TRANSFORMING OPEN RESPONSIBLE RESEARCH AND INNOVATION THROUGH CHARM

TORCH

DELIVERABLE D5.3 – TORCH: GOOD PRACTICES REPORT ON INNOVATION'S DETECTION

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GLOSSARY OF KEY INITIALS, ABBREVIATIONS AND ACRONYMS

AKTS : Annual Knowledge Transfer Survey
BIM : Booster Innovation Montpellier
CTRIA : Central Transdanubian Regional Innovation Agency
IDF : Invention Disclosure Form
IP : Intellectual Property
IPR : Intellectual Property Rights
IRL : Investment Readiness Level
KTO : Knowledge Transfer Office
OCPKE : Office of Corporate Partnership and Knowledge Exchange (TCD)
OI : Open Innovation
RD or R&D : Research and Development
RDI : Research, Development and Innovation
RSO : Research Support Office
SATT : Société d'Accélération de Transfert de Technologies (France)
SDF : Software Disclosure Form
SEP : Standard Evaluation Protocole
SFI : Research Centres and Institutes (TCD)
TRL : Technology Readiness Level
TTEC : Trinity Technology and Enterprise Campus
TTO : Technology Transfer Office
WP : Work Package

Universities
ELTE: Eötvös Loránd University
UB: University of Barcelona
UM: University of Montpellier
UU: Utrecht University
TCD: Trinity College of Dublin

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EXECUTIVE SUMMARY: GOOD PRACTICES REPORT ON INNOVATION'S DETECTION

The third report of Work Package 5, "Identification and promotion of best practices, procedures and tools to detect innovation resulting from a research contract or from the research unit" focuses on innovation detection within the universities. In addition, innovation scouting in innovation gathering ecosystems with external actors is also secondarily discussed, as knowledge of the current innovations in each research field is necessary for innovation detection within the universities.

Our analysis is based on the observation that in universities the ratio between the research carried out and the innovation detected is relatively low, particularly regarding the detection of the developed software.

The objective of D5.3, "Best practices report on innovation detection" is to collect and analyse the best procedures, practices and tools implemented in the Alliance Universities to detect innovation both within their research laboratories and outside of the universities (for instance innovation exercised by non-academic actors) when relevant. To propose a CHARM'EU model for innovation detection, a gap analysis between the Alliance partners and some benchmark on non-academic actors is relevant.

Innovation detection can be defined as innovation scouting. The analysis also considers digital innovation as we also note a low ratio of software declaration inside some universities. The document differentiates two types of innovation detection/scouting:

- Internal innovation detection (the innovation created inside the universities).
- External innovation detection (innovation produced outside of the academic field, by non-academic actors).

To carry out our analysis on innovation detection, data was collected through a qualitative survey filled in by the representatives of the Alliance partners. In addition, interviews were undertaken with the relevant administrative agents, researchers, and non-academic actors on innovation detection. We found that in all universities, administrative offices, mainly RSO's, are responsible for innovation detection inside the university. To monitor research being carried out, administrative agents use basic procedures such as communication through mails, calls, formal and informal meetings. Steering committees are also organised within the universities on a regular basis to keep the management and administrative agents up to date on the research activities inside the universities. To declare their inventions and software, researchers must fill in Invention Disclosure Forms (IDF) and Software Disclosure Forms (SDF) that must be handed to RSOs and/or KTOs. Researchers are expected to be relatively independent in the self-assessment of their inventions. Administrative agents can raise awareness among researchers on the importance of declaring their innovative research results to then be able to valorise them, for instance through patent applications. They can support researchers in properly filling in IDF's and SDF's. However, some administrative agents may not have sufficient scientific knowledge or working time available to detect innovations, although some of them have a scientific background that can be helpful for

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innovation detection. Intensive communication and cooperation must be established between researchers and administrators for a better innovation detection. Furthermore, the role of business developer is a relatively new position inside universities that can serve as a privileged intermediary between researchers and administrative agents. Indeed, business developers have a broad knowledge of the resources of the research laboratories and at the same time they are part of the university administration. This double-position can help thus support innovation detection.

In addition to research monitoring and innovation detection procedures and practices, some other initiatives, assignments, and practices can more or less directly support innovation detection within research units and research groups. For instance, supporting researchers in drawing up proposals for calls-for-projects would allow administrative agents to gain preliminary access to research ideas that could potentially lead to future innovations. Offering pre-maturation or maturation funding to researchers can encourage self-assessment of innovation and allow university administrations to be more aware of the research being carried out in research groups, to support open innovation and to encourage potential future innovation. It can enable a closer relationship with researchers and make them more aware of invention disclosure forms, research valorisation and knowledge transfer.

Open Innovation can be defined as *"the use of purposive inflows and outflows of knowledge to accelerate internal innovation"*[1]. Several actors can be involved in the research process and bring their knowledge. Thus, Open Innovation could increase the potential for innovation and innovation detection, as different actors share their expertise altogether. Moreover, enterprises usually have high expectations for innovative results when collaborating with researchers, which can push to pay more attention to innovation.

Innovation detection can be a different process in different research areas and is very discipline specific. Innovation detection within universities depends on the commitment of individual researchers in informing the university administration about their inventions, notably by filling in IDFs and SDFs. For instance, at the UM, very few IDFs are filled in by researchers per year in the domains of environment and biodiversity and other research fields such as Human and Social Sciences. Indeed, scholars in those fields may have other drivers or goals for their work, e.g. informing policy and practice rather than "innovation" outputs. Also, IDFs may not be totally suited for those disciplines, and their innovation are mostly not material, thus may be more difficult to valorise.

In the second section of the report, the innovation detection strategy of each of the Alliance Universities is introduced, with a description of the management approaches, procedures and tools used. In addition, some other initiatives that support innovation detection more or less directly are presented in the report, for example the F2I fund at the University of Barcelona, the Booster of

[1] BerkelyHaas, What is open innovation, <https://corporateinnovation.berkeley.edu/what-is-open-innovation/> [Accessed 14 Dec 2021]

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Innovation Montpellier within the Montpellier University of Excellence, and the Dutch National Faculty of Impact[2] programme.

Our analysis has found that universities face diverse challenges regarding research monitoring and innovation detection. The main challenge in some universities is the lack of involvement by the researchers in filling in IDFs or SDFs, mainly because they do not foresee the value that could come from it. The research assessment indicators also have an impact on the researchers' behaviour in disseminating their research results. In most countries the assessment indicators of the National Research Agencies and ranking agencies tend to give more value to bibliometrics such as the number of publications. Therefore, a trend appears: researchers would rather publish their research results in renowned scientific journals than by filling in an IDF and applying for a patent. In addition, these patent applications are pricey and time-consuming, which can hold researchers back. This, coupled with the lack of indicators for measuring innovation and following-up on research projects in some of the Alliance Universities (not all), and the lack of human and digital resources to scout for and measure innovation may hinder innovation detection in universities.

Furthermore, the Alliance Universities associate with non-academic actors to engage in the co-creation processes of advanced knowledge and to develop Open Innovation. They have developed specific strategies integrated within the ecosystems of innovation outside of academia and within the industry and public sector to support public research, innovation and entrepreneurship. Thus, some benchmarking with regard to non-academic actors is essential in our analysis in order to collect non-academic actors' best practices on innovation scouting. In our benchmarking of non-academic actors, we found that many have an R&D department with scientists and technicians dedicated to research and innovation and extensive internal reporting and administrative procedures system in place to monitor research and software. They believe that state-gating[3] is important to manage complexity. In addition, non-academic actors truly believe in cooperation between different stakeholders, communication, sharing of ideas and knowledge and in buiding trust in relationship between partners to know they can rely on each other. Thus, non-academic partners underline the importance of networking in innovation scouting, of knowing and having access to multiple and various key actors of innovation. In addition, non-academic actors invest a large percentage of their turnover in R&D, in broadening the knowledge of their employees and in collaborating with external partners. They also set aside some free working time to their scientists for exploration, trying new things, experimenting, which can boost innovation, and they encourage their scientists to meet their peers and go to conferences to encourage sharing of knowledge.

[2] Faculty of Impact, https://facultyofimpact.nl/ [Accessed 08 Fev 2022]

[3] State-gage is a method developed by Robert G. Cooper and theorized in the 1980s. This method is widely used in many types of companies, which facilitates the management and launch process of a product. It divides each new project into distinct and successive stages, separated by gates, i.e., decisions made during evaluation meetings, which concern the status of the project in terms of costs, risks, quality and team management. Each gate marks the transition to the next stage. Sequential cutting focuses on eliminating errors, organizing the development of a product or project and controlling decisions.

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ABSTRACT

"The best practices report on innovation detection" constitutes the third report of Work Package 5 "Strengthening cooperation between universities and enterprises". This report focuses on innovation detection and seeks to identify the strategies, procedures, best practices, and tools implemented within the Alliance Universities to monitor research and scout innovation inside and outside their institutions. The report also underlines the challenges that some universities face with innovation detection because of process-driven challenges. Furthermore, the best practice procedures, practices, and tools of non-academic partners of the Alliance Universities are introduced. Finally, a presentation of potential and preliminary recommendations that have emerged from our analysis will be presented.

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INTRODUCTION

Objectives of D5.3

Work Package 5 seeks to identify practices in each of the Alliance Universities in order to develop and support research, innovation and technology transfer partnerships with enterprises and societal actors, to detect innovation within the research groups and within the innovation ecosystems and the strategies implemented to develop, encourage and support the entrepreneurship of researchers and students alike.

The third report of Work Package 5, "Identification and promotion of best practices, procedures and tools to detect innovation resulting from a research contract or from the research unit" focuses on innovation scouting inside the universities, and the innovation ecosystems.

The objective of D5.3, "Best practices report on innovation detection" is to collect and analyse the best procedures, practices and tools implemented in the Alliance Universities to detect innovation. A gap analysis between the Alliance partners and some benchmark on non-academic actors is necessary to propose a model that would revolutionise innovation detection within CHARM-EU.

For universities, one of the objectives of innovation detection is to be able to valorise those innovations and to transfer them into the economic world. **Innovative research can help answer societal challenges when end-users' needs are taken into account for research programmes.**

The importance of innovation detection in universities

Innovation is at the core of the European Union's efforts to become the most dynamic and competitive economy in the world and to ensure a high quality of life for European citizens. The European Union focuses on the development of research, education, and all forms of innovation. The Lisbon Strategy, which has grown into a Community 2020 Strategy, is focused on innovation and is based on three main priorities: the first of which is reasonable growth, i.e., developing a knowledge-based economy and innovation[4].

Zornitsa Yordonova, in her 2019 conference paper, "Innovation competitiveness of universities – how to measure it?", notes that innovation "has been one of the most discussed topics over the last twenty years in the European Union". Nevertheless, she notes that it appears that research still does not bring the desired results and indicative values set by the EU to the Member States. There are many reasons for this gap. Some of the answers lie in the complexity of innovation and its management inside universities. "The question is whether researchers' work would lead to better

[4] Yordonova Z., Innovation competitiveness of universities – how to measure it? (2019), University of National and World Economy, conference paper.

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results and if their real use and optimization of management would help to achieve the necessary innovation level"[5].

Thus, we believe that improving early-stage detection of innovation within universities may support the valorisation of more research results and transfer innovation technologies within the economy, leading to more innovation in society overall.

Knowledge and Technology Transfer implies protection of Intellectual Property Rights, owned by universities. IPR protection involves non prior dissemination of research results by researchers, meaning no publications before the patent application procedures are properly formalised. This is one of the reasons why detecting innovation at an early stage directly inside the research units is paramount for universities, to prevent premature and inappropriate publications by researchers of innovative works that could have been valorised and transferred.

What is innovation inside universities research groups?

We beging by presenting some definitions that have direct bearing on this report. First, there are a significant number of definitions for the term "innovation" that we can all adopt, each definition involving different aspects and ideas, the main lines being:

- Innovation is the creation and implementation of new processes, products, services, and methods of delivery which result in significant improvements in outcomes, efficiency, effectiveness, or quality[6].
- Innovation is a continuous and dynamic process in which ideas are transformed into value[7].
- Innovation is the process by which new ideas turn into practical value in the world[8].

In "The Oslo Manual for measuring innovation"[9], the OECD defines four types of innovation:

1. Product innovation: Goods or services that are new or significantly improved. This includes significant improvements in technical specifications, components and materials, software in the product, user friendliness or other functional characteristics.

2. Process innovation: A new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software.

[5] https://www.researchgate.net/publication/336816743_INNOVATION_COMPETITIVENESS_OF_UNIVERSITIES_-_HOW_TO_MEASURE_IT
[6] Mulgary, G. and Albury, D. (2003) Innovation in the Public Sector. Strategy Unit, Cabinet Office, London.
[7] Confederation of British Industry (CBI)/QUINETIQ (2008) Excellence in Service Innovation. CBI.
[8] NESTA (2012) Plan 1: The Case for Innovation Led Growth. NESTA, London, 17
[9] OECD, Oslo Manual 2018, <https://www.oecd.org/science/oslo-manual-2018-9789264304604-en.htm> [Accessed 14 Dec 2021]

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3. Marketing innovation: A new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing.

