Guidelines to the creation of a Science and Innovation Skills Academy

Work Package 3 - Deliverable 6.1

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Executive Summary

The Guidelines for the creation of a Science & Innovation Skills Academy for Widening Countries was developed as an operational manual, a set of guidelines to support widening higher education and research institutions to set-up a researcher's professional development centre. These Centres must be the Institution central point of the researcher's career development, a unit that can work as an aggregating point with different services that will support researchers' career and therefore impact on the researcher's work quality.

The Guidelines were structured as a beacon to support others willing to implement such a structure, however it is important to stress that the Academy final structure is highly correlated to the institutional, local and national frameworks of the implementers - in this sense and because each institution internal and external conditions will play a major role on how the Academies will be assembled, these Guidelines must be used as a toolbox, a baseline for the development of Science & Innovation Skills Academy.

Apart from the structural and operational factors of such a structure, the link between research and industry was specially focussed in this document. The ties between both parties are not always linear, neither straightforward, but imperative and one of the paths to assure the higher mission of research, which is to put the scientific breakthroughs to the use of society.

The document was developed by an iterative process, using the scientific method as much as feasible, an initial desk research retrieved unsuccessful results, no references were found regarding how to establish such structure - this discovery highlighted the need of such a document in today's world. This first step was followed by distribution of a survey among the consortium partners that aimed to map their realities on the topic, the results showed highly variable realities, being the institutional framework the primary-key that will determine the operational establishment of such an Academy. The survey structure, and the results, supported the development of the Guidelines index, considering that that results itself cannot be statistically representative, they clearly showed the components that influence the establishment of a science and innovation skills academy, and therefore must be considered by any institution that wished to take this path.

The final outline of this document will address the Institutional Framework, Human and Material Resources, the Training Cycle, the Career Development and Coaching Services and How to Bridge the Gap between Research and Industry - while considering human factors in a fast-changing ecosystem, it is fair to assume fast changes, namely with a potential impact of AI supporting some processes or tasks. Nonetheless, the methodology used, and the date retrieved allowed to develop a solid baseline that hopefully will inspire and support other widening-countries to invest in the development and establishment of such support research structures.

1 | Introduction

Innovation and scientific advancement have historically been vital drivers of societal progress. However, a persistent gap remains between academic research and its industrial application - a phenomenon often referred to as the European paradox. This paradox describes the observation that while EU member states excel globally in producing high-quality scientific research, they struggle to convert this strength into wealth-generating innovations.[1]

European universities serve as key hubs for knowledge creation; yet, without strategic frameworks to translate research into practical applications, the full potential of innovation remains unrealized. Establishing a Science and Innovation Centre within universities is therefore a critical step in addressing this issue. Such centres foster professional development for researchers while ensuring that scientific discoveries lead to tangible, real-world impact.

A Science and Innovation Centre plays a pivotal role in equipping researchers with the skills and resources necessary to engage in meaningful collaborations beyond academia. While traditional academic training tends to emphasize theoretical knowledge and specialized methodologies, it often overlooks essential aspects such as intellectual property management and industry-relevant problem-solving. Through targeted workshops, mentorship programs, and interdisciplinary networking opportunities, a well-structured centre can empower researchers to transform their findings into innovative products, services, and policies - benefiting universities, the economy, and society at large.

Beyond individual development, these centres act as vital conduits for academia-industry partnerships. Although many industries actively seek cutting-edge research to fuel innovation, they often face difficulties navigating university structures to access relevant expertise. Similarly, researchers may encounter obstacles when attempting to secure industrial collaboration or funding. A Science and Innovation Centre can help overcome these barriers by facilitating dialogue, streamlining technology transfer processes, and initiating joint research projects that leverage the complementary strengths of academia and industry. This collaboration enhances the relevance of academic research and provides researchers with exposure to real-world challenges - refining their problem-solving skills and improving their employability across sectors. The positive impact of such collaborations on economic performance is well-documented, including evidence presented in a report by the U.S. National Science Foundation.[2]

Furthermore, fostering a culture of innovation within universities significantly enhances their global reputation and competitiveness. Institutions that prioritize innovation are more likely to attract top-tier students, faculty, and industry partners - creating dynamic ecosystems where knowledge flows seamlessly between research, policy, and practice. This leads not only to greater funding opportunities and increased visibility but also to measurable societal benefits, including higher levels of high-tech employment, improved productivity, and shorter time-to-market for new technologies.

In considering the need for Science and Innovation Skills Centres, it becomes evident that their function extends well beyond research support. These are transformative institutional structures that empower researchers, forge critical industry linkages, and drive economic development. To effectively bridge

[1] Maassen, Peter A. M.; Olsen, Johan P. (14 May 2007). *University dynamics and European integration*. Springer. p. 174. ISBN 978-1-4020-5970-4. Retrieved 26 March 2010

[2] University–Industry Research Collaborations and Regional Economic Performance, 2020, National Science Foundation, https://www.oecd.org/content/dam/oecd/en/publications/reports/2019/04/university-industry-collaboration_0e351ee0/e9c1e648-en.pdf

the gap between academia and industry, universities must view these centres as strategic investments that amplify research impact and cultivate a culture of continuous learning and applied discovery. In doing so, they enhance professional development and ensure that knowledge is mobilized to address pressing global challenges in a meaningful and sustainable way.

The present Guidelines are the result of a carefully considered process - one that, in many ways, mirrored a research methodology. The initial phase, a desk review, revealed a surprising gap: very little has been published on the comprehensive development of science and innovation skills centres for researchers. While some literature exists on professional training structures within higher education institutions, none addressed the transversal nature of research careers within and beyond academia, nor the essential cooperative relationship between academia and industry.

To gain further insight, a survey was developed and distributed to all nine academic partners following this initial phase. The survey aimed to determine whether institutions had specific training structures in place for researchers and faculty, as well as to understand the resources operating within those structures. It covered three main dimensions: Institutional Information, Existing Training Structures, and Training Plans, Programmes, and Assessment - comprising a total of 16 questions.

Achieving an 89% response rate, the survey provided valuable insights into the fundamental structures and roles of existing training and professional development centres. It also highlighted key bottlenecks and barriers - particularly in extending these centres' impact on researcher careers and, most notably, on industry engagement.

Despite the limitations, the survey results made a significant contribution to shaping the structure and content of these Guidelines. They provided a foundational understanding that ultimately informed the development of the Guidelines Index.

2 | Understanding Science and Innovation Skills Academy in EU

In recent decades, Europe has made significant strides in strengthening its research and innovation (R&I) systems. However, widening countries - those with lower R&I performance - continue to face persistent structural barriers. These include fragmented training provision, weak career support systems, and a limited translation of scientific knowledge into innovation and societal impact. Recognizing this gap, the Science and Innovation Skills Academy (SISA) emerges as a strategic institutional response, aiming to equip researchers with the essential competencies to thrive in increasingly complex academic, entrepreneurial, and interdisciplinary environments.

This chapter outlines the conceptual underpinnings of SISA, drawing from key methodologies and frameworks developed through the Unite! University Alliance - particularly the Researcher Development Framework (RDF) and the Development Needs Analysis (UDNA) tool - as well as broader EU policy instruments such as EURAXESS, the Union of Skills initiative, and the European Competence Framework for Researchers (Research Comp). Together, these tools provide a strong rationale and roadmap for building flexible, tailored, and effective researcher training ecosystems—particularly within the context of Widening countries.

Insights from the T3.1 Survey: A Widening-Aware Blueprint

The Unite!Widening T3.1 Survey, conducted among nine academic partners, provided essential data for conceptualizing the structure of SISA in Widening contexts. The survey identified that although some institutions have existing career support units - usually housed within HR departments - formal training centres dedicated to researchers remain the exception rather than the rule.

Key findings include:

- Training structures vary significantly and often lack dedicated governance or strategic orientation.
- Researcher support is primarily focused on publishing, proposal writing, science communication, and funding opportunities.
- Online and hybrid training modalities are most preferred.
- Institutions rarely implement comprehensive training plans or assess training impact systematically.
- Critical skill needs identified include leadership, communication, resilience, proposal writing, and career road mapping.

From this data, a model archetype emerged for SISA in Widening countries: a small, dynamic unit managed through HR or a dedicated development office, offering tailored, needs-based training cycles supported by digital platforms and stakeholder engagement. This blueprint is highly transferable and scalable across varied institutional landscapes.

European Instruments Supporting Researcher Development

The SISA initiative aligns closely with several EU-level tools and policy frameworks, which can inform and enhance its operational design:

- EURAXESS Researcher Career Development: Offers an integrated platform for mobility, job opportunities, and career services. SISA can draw on its resources, especially the career development centres' toolkit and Charter & Code principles.

- Union of Skills (European Skills Agenda): Reinforces lifelong learning and upskilling in digital, green, and entrepreneurial domains. SISA training plans can be aligned with these European priorities to increase employability and innovation capacity.
- ResearchComp: A European competence framework for researchers that offers a structured taxonomy of transversal and research-specific skills, providing a useful complement to the Unite! RDF and an anchor for defining SISA training outcomes.
- EOSC (European Open Science Cloud) and OpenAIRE: Advocate for digital skills in open science, data stewardship, and research integrity - areas that should be embedded into the SISA curriculum to future-proof researcher competencies.

