scaled up, (b) mainstreamed within core curricula, and (c) aligned with the knowledge valorisation strategy of the HEIs.

There are five key arguments why entrepreneurship capabilities are so important for catalysing knowledge valorisation: 1) because entrepreneurship is a key component of spin-off policies; 2) because entrepreneurship is a vehicle for skills development and creative leadership; 3) because entrepreneurship is an ecosystemic cultural change for knowledge valorisation; 4) because entrepreneurship is a catalyst for networking; and 5) because entrepreneurship is an inclusive and social innovation approach.

4.1.1. A key component of spin-off policies

The development of the entrepreneurship culture within circles of knowledge contributes to the acceleration of spin-off creation and increases the propensity of universities, public authorities, and other agents to more systematically develop spin-off programs. It consequently accelerates the potential of knowledge valorisation through the creation of new ventures, which take on board intellectual and knowledge assets. The dynamic management of spin-off portfolios then feeds the valorisation strategies and methodologies, with use cases, business-cases, business and funding models, and entrepreneurs' feedback.

4.1.2. A vehicle for skills development and creative leadership

Entrepreneurship development appears to be a perfect vehicle for learning and acquiring skills that are critical throughout the knowledge ecosystem and the knowledge valorisation process, especially in connection with business development and small business (sustainable) growth paths. The required skills for this entrepreneurial journey are different, complementary, and sometimes less formal than the ones conventionally taught. These include, among others, ideation, design thinking, business casing, modelling and planning, effectuation, investment readiness, DeepTech innovation marketing, conflict management, creative solutions, collective intelligence, open innovation and collaborative partnership, leadership, and team guidance.

4.1.3. An ecosystemic cultural change for knowledge valorisation

As indicated above, ecosystem thinking and multi-actors' co-creation is the “fil rouge” behind the emergence of the new knowledge valorisation concept, contrasting with the former linear model, within which knowledge production and knowledge absorption are considered as distinctive features. What is important is the engagement of various competences and actors interacting together in a global co-created way to reach the goal of the generation of socio-economic value. Entrepreneurship development helps adopting such an open, comprehensive, and collaborative approach of knowledge valorisation, involving intermediaries taking a pivotal role of stimulation, catalysing, translating, and connecting.

4.1.4. A catalyst for networking

Entrepreneurship is by nature a process that encourages a total networking approach, connecting with stakeholders, competitors, technology suppliers, investors, public authorities and agencies, universities, influencers, and relevant types of intermediaries. It is based on collaborative values, and on the principle that know-how also means know-who, meaning knowing who knows who knows what.

4.1.5. An inclusive and social innovation approach

Entrepreneurship is also by nature an inclusive phenomenon, open to everyone, everywhere, and everything. Aside from the required skills, the act of entrepreneurship requires strong behavioural attributes (curiosity, exploration, experimentation, innovation, competition, creativity, risk-taking, disrupting, operationality, making a difference, addressing small and grand societal challenges, networking, teamwork, etc). It is important to leave the process open, bottom-up, and not too much (not only) prescribed by top-down strategic orientations and limitations, in order to spot all possible potentials.

Entrepreneurship is often linked to tech and deep-tech matters, but it is at the same time a concept that equally applies to services, social innovation, social sciences, arts and culture, low-tech, frugal models, marketing innovations, women entrepreneurship, student entrepreneurship, etc. Adopting an entrepreneurship culture within knowledge valorisation circles helps to make it thematically and socially more inclusive.

5. Challenges and perspectives of knowledge valorisation intermediaries

Following interactive workshops held between Member State representatives, European Commission officials, and knowledge valorisation experts during the Sweden country visit (20 and 21 September 2023), and after having integrated the results of an online survey on the topic, a series of challenges have been defined. These aim to (1) raise points of attention about Topic 3 (intermediaries), (2) identify solutions and good practices, and (3) formulate recommendations for the implementation of a knowledge valorisation approach which involves qualified and publicly funded intermediaries.