4. Organisational innovation: A new organisational method in business practices, workplace organisation or external relations.

Thus, innovation could be synthetised as the creation and implementation of new products, processes, or methods. In addition, innovation is a process that is continuous and dynamic.

The document differentiates two types of innovation detection/scouting:

- Internal innovation detection (the innovation created inside the universities)
- External innovation detection (innovation produced outside of the academic field, by non-academic actors).

Innovation in public research is critical to maintaining competitiveness as it provides a growth engine for the European economy[10]. The presence of Research Universities is now widely viewed as a necessary condition to bring about university-driven and innovation-based economic development. Aggregate studies have found that academic research has a positive effect on industrial innovation and industry productivity. Indeed, although public RDI does not directly contribute to economic growth, it has an indirect effect via the stimulation of increased private R&D[11]. Universities and public research institutes play a key role in the innovation ecosystem[12]. Science has consistently been shown to be a fundamental driver of technological progress and economic growth and a source of innovation to the business sector (Jaffe 1989; Adams 1990; Cohen et al. 2002). Many countries have implemented national strategies to support the commercialisation of knowledge produced by public institutions, to help take their innovations and scientific breakthroughs to market and boost economic growth. Universities are expected to develop more and better on their third mission – namely - to contribute more to innovation and to economic and societal changes.

The question of innovation detection inside universities

Research carried out inside universities may simply stop before reaching the innovation stage, for example because it was not being detected or funded at an early stage or because an invention was not declared to the university because researchers did not submit an IDF. Also, some innovations, especially in the realm of software, may not be identified by the university administration, and instead, remain in research units without being shared with the rest of the scientific community, and risk being under- valued and under-used. These same innovations may have been useful for other research and could have worked to further push innovation. In addition, when IDFs are not

[10] BusinessEurope, Impact of EU Regulation on Innovation, December 2016
[11] Idem
[12] Harnessing Public Research for Innovation in the 21st Century, An International Assessment of Knowledge Transfer Policies

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being filled in, finalised or signed, this lack involves a decrease of research and innovation indicators for universities and TTOs to be used by national or internal evaluation and ranking agencies. Also, these undeclared innovations cannot benefit from further maturation funding to develop the technology and reach a higher TRL level.

Universities must be rigorous in their strategies and approaches to innovation, for instance by implementing efficient procedures and tools to better assist and support researchers, detect innovation and raise awareness of the benefits of declaring their invention by filling in an IDF. Indeed, it may be the case that some researchers do not see the value of IDFs to them and their work, for example, they may be unaware of possible future advantages that could stem from it (such as funding), and consequently, they do not complete IDFs.

In addition to internal innovation detection, we can also mention innovation scouting in the innovation ecosystems and in the academic field as a whole. This type of innovation scouting is mainly the task of researchers, with their deep knowledge of scientific cutting-edge and their diligent scientific and technological monitoring of what is happening in other academic research institutions and in private RDI. Researchers can be supported in the process of innovation scouting by the large network of universities, gathering academic and non-academic actors exercising innovation. This external innovation scouting can drive innovation inside the research units, for instance by providing new technology.

To analyse university strategies, practices, procedures, tools, and challenges on internal and external innovation detection, we must clearly state what we mean by "innovation detection", as this notion is complex. The word "detection" comes from the Latin "de", which means ''off" and "tegere", which means "to cover". Thus, to detect means "to uncover", to find out about the innovation potential of research or about an innovation. Innovation detection can be simply defined as innovation scouting.

As introduced and analysed in further WP5 reports, initiatives to help students, PhD students and researchers (scholars) to transform their initial innovative ideas to more mature innovation project proposals that can be taken further towards commercialisation by TTOs and/or the private sector already exist. Yet, the innovation detection phase is often not optimal. Indeed, there is a low ratio in the universities between the research carried out and the innovation detected[13] and generally speaking, a lack of indicators to properly monitor and measure innovation in some of the Alliance Universities. It may be interesting for the Alliance Universities to be able to detect innovation that has the potential to be valorised much earlier in its maturation process, or simply to detect innovation and software already existing in their institutions.

In addition, digital innovation especially concerning the question of software declarations needs to be studied. A real lack of detection and declaration of software has been detected inside some of

[13] Grant Agreement Number 101017229 – TORCH, European Commission, Research Executive Agency

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the Alliance Universities because researchers do not necessarily think about declaring their software which then remains solely in the research groups without being further exploited nor valorised.

How can universities meet the objective to better detect/scout innovation inside and outside their research groups?

Several questions arise from the notion of innovation detection by universities:

- Who is responsible inside the universities for detecting innovation? When introducing the task on innovation detection for Work Package 5, the TORCH Grant Agreement[14] focuses on administrative offices (research and partnership support offices, and K/TTOs). Indeed, one of the jobs of these offices is to support researchers in the administrative and legal side of their research projects. This support includes encouraging and helping researchers to declare innovation, in addition to valorising and transferring their research results. However, detecting innovation requires a deep knowledge of fundamental research, of what is cutting edge, of recent innovations and of the work being carried out by the research groups. Some administrative agents have a specific scientific background, but do not have a deep knowledge of what is cutting edge in all the scientific research fields they support, and accumulating this knowledge is time-consuming. Administrative agents do not have the working-time available to develop these skills. Thus, the main mission of the administrative agents from RSOs and TTOs regarding innovation detection focus on raising awareness among researchers on the importance of declaring their innovations, mainly by filling in Invention Disclosure Forms. They can support researchers in properly filling in the IDFs. This implies that it is mainly up to the researchers to evaluate whether their work is innovative, as they have accumulated a deep knowledge of their research subject and field, of what is cutting edge and of the recent innovations in their field of research. Peer advice is also a good indicator of innovation. Thus, researchers, RSOs and TTOs should work to a common agenda of boosting the detection of innovation inside universities. For external innovation scouting, collaboration with external academic and non-academic partners is also essential.

- The question of the measurement of innovation: how do we acknowledge that research is innovative? Which concrete indicators are implemented, or should universities implement to measure the inventiveness of an idea? The Technology Readiness Level (TRL) scale may already be a good indicator of the advancement of research/technology and may allow innovation to be detected at an early stage. Universities should be able to detect promising research at low TRL, to identify innovative research projects likely to be translated into applications. This approach finds its source in the good comprehension of the most fundamental research to translate discoveries into applications with a high societal or economic impact.

[14] Grant Agreement Number 101017229 – TORCH, European Commission, Research Executive Agency

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The question of research assessment's impact/influence on detection of innovation

Research assessment aims at preevaluating research projects for financing, provinding external evaluation of the research activity of individual researchers, providing accreditation to institutions of excellence or simply measuring research activity. In most of the Alliance countries, research is assessed by a ranking agency, based on various indicators. Research assessement indicators can be quantitative, such as bibliometrics, and qualitative, such as by peer review. These indicators may have an impact on the detection of innovation by impacting researchers behavior and goals in conducting research and in the choice of their strategy to disseminate their research results. Indeed, in some of the Alliance countries, it is important for researchers and their career advancement to be positively evaluated/assessed by the higher national authority and by their university. It is common knowledge that many indicators used for research assessment put the focus on bibliometrics[15], which may act as a barrier to early-stage detection of innovation. Indeed, researchers tend more to publish rather than to valorise their research results (for instance valorisation through filed IDFs, patent applications or secret), as the number of publications is still paramount for researchers' evaluation, promotion and recruitment[16].

Research activity and innovation and the Alliance Universities

We can note that all five universities are well-ranked on research bibliometrics in European rankings (U-Multirank 2021)[17], which underlines intense and excellent research activities within university research groups.

Now, if we take a look at the innovations stated in each universities, we have collected the following metrics.

Inventions Disclosure Forms submitted in 2021 in the Alliance's universities:

Table 1. Number of Innovation Disclosure Forms submitted in the Alliance'universities in 2021.

ELTE	TCD	UB	UM	UU
11	53	32	100	60

Software Disclosure Forms submitted in 2021 in the Alliance's universities

Table 2. Number of Software Disclosure Forms submitted in 2021 in the Alliance's universities.

ELTE	TCD	UB	UM	UU
4	Counted within IDFs	4-5	28	Counted within IDFs

[15] LERU, Research universities and research assessment (2012), <https://www.leru.org/publications/research-universities-and-research-assessment>
[16] F. Miedema, Open Science: The very idea, https://link.springer.com/book/10.1007/978-94-024-2115-6
[17] U Multirank, <https://www.umultirank.org/> [Accessed 21 Dec 2021]

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Patents applications submitted by researchers attached to the Universities in 2021[18]

Table 3. Patent applications submitted by researchers attached to the Alliance universities in 2021.

ELTE	TCD	UB	UM	UU
2	11	102[19]	30 in 2020[20]	5

If we focus on the IDFs and SDFs filed in 2021 in each university per research areas, we obtain an overview of innovation detection per research areas. Please note that some universities of the Alliance have not compile their figures per research themes and thus were not able to provide the metrics.

At ELTE, for altogether 15 Intellectual Property Declarations filed, they had :

8 inventions:

Table 4. Inventions per research areas in 2021 in ELTE.

Agriculture	3
Biology-Health	4
Chemistry	1

3 know-hows:

Table 5. Know-hows per research areas in 2021 in ELTE.

Social Sciences	2
Chemistry	1

4 SDFs:

Table 6. Software per research areas in 2021 in ELTE.

Mathematics, Computer Science, Physics, Systems	3
Biology-Health	1

[18] Data collected through the survey

[19] The number of patent applications (102) includes: Priority Patent applications, PCT patent applications and national phases. Therefore the PCT patent applications and national phases correspond to IDFs and SDFs prior to 2021.

[20] Consolidated numbers for 2021 are not yet available

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At Trinity College of Dublin, for 53 IDFs and SDFs filed in 2021, the distribution according to the reseach areas is as follows :

ICT	19
Physical Sciences	15
Life Sciences	9
Bio-medical sciences	10

The University of Barcelona does not have disaggregate data on IDFs and SDFs.

At the University of Montpellier, for 100 IDFs filed in 2021, the distribution according to the research poles is as follows:

Table 7. Number of IDFs submitted in 2021 per research poles at the University of Montpellier.

Agriculture, Environment, Biodiversity	4
Biology-Health	51
Chemistry	25
Mathematics, Computer Science, Physics, Systems	20
Social Sciences	0

The distribution for 24 Invention Disclosure Forms that were presented to the SATT AxLR in 2021 by either the University of Montpellier or the National Centre for Scientifique Research, for research groups of the UM, is as follows:

Table 8. Choices of the SATT AxLR regarding IDFs submitted to them in 2021.

Investments on the projects by the SATT AxLR	12	50% of the IDF
Return of the project to be managed by the UM	8	33% of the IDF
Waiting for information	4	17% of the IDF

The distribution of the 28 SDFs at the University of Montpellier, filed in 2021, according to their research poles is as follows:

Table 9. Number of SDFs submitted in 2021 per research poles at the University of Montpellier.

Agriculture, Environment, Biodiversity	1
Biology-Health	13
Chemistry	0
Mathematics, Computer Science, Physics, Systems	13
Social Sciences	1

The distribution fir the 60 IDFs filed to Utrecht Holdings by Utrecht University, according to their research poles is as follows:

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Table 10. Number of IDFs submitted in 2021 per research poles at the University of Montpellier.

Pharma	19
MedTech	10
Diagnostics	7
LifeScience	3
Biologics	5
EdTech/eLearning	2
GreenTech	4
eHealth	4
Chemical, Electronic, Energy	1
Other	5

Method: Overview of best practices and shortcomings on innovation within universities in order to improve the process

To start handling this complex challenge for universities to improve their detection and management of innovation inside their research groups and outside in the innovation ecosystems, we have reviewed the existing strategies, practices, procedures and tools for innovation detection and identified those that appear most efficient. This has also helped to highlight process gaps in our universities and the challenges the some of the Alliance partners need to tackle to increase innovation detection. For instance, to better detect innovation, universities may intensify their current efforts e.g., by implementing new procedures to collect research ideas and results, and to set in place indicators to measure the inventiveness of this research including positive rewards systems (Miedema 2022, Open Science: the Very Idea).

Moreover, it is important to underline that all the Alliance universities work in collaboration with a wide range of societal actors and business partners who can also be involved in detecting innovation. Thus, some of their practices are also introduced and analysed in this report.

To collect appropriate data, a qualitative survey with closed and open questions was developed by the WP5 leading team (UM) and filled in by representatives of each partner university. Our intention was to follow similar lines of questioning for each university while still allowing space for the individual characteristics. This data collection method has allowed the collection of key data and facilitated a comparative analysis between the CHARM'EU Alliance members.

In addition, semi-directed interviews, following interview matrixes prepared by WP5 leading team, were carried out by each university with appropriate administrative agents, researchers and societal actors and business to understand the practices to detect innovation inside research units.