Figure 1 - The European Competence Framework for Researchers

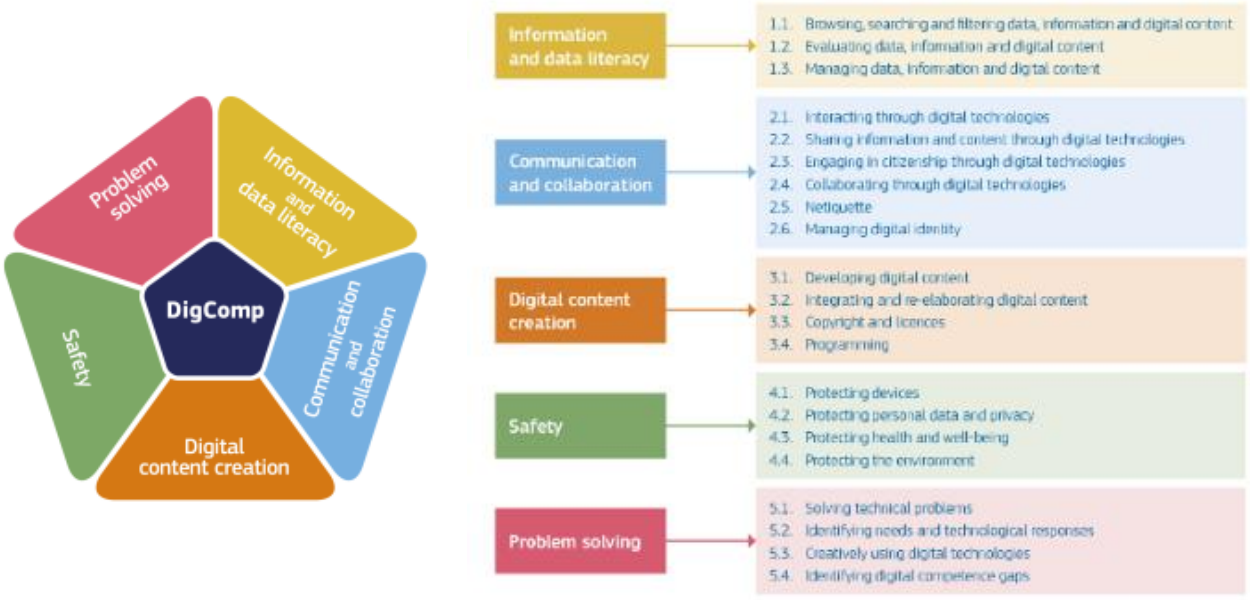

Figure 2 - Digital Competence Framework for Citizens (DigComp) - European Union

Figure 3 - Researchers Development Framework (RDF) – Unite! Model

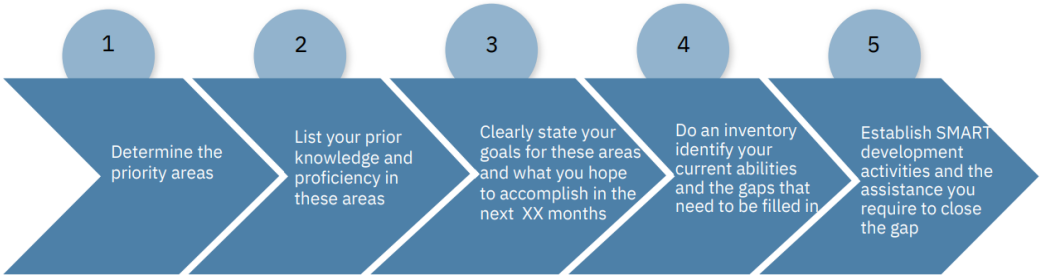

Figure 4 - Unite! Development Needs Analysis (UDNA)

Collectively, these instruments validate the need for institutionalized, structured researcher training centres and offer interoperability mechanisms, benchmarks, and funding synergies that SISA can leverage for sustainability.

2.1 | Desk Research

Initial desk research was conducted, using as resources open-science results, retrieving an unfruitful, and unexpected, result. Although a lot of references were found on researchers' careers and on the establishment of research centres, none were found on the bases for developing an institutional structure that supports and nurtures the researchers' skills and cumulative supports their work development and link to the industry.

Although relevant to support the researchers' professional development, the findings did not focus on the establishment of supporting structures, a demanding pre-condition for the effectiveness of the researchers' skills development.

2.2 | The Science and Innovation Skills Academy (SISA) Survey

Between the 30th October and the 31st December 2024 the Widening partners were invited to answer a survey that aimed to collect some background information on their professional training academies for researchers. The survey was organized in 3 main chapters: Overall Institutional Information, Existing Training Structures, and Training Plan, Programmes and Assessment, to which 89% of the partners replied (8 partners: Aalto, Grenoble INP-UGA, PoliTO, WroclawTech, TUDa, TU Graz, ULisboa, and UPC) and which main findings are presented below.

2.2.1 | Overall Institutional Information

	<500 RESEARCHERS	500-1000 RESEARCHERS	1001-2000 RESEARCHERS	>2000 RESEARCHERS	WIDENING PROJECT AVERAGE NUMBER OF RESEARCHERS
R1	2	2	2	2	1235
R2	4	2	2	0	649
R3	6	2	0	0	519
R4	7	1	0	0	341

Table 1 - Distribution of the researchers by the Rs categories per Institution

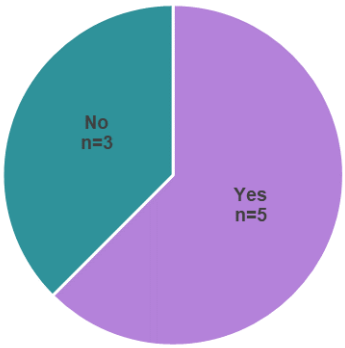

Figure 5 - Distribution of the existing units that support researchers career development[3]

Although most of the partners do already have an existing specific structure to support researchers career development, among those it's usually the HR department who is responsible for such structure operation. Regarding the type of support that is provided to the researchers, most of the partners support their researchers with Publications and participation in Scientific Events (n=6), in Submitting applications and Science Communication (n=7).

2.2.2 | Existing Training Structures

Regarding the training structure, the large majority have training structures for all their professionals (n=6), but some have declared to have specific units that support the researchers professional training (n=3). Among those, the majority doesn't have a specific regulation for their training centres or structures (n=5).

The Training Centres are primarily managed by the HR departments of the institutions (n=4), or by the specific units working with the researcher's professional development. The Training Centres staff varies from a minimum of 5 up to a maximum of 115 people involved, from Director, Coordinator, Trainers, Administrative and Technical Staff - there's no correlation between the average number of researchers in the 8 Institutions and the number of staff working in the training centres, even in the Institutions where Training Centres only for Researchers do exist.

The training physical structures available to support the training actions are quite similar among all institutions, all have training rooms (n=8) and the majority also has training rooms with computers (n=6) and auditoriums (n=5).

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[3] a) **TUDa** | Ingenium _ Young Researchers at TU Darmstadt http://www.tu-darmstadt.de/ingenium

b) **UPC** | Unit or Centre for Professional development (ICE): https://ice.upc.edu/ca/lice-de-la-upc/about-us

c) **WroclawTech** | There are units that helps with some aspect of research development, like writing specific grants or assessing proposal drafts, but there is no unit that is dedicated to ensuring that researchers are getting better in their profession.

d) **PoliTO** | Career Centre https://www.polito.it/en/polito/work-with-us/working-in-research

e) **Aalto** | HR Services / https://www.aalto.fi/en/services/hr-services

f) **Grenoble INP-UGA** | Both HR departments do have experts in teacher-researcher careers

g) **TU Graz** | Human Resource Development department https://www.tugraz.at/en/tu-graz/organisational-structure/service-departments-and-staff-units/human-resource-development

2.2.3 | Training Plan, Programmes and Assessment

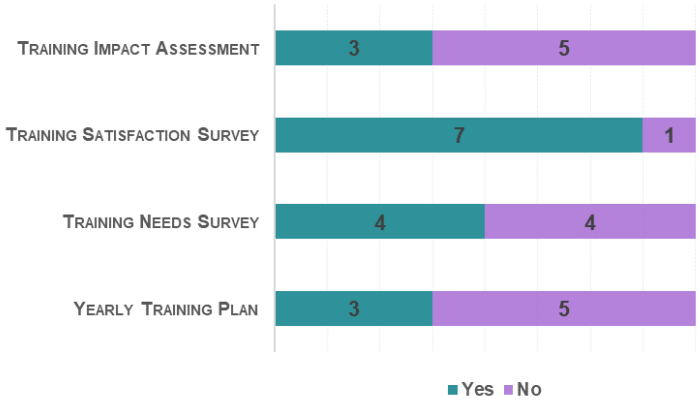


Figure 6 - Distribution of the Training Plan and Training assessment activities

Institutions usually don't have a yearly training plan for their researchers, neither extensively apply training impact assessment measures, however they assess the researchers' training needs and the trainings satisfaction which provide relevant data for the planning of future training actions.

As for the preferred training modalities, on-line and on-site training seem to gather the preference of the researchers.

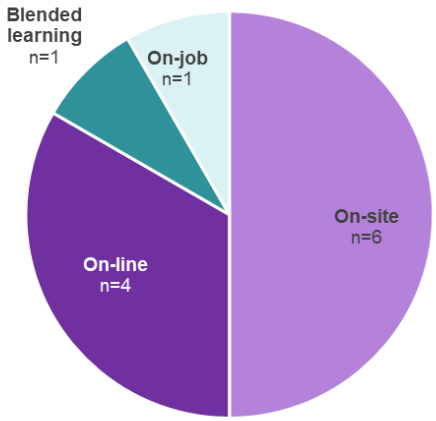


Figure 7 - Training modalities preferences

On the training topics, partners were asked to rank the relevance of themes in the areas of Career Progression, Research Expertise, Engaging Others and Personal Effectiveness:

- **Career Progression:** Finding Funding & Opportunities (n=7), Proactive Planning & Networking (n=6) and Application & interviews (n=5) were considered the most relevant for the researchers' professional development.
- **Research Expertise:** Writing Project Proposals (n=6), Research Methods & Techniques (n=5) and Ethical & Legal Requirements (n=5) were considered the most relevant for the researchers' professional development.
- **Engaging Others:** Writing and Presenting with Impact (n=7), Leadership & Mentoring (n=6), Teaching and Supervision (n=5), Collaboration & Teamwork (n=5) and Writing Scientific Papers (n=5) were considered the most relevant for the researchers' professional development.

- **Personal Effectiveness:** Self-leadership and resilience (n=7), Creative Thinking and Problem Solving (n=6) and Time and Project Management (n=5) were considered the most relevant for the researchers' professional development.

2.2.4 | The Archetype of the Widening Partners Training Centre

The ideal type of the Widening Partners Training Centre for researchers encloses:

- Be managed by the Human Resources within, or by a specific unit devoted to researchers' professional development that also supports researchers with publications, scientific events, submitting applications and science communication.
- The Training Centre structure usually don't have a specific regulation, but is composed by the following structure: Director, Coordinator, Trainers, Administrative Staff and Technical Staff, and has training rooms, with and without computers, laboratories and auditoriums to provide the trainings, which are usually preferred either on-site or on-line, depending on the circumstances (total duration, time and date, etc.).
- The training plan is oriented by a training needs assessment and monitored through the trainings' satisfaction surveys.
- As mandatory topics for the researchers professional training, the Centre offers training sessions on Finding Funding and Opportunities, Proactive Planning and Networking, Writing Project Proposals, Writing and Presenting with Impact, Leadership and Mentoring, Self-Leadership and Resilience and in Creative Thinking and Problem Solving.

3 | Guidelines for the Creation of a Science and Innovation Skills Academy

3.1 | Institutional Framework

In the contemporary academic and research environment, there is a growing acknowledgment of the necessity for extensive skills development among researchers. The Science and Innovation Skills Academy will function as a vital instrument for cultivating the diverse skill sets necessary for researchers to excel in academia, industry, public policy, and entrepreneurship.