Eight categories of policy and implementation challenges have been defined, and subdivided into two groups:

- General challenges (5):
 - a) Modelling and funding
 - b) Monitoring and evaluation
 - c) Skills and competences
 - d) Connectivity and networking
 - e) Engaging with civil society
- Emerging challenges (3):

- a) Open and inclusive entrepreneurship
- b) Integrating sustainability
- c) Demand-driven and innovative public procurement

While the Report maps and looks at both public, public-private, and private intermediaries for their instrumental roles in structuring and catalyzing the valorisation of knowledge, this section will concentrate on publicly-funded intermediaries.

5.1. General challenges

5.1.1. Modelling and funding intermediaries

There are many variations of the knowledge valorisation intermediaries' model, in terms of legal statute, business goal, size, centralised/decentralised character, physical/digital nature, governance, and funding mix. What are the key aspects?

5.1.1.1. *The mission of publicly supported intermediaries*

Establishing the purpose, characterizing the mission, explaining the need it answers to, determining the complementary role to other support instruments, and defining the target groups are some of the essential elements to qualify the intermediary and constitute a basis for recognizing and eventually funding its activities. The mission of public interest of the intermediaries should be confirmed and documented, as this will possibly pave the way to justify public support of the intermediary's operations. Generally, it is a challenge to ensure a longer-time perspective that allows to establish sustainable and credible intermediaries and networks of intermediaries, delivering added-value services and creating trust among end-users ("clients").

5.1.1.2. *Standard or variety of knowledge valorisation intermediaries' model?*

No one size fits all also applies here, and there is no standard model for intermediaries, even though a set of common features could be defined that correspond to implementation characteristics and could be the base for determining common KPIs. The trend seems to say that intermediaries of diverse (public/private) models co-exist in the same ecosystem and share common objectives and KPIs, despite of their differences.

5.1.1.3. *Funding of intermediaries*

Many intermediaries receive public funding to exert missions of public interest. There are intermediaries funded by universities or research institutes on a rather continuous base, but also intermediaries who have mixed (public/private) funding or whose funding is project-based, which creates risks of discontinuity of services and inflexibility in project implementation. Beyond university-affiliated intermediaries and governmental entities, most of the other intermediaries are increasingly run as public/private organisations or are private entities.

Public authorities and/or public agencies (funding bodies) exert significant financial and strategic control on publicly funded intermediaries. This is not contradictory to the principle of ensuring a minimum level of management independence for these intermediaries. Therefore, while public funders have to ensure that the support provided is spent according to the agreed objectives, they should also consider that intermediaries need a certain degree of

management independence to adapt to new circumstances and take up new challenges and tasks.

5.1.1.4. Generalists or intermediaries specialised in technologies/sectors?

Intermediaries are usually generalists in terms of technologies/sectors, but they tend to develop some macro-specialisations (digital transformation, bioeconomy, healthtech, etc). The scope of required competences may become an issue for them. Some intermediaries (clusters, incubators, etc.) are typically specialized by design. Beyond this sectoral specialisation, intermediaries might also develop other types of specialisations linked to some of the key functions and disciplines required by the knowledge valorisation process (IAM, standardisation, contract management, licensing, academic spin-offs, etc).

5.1.1.5. Tech transfer or true knowledge valorisation intermediaries?

Not all intermediaries have understood, adopted, and are capable of shifting from a traditional tech-transfer culture, an intellectual property (IP) protection narrow perspective with a focus on individual assets, to the new broad concept of knowledge valorisation (e.g., by also encompassing science for policy making and connections to societal players/citizens), an intellectual assets control (by contrast of protection) strategy, and a focus on a portfolio of assets.

5.1.1.6. Centralised, decentralised and networked intermediaries?

Thanks to the bottom-up federation or top-down organisation of intermediaries in network modes ("*Intermediary-as-a-network*"), the opposition between the centralised and decentralised models is less acute. For large countries, the decentralised networked model ensures better territorial coverage and proximity of users, together with a joint representation vis-à-vis-and interaction with the national funding body.

5.1.1.7. Size of intermediaries matters

A minimal critical mass of (human and financial) resources is required to exert this increasingly complex and demanding role of knowledge valorisation intermediaries. It necessitates multiple skills, in many sectors, for many and very different end-users, as well as multiple collaborations with other experts and specialists: this is why being too small is not necessarily beautiful! In this case, regrouping and merging organisations may often improve the ecosystem's efficiency. Networking of intermediaries with complementary competences may be another efficient option to enhance overall capacities.