Eventually, each partner selected two to three non-academic actors partners, for them to answer a short questionnaire, sharing with the Alliance their best strategies, procedures, practices and tools for innovation scouting.

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1. THE ALLIANCE UNIVERSITIES INNOVATION DETECTION STRATEGY, PRACTICES, PROCEDURES AND TOOLS

In the Alliance Universities, Research and Partnerships Support Offices and Knowledge/Technology Transfer Offices are responsible for internal innovation detection[21]. One of their missions is to detect innovative ideas with high potential for innovation, preferably at an early-stage. Indeed, early detection of innovation allows the valorisation strategy to be integrated at a much earlier moment in the research process and to raise awareness of researchers about possibilities for valorising and transferring their results and/or technologies prior to publishing. Detection of innovation is a challenge for universities' administrative offices as it implies a good knowledge of fundamental research, knowledge and skills. Some of the administrative agents working in RSOs and K/TTOs have a scientific background that can be helpful to participate in internal detection of innovation. However, most of the administrative agents do not have the working time available for innovation detection, due to workload.

Thus, detection of innovation is primarily the objective and responsibility of researchers and led at academic peer level. Most of the researchers agree that innovation detection comes from *"a deep knowledge of the field"*[22] and underline the importance of conducting a scientific and technological watch, going to conferences, reading articles, interacting with colleagues from inside and outside academia to stay updated about the latest innovations in their fields. In addition, researchers often seek to interact with each other, to maintain a dialogue to follow-up on peer research and potential innovation.

The easiest way to detect innovation inside the research groups for administrative agents is to implement procedures to collect research ideas and results and ask researchers to be proactive in declaring their innovations, notably by submitting Invention Disclosure Forms and Software Disclosure Forms. Indeed, in most of the Alliance countries, it is a legal obligation for researchers to inform their employer (here, the universities) about their research results, in order to discuss with the university on how to protect and valorise those results. Data collected has shown that all universities have implemented procedures to collect research results and to detect innovation. Yet, these procedures may need to be improved and reinforced in some of the universities. The Alliance universities use similar tools, such as follow-up sheets or Invention Disclosure Forms. The procedures and shortcomings of universities in research results collection and innovation detection demonstrates the importance of mapping the resources, technologies and knowledge of research units and also mapping the research being carried out in each research unit.

Innovation detection can be a different process in different research areas and is discipline specific. Innovation detection inside universities depends on the commitment of researchers to informing the university administration about their inventions, notably by filling in IDFs and SDFs. For instance, at the UM, few IDFs were submitted in 2021 in the research areas of Environment and Biodiversity. Also, in some other research fields such detection of innovation may be more challenging. In Human

[21] Data collected through the qualitative survey
[22] From the interview of a researcher part of the Alliance

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and Social Science for instance, we can note a lack in innovation detection and valorisation in some universities, because of a combinaison of factors. We can suppose that one of the reason is because traditionnally attention has been focused on the hard sciences vis-a-vis tech transfer, because IDFs are not very suitable for those disciplines, and because innovation is Social and Human Science is mostly not material, tangible. In addition, in Human and Social Sciences many researchers work without funded research contracts from external parties, so they may be operating in greater isolation to those on funded projects, creating an innovation identification, development and transfer gap.

1.1 Common innovation detection procedures and tools within the Alliance Universities for research groups

The Alliance Universities have all implemented a system to support researchers in innovation detection and valorisation.

By benchmarking the procedures implemented and tools used by each of the Alliance Universities for internal innovation scouting , we have identified procedures and tools that are common to all five universities. These are presented here.

1.1.1 Follow-up on research being carried out inside the research groups

RSOs and KTO/TTOs can follow-up on research being carried out in research groups, especially when they manage researchers' projects and contracts and thus know the researchers personally. The communication between administrative agents and researchers is mostly done via e-mail and phone calls, formal and informal meetings on a regular basis. This communication may allow administrative agents and researchers to detect innovative research results, with a close monitoring of research and of Technology Readiness Level and a share of expertise and viewpoints: *"For example, in European projects, if they are researchers with whom we don't have any kind of relationship, we organise meetings with them to find out what the project is about, what are the results that are going to be obtained"*[23].

In addition, RSOs and K/TTOs aim to create links with new researchers to keep them updated about their mission and the support they can offer: *"We have a list of staff who have recently joined the university, so that we can even hold a mini-meeting to explain to them what the [TTO] is, what units work in, and what support we can give them, independently of the fact that when they get results, then we can meet them again"*[24].

Moreover, administrative agents from the RSO and K/TTO can also visit the researchers in their departments/schools/faculties to raise awareness about innovation detection, filling in IDFs, SDFs and valorising innovation.

[23] From the interview of TTO of the Alliance
[24] From the interview of one TTO of the Alliance

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Finally, some administrative agents try to follow-up on researchers who have shown excellence in their research and who are likely to come up with innovation, for instance because they have been granted specific funding : *"We try to look at the researchers, both new recruits and those who can be considered of excellence have projects of excellence, above all, also European projects, due to the magnitude of funding involved. And above all, also because now I believe that one of the things that are going to be valued, is the issue of innovation. And, well, to try to give impetus to the transfer of the results obtained"*[25].

1.1.2 The Invention Disclosure Form and the Software Disclosure Form

The Invention Disclosure Form (IDF) is a tool commonly used in the whole of the Alliance, for researchers to declare an innovation. An IDF is a document providing a written and dated record of an invention, disclosing information useful to evaluate the technology, potential Intellectual Property (IP) protection, patentability and commercial potential. This document is highly confidential. In the IDF, researchers must provide a technical description of the invention and notify whether the invention includes a software technology, and if so, of what kind. The invention must be new and provide a solution to a technical problem. All the inventors must be listed in the IDF, sometimes including the percentage of the inventive part of each inventor. Literature and patent research must be specified. Also, the prior knowledge and the functional and structural differences with what has been done before must be described. Researchers must list all relevant publications or disclosure of the invention in a "Invention Disclosure Record" session. Finally, they must specify the use of resources and fundings.

The Software Disclosure Form has the same objectives as the IDF but has been specially developed to declare new software inventions, with a focus on copyright management rather than patenting.

Researchers must fill in IDF and SDF to declare innovations. IDFs and SDFs are received by RSOs or KTO/TTOs and examined by their administrative agents. Each project and research result is analysed and discussed with the researchers to define the ambition and expectations for their research. Based on the elements provided on the document, a decision is made on IPR protection and how the results and technology will be valorised and transfered, or further matured if necessary. There is a financial incentive for researchers/inventors to fill in IDFs : in case of patent application following an IDF, if the patent is awarded, the researchers get a financial patent bonus.

Legal and financial impact perimeters of the Invention Disclosure Form

Filling in – or not filling in Invention Disclosure Forms have legal and financial impacts for the inventors. In case of patent application, any mistakes on the IDF has impact on the patent :

- If an inventor has not filled in an IDF, he or she cannot receive patent bonus in case of patent application and valorisation. Thus, there is a financial incentive for the inventors to fill in IDF and apply for patents.

[25] From the interview of one TTO of the Alliance

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- If an inventor does not appear on the IDF and patent application, it involves legal invalidity of the patent.
- In case of patent and licencing of the IP, each inventor mentionned in the IDF receives a quote-part, a renumeration, in the form of profit share, based on their percentage of contribution/implication in the invention.

1.1.3 Steering committees

In some of the Alliance Universities, steering committees are organised to follow-up on research projects and discuss them over time, through Research Development and Tech Transfer Offices. Steering committes raise the awareness of of managers and administrative agents concerning the advancements of researchers and thus scout innovation.

1.2 Practices and initiatives supporting innovation detection inside the Alliance Universities

In addition to the procedures implemented and the tools use for innovation scouting and declaration, the universities have implemented some practices and initiatives that also support innovation detection.

1.2.1 Support to calls-for-projects applications

In all five universities, a central office and/or multiple administrative agents from e.g., RSOs are dedicated to support researchers in writing proposals for calls-for-projects (at international, European, national and local levels) and in dealing with the financial, legal and administrative parts of their submissions. Their positions may potentially support early innovation detection because they have access to research proposals at the stage of ideas. It could be interesting for administrative agents to have a close follow-up of the submissions and, if projects are granted funding, to closely monitor the implementation of the research projects to detect the innovation being produced. These administrative agents can also play key role in raising awareness of researchers on filling in IDFs and SDFs and thinking of valorising and transfering their research results and technologies to integrate this strategy in the early stages of their research.

1.2.2 Funding for pre-maturation and maturation

Universities and external funding organisations offer pre-maturation and maturation funding to support researcher's projects. This funding acts as an incentive for self-detection of innovation by researchers and allows universities to be aware of potential innovation being developed in their institutions. Those fundings are meant to act as booster for invention declarations.

1.2.3 Business developers, priviledged intermediaries between research groups and the university administration

As introduced and developed in D5.1, four of the Alliance Universities have opened business developer positions. Business developers have priviledged access to internal research units and can

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thus participate in detecting innovation. One of their missions is to map the knowledge, resources and technology of research units. Therefore, they develop a deep knowledge of the research groups, useful to better detect innovations. Business developers act as an intermediary between research groups and RSOs and K/TTOs. They can, for instance, share their knowledge of the work in specific research units with their colleagues, for a better coordination on innovation scouting.

1.2.4 Open Innovation

Open Innovation creates opportunities for direct collaboration in innovation activities with diverse actors. To be considered as open innovation, it is necessary to allow free movement of ideas and to allow co-creation of products and services with a flexible Intellectual Property regime. For instance, researchers can associate with enterprises, research centres, associations, public institutions and other organisms to lead collaborative research. Open innovation may allow for better innovation detection as several actors are involved in the research and in the monitoring, and thus bring their expertise and can acknowledge if a process or a result is innovative. Enterprises also usually have high expectations for innovative results when collaborating with researchers. Also, if enterprises lead R&D and are well-aware of the cutting-edge scientific research on specific subject, they may detect the potential of research being carried out in universities.

Open innovation can speed up product development significantly. By asking a wider group of people to contribute their ideas and expertise, businesses can identify and solve problems a lot faster and can refine their products.

This is particularly helpful in areas like software development or app testing, where final products are found and developped through repetitive testing.

1.2.5 Fabrication laboratories (Fab Labs)

A Fab or FieldLab (Living Labs), or digital fabrication laboratory, is a place for learning and innovation where multiple actors can create, invest, test and mentor. Living Labs connect science with practice by linking research to social issues nearby[26] and by encouraging interaction with citizens. Fab Labs provide access to the environment, the skills, the materials and the advanced technology27. Fab labs are places open to the public where all kinds of tools, including computer-controlled machine tools, are made available for designing and making objects. The main characteristic of Fab Labs is their "openness". They are aimed at entrepreneurs, designers, artists or students who want to move more quickly from the concept phase to the prototyping phase, from the prototyping phase to the development phase, from the development phase to the deployment phase, etc. They bring

[26] Utrecht University, Living Labs, https://www.uu.nl/en/organisation/sustainability-monitor-2019/chapters/living-labs

[27] Fablabs.io, What is a fablab?, <https://www.fablabs.io/>, [Accessed 17 Jan 2022]

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together different populations, age groups and professions. They are also a space for meeting and collaborative creation28.

Thus, fabrication laboratories can participate to innovation scouting by gathering together multiple actors and technologies and facilite exchange, dialogue. Also, by facilitating the testing of prototypes and their development, it supports innovation detection.

For instance, at University Institute of Technology of UM, located in Sète, the Ob.i LAB[29], a Digital Fabrication Space inspired by the international network of Fab Labs, was created in 2017. This lab offers the use of digital equipment enabling to master innovative technological tools, increasingly present in the industrial fabric. The main target audience is students. Ob.i LAB is divided into two spaces :

(1) A multifunctional space with free access to organise meetings, work in groups, make presentations, event gatherings etc.

(2) A digital creation workshop including a range of classic and digital tools.

Also, another example is the U-fab at Utrecht University that aims at an open-collaboration platform. UU has also several other labs[30] : Police Lab AI, AI & Mobility Lab, AI & Sustainability Lab, AI & Media Lab.

Fablabs are also mainly implemented at the scale of the city, and we can find Fab labs in all the partners' cities: Barcelona, Budapest, Dublin, Montpellier and Utrecht.

In the following sections, the specific strategy, procedures, practices and tools of each of the Alliance University are laid out.

1.3 ELTE's strategy, procedures and tools for innovation detection

In ELTE, the Innovation Centre[31] is responsible for the detection of innovation. ELTE has declared that there is no measurement of the ratio between the research carried out and the innovation detected in ELTE[32]. Colleagues of the Innovation Centre follow-up on research projects carried out by researchers inside the University through regular official meetings with researchers and steering committee meetings. They also communicate a lot by mail.