The academy offers a controlled atmosphere that cultivates the essential abilities for scholars to emerge as leaders in their disciplines.

This Guidelines chapter will analyse the structural organization of a Science and Innovation Skills Academy and its potential integration within the institutional framework, especially in the European setting. Additionally, the discussion will address the differences between centralized and decentralized organizational models and how an institution's size and scope can influence the Academy's structure.

In the European context, a Science and Innovation Skills Academy has the potential to play a transformative role in enhancing the competencies of researchers. The structure of such an academy should balance the need for a unified vision and standardized training with the flexibility to cater to the diverse needs of researchers across various disciplines and countries. A centralized structure provides uniformity and efficiency, while a decentralized structure fosters flexibility and responsiveness. The size and scope of the host institution or network are critical factors influencing the governance and operational model of the academy, with larger institutions benefiting from decentralization and smaller ones potentially opting for a centralized approach. Ultimately, the model adopted should be one that allows the academy to evolve dynamically, meeting the needs of researchers and society at large in an increasingly interconnected and complex world.

3.1.1 | Structure of a Science and Innovation Skills Academy for Researchers

A Science and Innovation Skills Academy (SISA) would aim to equip researchers with both domain-specific knowledge and cross-disciplinary skills in areas such as innovation, communication, entrepreneurship, policy, and leadership. The structure of the academy would need to balance academic rigor with practical, transferable skills, enabling researchers to succeed in diverse career paths.

Core Components of the Academy

The Academy would have multiple components that include trainings, workshops, mentoring, and development programs, but before the activities kick-off there are several structural components that need to be defined:

1. Identification of the Vision and Mission

- Define the Purpose: Clearly articulate the vision and mission of the centre. What are the goals and objectives? How will it contribute to scientific research and innovation?
- Identify Target Areas: Determine the specific fields or industries the centre will focus on.

2. Governance and Management

- Establish Governance: Set up a governance structure with a clear leadership team and advisory board.
- Management Plan: Develop a management plan that outlines roles, responsibilities, and processes for decision-making.

3. Onboarding, Mentorship and Career Guidance

- These activities serve to prepare early career researchers for their position and then to plan their future. Mentorship programs that connect researchers with experienced professionals from academia, industry, and governmental organizations, offering guidance on career progression and skills development.

4. Infrastructure and Facilities

- Location: Choose a strategic location that fosters collaboration and accessibility. Inside or in the proximity to universities, research institutions, and industry partners can be beneficial.
- Facilities: Ensure the centre has state-of-the-art laboratories, meeting rooms, and collaborative spaces.

5. Sustainability and Growth

- Sustainability Plan: Develop a sustainability plan to ensure the long-term viability of the centre.
- Growth Strategy: Plan for future growth and expansion to accommodate new projects and partnerships.

6. Curriculum Design

- A comprehensive training programme that focuses not only on research techniques and methodologies but also includes modules on innovation management, intellectual property, entrepreneurship, public engagement, leadership, and policy development.

7. Skills Development Programs

- Offering skill-specific trainings in comprehensive areas, like scientific writing, presenting research findings, grant writing, teaching, emotional intelligence, team collaboration, and resilience building.

8. Research and Innovation Programs

- Program Development: Design research and innovation programs that align with the centre's mission and goals.
- Evaluation and Metrics: Implement evaluation metrics to measure the success and impact of the programs.

9. Research Collaborations and Networking

- Facilitating partnerships between universities, research institutions, businesses and industry, and government bodies to encourage cross-sector learning and innovation.
- Build Partnerships: Establish collaborations with universities, research institutions, industry partners, and other stakeholders.
- Engage Stakeholders: Involve key stakeholders in the planning and development process to ensure alignment with their needs and expectations.

10. Funding Application and Proposal Writing Support

- Assisting researchers in applying for grants and fellowships and in participating in research funding programs through activities like grant writing workshops, informational sessions about the main funding opportunities, trainings on presentation and interview skills. Here it is addressed to individual research grants and mobility funds (to the single researcher), rather than to competitive funding calls that address to a research group.
- Secure Funding: Identify potential funding sources such as government grants, private investors, and partnerships with industry.
- Allocate Resources: Plan for the allocation of resources, including personnel, equipment, and materials.

11. Community and Outreach

- Engage the Community: Foster a sense of community and engagement among researchers, industry partners, and the public.
- Outreach Activities: Plan outreach activities such as workshops, seminars, and public lectures to promote the centre's work.

Figure 8 - Academy core components

The Academy may not necessarily contain all the required expertise within itself, but it can be the point where such expertise, present within the university, meets and is made available to the researcher, according to its needs. Each Institution needs to take into account their own internal structure and adjust whenever necessary and according to the established priorities, as an example, regarding funding there might be overlaps with the activities of the Research Departments or Centres in some universities.

Institutional Positioning of the Academy

In terms of institutional positioning, the Science and Innovation Skills Academy could either be part of a larger university or research institution or a standalone entity operating across multiple institutions. The decision will depend on the strategic objectives of the institution, funding models, and the intended scope of the academy.

- **Standalone Academy:** This model involves the Academy being an independent entity with its governance and management structures. Such a setup might allow for flexibility in terms of the curriculum and partnerships, with more freedom to focus on interdisciplinary skill development and less constraint from the traditional academic structure, but it needs financial and human resources, a governance and must work aligned with the strategic objectives of the University.
- **Within an Existing Institution:** The academy could be housed within a larger university or research institution, integrated with the academic and research departments. This model would leverage the existing research and academic infrastructure, making it easier to align the academy's programs with institutional research priorities and initiatives. Inside the university the Academy could be part of the HR Department, the Research Department, the Graduate School, the Career Centre, the choice also depends on its role and the development objectives it is focused on.

3.1.2 | Centralized versus Decentralized Training Structures Management

The governance of a Science and Innovation Skills Academy can be either centralized or decentralized, both encompassing advantages and challenges.

Centralized Structure

A centralized structure for the academy places all decision-making authority in a central unit, typically within a single institution or department. This structure is often hierarchical, with top-down management.

Advantages

Uniformity: a centralized structure provides consistent standards and curriculum, ensuring that all researchers receive the same level of training and resources.

Streamlined Decision Making: centralized governance can make decision-making faster and more efficient, especially when responding to administrative needs or funding opportunities.

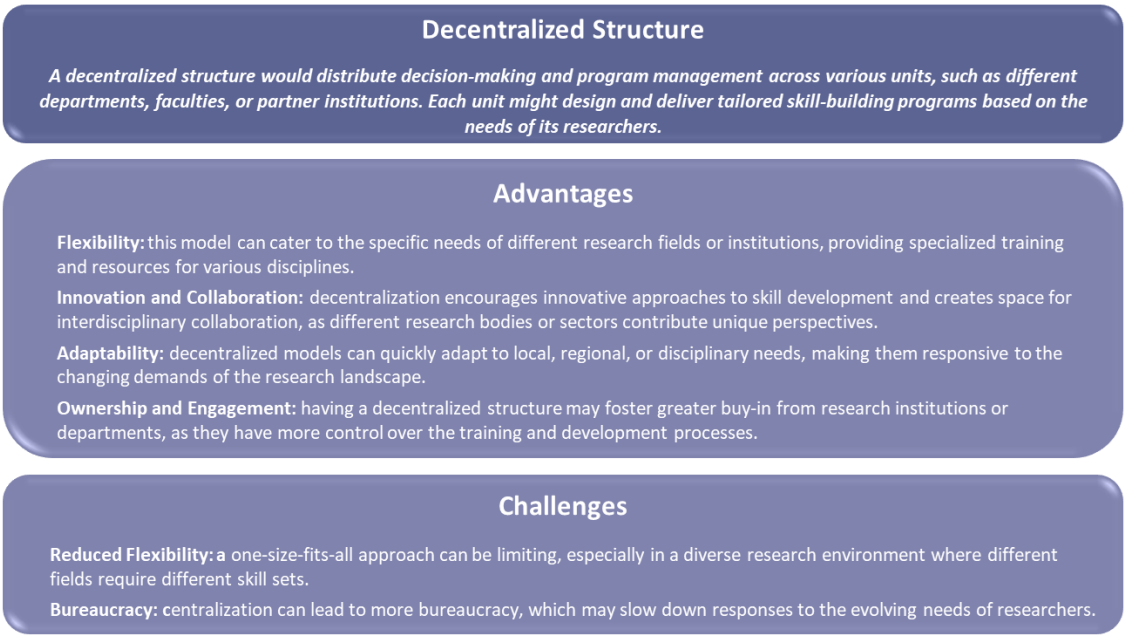
Resource Allocation: a centralized structure can ensure that resources (such as funding, facilities, and staff) are allocated efficiently and equitably across the academy.

Clear Leadership and Accountability: centralized leadership can offer a clearer strategic vision, with accountability resting in fewer hands.

Challenges

Reduced Flexibility: a one-size-fits-all approach can be limiting, especially in a diverse research environment where different fields require different skill sets.

Bureaucracy: centralization can lead to more bureaucracy, which may slow down responses to the evolving needs of researchers.



3.1.3 | Impact of Institutional Size and Scope on Academy Structure

The size and scope of the institution housing or supporting the Science and Innovation Skills Academy are critical in determining the appropriate structure.

Large Institutions

Larger universities or research consortia with multiple departments, disciplines, and partners might benefit from a decentralized structure. These institutions can tailor programs for specific research fields and foster partnerships across academic, industrial, and governmental sectors. They may also have the resources to manage multiple programs concurrently while coordinating through a central office or board.

However, coordination between structures is recommended so that mutual expertise can be leveraged: for example, engineering schools can provide training on technical skills and collaboration with non-academic partners, while more humanities-oriented faculties can contribute organizational and career guidance expertise.

Small or Single-department Institutions

Smaller institutions or standalone research organizations might prefer a centralized structure. This model allows for greater control over curriculum development, resource allocation, and the overall strategic direction of the Academy. Smaller institutions may not have the same diversity of research fields or the extensive resources of larger institutions, making centralization a more manageable option.

3.2 | Human and Material Resources

This chapter aims to elaborate on the Human and Material resources needed for the development or establishment of a Science and Innovation Skills Academy. The results obtained are based on the survey applied to the Widening Consortium partners. Therefore, the human and material resources

outlined in this chapter must be appropriately tailored to each institution's reality, preparation, and goals in order to successfully build a Science and Innovation Skills Academy.