5.1.1.8. Digital character of intermediaries

Smart intermediaries need to adopt digital tools and platforms (including AI-based tools) so that they can exert their mission more efficiently. Mastering all relevant data and processes is essential for managing the intermediation entity, for proposing smart tools to the end-users, and for enabling precise reporting and an impact assessment to, for instance, public funders.

5.1.2. Monitoring and evaluation of intermediaries

5.1.2.1. Evaluation system

Intermediaries should be monitored and assessed on an adequate basis through an intervention logic, with a comprehensive set of evaluation criteria. It is important to define the purpose of measurement so that it helps to define the development needs and next

steps. It appears to be very difficult to design a standard set of evaluation criteria and performance indicators for all knowledge valorisation intermediaries, as they are so diverse. Higher-level KPIs (by public funders) could be combined with collaboratively developed KPIs (by intermediary organisations/networks) that are tailored to the specific action. As knowledge valorisation is not always tangible, indicators would be needed to also assess the intangibles.

5.1.2.2. Accreditation

The question is raised whether or not there should be a certification/accreditation/quality assurance scheme for knowledge valorisation professionals, but also for intermediary organisations active in knowledge valorisation. One of the interesting paths is to combine (minimum) requirements and KPIs requested by the funding bodies, with self-governed indicators and measurement methods proposed by the profession in a bottom-up way. The self-assessment methodologies developed by the European Foundation for Quality Management (EFQM) have already demonstrated their relevance (EBN, Vinnova and SISP for example).

5.1.3. Skills and competences of intermediaries

5.1.3.1. Multiple talents required

Intermediation is a difficult role, requiring multiple talents and skills for which there is no specific dedicated curriculum; the capabilities cannot be easily acquired without having lived multiple experiences, within industry, research, and research & innovation services, and technology business consultancy. It is not about pure cognitive skills, but rather a combination of business modelling, collaborative innovation, technology foresight, networking, and open knowledge management: what a challenge indeed. In general, there is a lack of recognition of the complexity and the importance of the role of intermediaries. There is also a lack of competent professionals working in and as intermediaries. Further efforts are required.

5.1.3.2. Education system and actors

The specific and multi-disciplinary competences required to exert the role of intermediary are not met by standard curricula nor delivered by conventional, academic education players. There is room for novel and specific education solutions and schemes. The careers within intermediary organisations should also be better valorised, as well as intersectoral mobility between different types of actors in the knowledge ecosystem (e.g. from research to intermediary; from company/sector to intermediary; from research to private industry;...) should be promoted (see Thematic Report on Topic 2B 'Incentives and Skills: Focus on Research Talent'). The available EU funds for improving education/training schemes, and for capacity building offer opportunities in this regard.

5.1.4. Connecting and networking through intermediaries

5.1.4.1. Connecting with enterprises

The connecting capacity of intermediaries to start-ups, scale-ups, SMEs, and large corporates is a critical function. How can we ensure intermediaries have direct and qualified access to enterprises and their leaders and decision-makers? What is the process through which intermediaries source, select, connect, analyse, advise, and negotiate the transactions?

5.1.4.2. Interactions between different types of intermediaries

It is challenging to connect different types of intermediaries that are already active in a network of entities offering similar services, and develop collective positions. While there are always limitations to the scope and capabilities of each category of intermediaries, there are also windows for collaborations and interactions that enhance the complementarities between their respective core competences, for the benefit of the end-users, increasing the outreach, lowering transaction costs, and tackling complexities.

5.1.4.3. Competition between intermediaries

Paradoxically, one of the potential pitfalls of the abundance of intermediaries in some ecosystems can be a too high level of competition between intermediary bodies which in the end negatively affects the whole ecosystem. Too many entities (internal KTO, external agency, private venture funds...) scouting for new technologies in the same academic environment could lead to confusion and negative interference as all actors are aiming to achieve the same KPIs with the same targets.