[28] Carrefour-numérique, Qu'est-ce-qu'un Fab Lab?, <http://carrefour-numerique.cite-sciences.fr/wiki/doku.php?id=charte>, [Accessed 17 Jan 2022]
[29] IUT Montpellier-Sète, Espace de Fabrication Numérique Ob.i LAB, <https://iut-montpellier-sete.edu.umontpellier.fr/obilab/> , [Accessed 17 Jan 2022]
[30] https://www.uu.nl/en/research/ai-labs/our-labs
[31] ELTE, Innovation, <https://www.elte.hu/en/innovation> [Accessed 14 Dec 2021]
[32] Data collected through the survey filled by ELTE

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In order to declarate their invention, researchers must fill in the IP disclosure form and send it to the Innovation Centre. An average of eight to ten invention disclosure forms altogether, including inventions, know-how and software as well are filed per year at ELTE.

Regarding digital innovation, the tracking of software development is done through the continuous communication with researchers by mail, phone or during meetings.

1.4 Trinity College of Dublin's strategy, procedures and tools for innovation detection

At Trinity College of Dublin, the Office of Corporate Partnership and Knowledge Exchange (OCPKE) maintains close and regular contact with the researcher community. TCD major research centres and institutes (SFI) have formal IP committees that meet regularly to discuss emerging innovations.

OPKE has four case managers, representing the major technology sectors: ICT, Industrial, Life Sciences and MedTech. Every Institute, Centre, School, Department and Unit within the University has a case manager assigned to it, depending on the type of technology sector. The case managers are supported by the IP development manager. Case managers engage with these organisational units at all levels, from participating in Research Committees through the Research Directors, to meeting with the Principal Investigators. There are multiple layers of outreach activity, such as innovation seminars, workshops, showcase events, and an annual innovation awards night.

In order to declare an innovation, researchers must fill in an Invention Disclosure Form and declare the invention of a new software a Software Disclosure Form. The Disclosure Forms must be submitted to the Senior Patent and Licensing Manager Technology Transfer Office at Trinity Research & Innovation. These disclosure forms must contain the names of all the inventors. All IDFs and SDFs are tracked using a unique "technology ID" reference number (Tech ID).

The Technology Transfer Team is responsible for the implementation of Trinity's policies with respect to knowledge transfer and licensing, Intellectual Property identification and protection, patent protection strategy and management.

Currently, Trinity has over 920 technologies recorded over the past twenty years. Tracking and management of IP assets is supported by Inteum innovation management software.

Invention Disclosure Form enables Trinity Research & Innovation (TR&I) to evaluate the patentability and commercial potential of the invention. Trinity College of Dublin closely monitors it's innovation outputs as a result of research performed. These measures include :

- Invention disclosures received
- Priority patent filings, patents granted
- Licences / option
- Spin-outs formed

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In addition, TCD looks at :

- The global inputs to research, such as total research budget spent in any given year.
- The performance outside academic disciplines, such as Schools, and technology sectors (ICT, Industrial, MedTech, Life Sciences).

Trinity reports all innovation metrics to the Irish National Agencies for Innovation (Knowledge Transfer Ireland)[33] / Enterprise Ireland[34]) via the Annual Knowledge Transfer Survey (AKTS).

1.5 University of Barcelona's strategy, procedures and tools for innovation detection

At the University of Barcelona, Bosch i Gimpera Foundation (FBG)[35], the centre for Knowledge Transfer and Innovation, is responsible for innovation detection. Project managers of the FBG follow-up on research projects carried out by researchers at the University of Barcelona during informal discussions and meetings. In addition, drop-in sessions are organised with researchers to identify research results and capabilities of valorisation, during the research process and at the end of a research project. The FBG also organises workshops and seminars addressed to specific Research Institutes or Faculties.

Bosch i Gimpera Foundation is responsible for the implementation of the University of Barcelona's policies regarding IP protection and management.

In order to declare an invention, researchers must contact the FBG and fill in an Invention Disclosure Form (IDF), available on the FBG website. To track digital innovation, the FBG follows a similar procedure than for invention disclosures. An average of 55 Invention Disclosure Forms are filled in per year at the University of Barcelona. Invention Disclosure Forms enable the Valorisation and Licensing Unit of the FBG to evaluate patentability and commercial potential of the inventions.

The University of Barcelona has a Portfolio Committee that holds monthly meetings to evaluate the IDFs received, make decisions on patent filing and budget allocation and follow-up the ongoing projects. The vice-rector for Entrepreneurship, Innovation and Knowledge Transfer of the University of Barcelona is member of the Portfolio Committee.The FBG monitors the innovation outputs that are a result of the research carried out at the University. The metrics include:

- Invention disclosures received
- Priority patents filed
- Patents extensions

[33] Knowledge Transfer Ireland, Reports & Publications, <https://www.knowledgetransferireland.com/Reports-Publications/> [Accessed 21 Dec 2021]
[34] Enterprise Ireland, <https://www.enterprise-ireland.com/en/> [Accessed 21 Dec 2021]
[35] Foundation Bosch i Gimpera, <http://www.fbg.ub.edu/en/> [Accessed 21 Dec 2021]

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- Patents granted
- Licenses/Options
- Spin-offs created

The FBG reports Knowledge Transfer and Innovation metrics of the University of Barcelona to the Spanish Ministry for Science and Innovation and to the Conference of Rectors of the Spanish Universities (Research and Innovation Commission), via annual Knowledge Transfer surveys.

1.6 University of Montpellier's strategy, procedures and tools for innovation detection

In France, it is a legal obligation for researchers to inform their employer (the University) about their research' results as stated in the article L611-7, 3. of the Code of Intellectual Property[36] *"An employee who is the author of an invention shall inform [its] employer, who shall acknowledge receipt in accordance with the procedures and time limits laid down by regulation"*.

To declare an invention, researchers must contact the Contracts and Valorisation Office of the Partnership and Innovation Department. Administrative agents support researchers in filling in an IDF. In this form, researchers must self-declare the Technology Readiness Level of their invention. When the IDF is signed by hand in person and not by electronic signature via YouSign, a positioning letter for the SATT AxLR must join the IDF. Indeed, the University of Montpellier is working in close relation with the SATT AxLR for research valorisation and Technology Transfer. The University of Montpellier must inform the SATT AxLR about all new IDFs being filled. Every month, an « Intellectual Property Committee » is organised between the SATT AxLR and its shareholders. As the University of Montpellier is a shareholder of the SATT AxLR, the establihsment attends the IP Committee. During this committee, the new IDF are presented to the SATT AxLR and there is a follow-up ongoing projects and actions. An IDF can give rise either to a patent or to know-how kept secret, depending on the patentability study carried out by SATT AxLR. The SATT AxLR can choose to invest in some projects and valorise research results and/or technologies, or not to take action. In the last case, the University of Montpellier can choose whether or not to valorise the research results with the support of the Contract and Valorisation Office.

To follow-up on IDFs at the University of Montpellier, a share tracking table have been set up. Administrative agents must fill in and udpate this tracking sheet to follow up on the actions that need to be taken for each IDF. In addition, a common calendar has been created to have a general overview on the future IP Committes and of the timeline.

All inventors and the all unities directors must sign the IDF. To facilitate the signature, the University of Montpellier has implemented the electronic signature through the platform « YouSign ». The electronic signature facilitates and speeds up the signature process and allows for the original copy

[36] République Française, Légifrance, Code de la propriété intellectuelle, <https://www.legifrance.gouv.fr/codes/section_lc/LEGITEXT000006069414/LEGISCTA000006146364/#LEGISCTA000006146364> [Accessed 21 Dec 2021]

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of the IDF to be obtained more easily. Also, each administrative agents must follow-up on its files and can send reminders mails to their portofilio researchers. The Director of the Partnerships and Innovation Department can send a final reminder mail for ongoing unsigned IDFs.

To apply for patent, researchers should declare research results that could be considered as "invention" according to the definition laid out in the Code of Intellectual Property: it must be a technical solution to a technical problem, must imply a novelty aspect (not yet included in the cutting edge of their field), must imply an inventive activity (does not follow in an obvious way from the cutting edge research), must be suitable for industrial application. After the patentability study carried out by SATT AxLR, it may appear that the invention cannot be filed by way of a patent, so it will be kept secret and not published.

However, we note at the UM that researchers are more active in negotiating contracts than in setting up and finalising IDFs. Indeed, when they are engaged in contract negociation with enterprises with the support of the Contracts and Valorisation Office, most of the researchers are highly engaged in the process, being responsive to mails, reaching out to administrative agents etc. This active attitude is linked to the fact that researchers see and anticipate the value of the collaboration. In contrast, most of the researchers at the UM do not see or anticipate the value of filling in an IDF. For instance, the value could be to have access to a maturation funding granted by the SATT AxLR. This funding could allow researchers to upgrade, improve their technology, reaching an higher TRL and thus being more attractive for industrial partners and investors. Many IDFs are not finalised or signed by researchers. This create a block because the UM must send IDFs to the SATT AxLR. There is a loss of possible patents applications for the UM (which are not possible without finalised and signed IDFs), and the indicators decrease in national and international rankings. In addition, there is also a loss and decrease in indicators for the SATT AxLR, which is problematic because the SATT AxLR must be accountable to the National Research Agency.

Thus, more communication and awareness raising should be implemented at the UM to make the researchers aware of the challenges of detecting innovation for the university.

At the University of Montpellier, a low rate of software declarations is registered each year, compared to the research undertaken. To overcome this lack and enhance the detection and declaration of new softwares, the University of Montpellier has worked on developing an online platform, PLUM[37], to facilitate software declaration procedure for researchers. PLUM is a tool that allows researchers of the University of Montpellier to report all their software creations easily and intuitively. PLUM is easy to use and does not require the systematic filling in of a Software Declaration form in order to let the researchers know that a project is finalized. The research valorisation teams contact the authors directly to initiate a valorisation circuit.

[37] PLUM, La Plateforme Logicielle de l'Université de Montpellier, <Bienvenue sur PLUM ! (umontpellier.fr)> [Accessed 04 Jan 2022]

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Also, administrative agents from RSO and K/TTO visit research units to explain to researchers their missions, how they can support them and to raise awarness on IDFs and SDFs, patents applications, valorisation, technology transfers etc.

In addition, the University of Montpellier has opened business development positions since 2018 in the framework of MUSE[38] (Montpellier University of Excellence, introduced in D5.1) and with the support of Region Occitanie. The business developers have a priviledged relation with research laboratories. One of their mission is mapping their ressources and technologies. Thus, through their work, business developers can contribute to the detection of innovation being developed in research groups. In addition, they can also find industrial partners to collaborate with researchers to develop a technology in a perspective of Open Innovation.

The consortium "Montpellier University of Excellence" (MUSE) gathers sixteen local partners (national research organisms, education institutes and health facilities) in order to create an internationally recognised research rich university. Some actions aiming at reinforcing the detection of innovation within the research groups of the MUSE partners but also innovative project of external patners are carried out. For instance, the calls-for-project "Companies on Campus" can participate in innovation detection as project holders must co-draft a research proposal with a scientific partner. Thus, the administration and governing members of the university are aware of the potential innovative projects ideas at early stage of their development, even at the stage of idea.

The University of Montpellier also works in close relation with clusters, for instance the cluster "Pôle Mer Méditérannée"[39]. Cluster gather multiple stakeholders on one large research field, with an open directory of their members accessible to everyone on their website. Those networks can facilitate external innovation scouting.

1.7 Utrecht University's strategy, procedures and tools for innovation detection

At Utrecht University, there is not an explicit office responsible for innovation detection, but detection of innovation is part of the responsabilities of multiple specific agents or offices, including the central KTO (Utrecht Holdings). ''Scouting and screening'' takes place at the level of RSOs and of Utrecht Holdings[40], and also at the level of faculty 'deans of valorisation/impact', research support offices, and the Utrecht University strategic themes.

Deans, department Supervisors and Research Support Offices must have a clear overview of the research carried out in (their) research groups and thus be able to participate to the detection of potential innovation.

[38] Montpellier University of Excellence, <https://muse.edu.umontpellier.fr/en/muse-i-site/> [Accessed 21 Dec 2021]
[39] Pôle Mer Méditérannée, <https://www.polemermediterranee.com/> [Accessed 06 Jan 2021]
[40] Utrecht Holdings, <https://utrechtholdings.nl/> [Accessed 04 Jan 2022]

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Under the Collective Labour Agreement for Dutch Universities[41], all results from education and research developed by researchers employed by UU are owned by the institution. Thus, researchers have an "obligation to report" set up in Section 3 IPR, Article 1.21 of The Collective Labour Agreement for Dutch Universities: *"An employee who, during or otherwise coinciding with the performance of his [or her] duties, creates a possibly patentable invention or, by means of plant selection work, isolates a new variety for which plant breeder's rights may be obtained, is obliged to report this in writing to the employer and must submit sufficient data to enable the employer to assess the nature of the invention or variety."*

When they want to declare an invention, researchers must refer to their RSO with possible further support of Utrecht Holdings to fill in an Invention Disclosure Form and see the possibilities of patent applications and IP protection. The purpose of the IDF is to provide a written and dated record of invention disclosure and to provide information from which technology can be evaluated. It provides the basis that will enable the Holding and outside counsel to determine if the technology is patentable, determine whether Intellectual Property Rights are owned by UU, UMC Utrecht or third parties (either in part or in full) and to identify possible opportunities for licensing and commercializing the technology.