3.2.1 | General Framework

The Science and Innovation Skills Academy aims to define and promote objectives, to coordinate, to communicate, to evaluate and to disseminate Science, Research and Innovation relevant topics.

With this objective in mind, SISA embraces the following missions:

- To promote excellence in research, educational quality and innovation in the universities' fields of knowledge.
- To provide training, mentorship, coaching or assistance to the development and progress of the knowledge development process.
- To inform and update the research, academic, administrative staff and university community of the latest or foreseeable future evolution of tertiary education and of the activities and developments in the STEAM disciplines, responding to social changes and to new generations of students and contributing to the wellbeing of the community.
- To collaborate with the university community in the incorporation of improvement and innovation processes into the research and teaching activities of the university, ensuring their quality.
- To provide research-based and practical solutions and procedures that make it easier for lecturers to integrate technologies, theories and pedagogical models into their teaching effectively so that it is oriented towards meaningful student learning.
- To contribute to the university staff wellbeing (physical and mental).
- To instil and promote ethical guidelines of Research and Development practices aligning with the European group of ethics on science and new technologies[4]) and to disseminate the European Code of Conduct for Research Integrity among academic, research and administrative staff.

With this, the organizational model of the SISA is committed to a relatively small and very dynamic structure in continuous contact with the researchers and teaching staff of the university, identifying their needs and providing solutions and proposals for improvement in the form of training programs or courses taught by experts in each of the areas of interest.

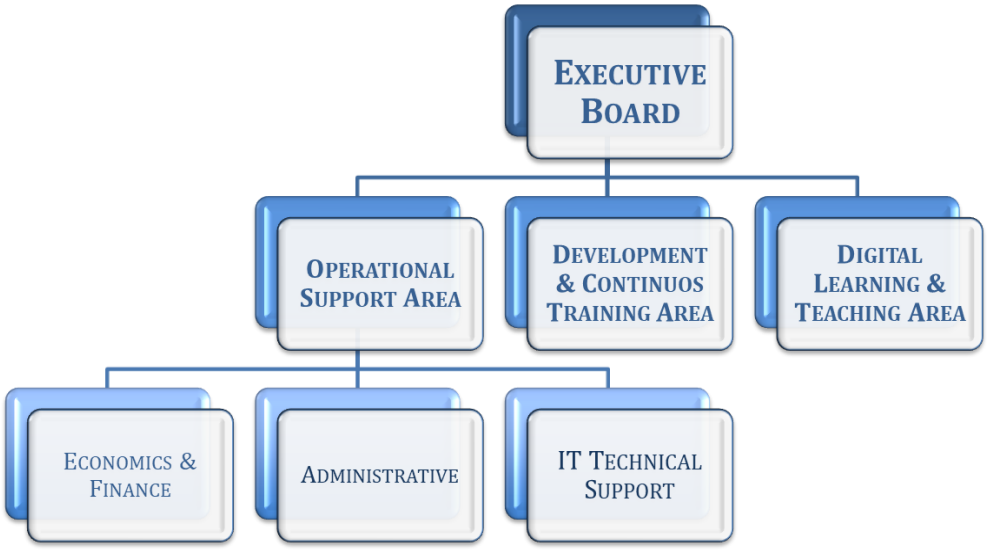
The aim is to make the most of the university's resources by coordinating its actions with the activity of the universities' services, departments and teaching and professional development centres, following the guidelines of the governing boards. This is many times acknowledged as an "agency model".

3.2.2 | Human resources

The size and structure of SISA human resources may necessitate flexibility in accordance with the Institution's framework; however, it is imperative that it maintains a formal structure integrated within the Institution's organization. The executive board, responsible for the Management and Support of the whole SISA, and the following areas:

[4] https://research-and-innovation.ec.europa.eu/strategy/support-policy-making/scientific-support-eu-policies/european-group-ethics_en

The picture below summarizes the staff structure, which should be flexible enough to be able to adapt to different university infrastructures and organograms.



Managerial structure and executive boards

The proposed composition of the executive board comprises two members, a professor, to be changed every 2 years, and an operations director. The board will be responsible for the Management and Support of the whole SISA. They are also responsible for the three areas and their staff (Operational support; Professional development and continuous training area; Digital learning and teaching area).

Human Resources under the Operational Support Area

The Operational Support Area is made up of 3 core sub-areas: Economics and Finance; Administrative and IT Technical Support.

Economics and Finance - experienced people in the area should be responsible for the management of the economics and finance area, with the following main responsibilities:

- Manage and execute budgets
- Monitor and settle the budgets assigned to the two units

- Carry out the economic management and administration of projects, subsidies and agreements
- Carry out the inventory of goods
- Carry out the acquisition of material, equipment and contracting services
- Carry out the management of the Continuing Education Funds
- Economic archive.

Administrative - general administrative support, institutional support and support for specific projects is carried out in this area, experienced people in the area should have the following responsibilities:

- Manage the operating budget and associated expenses
- Administration and personnel management:
    - Carry out the procedures for the recruitment of teaching staff
    - Carry out internal communication
    - Carry out the administrative management of personnel: permits and licenses, training, sick leave and attendance control of the administrative and service staff
    - Organize schedules and shifts during holiday periods.
- Processing collaboration grants
- File and store all data according to academic years
- Provide administrative support to management teams and governing bodies
- Provide administrative support to institutional projects.

Technical and administrative support staff (unit developers, training coordinators, administrators, IT services and other indirect staff) is crucial to provide operational support, coordinate courses and training staff, administrate courses, and act as a bridge between the training staff and SISA. This staff will be responsible for administrative tasks like scheduling courses, creating courses on the Learning Management Systems platforms together with IT technical staff, registration and issuing certificates, or gathering satisfaction surveys. More detailed information is given below about the functions of each area.

The Administrative Management staff will be more involved in the Academic organization and management, with the following main activities:

- Disseminate the training activities
- Manage registration
- Issue certificates and accreditations of participation
- Formalize collaboration orders from trainers and manage payments
- Manage surveys, participants and trainers and prepare reports.

IT Technical Support Staff - more specifically, Technical Support Staff would participate in the design of projects and programmes and in the activities that make them up, and provide technical support to it, to organize and monitor the development of projects and within their area of responsibility, the following list of tasks is streamlined:

- Design and analyse the results of the different satisfaction surveys
- To draw up guidelines for monitoring and evaluating projects, programmes and/or plans
- Provide support in the analysis, evaluation of projects, programmes and/or plants and make proposals for improvement incorporating the elements detected in the analysis
- Make and maintain contacts with public or private companies and institutions. To make proposals for the preparation of its own regulations and instructions
- Supporting stakeholders, collecting needs, energizing groups, etc.

- To maintain the information in their area of responsibility on the different websites. To provide information for the preparation of the annual report. Monitor the execution of the different budget items within its area of responsibility
- To provide technical support to the teaching planning process
- To provide technical support for the preparation of the teaching assignment, calendars and annual timetables of the different programmes, seminars or coaching activities
- Teaching guides for the subjects: review contents, contact the teaching staff responsible
- To organize the training practices. Evaluate and make proposals for improvement.

Among this staff, some IT-specific support profile would be necessary, although the responsibilities could be shared with the IT department. This staff could coordinate the development and maintenance of the Learning Management Systems platforms, make proposals for improvement and promote its use for teaching. Below the main tasks are listed:

- Maintain coordination with IT
- To support the management and monitoring committees for decision-making
- Know, collect, evaluate and implement the needs, suggestions and improvements in the functionalities of the different applications and communicate the requirements to the IT department so that they can carry out the technical development
- Plan, coordinate and monitor the migration to other applications
- To support teachers and students on the virtual campus
- Define requirements to be able to introduce improvements
- Participate in the design, development and monitoring of ICT projects to support teaching
- Coordinate the development and maintenance of the Moodle campus, make proposals for improvement and promote its use for teaching:
    - Maintain the information in their area of responsibility in the different information systems
    - Define and implement connection interfaces with other applications or interfaces.
- Provide ICT support to the realization of activities: conferences, etc. Administer the different servers. Provide information for the preparation of the annual report. Monitor the execution of the different budget items within its area of responsibility.

Development and Continuous Training Area

Regarding the area of Professional Development and Continuous Training area, two types of staff would be necessary sometimes in-house, others external.

Staff for the development of the educational methodologies and learning techniques can be in-house or external staff with expertise in current pedagogies in STEM.

Training staff (university professorship, in-house academic staff) such as University staff with acknowledged and recognized expertise and good practices willing to act as facilitators, coaches or mentors. Staff could be specialists in pedagogy and STEM hired by the university and/or professors and lecturers with some experience in the topics. Apart from designing and giving the course, they should also develop materials resources. Among the resources, they could provide materials closely related to the teaching methodologies in particular: pedagogical qualifications, teaching portfolios, courses, funding opportunities for pedagogical development and pedagogical prizes. Additional examples of tasks could also be: train university teachers about teaching methods, materials design, while giving teacher support on which tools can help teachers to conduct their teaching (accessible teaching, distance/hybrid learning, media production and copyrighted texts and images).

For example, within teaching methods, staff would be responsible for offering the following courses, webinars and support materials:

- Accessible teaching
- Teaching in English (English-medium instruction): how to scaffold and properly integrate content, language and intercultural communication for local and non-local students
- Administer educational support to students with disabilities
- Team-based learning
- Blended learning
- Project-based learning & Challenge-based learning

These experts could also be tasked with training assessment and examination methods particularly useful for STEM students. Assessment and examination of learning can be conducted in many ways: staff in this area could train academic staff on regulations and instructions on systematic quality work, examination and ethical review and assessment of assignments and exams, paying special attention to the ethical use of ChatGPT as a tool for teaching, for learning and for assessment. With regard to AI, SISA may need to hire external legal experts to train and update teachers and policymakers on the new legislation regarding AI, assessing policymakers and for example, academic vice-rectorate on the appropriate and accepted use of AI.

At least one person in the staff should be tasked with dealing with topics related to ethical research and development following the ethical conduct (European Code of Conduct for Research Integrity), to help teachers be updated on new developments. All these topics would relate directly or indirectly to the quality assurance system as they would provide systematic quality assurance in research and at all levels of education.

Finally, Accessibility and Work Environment: this topic relates to the accessibility in teaching and pedagogical adaptations, insurance, if necessary, pedagogical support for students with disabilities and how to report incidents for students.

Digital Learning and Teaching Area

Staff for the development of resources for the support to the training would be focused on the Digital Learning and Teaching Area and they could offer assistance with the creation of videos, podcasts etc. to help professors, lecturers and teaching assistants as well as early career academic staff. Its mission is to collaborate with the teaching staff of the centre in the provision of different pedagogical approaches, like ICT-based, Challenge-based, Project-based, and Blended learning for innovation and improvement of the teaching activity and to make learning closer to real life.