5.1.4.4. Total networking

Intermediaries are sometimes working in isolation, even when they are well-funded and heavily supported by public authorities. The risk exists – and this is a paradox – of an intermediary not well connected to the ecosystem. Therefore, the capacity should be cultivated to regularly initiate new network features to provide broader perspectives, benchmarking information, collaboration and business opportunities, and platforms to exchange problems and resources, for a better valorisation process.

5.1.5. Engaging with civil society intermediaries

The interaction with CSOs and citizens is not sufficiently described by the literature on knowledge valorisation, and there are few good practices and few methodologies available.

5.2. Emerging challenges

5.2.1. Open and inclusive entrepreneurship

How can we strategically manage intellectual assets to systematically integrate all possible potentials (people, firms, technologies, DeepTech/low tech, sectors, services profit/non-profit, large/small) in the process of knowledge valorisation, particularly in venture development? Improving inclusiveness in knowledge valorisation is essential. Will inclusivity efforts lead to a substantial increase in the number of research-based ideas ready for exploitation? Will user acceptance and broad uptake of solutions have more impact on different target groups?

5.2.2. Sustainable by design

How could sustainability be better and more systematically integrated into knowledge valorisation strategies, particularly concerning the business and operational development of SMEs? The role of intermediaries could well be to translate sustainability in the business model or to transform current models into more sustainable ones, to help companies assess relevance and double materiality analysis, identify gaps, and develop areas of business opportunities.

5.2.3. Demand-driven and innovative public procurement

How could intermediaries stimulate and support the participation of innovative firms in innovation (public) procurement schemes including linking public needs and policies to innovation and business development (also in SMEs)?

5.2.4. Leveraging selective transnational collaborations

How can we stimulate cross-border collaboration between neighbouring ecosystems and/or individual R&I actors through intermediaries? What are the knowledge valorisation-related risks which should be considered by intermediaries in international R&I collaborations with third countries given the current geopolitical situation, particularly regarding the management of intellectual assets?

6. Conclusions and Recommendations

A lot of interesting and relevant intermediaries have developed across the EU and beyond, a selection of which was presented and discussed at the MLE meeting in Stockholm hosted by Vinnova (September 2023).

The subject of intermediaries and the way they operate and interact (Topic 3) is very much connected to Topic 4 (Networks and Processes) of this Mutual Learning Exercise.

Based on the observations and analysis made above, and on the lessons extracted from the testimonials provided by knowledge valorisation stakeholders during the workshops and survey, we have developed seven areas of recommendations for policymakers on how to make the best use of intermediaries for implementing efficient knowledge valorisation strategies. These are summarised in seven key-words: 1 Missions of intermediaries. 2 Governance and Funding. 3 Skills and Resources. 4 Networking. 5 Entrepreneurship. 6 Ecosystem. 7 Monitoring and Assessing Impact. These recommendations are illustrated by fifteen good practices identified in eight Member States.

6.1. Establishing clear missions of intermediaries

- The mission of the intermediary should be formulated clearly and concretely understandable.
- The core mission of the intermediary should significantly cover matters related to the valorisation of knowledge in line with the broad concept enshrined in the Guiding Principles, the exploitation of research results, the generation of new ventures, innovation, and enterprise development.
- The mission of the publicly funded intermediary should very clearly and significantly contribute to the public good, and its mission of public interest be recognised. This is not contradictory to the fact that the intermediary is supporting private individuals and enterprises to valorise the knowledge available within the ecosystem.
- The mission of the intermediary is more important than its identity, its affiliation, and its category. There is no rigid standard for knowledge valorisation intermediation. Not only academic intermediaries and fully public-sector-owned organisations are eligible to exert the knowledge valorisation mission.