In Utrecht University, research and progress is monitored closely, notably in public-private partnerships. Progress and research results are regularly discussed with management, at the level of the department and faculty, and via the Dean and Vice Dean for Research, also with the Executive Board. In addition, the management teams of the four UU strategic themes (Pathways to Sustainability, Dynamics of Youth, Institutions for Open Societies, Life Sciences) report regularly to the deans and executive board.

As a public university, Utrecht University increasingly work in a quadruple and quintuple innovation helix framework. This helix framework describes university-industry-government-public-environment interactions within a knowledge economy.

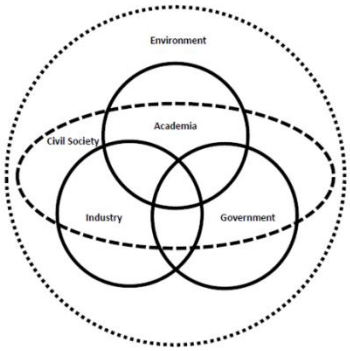

Figure 1. Five Helices of the Quintuple Helix.

[41] Collective Labour Agreement for Dutch Universities

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For instance, within the Regiodeal Foodvalley programme[42], the Dutch government, five regional partners (Regio Foodvalley, the provinces of Gelderland and Utrecht, LTO Noord and Waterschap Vallei en Veluwe) and four cooperation partners (Wageningen University, Wageningen Research, Utrecht University and VNO-NCW Midden) are working together on the transition to a sustainable and healthy food system. This open-innovation consortium supports detection of innovation.

In addition, Utrecht Science Park[43] gather multiple stakeholders in an inspirational environment, working on education, research, entrepreneurship and healthcare. Those kinds of envrionment stimulates co-innovation and the early detection of innovative ideas.

Other initiatives can be mentionned, such as The Advanced Research Center Chemical Building Blocks Consortium[44], the Sustainable Food Initiative45, RegMed XB46 and Oncode[47].

1.8 Overview of common strategies and practices for external innovation scouting within the universities networks and innovation ecosystems

Regarding the scouting of innovation outside of the universities, in the academic field on a whole and within innovation ecosystems gathering multiple academic and non-academic actors, the strategy of the Alliance' universities is to be very present within those innovation ecosystems and create strong links with external actors, as presented in D5.1.

Through a accumulated, shared and conscious knowledge of what is considered cuttinge edge and diligent scientific and technological monitoring, researchers can easily detect innovations that can level-up and support their own researches, in turn leading to more innovation.

Also, researchers can use and approach the university's network of external actors when looking for a specific technology or innovation. For instance, they can contact clusters, technology transfer acceleration societies, research centres or even incubators to gain access to a directory of available resources and technologies and the appropriate people to contact.

[42] Regio Foodvalley, <https://www.regiofoodvalley.nl/programma/regio-deal/> [Accessed 14 Dec 2021]
[43] Utrecht Science Park, <http://www.utrechtsciencepark.nl/en/home> [Accessed 14 Dec 2021]
[44] <https://arc-cbbc.nl/about/> [Accessed 14 Dec 2021]
[45] Sustainable Food Initiative, <https://www.sfifood.nl/> [Accessed 14 Dec 2021]
[46] RegMed XB, <https://regmedxb.com/> [Accessed 14 Dec 2021]
[47] Oncode, https://www.oncode.nl/

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101017229.

2. BEST INITIATIVES TO DETECT INNOVATION WITHIN UNIVERSITIES

In addition to their formal procedures and tools implemented to follow-up on research projects and to scout innovation within the research groups, each of the Alliance Universities has also implemented one or more initiatives that can support, more or less directly, the detection of innovations inside research groups. Those initiatives have been selected by each of the university representatives who undertook the qualitative survey.

2.1 ELTE

The ELTE Innovation Centre offers financial support to promote university innovation activities and the commercialisation of research results.

The main aim of the Proof of Concept (PoC) program is to bring university research projects closer to market and to turn ideas into developments as soon as possible. In order to promote the commercialisation of research results, the University has established a separate financial fund, the source of which is provided by the state-funded project "Development of ELTE's Innovation Ecosystem in line with industrial requirements".

The available budget in the first round of application was HUF 21 million, which could be increased on demand. As required, the amount was increased by up to 10000 euros and was enough to support up to eight applications. The ELTE Innovation Centre is planning to launch new rounds of the PoC program in the future.

2.2 Trinity College of Dublin

Innovators at Trinity College Dublin have access to several internal and external development structures. Internally, researchers have access to funding such as the EMBARK programme[48], a joint initiative from TCD, Royal College of Surgeons in Ireland and Technological University Dublin, supported by Enterprise Ireland and Knowledge Transfer Ireland under the TTSI-3 Technology Pipeline Fund (all introduced in D5.1). The Embark fund is a pilot programme to support the development of early-stage commercialisation projects that may advance to form new spin-out companies. Thus, by applying to this fund, researchers auto-evaluate their research as innovative and ready for transfer.

Recently, Trinity College of Dublin has launched the Innovation Hub (recently named 'Portal')[49], a 5500m2 facility located at the Trinity Technology and Enterprise Campus (TTEC). This is the initial development of the major planned Grand Canal Innovation District led by Trinity[50]. Trinity utilises

[48] Trinity College of Dublin, Embark fund, <https://www.tcd.ie/innovation/news-items/embark.php> [Accessed 14 Dec 2021]

[49] Trinity News, Innovation Hub at Trinity East to be called Portal (April 2021), <http://trinitynews.ie/2021/04/innovation-hub-at-trinity-east-to-be-called-portal/> [Accessed 14 Dec 2021]

[50] Trinity College of Dublin, Grand Canal Innovation District, <https://www.tcd.ie/innovation-district/> [Accessed 14 Dec 2021]

access to extensive resources primarily via the Enterprise Ireland Commercialisation Fund (EICF) programme[51]. All emerging new technologies from Trinity research activity would be considered for EICF funding. Recently, EIC and EIT KIC programmes are significant sources of development funding.

2.3 University of Barcelona

The University of Barcelona has created the Fund for the Promotion of Innovation (F2I)[52] through the Bosch i Gimpera Foundation. The Fund is an initiative designed to foster the innovation and transfer activities carried out by the researchers of the University of Barcelona. The Proof of Concept grant—endowed with € 125,000—aims to fund proofs of concept that improve the opportunities for exploitation of the research results generated at the university, and to valorise research projects with a high potential for transfer.

In addition, Living Lab UB[53] is the University of Barcelona's Social Innovation Laboratory, which offers innovative solutions through a user-centred methodology based on the active involvement of all social agents —companies, clients/users, the administration, and UB researchers—. Living Lab UB offers solutions for all stages of the development of new products and services — planning, conceptualisation, prototyping and innovation—. Living Lab UB innovates socially through a methodology of work and collaborative design that integrates research into new opportunities, the development of new ideas, and the evaluation and testing of new products and services.

The methodology of work implemented is as follows:

- Exploration : Analysis by UB experts of the most recent studies and cases relevant to the challenge at hand.
- Co-creation : Co-design of concepts, opportunities and prototypes with users and other agents.
- Experimentation : Implementation of "live" scenarios with user communities to collect data for evaluation.
- Evaluation : Evaluation of concepts, products, and services according to different criteria (ergonomic, cognitive, economic).
- Living Lab UB sets up a multidisciplinary team of UB research staff for each challenge, engaging the relevant actors, and creating an experimental environment where they can explore, co-create, and evaluate according to the needs of the project.

[51] Enterprise Ireland, Commercialisation Fund, <https://www.enterprise-ireland.com/en/funding-supports/researcher/funding-to-commercialise-research/> [Accessed 14 Dec 2021]
[52] Bosh I Gimpera, Grants and fundings, <http://www.fbg.ub.edu/en/what-we-do/grants-and-funding/> [Accessed 04 Jan 2022]
[53] Living Lab UB, University of Barcelona, <https://www.ub.edu/livinglabub/en/> [Accessed 14 Dec 2021]

Living Lab UB has the best human, material, and knowledge resources for tackling social challenges : over 6,000 researchers, supported by the prestige of the UB, the experience of the Bosch i Gimpera Foundation in managing knowledge transfer, research facilities and tools suitable for social research.

2.4 University of Montpellier (MUSE ecosystem)

The "Booster Innovation Montpellier"[54] is an event created by the consortium Montpellier University of Excellence, which is dedicated to innovative project leaders with a low Technology Readiness Level. Over two days, project leaders who simply have an idea, an ongoing research project or the will to create an enterprise, can participate in reflexions on several subjects link to innnovation, structure their project during workshops and can benefit from the advice of coachs. This event provides the University of Montpellier and other local education institutes and research centres with the opportunity to be udpated about new projects and detect potential innovation. On completion of the event, all projects are supported according to their needs (research collaboration, transfert, business creation) in cinjunction with MUSE partners. Funding can be granted to some of the projects depending on their innovation potential and needs typology. A € 75000 envelop is available to support all project introduced during the event.

2.5 Utrecht University

At Utrecht University, the "Valorisation Pre-seed" is a co-financing option for researchers who want to test the feasibility and function of their discovery, invention, or idea. This financing is only intended to conduct a (technical) feasibility study with concrete end-results that contribute to the further development, application and market implementation of the discovery or idea. UtrechtInc and the Rabo Pre-seed Fonds are the founders of the Valorisation Pre-seed funds.

This fund is meant for researchers who work for or on behalf of Utrecht University, UMC Utrecht and the Utrecht University of Applied Sciences.

[54] Montpellier University of Excellence, Booster Innovation Montpellier (B.I.M), <https://muse.edu.umontpellier.fr/partenariat/chercheurs/bim-2/> [Accessed 14 Dec 2021]

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3. CHALLENGES FACED BY THE ALLIANCE UNIVERSITIES TO DETECT INNOVATION

Despite the development and implementation of strategies, procedures and tools by universities to follow-up on research projects and to scout innovation, innovation detection inside research groups may remain fragile in some universities and thus may be improved, as some examples that will be presented here can demonstrate. The Alliance partners may overcome several challenges in order to become more efficient with procedures, practices and tools and implement indicators supporting internal innovation detection. The main challenges for the Alliance Universities on innovation detection are introduced in this section.

3.1 The criterias of Research Assessment, an influence on researchers' dissemination strategy of innovative research results

As mentioned in our introduction , research assessment critera in the Alliance countries focuses mainly on bibiliometrics (especially the number of publications), which can prevent early innovation detection, innovation valorisation and transfer. This is one of the reasons why implementing efficient procedures to detect innovation at the early stages of research is paramount for the universities.

The criteria used by assessment agencies have important implications for researchers, who must tailor the research they carry out to fit these criterias : *"You know that this indicator is fundamental, which is the number of articles published and other indicators that come after, the number of citations, whether you publish in such and such a journal. We have believed this so much that this inertia is very strong, very strong. The few of us who believe that apart from that, which is important, there are other indicators that have to be sought. Such as patents"*[55]. Researchers interviewed for WP5 admit that ranking agency requirements are their main concern and put pressure on them to publish, because it is important for recruitment and promotion. This idea is also found in agregated studies, for instance in the paper of Pierre Masip "Impact of assessment criteria on publication behaviour. The case of communication research in Spain" (2009)[56], where researchers say that they must *"publish too much, too soon, and in inappropriate formats"*. Giménez and Alcaín[57] explain that "*what previously was a decision shaped by the circumstances, by the research topic or by preferences for certain journals, now becomes something more premeditated, the result of a plan aimed at a better evaluation of an individual's CV"*. According to Jaume Soriano[58], the academic community have changed the way they disseminate their research results and young researchers plan their careers on the subjects of study which best meet the criteria defined by the funding agencies.

[55] From the interview of a researcher part of the Alliance

[56] P. Masip (2014). Impact of assessment criteria on publication behaviour. The case of communication research in Spain. Information Research, Impact of assessment criteria on publication behaviour. The case of communication research in Spain (informationr.net) [Accessed 14 Dec 2021]

[57] E. Giménez and M.D. Alcaín, M.D. (2006). Estudio de las revistas españolas de periodismo. [Study of Spanish journalism periodicals]. Comunicación y sociedad, 19(2), 107-131.

[58] J. Soriano, El efecto ANECA (2008), Paper presented at the Congreso internacional fundacional de la AE-IC. Santiago de Compostela. Spain.

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Thus, the challenges for universities and ranking agencies are multiple, for instance:

- Collaboration with enterprises and other non-academic actors and transdisciplinary science should be evaluated and valorised in researchers's careers to foster innovation and innovation scouting.

- Universities should be able to detect innovation that have the potential to be valorised, transfered and commercialised at an early stage (very early level of maturation). Indeed, publications involve disclosure of research results and thus the render it impossibile to pursue patent applications and associated licences. The research results could be valorised but with no financial return and with the risk of being legally copied by competitors.