3.2.3 | Material Resources

Given the analogous tasks and nature of materials, staff that is assisting in the areas above could also be giving support here. Basically, staff needed to carry out and assist teachers should be the same or shared with this area. Two main types of resources are required: physical, multimedia and digital facilities.

Administration and teaching physical facilities

Have, maintain and manage the resources for face-to-face and online training courses: spaces, equipment and specific equipment classrooms, visits and classrooms.

IT, Multimedia and Digital Facilities

The IT department supporting the university could also support SISA, making the most of existing resources. If SISA has its own platform, the staff should be responsible for the maintenance and management of the platform. However, at least one IT technician should be working for SISA, acting also as a bridge between SISA and the central IT department of the university. The staff should be knowledgeable about video editing, for example, to help those teachers that want to video record some of their lessons or explanations and upload their digital material to the SISA platform and/or Moodle platform. Other examples of digital resources apart from videos could be apps like Mentimeter or Kahoot, webinars and Podcasts.

3.3 | Training Cycle

This chapter describes the thematic areas in which the Science and Innovation Centre must make specific decisions that will be reflected in the training it offers later on, and how they will relate to the needs of researchers and faculties at the university. Each of the areas is described briefly, along with the proposed solutions. It is possible to use residential approaches in many cases, but it is worth bearing in mind the large commitment of resources that this involves.

3.3.1 | Training Needs

Training Needs Assessment (TNA) identifies gaps between the current competencies of staff and the skills required for optimal performance. It helps ensure that training programs are aligned with institutional goals and employee development needs. In the case of a university, these will be skills that should be included in the toolkit of researchers and scientists.

Needs assessment should be based on the required skills catalogue. It should be prepared with experienced scientists from different departments, to cover the skill pool in a comprehensive way. It also can be updated. Once a year can be preferred. The other way of creating such a list is benchmarking. It determines the gaps concerning a reference external organization, or a set of reference organizations that the university is considering useful. Research skill catalogue is the first step in the gathering needs process. It should be well established, and consulted with a variety of researchers.

TNA in small groups' training and how a university can scale it up

- ***Small Groups:*** needs can be identified through direct discussions (one-on-one interviews/ focus groups) or short surveys with interested researchers. It can be done by the Centre, or trainer (preferably the Centre). These actions can be proactive (initiated by the Centre) or reactive (after a request from one or more employees).
- ***Scaling up at University Level:*** a systematic approach is required to gather needs across multiple departments. This includes using centralized surveys the survey must be developed taking into consideration the Institution structure, human resources and potential application of the results), and structured interviews (people can voluntarily take part in them, preferably after the survey).

TNA main instruments: surveys and interviews

- ***Surveys:*** conducted periodically to gather training demands from researchers and PhD candidates. The other solution is to have an active survey permanently, to collect needs continuously.

- ***Interviews:*** engaging with faculty heads, staff representatives, or researchers to understand their needs. It can also be done cyclically, but the most effective way is to do it after surveys, within the group of people who ask for specific training.

Gathering needs

- ***Centralized Approach for large scale:*** University-wide needs assessment through structured research and surveys - one, the same survey to the whole university.

Decentralized Approach within departments: Each department collects and reports its specific training needs. Then the needs are then centralized, or they are left as unique to every department. So, in the end, each department has different needs. The mixed way is to gather needs within departments, but then map them as these, which can be taken into account as “university wide” or “department specific”. Example: project management as "university-wide" and lab organization as for “chemistry department”. It should be taken into consideration that even training which seems to be destined for the general public in fact may need to be tailored for individual departments. For instance, a training on sustainability will have to be designed in a completely different way for members of the Department of Environmental Protection, who have some knowledge on sustainability, than for the members of the Department of Art.

After conducting such a process, the result is a list of the needs of scientists within the entire university or individual departments. This is a starting state - what employees care about at this moment, what areas require training, and what do not. The decision about what the Centre will ultimately want to implement may depend on other factors, such as the university's strategy.

3.3.2 | Training Plan

Regardless of whether the Centre decides to study the needs of researchers at the university or not, it must develop two deliverables: a training offer and potential development plans for researchers. Development plans are training paths (they can have their own sequence, or the courses can be independent; also, there may be different paths for different groups of participants) that must be completed in order to achieve the full knowledge and skills needed in the context of research. The offer of courses is the training that the Centre can provide (or outsource). It can change during the year. This means that training is available periodically or is implemented in response to demand. It can be considered to propose an obligatory path for each identified group (especially for young researchers), and an optional path. This subsection describes some of the paths that the Centre can take to provide training to researchers from its university.

Approaches to Training Planning

If the Centre knows the needs of researchers:

- Develop targeted training programs addressing specific gaps
- Organize specialized workshops and courses throughout the year

In practice, it comes down to offering training, taking into account the needs collected in the TNA. Training can be repeated cyclically - e.g., workshops on writing a specific grant every month, or be condensed - e.g., a week of workshops related to a specific grant. Much depends on what spoils better to the dynamics and needs of the university.

If the Centre does not know the needs of researchers:

- Implement training on demand when staff requests specific training
- Create a cyclical training schedule based on e.g., industry trends and institutional priorities

The main difference in the approaches is that the Centre is not certain whether the training that it decides to conduct will meet the real needs of researchers. The presented approach requires fewer resources (because the Centre does not examine the needs) and allows for conducting training practically from week to week - because there is no inertia related to the flow of information, e.g. from departments. Conducting training "on demand", when a certain number of willing people gather, is also one of the solutions. But there is a risk of selecting a date for a limited group of interested people - if it is not suitable, people will resign, and the training will not take place in the end.

In any case, three aspects need special consideration: teaching form, size of groups, and timing. While selecting the teaching form, it is possible to choose among more active and more passive forms. In principle, the more passive forms should be used only as an introduction to more active forms. As far as the size of groups is concerned, it has to be taken into account that small groups (less than 10) are far more effective and lead to a higher satisfaction of the participants. One to one training is especially effective and could be offered to a carefully selected group of participants. In case too many candidates want to take part in small groups training, it is possible to implement a selection process to choose the most motivated participants. As for the timing, some people prefer training in the working hours, some would rather choose weekends. The preferences of potential participants should be taken into account in the planning process.

Aligning training with institutional strategy

Researcher needs are one of important determinants of how the Centre can create a training offer. Another is the university strategy. Each university has its assumptions, on which it focuses on its activities. They can be created by the current university president or other councils. Since training improves competences, it is important that their subject fits in with the direction in which the university wants to go. If one of the university's goals (for a given period) is to increase the number of obtained grants - it may be worth putting more emphasis on these training.

- Match training programs with the university’s short-term and long-term goals
- Address the future demands of researchers

Development Plans for Different Groups

In addition to organizing access to training for researchers, the Centre also should have basic development paths at different stages of career advancement. A path is understood as a set of training (they may have their own order) that a researcher must or may undertake. This decision should be regulated by the university authorities. This is a solution that increases the probability that the level of research skills will be similar and increased within the university. As a thumb rule, the European Union profile descriptors:

- R1 - First Stage Researchers (researchers doing research under supervision up to the point of a PhD or equivalent level of competence and experience).
- R2 - Recognised Researcher (researchers with a PhD or equivalent level of competence and experience who are not yet fully independent in their ability to develop their own research, attract funding, or lead a research group).
- R3 - Established Researcher (researchers with a PhD or equivalent level of competence and experience who have achieved a level of independence in their ability to develop their own research, attract funding, or lead a research group).
- R4 - Leading Researcher (researchers with a PhD or equivalent level of competence and experience who are recognised as leading their research field by their peers).

Example focus areas of training for these different groups:

- Predocs: Research methodology, Academic writing and publishing, Scientific communication, Grant writing, Networking, Open Science.
- Postdocs - Early stage: All above in advance stage, Leadership.
- Postdocs - Later stage: Research leadership, Knowledge transfer, Curriculum development, Commercialization of research.

3.3.3 | Training Development

After determining what set or offer of training the Centre wants to provide to researchers at the university, the next step is to create specific training programs. This means defining for each training such elements as training objectives, agenda, methods used, materials needed for training, and planned duration. The Centre as an organizational unit can coordinate the creation of this content (or its delivery), while the process itself can rest on several potential groups: experts from the university, external trainers or platforms.

Training Creation

- Internal Experts: University members and experienced staff. These people without training as trainers will unfortunately not be able to optimally prepare such programs. In this case, domain knowledge is insufficient. However, equipping such people with the necessary skills may be profitable for the university in the long run - especially if they were to run these courses later.
- External Training Providers: Collaborations with industry experts, external organizations, and training firms. This is the simplest, but also the most expensive solution.
- Technology and Learning Platforms:
    - E-learning modules for asynchronous learning
    - Hybrid and blended learning approaches
    - Training repositories for continuous access to learning materials.

The integration of a remote component into the training offer is currently a well-used standard. Solutions in terms of one-time costs are more expensive than live training, but in the long run, taking into account the ease of access and unlimited times of access to training, they make it much easier to familiarize yourself with the program content. It is worth noting, however, that this is primarily knowledge training. The skills and foundations of researchers should be shaped within live workshops.

The training can be built on existing open online trainings and webinars. For example, the Aalto University publishes all their trainings online and makes it accessible to everybody. Websites like https://masterclasses.nature.com/ also offer interesting possibilities. It is possible to treat the on-line training as an introduction and build more focused and practical training on site using the on-line training as a starting base.

Additional Considerations

When creating the training, a few additional factors should be taken into consideration. They affect the organization of the training, their potential quantity and the distribution throughout the year. Depending on the topic and purpose of the training, specific features will vary, but it is worth knowing to what extent this can happen:

- Duration of one training unit – For example, from 2h to 8h
- The appropriate year period for courses and trainings – If summer/winter semester, summer/winter exam session, or summer/winter breaks

- Days in which trainings are provided – If are on weekdays, or Saturdays and/or Sundays
- Depending on the topics, the trainings assume different forms – Could be workshops (being more practical exercises) or lectures (for initial familiarization with the topic); held online, hybrid or presential; organized for teams or for individuals. Subsequently other points must be considered, such as:
    - The development of the training materials (manuals, digital resources, interactive content)
    - The infrastructures (physical spaces, online learning platforms)
    - The accessibility and inclusivity in training delivery.

