REVALORISE+

enhancing research impact

Literature

Review

Co-funded by the
Erasmus+ Programme
of the European Union

Literature Review

Main Objectives

This literature review highlights the existing insights regarding the availability of support and training for researchers to valorise their research. More specifically, it looks at researchers who are engaged or want to become engaged in exploiting the outcomes and insights of their research in the Social Sciences and Humanities (SSH) domains, to create social and entrepreneurial value. SSH is an area often overlooked when it comes to creating value from research. Therefore, by analysing the literature we seek to establish the state of the art in terms of knowledge about SSH valorisation and identify remaining gaps. We will use these insights as a starting point and direction for the ReValorise project in which we seek to advance the field of SSH valorisation practice and the support of this process.

The literature review addresses specific gaps in the literature on SSH valorisation, specifically related to existing training models, skills and knowledge traits of researchers and knowledge and technology transfer (KT/TT) professionals – the key actors who are in general the first point of contact in the valorisation process. We also look at the barriers and drivers along the process of valorisation, the mechanisms within universities and institutions that support the process, and the interaction between researchers and KT/TT professionals and their connection with internal and external stakeholders. We aim to get more insight into how to develop a new generation of SSH researchers - empowered to use their research (skills) to impact society. Ultimately, we strive to solve the quest of the route towards successful valorisation of SSH research: paving the pathway for future researchers to create immediate social value. The literature review is structured based on the research questions, as shown in **table 1.**

#	RESEARCH QUESTION
1	How is valorisation in the SSH domains conceptualised in the literature and how do the relevant stakeholders make sense of it?
2	What are the types of SSH Valorisation activities that are being addressed in the literature and how can we classify them?
3	What are possible outcomes and impact of SSH valorisation, how can these be captured and how can we classify them?
4	Which mechanisms support SSH research valorisation at the personal, research group and institutional level?
5	What are the factors that hinder or drive valorisation activities in SSH at the personal, research group and institutional level?
6	What are the knowledge- and skill needs of SSH researchers regarding research valorisation? To what extent are these sufficiently developed throughout the population? What are the existing training models for valorisation in SSH?
7	What are the knowledge- and skill needs of KT/TT professionals in order to best support and facilitate valorisation in SSH?
8	Which internal and external stakeholders play a relevant role in SSH research valorisation?

This programme has been funded with support from the European Commission. The author is solely responsible for this publication (communication) and the Commission accepts no responsibility for any use that may be made of the information contained therein

2. Methodological Approach

Preparation	Construction	Analysis
Determining selection criteria The focus was finding relevant publications in the field of valorisation, and guarantee diversity of perspectives and types of publications. Therefore, we prioritised: 1. A mix of academic, grey and popular literature 2. Clear SSH valorisation link 3. Empirical above conceptual 4. As recent as possible and local/national For this project, practical and applied discoveries are the focal point, instead of theoretical findings. The literature review is based on publications that explore contextualised cases and practical discussions. Consequently, supporting the development of methodological strategies for applied research on SSH valorisation.	**Case selection and data selection** Each partner selected 10 – 15 articles. The excel sheet was filled with answers to the questions from **Table 1,** complemented with information about the article, publication reference, its nature and with a final reflection upon the articles' content.	**Identification of key insights, contradictions and gaps** All the questions of **Table 1** were answered with the data from the excel sheet. After that, a higher-level analysis was conducted in order to understand general lessons learned and allowed for pinpointing contradictions and gaps in the literature.
Creating literature database An excel sheet was created and provided to partners to facilitate partners to list and provide information about each article in a structural way. We created columns corresponding to the research questions in **table 1,** in order to be able to efficiently and in a structured way, distillate relevant parts from each contribution for specific parts of the literature review. Some columns were designed with predefined (optional) information, while others were open for elaboration.	**Review database** A first analysis of the excel sheet list and data was done by the leader of the task and when needed, more information or new articles, were requested - covering a gap or increasing literature diversity. As lead partner AUAS used these articles as the basis for the literature review. However, as this original set of literature did not cover all research questions to a sufficient extent AUAS, supplemented this original set of articles with additional materials through a directed search.	**Creating draft report for feedback and collecting and processing feedback** The gaps in the literature were used to construct questions for the proceeding steps of the research project: surveys for SSH researchers and KT professionals, case selections and the selection of lighthouse stories.
		Developing the final report A final report was written with the feedback from the partners.

Table 2. Methodology of the literature review

3. Defining Valorisation

3.1 Definition

When looking at the academic and professional literature, the label *Valorisation* has been used to describe a variety of different activities and is also used as a synonym (or partially overlapping concept) with related concepts such as *third mission* (Rubens, Spigarelli, Cavicchi, & Rinaldi, 2017; Sánchez-Barrioluengo & Benneworth, 2019), *university business collaboration* (Hewitt-Dundas, Gkypali, & Roper, 2019; Orazbayeva, Plewa, Davey, & Muros, 2019), *commercialisation* (Hayden, Weiß, Pechriggl, & Wutti, 2018; Wutti & Hayden, 2017) and *academic entrepreneurship* (Muhonen, Benneworth, & Olmos-Peñuela, 2020; Siegel & Wright, 2015; Wadhwani, Galvez-Behar, Mercelis, & Guagnini, 2017). Hence, at the start of the ReValorise project it makes sense to pay some attention to how the label will be used in our project and how it will help us set boundaries for our activities.