In recent times, the appropriateness of various criteria (such as journal metrics) has been questioned through initiatives such as the San Francisco Declaration on Research Assessment (DORA)[59] (prepared in 2012, published in 2013) and the Leiden Manifesto on Research Metrics[60] (2015). This is a highly relevant debate, where a careful separation of assessment processes and criteria needs to be made. Those initiatives introduce recommendations to improve research assessement criterias. One of the recommendations is toconsider the value and impact of all research outputs (including datasets and software) in addition to scientific publications, and to consider a wide range of impact measures, including qualitative indicators of the impact of research, such as its influence on policy and practice. Considering the value of all research outputs could push more researchers to fill in IDFs and to declare software. The Leiden manifesto[61] also introduces ten principles to guide research evaluation "Research evaluation has become routine and often relies on metrics. But it is increasingly driven by data and not by expert judgement. As a result, the procedures that were designed to increase the quality of research are now threatening to damage the scientific system".

Thus, it may be appropriate to foster detection of innovation by valorising criteria based on numbers of invention disclosures and software disclosures forms, rather than a high focus on publications for relevant fields/researchers.

3.2 The benefit of submitting IDFs and SDFs for researchers

In some universities, some researchers do not submit IDFs or SDFs, sometimes because they find the document too long and complex to fill in, but mostly because they are not aware of the value/benefit that they could get from submitting it. For instance, IDFs could give access to funding for researchers to develop their technologies and reach an higher TRL to attract potential investors and clients. Thus, increased awareness among the research communities on the importance of

[59] DORA, <https://sfdora.org/> [Accessed 17 Dec 2021]
[60] Leiden Manifesto on research metrics, <http://www.leidenmanifesto.org/> [Accessed 17 Dec 2021]
[61] Leiden Manifesto for research metrics, <http://www.leidenmanifesto.org/> [Accessed 17 Dec 2021]

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submitting IDFs and SDFs, and of the advantages for the universities to have high indicators in order to be well-ranked in national or international rankings.

3.3 Encouraging patents applications to increase innovation detection and innovation valorisation

Some researchers do not tend to state their research and inventions for valorisation, for instance for patent applications, because the process of patent application is very costly, long and uncertain (cf D5.1). For researchers, it is faster to publish their results through publications in scientific journals. Publications give them peer recognition and is essential for research evaluation and career advancements, as seen before. Publishing is the simplest way for researchers to disclose their inventions, while they actually should wait several months to file and/or obtain a patent application first and then publicate their results, hence taking the risk of being duplicated by other researchers. Indeed, during interviews undertaken in the framework of this report, some researchers admit to preferring publication because it is simpler and faster then filling in an IDF and applying for a patent. Moreover, most researchers believe that *"the mechanism for detecting and managing patents is inadequately equipped"*[62] and that it is not well explained to them. However, we can note a financial incentive to fill in IDFs and submit patent : the patent bonus.

Thus, universities are encouraged to raise more awareness among researchers on the value of valorising their innovations through patent applications and technology transfer and to support them in the process. This could encourage more researchers to fill in invention disclosure forms and thus support innovation scouting in universities.

3.4 A lack of indicators and procedures to follow-up on research projects and to measure innovation hampers the detection of innovation and of software

In some of the Alliance Universities, it has been noted that there is a lack of indicators to follow-up on research projects. This is a challenge universities must work on to better monitor research and detect innovation.

Also, the challenge is to find ways, procedures and to develop tools improve the innovation detection directly within the research groups, hence encouraging more IDFs and SDFs to be filed by researchers and then patents to be applied for.

3.5 A lack of human and digital ressources to support the detection of innovation and of software

The above-mentioned challenge of lack of indicators and procedures to detect innovation is partly linked to the lack of human resources in research, innovation and partnerships support offices and KTO/TTOs. The excess workload of administrative agents may prevent them from being able to always carefully follow-up on research projects and to create new indicators and procedures to do so. They themselves have identified this challenge of lack of time to dedicate to innovation detection: *"Sometimes, it is a question of resources. As you can see, in the end we have to dedicate*

[62] From the interview of a researcher part of the Alliance

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ourselves from the beginning to the end. So maybe that takes time away from us to be able to identify innovations"[63].

Also, some universities are not well equipped with digital tools. Yet, digital tools could be useful to ease and speed up the process of stating innovations for researchers, and could reinforce communication between RSOs, K/TTOs and research groups.

3.6 Challenges in cooperation with non-academic actors

Some non-academic partners of the Alliance Universities believe that tech transfer organizations in several universities are too far away from the science, trying to set up exploitation of academic research findings as their own 'business' (sometimes even including venture capital), competing with industry[64]. This hampers scouting of innovative partnerships between academics and industry which on its turn leads to a severe delay in implementation. The challenge in innovation is to cross borders to new technology fields. Quite often however, due to funding structures and publication requirements, it is difficult to convince academic scientists to get involved in other fields.

In addition, some partner non-academic actors interviewed for the task report that they find it difficult to collaborate with universities for innovation, because universities may not be eager to share a lot of ideas or findings with enterprises without any financial return. Hard and long negotiations with academics may prevent innovation. According to some non-academic partners, there is sometimes a lack of trust of universities towards enterprises for collaborations.

[63] From the interview of an administrative agent working in one of the TTO of the Alliance
[64] Data collected through the questionnaire filled in by non-academic partners of the Alliance' universities

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4. CASES STUDIES FROM NON-ACADEMIC ACTORS STRATEGIES, PRACTICES AND PROCEDURES TO DETECT INNOVATION

The Alliance Universities associate with external non-academic actors such as enterprises, or within university-industry research centres, in business clusters or in innovation and entrepreneurial ecosystems, to engage in the co-creation processes of advanced knowledge and to develop open innovation. In addition, universities have developed specific strategies integrated within the ecosystem outside the academia and within the industry and public sector to support public research, innovation, entrepreneurship or innovation detection. Thus, some benchmark on non-academic actors is essential in our analysis in order to understand non-academic actors' best practices to detect innovation, and perhaps find some inspirations outside of the universities to increase our practices of innovation scouting and build a common CHARM'EU model.

Each of the Alliance Universities have selected two or three non-academic partners with which they have close relationship to collect their strategies, procedures, tools and practices for innovation detection. A diverse sample of non-academic actors was selected to collect diverse perspective and see if some practices are common to many actors, or if some specific actors have specific efficient practices. The results of these exchanges are presented in this section.

Summary of the best practices of non-academic partners on innovation detection:

- Have a Research and Development Department to have a aggregation point to filter the innovation funnel.
- Implement an extensive and efficient internal monitoring, reporting and management process.
- State-gating is important to manage complexity.
- Regular meetings with manager to monitor research, innovation and software.
- Invest turnover in RDI. In general, invest in innovation without expecting return on results.
- Collaborate with external partners, encourage exchanges, share ideas.
- Create and leverage outside-in data channel.
- Select individual with extended reach to bring more opportunities.
- Seek validation from external markets events.
- Let free-time working sessions for experimentation for the scientists to encourage out-of-the-box thinking.

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- Invest in broadening knowledge and skills of your employeers and be inclusive in RDI.
- Attend B2B salons, conferences ect. Importance of the network, of knowing and having access to multiple actors of the innovation ecosystem to develop opportunities.
- Understand trends in innovation.

- **Technology Transfer Acceleration Societies in France**

In France, thirteen Technology Transfer Acceleration Societies (SATT) have been created since 2012 with the support of Investments for the Future Programme. SATTs are committed to research valorisation and maturation and support public research esthablisments in technology valorisation and transfer. They create links between researchers and businesses with a priviledge access to research groups. SATTs can support cutting-edge technology maturation and valorisation and provide enterprises with de-risked technological solutions with high potential.

The SATT AxLR is one of the acceleration societies implemented in the Occitanie Region. The SATT AxLR plays a key role in innovation detection inside the University of Montpellier :

· SATT AxLR project or start-up managers have access to UM research groups and maintain close and priviledged relations with researchers. Those links allow the SATT AxLR managers to be udpated on the research carried out inside the UM research groups and they are well-placed to therefore detect potential innovations at an early stage, advise researchers and invest in the maturation of potential inventions.

· The importance of networking in innovation scouting : The SATT AxLR has a large network of actors in different scientific and technological research fields. For instance, entrepreneurs can contact managers at the SATT AxLR to ask for a matching contact in a specific field for instance in materials chemistry.

· The SATT AxLR provides entrepreneurs with refundable advances to develop research and innovation and thus participate in innovation scouting through funding.

- **Entrepreneur, project holder : LINEUP OCEAN**

LINEUP OCEAN is an entreprenarial project that became a company at the beginning of 2022. LINEUP OCEAN is specialised in the eco-design of multi-use artificial reefs for the protection of the coastline, the ecological restoration of small coastal areas and the development of ecotourism. Its president and foundator is a former student-entrepreneur who has followed the national "Student-Entrepreneur's Establishment Diploma" (D2E). The specificities of this diploma will be introduced in D5.4 on students entrepreneurship support methods. The project also benefited from the support of the SATT AxLR and was incubated at the Business & Innovation Centre (BIC) of Montpellier with the insentive program "Jump-in", two organisms that had been presented in D5.1 and D5.2.

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In addition, LINEUP OCEAN benefits from the program “Companies on Campus” of the Montpellier University of Excellence (MUSE) Ecosystem.

In 2019, the project LINEUP OCEAN won the Regional Pepite Prize in Occitanie. In 2020, it was finalist of the French Cup for Young Social Entrepreneurs and the Foundation GRDF[65] "Coup de Coeur" prize (Social Cup 2020 - Paris). The same year, the project won the TechtheFutur 2020 Innovation Award (Ecole des Mines d'Ales - Agglomération Hérault Méditerranée - Le Village by CA). In 2021, the project was awarded the Grand Prix OCEAN HACKATHON 2021 Sète.

According to the founder and president of LINEUP OCEAN, innovation scouting takes a lot of time, and not everybody can afford to dedicate many time to it. Thus, the founder has decided to hire a Research and Development engineer to focus on innovation development and detection. This can already be considered as a good practice for efficient innovation scouting.

Also, the LINEUP OCEAN founder has underline several major aspects to focus on for efficient innovation scouting in his research area :

- He has highlighted the importance of the scientific and technological watching and benchmarking. Every week, a short time should be given to follow-up on new scientific and technological innovations in the relevant research field. To support innovation detection, in each research field there is already a commun knowledege sharing and conscious scientific cutting edge monitoring by all specialists. Thus, it is easy to identify an innovative project because their peers know very well whether it has been done before.

- Importance of the network : a scientific research project holder must know and have access to scientific groups, to researchers, academics, enterprises, to incubators, investors etc. Indeed, innovation detection is made through meetings, discussions, dialogue, sharing of knowledge, expertise and perspective. For entrepreneurs, start-ups and all type of enterprises, it is paramount to create strong links with the academic network of researchers (at all level, by starting with local level) and research groups to detect innovation. Innovation comes from the meeting of several innovative ideas and technologies. Project managers inside incubators for instance can play an active indirect role in innovation detection by putting project leaders in contact with companies, researchers and investors for instance. B2B events work very well, they gather multiple actors from one geographical region and one scientific field in the same room for networking and direct meeting and dialogue (face to face when possible or by visio with rooms equipped with computers). Those meetings lead to the implementation of concrete partnerships. The detection of innovation comes about through networking, which itself comes from an existing network of various actors focused on innovation. To better detect innovation, it is paramount to build trust between different actors and they know that they can rely on each other. Building a federative project that allows various actors who usually work in isolation to work

[65] Gaz Réseau Distribution France

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together helps detect and create innovation. From innovation and stimulation comes innovation. For project holders, it can be interested to be pre-incubated and incubated in a incubator because give access to a large network usefull for innovation detection. In addition, Montpellier is a small city, so very quickly projects holders, academics and researchers exercising innovation know each other.

- The project holder of LINEUP OCEAN has underlined the importance of being active and responsive in innovation detection, this is something that must be quick, there is no time to lose. For instance, he has detected a new 3D printing technology through an advert on social medias. This show us that external innovation detection can also be possible thanks to the social medias algorithms and targeted advertising. He has identified the firm offering this new 3D printing technology and has been quick to respond and pro-active as mentionned in the previous point. He has directly contacted the firm offering this service, they have met and discussed about the project very rapidly, to see if their technologies could match to build another innovations.

- A way to be innovative in science and technology is to get inspiration from nature to build new technologies with eco-friendly materials. In this way, innovations can be sustainable. This is a conceptual paradigme switch. The approach in itself must be innovative.

- He has underlined the importance of testing technological prototypes in operationnal environement to see what works or not because it allows to detect innovation.