6.1.1. Good practice 1

KU Leuven R&D, a leading Knowledge & Technology Transfer Office (KTO): The KTO of the Leuven University – KUL (Flanders, B) is a model of a Knowledge Valorisation platform owned by and dedicated to the University. It manages an impressive portfolio of patented technologies (144 patents filed, and €362M of licensing income in 2022), and offers a wide range of support services to KUL's Research Teams and to industry, thanks to a team of 40 Innovation Managers covering various themes (MedTech, Energy, Biosciences, Material, manufacturing, health and Culture). A seed fund (Gemma Frisus Fund) offers early-stage money to spin-offs in the making, while their Industrial Research Fund (IOF) supports advanced business developments. A generalist innovation center and a bio-incubator provide advice and coaching, business, and financial planning tools. An online Spin-off learning platform guides the researchers through the various steps in the process of creating a spin-off company (cumulated portfolio of 142 spin-offs).

6.2. Ensuring adequate governance and funding

- Ensuring adequate governance and funding
- Intermediary structures should be set up with a long-term vision and funding that is commensurate with their mission and objectives to ensure that they become trusted, well-connected, and sustainable players in the R&I ecosystem.
- Obstacles to the smooth and efficient operation of intermediaries should be removed, if necessary through legal and/or administrative reform. National guidelines and/or the dissemination of best practices can help to set up efficient intermediary structures, e.g. in or close to HEIs and RTOs.
- It should be considered to give intermediaries the responsibility and management of appropriate funding instruments (e.g. proof-of-concept funds) to strengthen their standing and their ability to intervene with other R&I actors in line with their mission.
- Regardless of the choice of public funding (institutional, project-based), regular assessments, flexibility, and calibration of the directionality are necessary to avoid inertia and allow responding to new challenges.
- Not only publicly supported intermediaries should adhere to ethical principles and standards like impartiality and equal treatment.

6.2.1. Good practice 2

Jožef Stefan Institute (JSI) Proof-of-Concept (PoC) fund: this initiative aims to actively support researchers to increase the TRL of technologies to meet expectations of the market and potential customers, to ensure the eligibility for participation in external calls (including PoC funds), and to establish connections and cooperation with companies during the development.

6.3. Developing skills and resources

- Intermediaries should demonstrate a wide set of skills, ranging from intellectual assets management to technology development processes, business modelling, enterprise organisation and market intelligence, and citizen engagement, amongst many other areas.
- Intermediaries should be powered by teams of credible and experienced professionals, capable to navigate as a general practitioner of knowledge, innovation and business development.
- Intermediaries should have the capacity to offer credible staffing or outsourcing solutions, as far as specific sectors and technologies are concerned, especially the dominant sectors of the ecosystem in which they operate; they should be able to source and activate ad-hoc expertise or to signpost to other serious organisations, for less-current or new sectors and areas.
- Intermediaries should use and master state-of-the-art methodologies, enabling them to exert their mission in a highly professional, traceable, reviewable, and reproducible way. New tools, e.g. based on AI, should be quickly integrated.

- Intermediaries should operate with a dynamic entrepreneurship mindset and should use entrepreneurship practices, processes, and skills as a support methodology.
- Intermediaries should be capable of acting as ‘IAM evangelists’, meaning they should be educated about this, and capable of exerting their mission of knowledge valorisation amplifier in the broad sense and by integrating the multiple aspects of this new integrated approach.
- Policymakers should ensure an adequate training offer for developing skills needed by intermediaries (e.g. IAM, entrepreneurship, standardisation) and provide recognition and incentives to attract more talents to the profession.

6.3.1. Good practice 3

Interactive guide to Knowledge Transfer: the LIEU network (TTOs of Belgian French-speaking Universities): developed an interactive guide enabling any researcher to have an overall view of the process leading to knowledge transfer and to have concise information at each step. By making the process of research promotion more transparent and accessible, the LIEU Network hopes to see more initiatives among universities and HEIs leading to knowledge transfer within civil society.

6.3.2. Good practice 4

Build and manage an IP portfolio: this programme aims to enhance the capacities of Portuguese KTOs in identifying and evaluating the commercial potential of Portuguese HEIs’ assets. KTOs in Portugal face limitations in managing and commercialising their HEIs’ IP assets due to limited resources and a lack of tools and facilitators. To overcome these challenges, a series of workshops were conducted for KTOs to learn strategies for collaborating with researchers, conducting market research, monitoring industry developments, leveraging external networks, and utilizing internal resources to identify technologies with commercial potential. Furthermore, the guidance of international experts was provided to evaluate the commercial potential of each IP asset.