When it comes to defining the concept *valorisation*, the literature can be divided in two categories: First and traditionally, there has been an emphasis on the capture of economic value by universities through the creation of (commercial) spin-offs and granting licenses to the utilisation of patents (Burmeister, Norn, & Abrahamsen, 2017; Williams & Galleron, 2016). From this rather economic perspective, valorisation and commercialisation are (almost) synonymous. While not limited to these domains by definition, in practice such a view on valorisation implies a strong emphasis on Science, Technology, Engineering & Mathematics (STEM) domains. Being rooted in these domains, the focus on commercialisation aspects furthermore allows for the use of relatively simple (quantitative) performance and outcome indicators that can be easily measured. Additionally, Williams and Galleron (2016) point out that, while valorisation produces also social and organisational impact, the technological and economic outcomes are generally seen as "[o]ne of the indicators of the quality and influence of the research unit [...]" (p.187).

In the second category, authors question this narrow perspective (Schneijderberg, 2011). In recent articles, we see a rise of definitions that describe valorisation as a broader process of knowledge development for societal and economic application (IXA, 2014; Olmos-Peñuela, Castro-Martínez, & D'Este, 2014; Van De Burgwal, Dias, & Claassen, 2019). Notably, the emphasis has shifted much more towards the creation of impact through the use of research findings from all domains including both STEM and SSH. Some scholars such Reale et al. (2018) categorise this impact as scientific, social and political. Likewise, IXA (2014) differentiate between hard and soft impact, which could also be translated as economic and soci(et)al impact. With this shift in focus on different types of impact, new perspectives have come on the range of valorisation activities.

While many authors agree that valorisation should go beyond the academic environment, and that the benefits that it can bring to the broad public and society should be one of the main characteristics of valorisation (Hannon, Dewaele, De Smet, & Buysse, 2019; Olmos-Peñuela et al., 2014), many authors continue to struggle pinpointing which types of activities should be seen as (contributing to) valorisation, which outcomes it produces, and how to measure those outcomes (Girkontaitė, Benneworth, & Muhonen,

2020; Pedersen, Grønvad, & Hvidtfeldt, 2020). Galleron, Ochsner, Spaapen, and Williams (2017) argue even that, while research is seen as producing value both for academia and for society, "[..] a large part of this value is not measurable in quantitative terms, nor assessable in other tangible terms." (p.37).

Furthermore, regardless of whether researchers adopt a broad or narrow definition of valorisation, most authors continue to present valorisation as a highly academic centred activity (Hladchenko, 2016) where academics transfer knowledge - being produced within the university - to either practitioners (science to professionals) or the public (science to public) (Wutti & Hayden, 2017). However, particularly when looking at the practices in universities of applied sciences (Berg & Geerdink, 2017; Franken et al., 2017; Ngwenya & Boshoff, 2018), but not limited to these, scientists are increasingly involved in the co-creation of knowledge together with professionals and the public (Jull, Giles, & Graham, 2017; Rock, McGuire, & Rogers, 2018). From this perspective, valorisation includes all activities that contribute to ensuring that the outcomes of scientific knowledge add value beyond the scientific domain (Benneworth & Jongbloed, 2010). According to these authors, valorisation ensures to make results from academic research available or at least more easily accessible, in order to increase the chances of others—outside academia—making use of it, as well as the co-production of knowledge with non-academic groups.

For these reasons we propose to embrace *valorisation*'s diversity and plurality along the lines described above, rather than adopting a strict and unambiguous definition. As valorisation is in its very nature a complex activity, it cannot be identified in terms of its actual outcome or impact, but should rather be recognised in terms of its intentions. Hence, we suggest to include all purposefully initiated activities by scholars, aimed at making research findings available and useable for non-academic actors in order to create significant, measurable or observable impact beyond the academic context. Therefore, we exclude diploma-oriented teaching and publication driven research.

3.2 Valorisation Activities

Within the valorisation literature, a varied set of valorisation activities is described without clear signs of a generally accepted shared conceptual framework. While not focusing specifically on SSH valorisation, Klofsten and Jones-Evans (2000) argue that all activities beyond teaching and personal research, could be considered valorisation. Likewise, Davey and his colleagues, include a long list of valorisation activities in their research, ranging from mobility for students and staff and life-long learning efforts, to collaborative research efforts and spin-offs (Davey, 2015; Davey, Baaken, Galán-Muros, & Meerman, 2011; Davey, Baaken, Galan Muros, & Meerman, 2011; Davey, Rossano, & van der Sijde, 2016). While using the label university-business collaboration, the authors show that these activities can be undertaken with, or benefit both private and public actors beyond companies. Others suggest that valorisation activities also include contract research and consulting (D'este & Perkmann, 2011), facility- and data-sharing (Wakkee, Van der Sijde, & Nuijens, 2013), popularisation of science (Ren & Zhai, 2014), and performing the role of social critic (Grimaldi, Kenney, Siegel, & Wright, 2011).

In an effort to categorise valorisation activities, some authors classify them based on having a research

or educational orientation (Hladchenko, 2016). Others point to the type of partners or beneficiaries to whom the activities are oriented (i.e. policy, business and public) (Wutti & Hayden, 2017). Van Der Sijde, Wakkee, and Sharp (2015), who studied valorisation activities in both STEM and SSH domains, adopt a process perspective and distinguish between (1) Science Society Interactions (SSI), which includes formal and informal types of knowledge exchange, and (2) collaboration between academics and non-academic actors and the development of Marketable Academic Products and Services (MAPS) which can be autonomously sold in the market.

The lack of a generally accepted framework, classifying different types of valorisation activities, may be a barrier to determine the effect of specific intervention schemes and support structures towards valorisation in the SSH domain. While creating such a framework is beyond the scope of both the literature review and the ReValorise project, we nevertheless attempt to integrate the emerging frameworks and map the most commonly mentioned valorisation activities in the SSH domain. Therefore, we have created a matrix based on two axis (research vs. education driven activities and economic vs. societal impact) and showing the quintuple helix (Carayannis, Barth, & Campbell, 2012) to represent the various target groups to which the activities are directed. These insights are shown below, in **figure 1**.