- Detection of innovation depends on the research field, but also on the political wilingness to invest in this field. For instance, in the case of LINEUP OCEAN, the scientific and technological sector of coastlines, marine biodiversity, ecology is not in crisis, there is a lot of funding available to develop research and innovation, as they are very challenging and furture-oriented sectors. Subjects of artificial reefs with sustainable materials, preservation of marine biodiversity, protection of coastlines are challenges of high concern at a global scale. There is an intellectual, scientific and technological momentum around these issues, which simplifies and improves innovation detection. In the Montpellier area, there is a common culture and willingness around those matters of high importance for a sustainable future. All costline cities such as La Grande Motte, Palavas-les-flots, Sète and Agde for instance are very committee to these challenges and willing to invest for research and innovation.

- **International company: Enza Zaden**

Enza Zaden is an international vegetable-breeding company. Focus on innovation has characterised the company's distinctive features and growth. Innovation is the foundation and strength of the company. They invest more than thirty percent of their turnover in research, broadening and developing the knowledge of their employees and cooperation with other parties.

The research stations of Enza Zaden are located all over the world, and cooperate closely. They rapidly exchange specific knowledge that enables them to create even better innovation.

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The Enza Academy, the internal training institute, offers up and coming talent and (senior) managers customised training courses aimed at further personal development and international cooperation. In addition to leadership and management training provided by teaching professionals from institutes, master classes are developed based on specific themes and topics. These include new breeding techniques or project management, for example.

To encourage innovation and out-of-the-box thinking even more, researchers and breeders are given the opportunity to spend time on their own pilot projects. Each year, the company presents the Innovation Award to employees who have contributed to product or process improvement in an innovative way.

Alongside their intensive collaboration with other chain parties, they also closely cooperate with universities and institutes over the world.

Responsibility for innovation scouting is at research managers level and they report CSO.

To measure the ratio between the research being carried out and the innovation detected in the company, the most important measure is the research budget for external collaborations vs the internal R&D costs. The company has an overview of external collaborators and how they map on strategic R&D themes.

To follow-up on the research being carried out inside the compagy and with external collaborators, the company has implemented an internal funnel process (stage-gating). Stage-gating is important to manage complexity and purpose to overarching goal to breed faster for better varieties. The researches of the company mainly focus on breeding for new varieties, products development is an ongoing process. In addition to products development, there are more specific research projects defined over time which have specific objectives. To measure innovation, the indicators differ per research topic (crop, traits, process etc.)

Regarding digital innovation for software tracking, the tools used are powerpoint templates and project online.

The best practice for innovation scouting inside Enza Zaden is inclusivity. Innovation is not done by a specific person or department, but there is a platform representing different disciplines where decisions can be made on research topics.

The challenge remains the selection process for research as there are many opportunities and also to create proper business cases.

- **International Company : Rijk Zwaan**

Rijk Zwaan is a vegetable breeding company that develops new vegetable varieties and sell the seeds produced from them all over the world.

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In order to develop new varieties and supply top-quality seeds, continuous innovation is essential. Forty percent of Rijk Zwaan staff is actively involved in research and development. The company invests around thirty percent of their turnover in R&D each year. The only products they sell are products that have been developed by means of their own R&D activities. All products are protected by IP (breeders rights, PVP, patents), which means that those products are new and innovative. Their field of business has a high innovation speed. Providing these conditions, their turnover is the best proxy for innovation.

Scientists are responsible for innovation scouting in their respective fields of expertise. They are supported by a specific department, called Business Support R&D that takes care of the business side of research (contracts, funding, IP, etc.).

To monitor RDI, they have an extensive internal reporting and administrative system in place.

Their best practice on innovation scouting is allowing their scientists to go out and meet their peers at scientific conferences to encourage sharing of knowledge and ideas and meeting between scientists.

- **Science-based company: GenDx**

Gendx is a science-based company, specializing in molecular diagnostics for transplantation and personalized health care. GenDx develops and offers a comprehensive line of reagents and services, analysis software, and education. Their mission is to improve the quality of life and survival of transplant patients. They strongly believe it is crucial to share knowledge and experience with partners, and have a strong focus on excellent customer support, education and collaboration.

GenDx has an Research and Development Department, where an average of twenty people work, among whose scientists, technicians, PhD, logistics, marketing etc. The RD department reports its research and findings to the Chief Technology Officer (CTO). Everyday, they have a 50-minutes group meeting in which they share about the research projects going on, and they also report about their activities during weekly meetings.

In addition, GenDx develops softwares that are tracked together by the employees working on them. Each employee works on one part of the software. Then, twice a day, the different parts of the software are uploaded to a server and compiled together to check on its advancement. There are very strict procedures in place regarding software and they are highly protected.

To boost innovation detection, GenDx underlines the importance of sharing information between different actors (businness, universities, research centres, public institutions etc.). GenDx strongly believes in collaboration and cooperation.

Also, GenDx can choose to support scientists even if they have no grants when the company believe in the project. They are ready to take risk and invest to develop innovation, without expecting a return on results. They believe it is the right thing to do to get innovation.

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Finally, a good practice at national level is the tax reduction on hours spend on research for Dutch companies. In addittition, there are tax reduction on profits made on products that have been created by the company thanks to their investment on innovation. A product created by the company that is sold, wouldonly incur an ten percent tax level instead of the normal twenty-five percent level. Thus, taxes reductions support companies in innovation.

On the company level, the best practices are to have a plan for research, but also to let some freedom to their scientists to experiment, to do things that are not in the plan. Those freedoom periods in research are called the "Friday afternoon experiments".

- **Avantium**

Avantium is a pioneer in the emerging industry of renewable and sustainable chemistry. Avantium is headquartered in Amsterdam, employing approximately 200 people, with extensive R&D groups and three pilot plants in Geleen and Delfzijl, the Netherlands. They are an innovation-driven company dedicated to developing and commercializing breakthrough technologies for the production of chemicals from renewable sources and circular plastic materials used for a variety of consumer products.

Their organization is innovation-oriented and a large part of the employees are involved in R&D activities. As such, detecting innovation is not limited to certain departments. They work with research goals and strategies and have procedures for the internal reporting of inventions. They report inventions internally following a procedure. As they are innovation driven, usually employees report relevant innovations.

One of the main barriers when it comes to external innovation is availability of scientific literature. It is costly to buy all the papers they are interested in.

- **Non-profit: CHIC (Közép-magyarországi Innovációs Központ Nonprofit Közhasznú Kft.)**[66]

CHIC organisation is a specific innovation agency that helps the owners of innovative ideas and research results with expert advice and networking services. The business executive is responsible for innovation scouting. They have worked out a project gathering data sheet for owners of individual innovation ideas and for researchers. In this datasheet the innovative product and service ideas and research results can be presented. CHIC was mainly concerned with developing the competitiveness of SMEs and bringing innovative ideas and research results to the market.The result of the innovation is the successful introduction to the market and the income.

In order to measure innovation, they use Technology Readiness Level from 1 to 9. In order to determine the market success of innovation, they use Investment Readiness Level from 1 to 9. The design of the IRL level is the following:

- IRL 1: 3F (Family, Friends, Fouls)

[66] Hungarian name: Közép-magyarországi Innovációs Központ Nonprofit Közhasznú Kft.

- IRL 2: Community seed capital, tender
- IRL 3: Community Seed Capital, Business Angel
- IRL 4: Business Angel, tender
- IRL 5: Application, Business Angel, early venture capital - Validated revenue model and market suitability (high technical risk, total commercial risk)
- IRL 6: Business Angel, tender, early venture capital
- IRL 7: Venture capital Prototype of a viable product
- IRL 8: Growth Venture Capital - Validated value creation
- IRL 9: Professional and financial investors Identification and validation of metrics

Their best practices on innovation scouting are that they don't currently spend on advertising. Indeed, their experience in competitiveness and innovation management services for the period 2004-2012 has convinced them that these activities are not yet paying off in the market. However, their organisation has several results and wide network of contacts, based on that, the researchers and inventors can find them.

The challenges the organisation faces in innovation detection is to search and manage innovative ideas from unfunded sources and competitions. Previously, with no advertising, they were approached on average with one innovative idea per week, but this number has dropped dramatically recently (one idea per month, every two months), although they have been able to advise and mediate with virtually every person who comes to them. They have not systematically collected innovative projects in recent years, but they have tried to help everyone.

- **Regional Innovation Agency: the Central Transdanubian Regional Innovation Agency (KDRIÜ or CTRIA)[67]**

The Central Transdanubian Regional Innovation Agency Non-profit Ltd. (KDRIÜ or CTRIA) was founded in 2008 by six organisations and now manages national and international innovative projects, implements and popularizes them, does business consulting, encourage innovation, shapes knowledge and deal with technology transfer, training and mentoring on a non-profit basis.

Over ten years of operation, they have become key players in generating and coordinating regional innovation processes, organizing technology innovation networks, and providing innovation support services. Today they offer cooperation for more than 200 Hungarian and 100 foreign partners - including international project developers, potential entrepreneurs, brainstorming companies, innovative companies (startup, beginner, operating) SMEs, offices, higher education and research institutes, and municipalities. They have developed 30+ new products or services locally.

CTRIA employs three innovation experts, two of them are responsible for scouting. They are both senior experts with significant experiences and fully fitting professional background.

[67] Hungarian name: Közép-dunántúli Regionális Innovációs Ügynökség (KDRIÜ)

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Being an intermediary organisation, CTRIA is working together with different research entities in the region and supports them to utilise their reasearch outcomes. They concentrate on applied research and help to select the ones can be transformed into innovation, irrespective of whether it is product or service. It means a kind of outsourcing of scouting from their clients.

To measure the ratio between the research being carried out and the innovation detected, they apply a complex and cooperative selection approach by considering the following indicators :

· Generated innovative ideas

· Number of patents

· Possible return on investment

· R&D to product conversion

· Budget to develop

· Time to adopt

CTRIA has established an innovation support board, having five thematic experts (internal and external) responsible to lead the scouting process as well as following-up the scouted ideas. The board has two regular monthly meetings and evaluates the project progress individually. The method for that is two-fold, on one hand measurement indexes have been developed and used and on the other hand non-controlled evaluation. Both are grounded in a self-evaluation questionnaire of the idea owner.

The measurements of innovation processes cover the following elements :

· Strategic and management measures

· Cooperation measures

· Innovation efforts

· Capacities

· Impact measures

The proven practice in their organisation is based on the following ideas:

·Well-developed organisation background (internal staff and board)

· Adapted key indicators and continuously updated measures

· Co-creation based processes with full involvement of the idea owner

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The main challenge is to raise awareness of public research entities to step forward with their results. It is mostly over and above their main interest and needs further efforts for regular cooperation.

- **Anonymous non-academic partner**

Innovation scouting is shared across a number of senior people to increase scope and range. They are also a limited partner in an established VC firm and they act as a supplemental opportunity radar. The key of using shared scouting is to have a single aggregation point and filtering for the innovation funnel. Scouting and funnel process is managed by the Innovation team with responsibility of the COO.

They do not have a formal ratio measurement between the research carried out and the innovation detected. All opportunities go through the same innovation funnel (internal start-ups, spin outs and spin ups, outputs from our R&D programme (funded collaboration with academia) plus external investment opportunities.

To monitor research in their organisation, bi-weekly meeting with their R&D partner are organised, with quarterly reviews and programme board meeting, annual funding (& ROI) review.

To measure innovation, they look at opportunities entering the funnel, opportunities at each stage gate, funding allocated (and deployed) at each stage, resources deployed (opportunity cost), prototypes delivered, MVPs delivered, customer validation results, product delivered, outcome and impact, customer numbers and revenue, target margin tracking. They also measure how quickly they stop an innovation project.

Their best practices on innovation scouting are:

- Clarity on target niche markets that are in or will be in high growth sectors (understanding trends). Identify likely future impacts on core business to be mitigated/managed/accelerated.
- Seek validation for their strategy from external market events.
- Create and leverage outside-in data channels (events, conferences, networks, etc.).
- Select individuals with extended reach to bring opportunities.

- **Anonymous non-academic partner**

Innovation is all over the organisation, but is condensed around the SHIFT Platform and impulsed by several programs along different innovation lines.

They measure and communicate the R&D spending, the number of IP filings and the revenue share generated by the last three years innovations.

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Aside from Business Areas own processes the SHIFT Platform and various programs give coherence to the innovation effort.

Software development is integral part of all innovation efforts, it is tracked through the Technology Excellence Software initiative.

To declare innovation, they have a comprehensive approach through our Technology Excellence Intellectual Property initiative. Software is an integral part of all innovation efforts and is declared in a combined form. In cases like AI and cybersecurity it is mostly Software but it is also managed by TE Intellectual Property.

The best practices for innovation scouting are their programs Innovation Think Tank (ITT), Digital Technology and Innovation Center (DTI), Technology Accelerator (TAC), OpenIT Studio (ITT@IT) and DigiLab

As innovation is all over the main challenge is to have a comprehensive view of innovation and to be able to share and combine efficiently innovation efforts. They address this through the SHIFT Platform and the TE central function.