6.4. Fostering networking

- Networks of intermediaries should be used to further develop capacities, competences, and methodologies, resulting from peer learning and a co-creation approach.
- Policymakers should stimulate and support the establishment of networks of intermediaries at European, national, regional, and inter-regional levels.
- Intermediaries should network with their peers (within the same category of intermediaries; examples: incubators with incubators), and with other types of intermediaries (example: TTOs with incubators and with clusters) to enhance outreach and impact.
- Thematic and sector-specific networks should also be designed to promote collaboration between intermediaries active within the same sectorial area.

6.4.1. Good practice 5

VINNOVA’s multi-stakeholder collective approach: the Swedish R&I support system and landscape of intermediaries includes (1) Swedish universities (where researchers own their

IP - the “teachers privilege”), having their own holding companies performing their commercial activities; IP-centric internal support organisations and business oriented incubator support is provided, and there are 14 innovation offices at the universities); (2) Swedish incubators and science parks (which are triple helix-based nodes in the regional innovation system, there are more than 40 business incubators and 33 science parks which focus on processes, commercialisation, and renewal of businesses); (3) Swedish research institutes across different thematic areas with test-beds and demonstration facilities; (4) Cluster support at Vinnova through the Vinnväxt programme; and (5) a Government support system for commercialisation (including incubators, business advisory services and collaborative co-working spaces, and innovation offices). Vinnova’s priorities in developing the firm’s innovation excellence include (a) the ability to invent and develop businesses; (b) the ability to manage intellectual assets; (c) the ability to manage innovation investments and initiatives; and (d) the ability to grow and orchestrate the firm’s ecosystem.

6.4.2. Good practice 6

Energy Vaasa: the igniting role of public/private partnerships between local/regional authorities (City of Vaasa, Ostrobothnia region), leading industry (Wartsila, Danfoss, ABB, Hitachi, Freyr, Wasaline, etc), entrepreneurial universities (University of Vaasa), and energy technology centers (VEBIC). The strong political leadership of the local and regional authorities, providing a co-created strategic roadmap, is enhanced by the focused strategy of the University and its technology center, and accelerated by collaborations with large corporations and strongly anchored SMEs.

6.5. Boosting entrepreneurship

- Policymakers should promote business creation and venture development as main drivers of knowledge valorisation (including through incubation and acceleration programmes). Intermediaries should be tasked to maximize the generation and growth of excellent enterprises as a socio-economic output of knowledge valorisation.
- The focus on enterprises means engaging SMEs and large enterprises in knowledge valoriation, through, for example, clusters, technology infrastructures, science and technology parks, etc.
- Engaging with large enterprises through Open Innovation schemes, facilities and challenges should also be promoted since they offer small emerging businesses a hook within the large firms’ ecosystem with R&I and business opportunities; and they offer large corporates a dive into the thriving world of small innovative business and novel ideas and models. (For more details see MLE Topic 4 ‘Networks and Processes’).

6.5.1. Good practice 7

Challenges: several open challenges are organised to stimulate the emergence of novel ideas, technology applications, an entrepreneurial innovation mindset, and new talents (Confluence, Ecotrophelia), to connect problems with novel ideas and solutions, and to promote the engagement of new talented individuals and teams with the purpose to valorise creative and problem-solving knowledge. This is based on the matchmaking (i.e., intermediation) process between problems (challenges) and solutions. An illustration of this practice is the “Digital solution for societal challenges” hackaton co-organised by the University of Vienna and the City of Vienna ([Digital Solutions for Societal Challenges – Hackathon | Research and Innovation \(europa.eu\)](https://www.digitalsolutionsfor.europa.eu/))

6.5.2. Good practice 8

VTT Launchpad: an in-house business incubator that aims at creating fundable spin-off companies built on technologies developed by the researchers working at VTT Technical Research Centre of Finland.