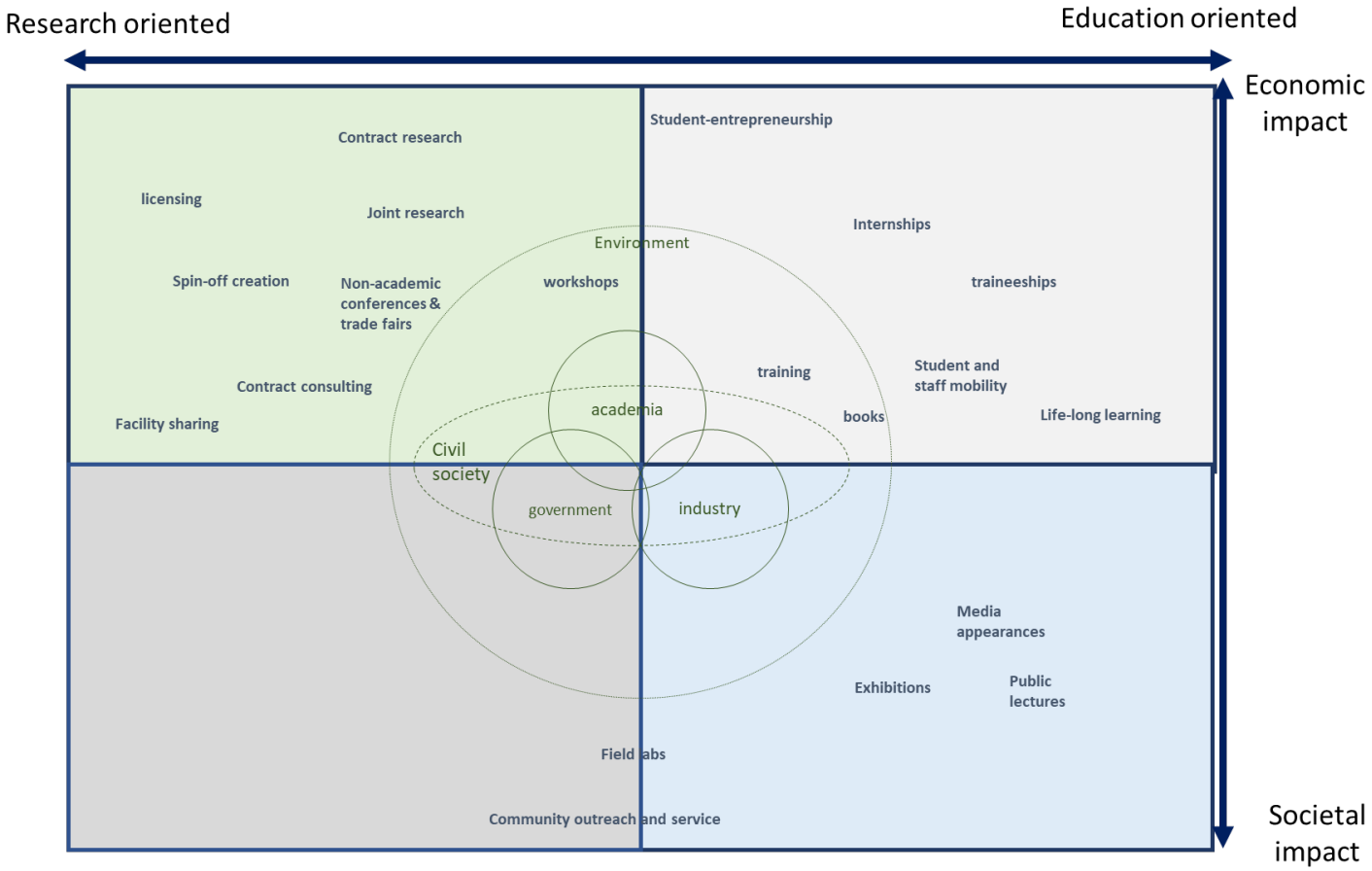

Figure 1. Categorisation of Valorisation Activities

3.2 Valorisation Outcomes in SSH

While many authors stress the importance of policy and soci(et)al impact in addition to economic impact (Reale et al., 2018), economic impact measures are still dominant within the SSH valorisation literature. The measures used in relation to SSH valorisation seem to have been copied from studies about STEM valorisation. Several studies on the categorisation of valorisation impact differentiate between social impact related to policy, education and society at large (IXA, 2014; Reale et al., 2018) without further specifying what this entails and what the actual outcome and impact is. Publications mention social improvements, societal benefits and similar terms, but they lack examples that illustrate what social improvement means in the context of valorisation and how they can be attributed to valorisation activities (Galleron et al., 2017; Reale et al., 2018). A number of studies (Hladchenko, 2016; Olmos-Peñuela et al., 2014) pinpoint *policy advice* as a key outcome of SSH valorisation.

When impact is analysed from an educational perspective, several studies map valorisation outcomes through knowledge transfer indicators such as the facilitation of building expert academic networks, publishing, development of workshops, lectures, conferences and training (Cherney, Head, Boreham, Povey, & Ferguson, 2012; Dewaele, Vandael, Meysman, & Buysse, 2021).

Looking at economic impact, specific indicators are being used, including (the number of) patent applications, start-up creation and service-based ventures (Olmos-Peñuela et al., 2014; Perkmann & Salter, 2010). How this translates into actual impact is seldom studied, as impact measurement is notoriously complex and time consuming. Yet, a recent literature review by Pedersen et al. (2020) does suggests that there are various methods and tools available to measure the actual impact of valorisation "[..]while avoiding catch-all indicators and universal metrics" (p4).