3.3.4 | Training Assessment/Evaluation

Regardless of whether the Centre conducts training needs analysis, commissions external companies to prepare the trainings or scientists from the university do it, one of the key elements is the use of a unified system for assessing individual trainings and evaluating the researchers' learning process. The starting point is an assessment immediately after the training - for each unit, each participant assesses. This is the basis for analyses (e.g., every semester) and allows, at a later time, through a separate evaluation study, to observe the effectiveness of the training.

Multi-level evaluation process

Session-Level Evaluation: Immediate feedback from participants on individual training sessions. The most popular one is a survey, that should have the following metrics:

a. The set training objectives were met
b. Usefulness of the acquired knowledge and skills in future work
c. Level of satisfaction with the training
d. Evaluation of the trainer's skills
e. Preparation/access to training materials

Group-Based Evaluation: Assessing the effectiveness of training programs taking into account the specific topic, the target group, etc. Should be done every semester or year (depending on topic).

- Annual Training Review: University-wide assessment of all training programs conducted throughout the year. It can also be done every time, before the training program changes. It is very helpful to collect contact information to participants, and again with the survey or interviews, assess their skills growth (in terms of the training that they attended).
- Tracking Development Milestones:
    - Assessing staff progress based on individual development plans
    - Monitoring improvements in key performance areas post-training.

If development paths are proposed to researchers as part of training, their implementation should be monitored. Additionally, metrics should be defined that will indicate the use of training potential by researchers. These may be the number of participants during the year (or given months), the level of satisfaction, the number of applicants, the number of cancelled trainings, etc.

Continuous Improvement Strategies

Regular review and adaptation of training programs: in case of training related to the specific grant writing, it should be done annually. Considering ones related to general topics like project management, research methodology, etc. - they can be updated at large intervals - e.g., every three years.

Integration of feedback into future training design: adjusting and changing training programs cannot be based solely on opinions about participant satisfaction from surveys. The trainer should also be involved in this process. Perhaps a personal form should be prepared, also after each training, so that the trainer can write down his/her feelings - e.g., how the group found the proposed learning methods, with possible suggestions for change.

Benchmarking against other leading universities to maintain high training standards.

3.4 | Career Development and Coaching Services

This chapter provides an overview of current challenges in academic career progression, that motivate the need for an integrated career development within the Science and Innovation Skills Academy (SISA). It will define the scope and goals of career development and coaching services in the research context and explain how these services enhance researcher professional training and transition into diverse career paths.

The aim is to illustrate the best practices in each aspect and clarify the added-value of the SISA and how it can link between professional training as a researcher and career development.

3.4.1 | Overview of challenges and needs in career development

Researchers face several key challenges and needs in their career development:

- Lack of Structured Career Pathways: unclear progression routes and limited guidance on alternative career options beyond academia.
- Inadequate Mentorship and Coaching: insufficient access to experienced mentors and personalized career support.
- Limited Funding and Job Security: scarce funding opportunities and precarious employment conditions.
- Skills Mismatch: need for balanced training in both technical expertise and transferable soft skills (e.g., leadership, communication).
- Barriers to Non-Academic Transitions: challenges in leveraging academic expertise for roles in industry, policy, or entrepreneurship.
- Work-Life Balance and Inclusion: difficulties in managing career progression alongside personal well-being, with additional hurdles for underrepresented groups.
- Cross-Border Mobility Barriers: legal, administrative, and accreditation differences hinder seamless international mobility and recognition of qualifications.
- Fragmented Funding Landscapes: navigating multiple, often short-term funding streams (Erasmus+, Horizon Europe, national funds) creates uncertainty and limits long-term career planning.
- Institutional Disparities: varying levels of institutional support and resources lead to uneven access to tailored career development services across regions and disciplines.
- Interdisciplinary Collaboration Difficulties: structural and cultural barriers can impede effective collaboration across disciplines, which is increasingly needed for innovation.
- Rapid Technological Change: accelerating scientific and technological cycles demand continuous upskilling that current training systems struggle to provide.
- Complex Career Pathways: emerging transnational alliances and new academic models introduce complexities in career trajectories, requiring researchers to adapt to multifaceted, non-traditional roles.

3.4.2| The added value of career development and coaching services

Integrated professional training: ensures that researchers develop a balanced skill set, combining technical expertise with essential soft skills for career success, as well as know-how in research management. Synergies between specialized research training and transferable skills - such as leadership, communication, project management, stress management, and entrepreneurship - enables researchers to thrive in Academia and diverse professional environments. By fostering this holistic development, institutions can equip researchers with the adaptability and strategic mindset needed to excel in academia, industry, and beyond.

Personalized career support: empowers researchers to navigate their unique career journeys with confidence and clarity. One-on-one career coaching sessions (or "career interviews") create an environment where experienced professionals provide tailored guidance, helping individuals identify their strengths, address skill gaps, and set realistic, achievement-oriented goals. Complementing these personalized interactions there are customized career planning tools and resources that facilitate self-assessment, skill mapping, and strategic planning. Together, these services offer a comprehensive, bespoke approach to career development, ensuring that every researcher receives the support they need to advance in an increasingly competitive and dynamic professional landscape.

Enhanced researcher competitiveness is crucial in today's evolving knowledge economy, where academic expertise must seamlessly translate into societal, industrial, and policy impact. Bridging this gap requires strategic engagement with stakeholders beyond academia, fostering collaborations that allow researchers to apply their knowledge to real-world challenges. Establishing structured pathways for industry partnerships, fellowships, and interdisciplinary projects can significantly enhance a researcher's ability to navigate multiple career trajectories. Additionally, dedicated programs for research commercialization - such as technology transfer offices, start-up incubators, and intellectual property training - equips researchers with the necessary skills to transform discoveries into market-ready innovations. By integrating these strategies, institutions can cultivate a new generation of researchers who not only advance scientific knowledge but also drive meaningful societal and economic progress.

3.4.3 | Best practices in academic career development

International Models and Frameworks: overview of best practices from top universities and research institutions worldwide. For example, the analysis of the Euraxess model and its impact on researcher mobility and career support; or the analysis of the mobility schemes and international cooperation in Marie Skłodowska-Curie Actions (MSCA).

Erasmus+ and Horizon Europe Initiatives such as EEI and University Alliances: key projects and alliances shaping career development frameworks in the European context. Lessons learned from these and benchmarks for effective career development.

3.4.4 | Tailored services for different career stages and needs

Early-Career Researchers: *orientation programs* introduce them to career pathways, funding opportunities, and institutional resources, ensuring a smooth transition into research environments. *Career planning workshops* provide structured guidance on goal setting, skill development, and strategic career moves, helping researchers navigate their options within and beyond academia. Pairings with experienced professionals for coaching offers invaluable insights, fostering both personal and professional growth. Training in *foundational and soft skills* - such as grant writing, interdisciplinary collaboration, and effective communication - alongside *networking opportunities* ensures that early-

career researchers build strong professional relationships and establish themselves in their respective fields.

Mid-Career Researchers: *advanced career coaching* provides tailored guidance on navigating career progress and transitions, refining professional goals, and leveraging existing expertise for career advancement. *Leadership development programs* equip researchers with essential managerial and strategic skills, preparing them to lead projects, teams, secure funding, and shape research agendas. *Lateral movement strategies*, including industry collaborations, policy engagement, and entrepreneurship, offer alternative pathways for career growth. Additionally, *specialized programs* in e.g., research management and innovation skills - such as finance, grant acquisition, project management, technology transfer, and interdisciplinary project coordination - enable mid-career researchers to expand their impact, ensuring they remain competitive and adaptable in an evolving research landscape.

Note: mid-career researchers often face critical transitions, whether moving into leadership roles, shifting research focus, or exploring opportunities beyond academia.

Senior Researchers: their strategic career development focuses on leveraging their expertise for broader impact while ensuring long-term career sustainability. *Succession planning initiatives* help experienced researchers coach, prepare, and mentor the next generations, preserving institutional knowledge and fostering leadership continuity. Engaging in *institutional governance* - through advisory boards, research councils, or executive roles - allows senior researchers to shape the strategic direction of their organizations.

Beyond academia, *tailored support* can facilitate transitions into policymaking, consulting, or entrepreneurial ventures. Programs offering insights into science diplomacy, regulatory frameworks, and industry partnerships help researchers *influence policy* at national and international levels. *Entrepreneurial pathways*, including spin-offs and start-up's, provide opportunities to commercialize research findings, with dedicated incubators, funding schemes, and business development training. By integrating these elements, institutions can empower senior researchers to extend their influence beyond traditional academic roles, fostering innovation, leadership, and long-term research impact.

Research management and TTO staff: development programs should focus on *enhancing their expertise in innovation management*, e.g., knowledge management, grant acquisition, intellectual property (IP) management, PMO, and commercialization strategies. *Training* in e.g., negotiation, licensing agreements, programme management, and start-up incubation enables them to facilitate research-driven entrepreneurship and foster stronger industry partnerships.

Additionally, TTO staff benefit from training in leadership and strategic management, enabling them to support institutional research agendas effectively. Exposure to *best practices in innovation ecosystems* - through case studies, study visits, and networks like ASTP or Knowledge Exchange UK - ensures they remain at the forefront of research commercialization trends. *Strengthening capacities* in stakeholder engagement, regulatory compliance, and impact assessment further enhances their ability to position research as a key driver of economic and societal progress.

Special focus on underserved groups: targeted initiatives should address the unique challenges faced by minorities, persons with disabilities, gender-diverse individuals, LGBTQIA+ researchers, and other underrepresented communities. These initiatives can include *dedicated career development programs, tailored funding opportunities, and safe spaces* for networking and peer support.

Customized *support programs*, such as coaching pairings with role models from similar backgrounds, can provide guidance and encouragement, helping researchers navigate systemic barriers. *Inclusive career services* should offer accessibility accommodations, culturally sensitive coaching, and training

on workplace equity and advocacy. Institutions can further promote diversity by embedding i*nclusive leadership training* and anti-discrimination policies into research management frameworks.

It is important to define in this context that *Coaching* is a structured, goal-oriented and short-term process that focuses on developing or improving specific skills and addressing immediate performance challenges. Coaches work with researchers over a defined period, often using formal sessions and measurable outcomes to enhance specific competencies, such as project risks, grant writing, communication, or project management.

In contrast, mentoring is a more holistic, long-term relationship where an experienced professional guides a researcher's overall career, personal development and, ultimately, in strategic career planning. Mentors nurture long-term growth, offer advice, share experiences, and provide insights into navigating academic and industry landscapes, helping mentees develop a broader perspective on career trajectories, leadership, and work-life balance.