6.5.3. Good practice 9

Open Innovation schemes and industry-led corporate accelerators: several Swedish large corporates have developed initiatives aiming to place the corporations as an intermediary between their corporate strategy and external small ventures; examples are (a) the AstraZeneca Bio venture hub, which uses corporate infrastructure to support innovation and SME growth in a cross-sector way built on the principles of non-competitive complementarity, and (b) Synerleap, the ABB Corporate hub, which brings startups and ABB together to ignite innovation transfer across industries, ranging from industrial automation, robotics to grid technologies, smart cities, buildings, and transportation technologies. They aim to help startups accelerate and expand on a global market together with ABB. SynerLeap offers mentorship, investments, and unique access to ABB's networks, clients, and technology. It started with a focus on Sweden, expanded to the Nordics, and is now also open to companies from around the world. In Austria, public authorities have established a national **Open Innovation Strategy, embarking on both academic and industrial stakeholders and intermediaries.**

6.6. Embracing ecosystems

- Policymakers should promote and stimulate the emergence of multi-stakeholder ecosystems in which intermediaries of various types and origins interact efficiently for the benefit of both the end-users and the ecosystem itself.
- Civil society is often the less-prioritised stakeholder in knowledge valorisation processes. Both policymakers and intermediaries must realize this is a weakness of stakeholder engagement for the purpose of knowledge valorisation, and a point of action is needed.
- Inclusiveness, notably gender equality, is not only a general overarching value, but it has also been demonstrated that enhancing the socio-diversity of teams/actors increases the quality and productivity of new ideas and valorisation results. This aspect should be well integrated into the mission and work of intermediaries.
- Intermediaries should embrace the importance of sustainability in innovation and business models of transferable knowledge. Policymakers should include 'sustainability' as a transversal criterion for knowledge valorisation activities, and find a way to provide an incentive (and/or an obligation) for intermediaries in charge of supporting the process.
- Policymakers should support the professionalisation of stronger KTOs, in geographical areas where weaknesses have been observed; becoming stronger might mean joining forces and avoiding a fragmented landscape with myriads of small offices.
- Policymakers should stimulate the diversity of intermediaries, so that every segment of the "market" is served with an adapted solution, and that no potential valorisation is left aside.
- Regular monitoring and adaptation of intermediaries' structures, objectives and networks is also necessary to ensure complementarity between the different types of intermediaries

and the optimal use of public funds, while avoiding over-complexity and competition in the eco-system.

6.6.1. Good practice 10

Blikopener, a single point of contact for collaboration: a platform connecting all Flanders' universities of applied sciences and arts (Hogescholen), which aims to increase knowledge diffusion and valorisation. These HEIs develop student entrepreneurship programmes, and launch calls to bring solutions to societal challenges.

6.6.2. Good practice 11

The EPFL campus (Ecole Polytechnique de Lausanne): The university promotes innovation activities with industry, and sets up new programs to encourage entrepreneurship and new thematic initiatives to strengthen collaboration with businesses (Future leaders, Social Innovation camp, Start-up Launchpad). Its campus is a central feature of its activities towards intermediation. Whereas EPFL draws some of the best international researchers to develop cutting-edge technology, the EPFL Innovation Park is a hive of interaction between academia and business, attracting outstanding, innovative projects and empowering them to flourish, scale up, and transform society.

6.6.3. Good practice 12

ALMI (SE) develops sustainability in knowledge valorisation for SMEs: by integrating sustainability in the operational development and business models of SMEs, Almi (an intermediary owned by the Swedish government and regions) has now reached 10,000 companies. One of the tools used with SMEs is a joint Sustainability Strategy Board, which includes 30 questions to increase the company's knowledge about sustainability and identify the top 10 sustainability issues to help companies assess relevance and double materiality analysis, and help them identify gaps and development areas and business opportunities.

6.6.4. Good practice 13

The Israeli R&I ecosystem & agency: this is considered by most experts as one of the most remarkable ecosystems in the field, and it was demonstrated that this performance was very much linked to the intensity and experience of interacting with tech-industry, market leaders and venture capital, the proximity with universities' TTOs together with Incubators, as well as the benefit from agile innovation funding agencies and public-private mechanisms, and finally thanks to the availability of highly skilled staffing both on technology and business matters. The role of the national innovation funding agency (Israel Innovation Authority – IIA) is crucial as it provides the strategic direction (over time), the networking effect, the demanding specifications, and the related funding schemes.