4. **Drivers, Barriers & Mechanisms**

4.1 Drivers

As metaphorically pointed out by Lam (2011), scholars are typically motivated to engage in valorisation activities by three aspects it might entail: the 'puzzle' (intrinsic satisfaction), 'gold' (financial rewards) and/or 'ribbon' (reputational/career rewards). Within the literature on SSH valorisation specifically, it seems that the most commonly discussed drivers of valorisation are related to personal motivations and social values, such as status and civic duties (i.e. the so-called *puzzle* and *the ribbon*, rather than *the gold*) (Kongsted, Tartari, Cannito, Norn, & Wohlert, 2017; Wutti & Hayden, 2017), although some have also pointed that the idea that obtaining larger research funds is still relevant (Benneworth, Muhonen, & Olmos-Peñuela, 2017; Galán-Muros & Plewa, 2016; Williams & Galleron, 2016). Galán-Muros and Plewa (2016) and Schofield (2013) furthermore point at the availability of resources and relationships, thus suggesting that opportunity also plays a role in this process. The most cited drivers are listed below in **Table 3**.

Drivers	**Literature support**
Status ***ribbon***	Benneworth, Muhonen, & Olmos-

Being acknowledged for the work done ***ribbon*** *Entrepreneurial attraction* ***puzzle*** *Practical impact in society* ***ribbon puzzle gold*** *Paying public funds back* ***puzzle ribbon*** *Educational impact and knowledge transfer* ***ribbon puzzle gold*** Career advancement ***ribbon gold*** *Getting bigger funding* ***gold***	Peñuela, 2017; Galán-Muros & Plewa, 2016; Kongsted, Tartari, Cannito, Norn, & Wohlert, 2017; Schofield, 2013; Williams & Galleron, 2016; Wutti & Hayden, 2017

Table 3. Most cited valorisation drivers

4.2 Barriers

As the literature shows, there are many factors that hinder or even inhibit valorisation in the SSH domain, including lack of time and funding and an academic culture that favours scientific publications over valorisation. Many barriers for valorisation are connected to institutional mechanisms and systems, closely linked to the focus on 'science to science' (Cherney et al., 2012; Wutti & Hayden, 2017). Even the barriers on a personal level are often the result of the academic culture and the process applied within. By fearing to lose control of the research to other stakeholders, for example, researchers might be projecting an academic culture of individual merit, created by the pressure of having articles published, as an indicator of academic success (Cherney, 2015; Cherney et al., 2012; Vanholsbeek et al., 2019). This fear also illustrates a barrier on organisational level, also illustrated by other authors, who show that the complex social processes have significant impact on the effectiveness of the knowledge transfer process (Good et al., 2018; Huyghe & Knockaert, 2015; Urbano et al., 2019). To illustrate all of the most cited barriers, we provide an overview in **Table 4** below.

Barrier	**Literature support**
Academic structure and traditions - Focus on publications as an indicator of academic success - Priority for other academic tasks - Lack of multidisciplinary cooperation - System preference for STEM research - Unclear measurements of SSH valorisation - Hard to find (SSH) valorisation training - Lack of time	*Cherney et al., 2012; Cherney, 2015; Galleron, 2017; Reale et al., 2018; Williams, 2016; Vanholsbeek et al., 2019; Wutti & Hayden, 2017;*
- Growing competition for research funding - Lack of funding and incentives - Scientific publication language does not meet 'outside' world - Fast paced business system does not align with the academic pace	*Benneworth & Jongbloed, 2010; IXA, 2014; le Dû-Blayo, 2017; Reale et al., 2018*
Personal & Organisational - Lack of skills-time funding - Lack of skills and knowledge	*Good et al., 2018; Huyghe & Knockaert, 2015; Urbano et al.,*

- Fear of losing ownership/control over research - Fear of stakeholders' interests bias – impacting outcomes - Complex social processes - Unclear KT role - Distrust of KT professionals by researchers	*2019; Vanholsbeek et al., 2019*

Table 4. Most cited valorisation barriers

4.3 Mechanisms

Studies addressing mechanisms that support valorisation do not focus specifically on the SSH domain. Nevertheless, more general mechanisms are still relevant in this context. Most studies focus on schemes and measures that universities have implemented at an institutional level in order to overcome the previously addressed barriers that exist at this same level (Perkmann & Salter, 2010; Siegel & Wright, 2015). In general, these mechanisms are designed to solve short-term issues rather than changing structures for the long-term. Among these mechanisms are for example the creation of entrepreneurship garages and accelerators, incubators, research centres and KT/TT offices that support scholars through policy support; patent and licence procedure consultancy service, and the management of conflict of interest (Olmos-Peñuela et al., 2014; Siegel & Wright, 2015; Van De Burgwal et al., 2019). Interesting to note is that more and more measures in relation to career advancement are taken, for instance developing specific career tracks for entrepreneurial academics (Duval-Couetil, Ladisch, & Yi, 2020; Sanberg et al., 2014). **Table 5** below shows the most cited mechanisms.

Mechanisms	**Literature Support**
◊ Student business plan competition **personal, institutional** ◊ Valorisation events **institutional** ◊ Output indicators **institutional** ◊ Accelerators **institutional** ◊ Entrepreneurship garages **institutional** ◊ Integration of KT/KT service into curriculum **institutional** ◊ Professional SSH consortia management **institutional** ◊ Patent procedures **institutional** ◊ Policy makers support **institutional** ◊ Support conflict of interests **institutional** ◊ Funds for translational activities **institutional, financial** ◊ Career promotion system **institutional, personal, financial** ◊ Rewards **institutional, personal, financial**	Duval-Couetil, Ladisch, & Yi, 2020; Olmos-Peñuela et al., 2014; Perkmann & Salter, 2010; Sanberg et al., 2014; Siegel & Wright, 2015; Van De Burgwal et al., 2019

Table 5. Most cited mechanisms

The lack of a clear overview; classifying different types of drivers, barriers and mechanisms for successful valorisation, is a barrier on its own in order to determine a model for valorisation in the SSH domain. While

creating such a framework is beyond the scope of both the literature review and the ReValorise project, we nevertheless attempted to map the most cited drivers, barriers and mechanisms of valorisation in **figure 2**.