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5. POTENTIAL PRELIMINARY RECOMMENDATIONS FOR THE ALLIANCE UNIVERSITIES TO IMPROVE DETECTION OF INNOVATION PROCEDURES

During interviews, researchers and RSOs and K/TTOs administrative agents from the universities and non-academic actors shared some potential preliminary recommendations for universities to improve their strategies, practices and tools on innovation scouting. Here the main potential preliminary recommendations that have emerged from the interviews and from our analysis of the current practices for innovation scouting within universities are introduced :

- Universities should raise more awareness among researchers for them to fill in more IDFs and SDFs and raise awareness on the benefits researchers can acquire from their IDFs and SDFs, for instance additionnal funding.

- Simplify or shorten those forms, without losing the importance of the content, or to have more administrative agents available to support researchers in submitting IDFs. Most importantly, Awareness of innovation should be introduced much earlier, for example with innovation modules in all courses and adapted to each field of research, but also with transdisciplinary innovation modules. There is not enough cutting-edge knowledge and updates about new technologies in research fields.

- Universities could create technology watch workshops for students, researchers and administrative agents.

- Universities should invest more in developing human resources to have qualified agents trained to innovation scouting, to improve the dialogue with the research groups, the knowledge and follow-up of the research being carried out. They could, for example, have one agent dedicated to innovation detection : *"(...) It has been proposed that perhaps in the different groups or institutes there should be a promoter who is in more direct contact with the groups and who can identify these results and then come to us as a kind of filter. I believe that there are already some institutes that have such promoters and that in a certain way they also help us to identify this innovation"*[68].

- There is not enough communication from the research groups on their available and new technologies towards potential non-academic partners, companies, investors etc. Knowledge of potential innovation emerging within research groups and universities could be more visible and democratised through digital communication, for instance with dedicated pages on the research groups and universities websites.

- Universities should invest in developing more digital resources such as online platforms, to ease and speed-up innovation and software statements by researchers, and to facilitate the communication between the administration and the research groups. An good

[68] From the interview of a researcher of the Alliance

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example could be the development of the digital platform PLUM by the UM for researchers to declare the invention of a new software to RSOs and K/TTOs.

- Universities could develop more effective digital technology watch tools. For instance, they could develop online platforms with keyword search to find available technologies and contacts of organisations deploying them. Or, it could also be interesting to implement a common platform between several universities at a higher level, to gather in one place the resources and technologies available in different research groups, universities, and their partner research centres.

- Universties should implement more indicators to follow-up on the research being carried in research groups and to quantify the level of innovation of research.

- Universities should raise awareness in research groups on the importance of declaring innovations and software for purpose of valorisation.

- Universities should ensure to develop more collaboration and communication between the administration and research laboratory directors or managers.

- Research support offices could implement strategies to attract more researchers to contact them for support, to encourage researchers to communicate with them. Like this, the offices would know more researchers and have more opportunities to be aware of research being carried out inside the research units. Some Alliance universities are more advanced than other on the subject of communication with research groups and researchers on innovation detection.

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CONCLUSION

To conclude, innovation scouting is a complex challenge for universities that requires good and efficient research monitoring and management strategy, procedures and tools.

Innovation detection process may greatly vary from one research field and discipline to another, as it has been presented in the metrics of IDFs and SDFs submitted per research areas in 2021 in each university.

In order to detect innovation emerging from the research being conducted in their research groups, universities have implemented procedures such as regular communication through phone calls, mail, formal and informal meetings, steering committee, Intellectual Property Committee for example. Researchers have the obligation to report to their employers about the research they undertake. To declare their inventions and software being developed in the research groups, researchers must fill in an Invention Disclosure Form and a Software Disclosure Form. These documents must be handed to the appropriate RSOs or TTOs and discussed with admistrative agents and managers to see which IP regime must be applied and how to protect and valorise the innovation.

To facilitate the link between the universitiy administration and the research groups, business developers positions have emerged in some of the Alliance Universities as part of the administration. They act as a priviledged intermediary. Thanks to their knowledge of the resources, technology and current research carried out in research groups, they can support innovation detection and communication with the administration. In addition, they can support researchers in scouting innovation outside of the academia and collaborate with non-academic actors to develop their ideas and create innovation with the support of other technological innovation for instance. Indeed, innovation feeds innovation.

In addition, universities have implemented practices and initiatives that also support innovation detection inside their research groups : support drawing up proposals for calls-for-project, support to open innovation, offering funding for pre-maturation and maturation, initiatives that help administrative agents to be more aware of the research being carried out and to create closer ties with researchers. Some of them have created specific funds or events to better detect and support innovation scouting.

In addition, the report underlines the challenges that universities face in innovation detection as this process can still be improved in some of the Alliance partners. We do note the heavy workload of administrative agents that may prevent them from acquiring a deep knowledge of the ressources and the research being carried out in research groups. Detection of innovation requires a deep knowledge of cutting-edge scientific and technological advances, a common knowledge that researchers have accumulated. In addition, in some universities there are not enough indicators to monitor research and measure the ratio between the research being carried out and the innovation detected, nor enough indicators to measure innovation. Also, in some universities there is a lack of

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implementation concerning digital tools such as online platforms to facilitate innovation disclosure, communication between research groups and university management, scientific and technological watches and visibility of available technologies and innovations. Thus, universities could work towards implementing a common model with precise indicators to monitor research and innovation, and efficient digital tools to support innovation detection.

Administrative agents, but also the higher management, could raise awareness among researchers on the importance of declaring their innovative research results to then be able to valorise them, for instance through patents applications. They can also support researchers in properly filling in IDFs and SDFs. Indeed, some researchers may not see the interest in filling in IDFs and SDFs and find the documents too complex and long to complete, while in reality this could lead to funding.

Intensive communication and cooperation must be established between research groups and universities administration to support and improve detection of innovation.

Finally, the benchmark on non-academic actors regarding their best practices in terms of innovation detection may give the Alliance Universities future ideas to explore in order to improve their practices by drawing inspiration from other actors.

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ANNEX I: SURVEY QUESTIONS ON INNOVATION DETECTION

1. Do you have offices responsible for innovation's detection ?
- Yes (please specify the office)
- Not explicitely, but it is part of responsabilities of specific agents or offices (please specify)
- No

2. Do you engage in collaboration with non-academic sectors in co-creation of advanced knowledge ?
- Yes [Multiple answers possible]
  - With enterprises
  - Within university-industry research centers
  - Within business clusters
  - In innovation and entrepreneurial ecosystems
- No

3. Do you measure the ratio between the research carried out and the innovation detected ?
- Yes (precise the indicator used and the results)
- Under discussion
- No
- I don't know

4. Is there regular communication between the administration and the researchers to follow-up on research projets ?
- Yes [Multiple answers possible]
  - Regular official meetings between administration offices' agents and researchers
  - Steering committee meetings
  - Informal meetings
  - Communication per mail
  - Follow-up sheet / Tracking sheet
  - Other (please indicate)
- Under Discussion
- No
- I don't know

4.1. Is there a procedure implemented to collect research'results ?
- Yes (please describe the procedure)
  - While the research is being carried out
  - At the end of the research
- Under Discussion
- No
- I don't know

4.2. Is there a specific procedure for tracking softwares developement ?
- Yes (please describe the procedure)
- Under Discussion
- No
- I don't know

5. Which procedure has been implemented for researchers to declare an invention ?

5.1. How many invention declarations are filled per year at the university ?

5.2. How many software inventions are declared per year at the university ?

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6. Which national institution is responsible for receiving and examinating patent applications ?

6.1. Which major criterias need to be filled for an invention to be patentable ? [Multiple answers possible]

- A technical solution to a technical issue
- Innovative nature
- Inventive activity
- Industrial application
- Other (please indicate)
- None

6.2. Please indicate how many patents applications researchers from the University fill per year ?

6.3. Please indicate how many patented inventions are accepted per year at the University ?

6.4. What is the price for a patent application ?

6.5. Who is paying for patent appliction ?

- The university
- Other (please indicate)

7. Is there a development structure (TT acceleration structure) inside the University or is it externalized ?

- Intern structure
- Extern stucture
- There is no such structure

8. Which structure is financing the pre-maturation and/ or maturation of a research project ?

- The university
- Other (please indicate)
- None

8.1. Please indicate the main criterias that need to be filled to receive a pre-maturation or maturation funding

8.2. Please indicate how many projects are presented per year to have access to pre-maturation or maturation funding inside the University ?

8.3. Please indicate how many projects have access to pre-maturation or maturation funding per year inside the University ?

9. Are there any other initiatives implemented to help students, PhD and researchers transform their initial innovative ideas to more mature innovation project propositions?

- Yes (please indicate)
- Under Discussion
- No
- I don't know

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ANNEX II: INTERVIEW MATRIX FOR RESEARCHERS ON INNOVATION DETECTION

1. Do you have the obligation to inform the University of the advancement of your research? If yes, is there a specific procedure at the University to monitor research?
2. Do you fill an invention declaration for each research conducted ? If not, why ?
3. Do you fill a software declaration for each software created ? If not, why ?
4. Do you encounter any difficulties in declaring your inventions ?
5. What are the best practices implemented at the University to declare inventions ?
6. Wich recommendations would you give to the University to improve innovation'detection ?
7. Have you ever applied for patenting an invention? If yes, was the patent given?
8. Have you ever beneficated from maturation's investment to mature a research ? If yes, was it helpful to improve your research/invention/technology ?

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ANNEX III: INTERVIEW MATRIX FROM PARTNERSHIP AND RESEARCH SUPPORT OFFICES AND TTOS' ADMINISTRATIVE AGENTS, ON INNOVATION DETECTION

1. Is there an implemented procedure to monitor research and detect innovation at the University ?
2. According to you, which barriers are hampering innovation's detection inside the University ? (For instance regulatory, financial or political barriers)
3. According to you, what are the best practices implemented at the University to detect innovation ?
4. Which recommendations would you give to the University to better detect innovation ?

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ANNEX IV: JOINT LETTER OF THE CHARM'EU ALLIANCE TO CONTACT NON-ACADEMIC ACTORS FOR A BENCHMARK ON THEIR PROCEDURES, PRACTICES AND TOOLS FOR INNOVATION DETECTION

CHARM'EU Alliance

Eötvös Loránd University Budapest

Trinity College of Dublin

University of Barcelona

University of Montpellier

Utrecht University

Name of the organisation

Contact in the framework of TORCH's project

Dear partner,

We are contacting you as the CHARM-EU Alliance, an European University gathering Trinity College of Dublin, University of Barcelona, Utrecht University, University of Montpellier and Eötvös Loránd University Budapest. CHARM-EU represents a Challenge-Driven, Accessible, Research-based and Mobile model for the co-creation of a European University.

TORCH (Transforming Open Responsible Research and Innovation through CHARM) is a project funded by the European Union under the Horizon 2020 programme which aims to develop a common Research & Innovation (R&I) agenda for the European universities initiative. TORCH aims to achieve this main goal through the consolidation of CHARM-EU's vision and mission based on transdisciplinarity and interculturality to solve complex societal challenges.

The University of Montpellier is leader on TORCH Work Package 5, « Strenghtening cooperation between universities and enterprises ». This WP is one of the four transformational modules of TORCH' project, considering cooperation with non-academic actors. It aims at identifying and analysing strategies and practices implemented within the Alliance's members to improve the cooperation with the private sector and key societal stakeholders in the full spectrum of their activities.

This WP is divided into four tasks. The second task, « Identification and promotion of best practices, procedures and tools to detect innovation » aims at building a gap analysis between the alliance's partners on their strategies, practices, procedures and tools implemented for scouting innovation and software. To complete this gap analysis, benchmark on non-academic actors is necessary to propose a model that would revolutionize innovation's detection within CHARM-EU.

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Thus, we are contacting your organisation to ask if you would be willing to share with us your best practices, procedures and tools implemented for innovation scouting. By understanding and analysing your best practices and procedures, this could help the Alliance better grasp their gaps and challenges, to build a solid model for innovation detection inside our research units.

If you are interested by our approach, we will kindly ask you to answer a short questionnaire regarding your indicators for measuring innovation, your procedures and tools implemented to collect research results, detect and declare innovation and software. This short questionnaire should be answered by the end of January 2022. The collected data would then be including in our final public report « Good practices report on innovation's detection », and could be anonymised if your organisation/firm wish so.

We remain available if you have any question regarding TORCH project and our approach, and thank you for your help and collaboration.

Best regards,

The CHARM'EU Alliance

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ANNEX V: QUESTIONNAIRE ON INNOVATION DETECTION FOR NON-ACADEMIC ACTORS

Questions	Answers
Who is responsible for innovation scouting in your organisation/firm ? (it could be a specific position, an office, a department ?)	
Do you measure the ratio between the research being carried out and the innovation detected in your organisation/firm ? If yes, which indicators do you use?	
Which procedures and tools have been implemented to follow-up on the research being carried out ?	
Is there a specific procedures for tracking software? (if applicable)	
Which indicators do you use to measure innovation ?	
Which procedures and tools have been implemented to declare innovation ?	
Do you have specific procedures and tools to declare software? (if applicable)	
What are the best practices for innovation scouting in your organisation ?	
Which difficulties /barriers/challenges does your organisation/firm face for innovation scouting ? How could these challenges be addressed ?	