3.4.5 | Alignment with institutional and European strategies

Integration with HRS4R strategies

Career development services must align with the Human Resources Strategy for Researchers (HRS4R), ensuring that institutions provide a structured and supportive environment for researchers at all career stages. By embedding career development initiatives within HRS4R action plans, institutions can enhance researcher mobility, improve working conditions, and promote transparent recruitment practices. Best practices include integrating career coaching into institutional HR frameworks, aligning training programs with The European Charter & Code for Researchers, and developing targeted career pathways that reflect both academic and non-academic opportunities. Establishing clear links between research priorities and professional development ensures that researchers gain the skills needed to contribute effectively to institutional goals and global challenges.

Synergies with European initiatives

A cohesive career development ecosystem benefits from strong coordination with European programs such as Euraxess, Erasmus+, and Horizon Europe. Euraxess already provides mobility support, job opportunities, and career development resources for researchers across Europe, making it a valuable platform for strengthening institutional career services. Erasmus+ offers opportunities for researcher training, mobility, and collaboration, while Horizon Europe supports research careers through funding schemes, Marie Skłodowska-Curie Actions (MSCA), and innovation-driven initiatives.

Strategic partnerships among European institutions can enhance the impact of career development programs through joint training initiatives, co-funding mechanisms, and shared resources. Cross-institutional collaborations, such as those facilitated by university alliances under Horizon Europe, can provide scalable career services, access to wider mentorship/coaching networks, and transnational career development models. By leveraging these synergies, institutions can create a more dynamic and interconnected research career ecosystem, ensuring long-term sustainability and competitiveness for European researchers.

3.4.6 | Career Development Design and Career Road Mapping

Foresight and Strategic Career Planning

As scientific and technological landscapes continue to evolve, researchers must proactively anticipate industry and academic trends to shape their professional trajectories. A foresight-driven approach to

career development ensures that researchers are not only prepared for current opportunities but also equipped to adapt to future disruptions in research, innovation, and policy. By integrating strategic foresight into career road mapping, institutions can help researchers align their skills, expertise, and aspirations with emerging job markets, funding opportunities, and interdisciplinary collaborations.

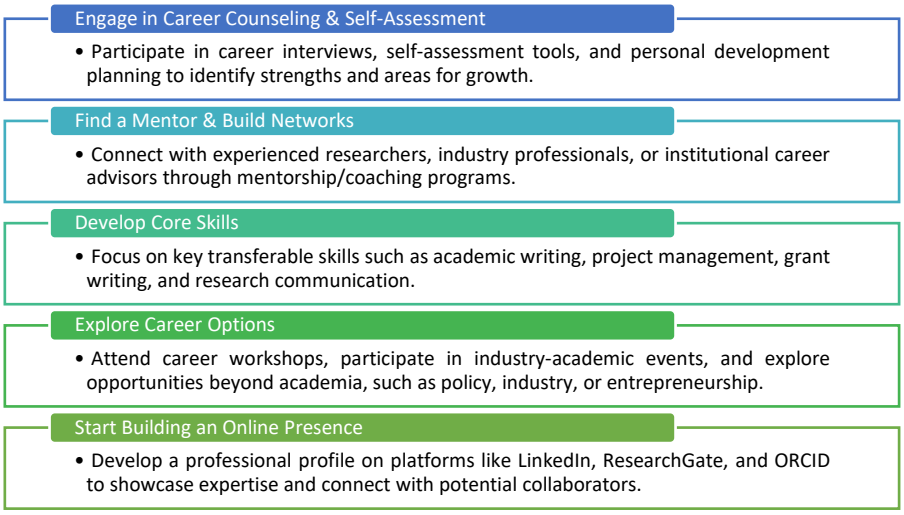
Key strategies for strategic career planning include:

- Trend Analysis & Scenario Planning: using future-oriented methodologies to predict industry and academic shifts, allowing researchers to design multiple scenarios for the future, and make informed career decisions.
- Interdisciplinary & Cross-Sector Mobility: encouraging career pathways that span academia, industry, policy, and entrepreneurship to maximize impact and adaptability.
- Personalized Career Mapping: developing tailored career roadmaps that integrate researchers' skills, interests, and long-term professional goals.

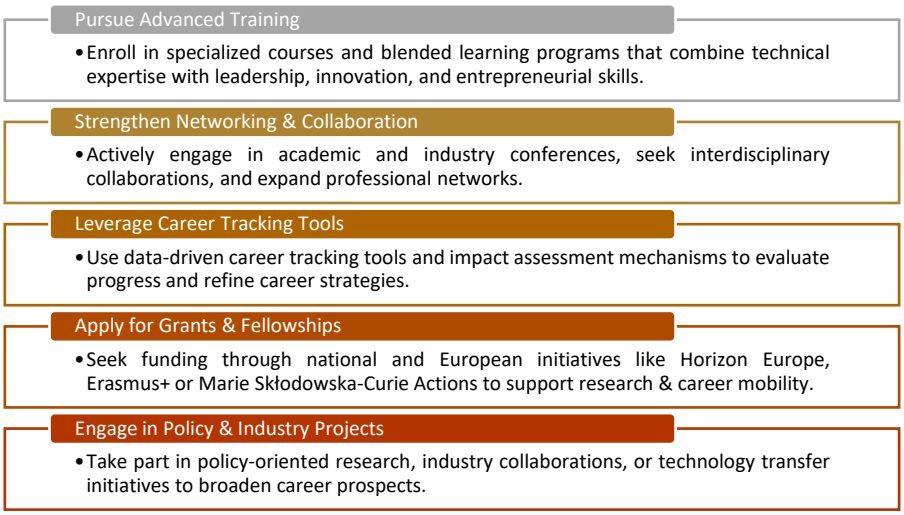
3.4.7 | Career Roadmap - As an initial Career development Plan

To ensure a structured and scalable approach to career progression, a phased implementation plan is essential. This roadmap outlines key milestones and actions that researchers can take at different stages of their careers to enhance their professional development and maximize their impact.

- Short-Term Actions (0-2 years): Laying the Foundation



- Medium-Term Actions (2-5 years): Expanding Skills & Opportunities



- Long-Term Actions (5+ years): Establishing a Sustainable Career Path

Performance Indicators and Impact Assessment

To ensure continuous improvement and accountability, career development initiatives should be evaluated against key performance metrics:

- Engagement Levels: participation rates in training programs, mentorship schemes, and networking events.
- Career Progression Metrics: success rates in securing research grants, industry positions, or policy roles.
- Researcher Satisfaction Scores: feedback on the effectiveness of career development services.
- Impact on Institutional Research Strategies: alignment with HRS4R strategies and contribution to institutional research excellence.

- Benchmarking against Global Standards: comparison with best practices in researcher career development from leading institutions worldwide.

3.5 | Bridging the gap between Research and Industry

While recent years have shown improvements, many universities, especially those in Widening countries, face challenges in effectively translating research findings into commercial products and services. These challenges include a lack of industry connections, limited access to funding, and insufficient expertise in research valorisation or intellectual property management.

The Science & Innovation Skills Academy should also aim to address this gap between academic research and industry by providing support for knowledge transfer, training, networking, and regional collaboration. This chapter outlines key activities that SISA could develop to support research valorisation and industry engagement, ensuring that universities, particularly in Widening countries, can leverage best practices and strengthen their innovation ecosystems.

This chapter builds on the idea that universities must look beyond their own institutions and their own networks to support a dynamic increase in research-to-industry collaboration.

3.5.1 | The role of Technology Transfer Offices (TTOs) in bridging the gap

As part of the activities and functioning of the SISA, it is recommended that Technology Transfer Offices should play a central role. In our universities, TTOs are the main actors of technology transfer and the main structures that help to bridge the research to industry gap. They usually manage intellectual property, facilitate industry collaboration and support research commercialisation. By integrating TTOs into SISA's framework, it will ensure two key outcomes:

1. The activities developed within SISA are designed with efficiently and effectiveness, drawing on the expertise, knowledge and ongoing activities of TTOs,
2. The institutional change instigated by SISA is accepted by the stakeholders within each institution, as they will have been active participants in shaping this transformation.

In order to develop relevant guidelines to the establishment of the SISA, it is important to understand the current activities and roles of TTOs both in Widening and non-Widening countries.

Appendix B provides a broad analysis of the structure, services, events and activities of the TTOs at each Unite! University. This case study supports the development of good practice analysis that can be helpful to draw conclusions and develop data backed ideas for the activity of the SISA. This analysis is based on the data collected in TTO Directory developed in the Widening project, available on the Agora platform, part of the digital infrastructure of the Unite!Widening Project.

This approach allows for a comparison, highlighting the existing strengths and differences between TTOs in non-widening and widening countries. It is a useful first step in identifying the best practices and areas for development, ensuring that TTOs play an integral part in the establishment of the SISA.

Based on the information collected, it is possible to draw some general conclusions, though a further analysis could be beneficial, regarding the main differences in the activity of TTOs in Widening and non-Widening countries. This second table shares the different aspects for each category.

Aspect	Non-Widening Universities	Widening Universities
Mission & Objectives	Focus on societal impact through technology transfer and fostering innovation with an emphasis on commercialisation and industry-academia collaboration.	Focus on fostering entrepreneurship, managing intellectual property, and research commercialisation with a stronger emphasis on career workshops and talent support.
Key Activities	IP management, start-up creation, technology licensing, research commercialization, and industry-academia collaboration.	IP management, start-up support, research commercialization, and industry collaboration, along with additional activities like talent search and career workshops.
Services Offered	Consultancy, mentoring, networking, events, and fostering collaborations between academia and industry.	Similar services but with a stronger focus on incubator support, talent development, and workshops connecting academia and industry.
Innovation Ecosystem	Strong connections to regional ecosystems (e.g., Helsinki region for Aalto University), fostering ties with industry, investors, and stakeholders.	Focus on creating connections to regional networks and incubators, with collaborations with technology parks and regional academic partnerships.
Recurring Events	High level events like Demo Day (start-ups present to investors), Founders Exchange, Tech Share Day.	Events like Web Summit, AI Business Breakfasts, and industry workshops, with more direct commercialization and talent-focused activities.
Events & Activities	Regular, well-established events like annual Demo Days and innovation showcases. Focus on high-profile industry events (e.g., 4YFN MWC for UPC).	More diverse range of events and activities. Greater emphasis on capacity building and ecosystem development (e.g., IP Talks, Lab2Market@Tecnico for ULisboa, Grow Up Tech for Wroclaw Tech).