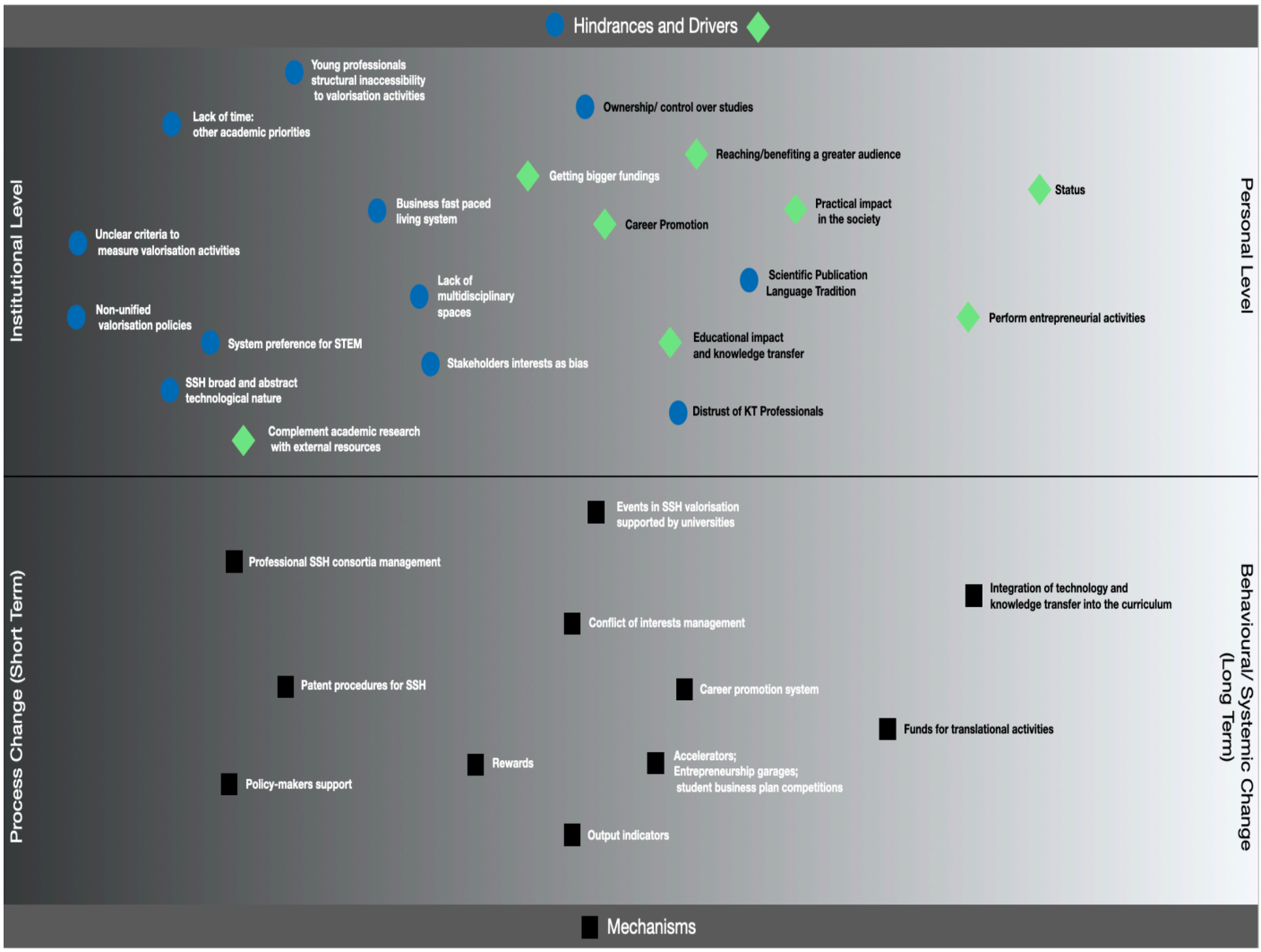

Figure 2. Connecting Drivers and Barriers to Valorisation Mechanisms

Taking a closer look at the literature on this topic, it seems that mechanisms generally focus on academics that are already inclined to engage in valorisation activities or have already experience in successful valorisation. Few studies explore mechanisms that focus on helping academics take the first step towards valorisation, motivating and teaching researchers to recognise opportunities for valorisation in the first place. Furthermore, very few studies explore how these mechanisms coincide and or reinforce each other. Indeed, most studies to date have focused on the effect of single factor mechanisms, such as promotion. The question how a combination of integrated activities aimed at changing the academic culture and specifically the valorisation-averse characteristics thereof, may impact upon the valorisation activities of its scholars, has thus far remained unaddressed. In a similar way, most studies focused on the mechanisms are cross-sectional and quantitative in nature, oftentimes lacking theoretical models to properly explain just how the individual and combined mechanisms cause academics to engage in valorisation behaviour.

Concluding, the analysis of the characteristics of valorisation mechanisms is still a topic that demands

more attention in the literature of valorisation. Therefore, we wonder if the academia is interested in redesigning bureaucratic process and reshaping structural behaviours rooted on academic values and institutional modus operandi, and whether they feel responsible doing so.