6.7. Monitoring and assessing impact

- Intermediaries should be evaluated regularly against a set of both qualitative and quantitative criteria, amongst which the core-roles of intermediation should be assessed (sourcing, connecting, accelerating, supporting, networking, marketing) with the aim to define potential for improvements.
- Intermediaries acting as coherent networked communities should take the initiative to develop their own bottom-up and common self-assessment system; this may improve the confidence of the funders and the self-confidence of intermediaries.

6.7.1. Good practice 14

SISP and EBN: the Swedish (SISP) and the European Network of Business & Innovation Centers (BICs) and Incubators (EBN), have developed a set of common indicators capable to measure the inputs (resources), outputs (results) as well as a series of impact indicators. Measured annually for more than 10 years for a large series of incubators, it offers statistical relevance and a benchmarking interest for the intermediaries and helps self-monitoring the operations.

6.7.2. Good practice 15

Elevate: a Greek governmental national platform collecting and presenting all information about the Greek start-up ecosystem. It aims to identify and monitor data, performance, and evolution of the entrepreneurship landscape in the country, particularly of the start-ups.

References

- Colombo et al (2015). Contribution of innovation intermediaries to new Product Development (NPD) process. *R&D Management*, 45 (2015)
- Dichter G., Vanrie, P., (2016). Incubating innovation, accelerating entrepreneurship: impact report. *EBN, Brussels (B)*.
- Enkel, E., Gassmann, O., Daiber.M., (2011). The role of intermediaries in cross-industry innovation processes. *R&D Management*, 41,5, 2011
- Enkel, E., Gassmann. O., Chesbrough. H., (2009). Open R&D and Open Innovation: exploring the phenomenon. *R&D Management*, 39(4), 2009.
- European Council (2022). Council recommendation (EU) 2022/2415 on the guiding principles for knowledge valorisation. *Official Journal of the European Union*, 2 December 2022. Commission Recommendation (EU) 2023/499 of 1 March 2023 on a Code of Practices on the management of intellectual assets for knowledge valorisation in the European Research Area. *Official Journal of the European Union*, 7 March 2023
- European Commission (2022). Knowledge ecosystems in the new era. *European Commission. DG R&I*
- Ferri, A., Grande, S., (2016). Approaches to and methods for evaluating new technologies in TTOs. *European Commission - Joint Research center (JRC)*
- Foray, D., et al (2012). Guide to R&I strategies for smart specialisations (RIS3). *European Commission, DG Regio*
- Gailly, B (2018). Navigating innovation. *Palgrave MacMillan*
- Heiden B, U Petrusson (2009). From assets to profits. *John Wiley & Sons*.
- Link, N., Siegel, D., Wright, M., (2015). The Chicago handbook of University Technology Transfer and Academic Entrepreneurship. *University of Chicago press*
- Saublens, C., et al (2013). Regional policy for smart growth of SMEs. *European Commission. DG Regio*.
- Torres JM, Stepaonavicius. M., (2022). More than just the go-between: the role of intermediaries in knowledge mobilisation. *OECD Education Working paper 285 (2022)*
- UCLouvain (2023). Le transfert de connaissances et son processus - Aide mémoire pour le chercheur. *LTTO & Réseau Lieu*
- Vanrie, P, Dichter, G., (2010). The smart guide to innovation-based incubators. *European Commission. DG Regio*.
- Verbeek A, Busato, L., (2017). *Access-to-finance conditions for RTOs and their academic and industrial partners. EIB (Innovfin Advisory)*

Villagran-Polo, J., (2023). Four approaches to technology transfer at higher Education Institutions. *University Industry Innovation Network (UIIN)*

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This Thematic Report defines what is meant by knowledge and innovation intermediaries, summarises the rationale behind the role given to intermediaries in an open ecosystem and multi-actor perspective, describes the role of intermediary organisations as knowledge valorisation actors, maps and analyses the landscape of established intermediaries, identifies new approaches, practices and models adopted by conventional and novel intermediaries, and discusses the main policy implementation challenges.

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