5. KT/TTs & Researchers – Skills, Knowledge & Behaviour

5.1 Changing Knowledge and Skill needs

The role of Knowledge Transfer Offices (KTO) as a part of the university and important in justified valorisation activities, such as patenting and protecting intellectual property, forms an important subject within the valorisation literature (Göktepe-Hulten & Mahagaonkar, 2010; Siegel & Wright, 2015). However, due to increased involvement of external stakeholders in the research process, the role of KT professionals evolved, and their skills need to be more iterative, overcoming the juncture between research and business (McCutcheon, 2019; Mom, Oshri, & Volberda, 2012). KT professionals now need to be able to work with unpredictable outcomes and have partners in different areas with varying levels of engagement through time (Dewaele et al., 2021). This evolution asks for a more hands-on approach; networking skills, new business development, marketing-oriented skills as well as familiarity with the academic norms and values, strategic use of negotiation and mediation skills (Davies, Nutley, & Walter, 2018; IXA, 2014; Le Dû-Blayo, 2017; Mom et al., 2012; Soares & Torkomian, 2020). The list of knowledge and skills (which go hand in hand) a KT professional should have is extensive, and moves more and more away from the traditional, legally oriented skillset, towards a skill set where the academic connection and legal tasks stay, complemented with skills closely related to the business (development) environment. This rising importance of business knowledge is also present when looking at researchers' needed skills and knowledge (Namdarian & Naimi-Sadigh, 2018; Reitzer & Teräväinen, 2011).

5.2 Overlap

The roles and responsibilities of researchers and KT/TT professionals over the course of a research and valorisation process are not clearly mapped by the literature. Responsibilities, skills and knowledge needs are described interchangeably, which makes it difficult to assign each of them specific tasks and complementary skill and knowledge sets. *Multidisciplinary/interdisciplinary cooperation* is a skill that many emphasise as being very important for valorisation – for both researchers and KT professionals (Klima, Meysman, Carlier, Dewaele, & De Smet, 2019; Muhonen et al., 2020). Additionally, entrepreneurial skills; commercial awareness, business knowledge, communication and marketing skills, mind-set and personality, are terms that the literature shows as most important skills and features within the valorisation process (IXA, 2014; Klima et al., 2019; Mom et al., 2012; Namdarian & Naimi-Sadigh, 2018). This is also the case for both KT professionals and researchers; each of them uses this knowledge – although maybe in different amounts and in different phases of the valorisation process.

Hence, we conclude that the literature clearly shows overlap in the skills and knowledge researchers and

KT professionals need to have. There does not seem to be overall agreement upon a clear division. Nevertheless, in **figure 6** below, we draw a picture of the clearest differences between the skills and knowledge of researchers and KT professionals, first we discuss the (SSH) researcher, and below that section we illustrate the most common traits of the KT professional.

SSH Researcher
Skills and Knowledge

Skills & Knowledge	**references**
Cooperation. Research shows that in order to valorise, it is important for a researcher to network and build close collaborative relationships with many stakeholders - from policy officers to business and researchers of other disciplines - sharing knowledge and co-creating, demonstrating public value. In short: cooperating.	Benneworth & Jongbloed, 2010; D'este & Perkmann, 2011; Ren & Zhai, 2014; Rock et al., 2018
Interdisciplinary outlook. Interdisciplinary research is important for a successful adoption of new approaches; creating knowledge with resources from different angles and expertise; with a broader view, benefiting more favourable ecosystems for the valorisation of research.	Davies et al., 2018; Dewaele et al., 2021; Klima et al., 2019; Koenig, 2019
Mind-set. Personal traits, intrinsic motivation and drive are highly important. Curiosity and creativity are needed. Awareness, alertness to opportunity, a desire to solve puzzles and a curiosity-based pursuit of knowledge.	Holm, Jarrick, & Scott, 2015; IXA, 2014; Reitzer & Teräväinen, 2011
Entrepreneurial awareness. Valorisation is in general synonymous for Academic Entrepreneurship, and entrepreneurship calls for entrepreneurial traits and skills. (commercial) awareness, alertness to opportunities and the eagerness to exploit opportunities are important to initiate the process of valorisation.	Namdarian & Naimi-Sadigh, 2018; Reitzer & Teräväinen, 2011

KT/TT Professionals Skills & Knowledge	
Legal knowledge. Traditionally, KTOs had a strong legal task. KT professionals were responsible for support with the protection of intellectual property, managing patents, and to make sure that universities had well-defined IP- and patent strategies. This role is still there, even though the role of KT professionals has become broader.	Göktepe-Hulten, 2010; Mom et al., 2012; Siegel & Wright, 2015
Interdisciplinary knowledge and skills. A KT professionals' skills need to be iterative; over-spanning the juncture between research and business. It is essential to be able to work with unpredictable outcomes and have partners who have varying levels of engagement through time. This asks for the strategic use of negotiation and mediation skills, over spanning the gap between disciplines.	Burmeister et al., 2017; Dewaele et al., 2021; Doyle, 2020; IXA, 2014; Le Dû-Blayo, 2017; Soares & Torkomian, 2020; Union, 2019; Wadhwani et al., 2017; Wutti & Hayden, 2017
Entrepreneurial awareness. Entrepreneurship evolves around opportunities. Opportunity recognition, a hands-on mentality, and exploitation in order to create value. This requires a hands-on approach of KT professionals, to commit to shared values and to create a context in which all parties perceive benefits. Therefore, a KT professional needs to have a certain level of creativity, commercial awareness and conceptualisation skills - translating research outcomes and transforming it into to an attractive business case.	Benneworth & Olmos-Peñuela, 2018; Caulfield & Ogbogu, 2015; Dewaele et al., 2021; Mom et al., 2012; Reitzer & Teräväinen, 2011; Soares & Torkomian, 2020
Management & Communication skills. Communication is key in management and cooperation; building partnerships, negotiate deals and making sure that every stakeholder perceives benefit. As there are so many stakeholders involved in processes like valorisation, knowing how to communicate strategically with universities, media, society, government and/or business stakeholders is therefore essential.	Dewaele et al., 2021; Le Dû-Blayo, 2017; Mom et al., 2012; Muhonen et al., 2020; Namdarian & Naimi-Sadigh, 2018; Soares & Torkomian, 2020; Wutti & Hayden, 2017

Table 6. Skill sets required for academics and TK professionals

Whereas there is some agreement on the importance of the above-mentioned skills as well as on the notion that these skills are insufficiently developed – particularly for researchers; we have not come across any large-scale studies measuring the presence or lack thereof in the population of SSH researchers. Some studies about the development of the academic landscape over the past decade (Enders, De Weert, & de Weert, 2009) may however suggest that amongst the younger generation of academics the awareness regarding the importance of such skills for their academic career is growing, which might be a result of changing pedagogies and curriculum in the education that the younger generation has received. And while we are aware that many universities offer training courses about

valorisation (IXA, 2014; Miranda, Chamorro-Mera, & Rubio, 2017), very few studies have been undertaken in which such training and the effect thereof is explored in much detail. From a scientific point of view, training models for valorisation seem very scarce. While practical 'how to-guides' for valorisation, step for step templates covering common processes, and pathways to commercialisation seem to be abundant on the web (Gascoigne & Metcalfe, 2005; IXA, 2014; Reitzer & Teräväinen, 2011), scientific support for these instruments seems to lack behind. The answer on the question 'what is the evidence for training models, the training steps and their effects' seems therefore hard to be answered. Gascoigne and Metcalfe (2005) argue that there is the need to think more in terms of continuous interactions of the process, a more holistic approach instead of focusing on knowledge parcels without undebatable evidence.

5.3 Relationship KTs and researcher

Surprisingly, and briefly discussed in the barrier section, some studies show that researchers distrust KT professionals; not seeing them as 'one of them' (Hayden, Petrova, & Wutti, 2018; Wutti & Hayden, 2017). Several studies show through surveys and interviews with academics that there is fear to have less control over their work when performing a valorisation activity (Nielsen & Cappelen, 2014). Moreover, the KT role and the costs involved are questioned by many (Dewaele et al., 2021; Goktepe-Hulten, 2010). KT officers are sometimes suggested to actually create more social tensions, thereby challenging already existing relationships between academics and their external partners (Goktepe-Hulten, 2010). More in-depth reasons for the lack of trust are not identified in the literature. We argue that more research is needed on whether researchers see KT professionals as part of the university - as their *'partner in crime'* and an ally that helps them achieve a shared goal, or as (knowledgeable) outsiders, working for the market and external stakeholders' needs (Dewaele et al., 2021).

6. **Stakeholders**

6.1 Undefined Roles & Actors' Perspectives

Valorisation is an open field with a complex network of actors, but a few things stand out. Most scholars agree that valorisation is a complex process that demands collaborative effort of different disciplines and stakeholders, within and without the academia, with different knowledge, expertise and roles (Dewaele et al., 2021; IXA, 2014). Valorisation activities and the different stakeholders involved are increasingly framed in a triple, quadruple or even quintuple helix (Amry, Ahmad, & Lu, 2021; Vanholsbeeck & Lendák-Kabók, 2020). What does remain unclear from this literature is how these actors specifically engage and relate to each other, their independent roles and the manners that they specifically contribute to valorisation activities. According to Wood (2011) the "[…] lines between actor roles are not always clear" and "[…] some of the stakeholders' roles associated with various stages of the process could be occupied by the same person" (p. 155).

The perspectives and narratives in articles often clash, simply because the roles are not well defined, nor are the stakeholders' correlations to each other. Following Gascoigne and Metcalfe (2005) however, we

do recognise that valorisation in the SSH domain could in fact be understood as a multi-stakeholder process. During this process, academics engage with a variety of parties, taking different roles in different stages of the process. For instance, an SME or NGO may at one point act as inspirator by raising interesting questions guiding research, while in another project they may be collaborators or clients. Likewise, another research group (either in the same or another institution) may act as an inspiration by setting an example, while it may also be act as a consortium member in a joint project and a competitor when it comes to attracting funding for research or valorisation projects. While hierarchical relationships are affecting the valorisation process, further research is necessary to gain a better understanding of how these relationships develop and can be managed by the academics and TK professionals involved. The main stakeholders are shown below, in **Figure 3.**

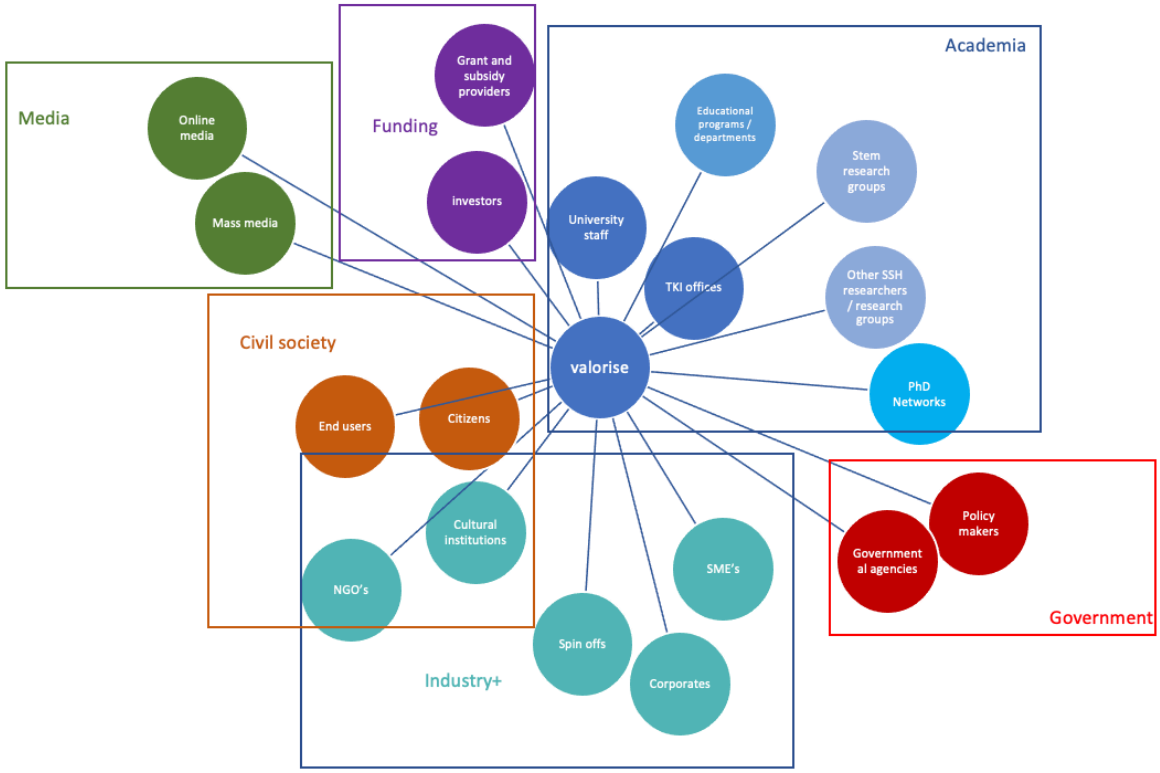

Figure 3 relevant stakeholders

7. Conclusion & Needs for Further Research

Whereas the number of studies focusing on valorisation in the SSH domain has grown rapidly over the past decade, the legacy of its origins in the STEM domain remains strong. While scholars continue to point out that particularly the metrics used in this domain are not doing justice to the diversity and richness of valorisation in SSH (Schneijderberg, 2011), a shared alternative framework to model, map and value it is yet to be developed (Galleron et al., 2017). Quantitative metrics that are more fit for technological innovations remain dominant, more due to ease of use rather than relevance (Wutti and Hayden, 2017). Hence, we agree with Bulaitis (2017) who suggests that "Working within SSH evidences that humanities

scholars themselves recognise alternative values, beyond the economic and commercial, in the work they do… [and this] calls for humanities scholars to build upon such evidence, in providing an alternative approach that engages with policymaking as opposed to avoiding it." (Bulaitis, 2017, p. 7). This will require the development of SSH friendly mechanisms that take in consideration SSH language, processes and projects such as assessments that reflect SSH practices and bottom-up procedures based on SSH peers evaluation (Ochsner, Hug, & Galleron, 2017).

The main objective of ReValorise project is to develop better training for SSH research valorisation. However, it is a difficult mission to understand what type of preparation SSH valorisation actors need in order to overcome obstacles and achieve success in valorisation activities. Specifically, a number of gaps were found throughout the literature review (see **Table 8**, below). These give direction to further empirical exploration. By following a multi-stakeholder approach that looks beyond indicators in order to understand stories based on networks and relationships, on behaviours and systematic cultures; we believe we can contribute to building better valorisation training.

Former research questions	**Questions not answered by literature review**	**Suggestions for further exploration in ReValorise**
What are the existing training models for valorisation in SSH?	What is the evidence for training models, the training steps and their effects?	Survey - Question names of training Cases - Evidence of effectivity Lighthouse - Were the knowledge and skills (obtained by training) put into practice during the project?
What are the knowledge and skill needs of KT/TT professionals in order to best support and facilitate valorisation in SSH?	What are their separate roles? Where does their loyalty rely? Are KT professionals being trusted by researchers? If not, why not?	Survey - Roles - Knowledge and skills - Trust Cases - Network - Goals Lighthouse - Moments of engagement KTO/Researcher during the project

What are the knowledge and skill needs of SSH researchers regarding research valorisation? To what extent are these sufficiently developed throughout the population?	What are their roles? How do they relate to different actors? Are personal skills being developed? Do they think it is important?	Survey - Roles - Allies Cases - Does training develop skills that they believe are important? Lighthouse - Dynamics between partners
What are the factors that hinder or drive valorisation activities in SSH?	Are there training courses working on specific drivers? Is there a generational gap (due to changing systems/curricula)?	Survey - Age - Valorisation definition and experience Cases - Are drivers created/supported? - Evidence of overcoming the barriers? Lighthouse - Different backgrounds of researchers - Field of expertise - Age - Experience
Which mechanisms support SSH research valorisation?	Are there mechanisms to redesign the (academic) process? Do they work for the long-term or are they there just to overcome barriers?	Survey - what mechanisms affected them? Cases ? Lighthouse: - Impact of these mechanisms in the projects
Which stakeholders play a relevant role in SSH research valorisation?	What are their roles at specific moments of a valorisation process?	Survey: - Allies - Actors creating barriers Cases: - Is conflict of interest management included in the training Lighthouse: - Impact of these mechanisms in the projects

What are the various types of SSH research valorisation activities?	How can activities with a social focus be better illustrated?	Survey - What are activities that you were not familiar with? Cases - What are the training parts that focus on performing valorisation social activities? Lighthouse - How can training help to better illustrate social activities?
What are possible outcomes and impact of SSH research valorisation and how can these be captured?	What does social impact mean to valorisation actors? How can impact be captured through SSH training?	Survey ? Cases - How is social impact addressed in the training? Lighthouse - How did the training explicitly address social impact?

Table 8. Gaps and needs for further research

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