To conclude, it is apparent that the TTO ecosystems are widely developed in both the Widening and non-Widening universities of this case-study. However, some key differences are visible. These differences are, of course, a reflection of the broader European innovation context:

- Organizational structure: non-Widening universities typically feature more centralized and well-established TTO structures, usually operating as one dedicated university department (though some universities have a broader network with clusters, independent entities or subsidiary companies). In contrast, the Widening universities often have several university departments dedicated to technology transfer activities spread across several university departments. This difference in structure can impact coordination and collaboration.
- Innovation ecosystem maturity: non-Widening universities benefit from mature innovation ecosystems with strong, long-standing connections to industry partners, investors, and other key stakeholders. Widening universities, on the other hand, place a stronger emphasis on building and strengthening their innovation ecosystems, with less regional ties.
- Focus, activities and events: While both groups work on technology transfer and research commercialization, non-Widening universities tend to lean more towards IP management and commercialisation. Widening universities offer a wider range of events and activities aimed at capacity building and ecosystem development, including workshops, training sessions, and

networking events designed to grow entrepreneurial skills and bridge the academia-industry gap. Non-Widening countries also organize regular events, but they are usually of a higher-profile that attract significant industry attention, such as Demo Days of Aalto or KTH and InnoDay of TUDa.

Based on these conclusions, the SISA could develop activities to support the development of good practices in the TTOs themselves. The SISA could support local TTOs by offering training programs on best practices in IP management, commercialisation, and industry collaboration, drawing from the expertise of non-widening countries. It could also establish mentorship and peer learning opportunities, with TTO staff from non-widening countries through joint webinars, exchange visits, or hands-on workshops. Organizing collaborative innovation projects between local and non-widening TTOs would provide practical experience and knowledge sharing. Additionally, the SISA could facilitate networking events to help local TTOs connect with industry leaders and adapt successful tools and frameworks to their own context. Regular monitoring and feedback sessions would ensure continuous support and improvement, ultimately enhancing the local TTOs' ability to bridge the research-to-industry gap.

To ensure successful integration, SISA will involve TTOs in all aspects of its activities, providing them with opportunities to both train others and receive training, while actively facilitating and organizing SISA events.

3.5.2 | Industry-led PhDs as a collaboration model

Another important step in research-industry collaboration is the development and implementation of industry-led PhDs. These programs, while they already exist in most universities, are concrete and implementable actions that could fall under the scope of SISA. Industry-led PhDs typically involve a collaborative research project between academia and industry, where the PhD student works on a topic that directly addresses challenges faced by the industry partner. These programs are designed to create mutually beneficial outcomes: they provide PhD candidates with practical, industry-relevant experience while also contributing to the goals of the industry.

TTOs also play an important part in this as they should be included in the development and creation of these PhDs. They are already involved in and understand the strategic vision of the university's industry links. Their expertise in managing intellectual property, forming partnerships, and navigating the requirements of both academia and industry makes them a key element in these programs.

The SISA can play a role in **promoting and supporting the development of industry-led PhDs**, as well as **facilitating the creation of these programs and of their curricula**. This also involves working with TTOs to create structured pathways for collaboration, helping the Academy identify the right industry partners, and supporting the design of PhD projects that address industry issues.

Most Universities, both Widening and Non-Widening, already have successful industry-led PhD programs. An example of an industry-led PhD program is CIFRE (Conventions Industrielles de Formation par la Recherche), a French initiative where PhD students are jointly supervised by academic researchers and industry experts, with the company financing the PhD candidate. These PhD programmes can benefit from being broadened, promoted, improved through the Centre.

3.5.3 | Training and capacity building for research-industry collaboration

Entrepreneurship training is a strategic activity to achieve the goal of disseminating an entrepreneurial culture. Researchers must have the tools and skills to grow in an ecosystem that allows their ideas to become technology that can be protected and transferred to society, including via the foundation of innovative and sustainable companies. Students and researchers are today required to acquire new

skills and expertise that, however, it is often difficult to master within the university path but are essential to be able to fit into teamwork based on the multi-disciplinarity of its various members, to be able to share a goal to be reached, to know how to identify crucial points of a worthwhile proposal, to meet deadlines, to assess the economic sustainability of the project, and to effectively communicate the results.

A key aspect of SISA's training program should be dedicated modules on research-industry collaboration, ensuring that researchers, PhD students, and research support staff acquire the skills necessary. While many universities already offer general training on entrepreneurship or innovation, the SISA should take a more targeted approach, with specific hands-on learning opportunities directly related to bridging the research to industry gap.

This programme should cover essential topics such as valorisation and intellectual property (IP), patent protection and digital protection, Open Science practices, entrepreneurship, commercialisation, start-up management, negotiations, partnership development and management, communications skills.

An example of such training is INOVALO360 at Grenoble INP-UGA, which offers programs covering IP protection, entrepreneurship and start up management, helping researchers better connect with industry and commercialize their work. This training has actually developed into a wide venture, as the winter school that targets researchers and PhD candidates is now available, in English, in hybrid format and the training delivered by a range of experts from different Universities.

Another example of innovative training is "The Challenge@PoliTO" held at PoliTO: students/PhDs are divided into multi-disciplinary teams with different backgrounds and work together to create new solutions to respond to the needs for innovation that companies are facing. Challenges can come from businesses and associations on concrete technological problems or be chosen by the Institution for being considered strategic issues. Both formats require teams to learn and apply new skills and working methods. the possible outcomes include the entrepreneurial development of the Team's idea, supported by PoliTO's "technology transfer innovation supply chain" during all different steps.

The SISA can leverage existing programs at their university or at partner universities in their networks and develop new programs to fulfil these training needs.

Another training format is on-demand tailored training in research infrastructures and labs that can be offered to researchers at all stages of their career.

3.5.4 | Networking for research-industry connections

Strong networks between researchers, universities, and industry are essential for collaboration and knowledge exchange. Many universities already host successful networking events, such as InnoDay at TUDa, which brings together researchers, start-ups, and industry leaders to explore new opportunities. These initiatives provide a platform to showcase research, discuss industry challenges, and build long-term partnerships.

The SISA can play a role in promoting existing events of its own institution but also of other institutions that are part of their networks and developing new ones at a wider scale. By connecting researchers and industry partners across different regions, SISA can help establish international networking platforms and matchmaking support. Expanding such initiatives beyond local contexts ensures that best practices are shared and that industry-led research opportunities reach a broader audience.

The SISA can also organise matchmaking sessions between researchers and industry representatives, organise hackathons with said industries, industry visits, joint alumni events or mentorship opportunities.

As previously shown through the analysis of practices of TTOs, large networking events that are well connected to industry, with high-profiles are more commonly organized by TTOs of non-Widening countries, these can serve as an example of events to developed by the SISA in collaboration with TTOs to improve industry connections with institutionally developed start-ups, spinoffs and more generally, researchers.

3.5.5 | Regional ecosystem development for innovation

Universities have strong potential to develop links with their regional ecosystems, and most already do it. These connections offer clear advantages: they strengthen ties with industry, give access to funding - often available at the regional level in strategic areas - and ensure that university curricula align with local economic and industrial environments. This not only helps the development of high-level targeted research but also ensures graduates secure jobs and industries have a well-prepared talent pool.

Observing the national context, the universities and research centres become key parties in supporting companies, in particular small and medium enterprises, which are not structured to innovate alone. In fact, the so-called “Fourth Industrial Revolution” entails an increasing need, on the part of companies, to generate and adopt innovative processes and products to continue to be competitive.

However, while a strong regional focus is essential, it does not mean universities should operate in isolation. Some regions collaborate with each other, offering universities an additional platform for cooperation, especially in the case of European University Alliances. Established initiatives like Four Motors for Europe are a good example of this model. This partnership connects the industrial and research ecosystems of Auvergne-Rhône-Alpes, Catalonia, Baden-Württemberg, and Lombardy, bringing together the regions of three non-Widening universities: Grenoble INP-UGA, TUDa and UPC. Such collaborations foster joint local engagement and interregional cooperation. innovation projects, interregional funding opportunities, and connected research developments. This model demonstrates how universities can benefit from both deep

For universities in Widening countries or those seeking to develop a Science & Innovation Skills Academy (SISA), this can serve as inspiration. The SISA can play a role in:

- Scaling up links with regional ecosystems, identifying regional funding opportunities and helping universities apply for these.
- Encouraging interregional partnerships by facilitating connections between universities in different regions with shared strategic priorities.
- Supporting curriculum development in collaboration with regional industry needs.
- Promoting joint research and innovation initiatives.

By strengthening regional and interregional ties, universities - especially those in Widening countries - can establish SISAs that serve as bridges between research, industry, and policy. SISAs could become hubs for interregional cooperation, ensuring that knowledge transfer and tech development aren’t limited to institutional, local or national contexts.

3.5.6 | Preliminary Roadmap for the establishment of the SISA

To ensure a structured and scalable rollout a phased implementation approach is essential.

Short-term Actions (0-2 years):

- Establish core services within SISA, including career counselling, mentorship programs, and basic training modules.
- Launch pilot career interviews and self-assessment tools.

- Develop partnerships with Euraxess, industry players, and policy organizations for career placements.
- Conduct baseline assessments of researcher needs and expectations.

Medium-term Actions (2-5 years):

- Expand blended learning offerings with advanced workshops and online courses.
- Strengthen networking and mentorship programs, including alumni engagement.
- Introduce data-driven career tracking tools and impact assessment mechanisms.
- Align career road mapping services with European initiatives like Horizon Europe and Erasmus+.

Long-term Actions (5+ years):

- Scale career development initiatives to a European-wide framework.
- Establish career fellowships and funding mechanisms for research mobility.
- Continuously refine and expand training programs based on feedback and global best practices.
- Benchmark against international career development models to ensure relevance and impact.

4 | Conclusions

The integration of comprehensive career development services within the Science and Innovation Skills Academy (SISA) represents a transformative step toward equipping researchers with the skills, knowledge, and support necessary to thrive in an evolving research and innovation ecosystem. By fostering a structured (yet flexible) approach to career development, SISA will help bridge the gap between academic training and diverse professional trajectories, ensuring that researchers are prepared for leadership roles in academia, industry, policy, and entrepreneurship. This holistic model will not only enhance individual career prospects but also strengthen the overall research and innovation landscape, promoting knowledge transfer, interdisciplinary collaboration, and societal impact.

The academic and professional world is undergoing rapid transformations, driven by digitalization, artificial intelligence, open science, and the increasing importance of interdisciplinary and impact-driven research.

The rapid acceleration of technological and scientific advancements is reshaping the research landscape at an unprecedented pace. Breakthroughs in artificial intelligence, quantum computing, biotechnology, and other frontier disciplines are shortening innovation cycles, requiring researchers to continuously adapt their skills and approaches. The traditional academic career trajectory, which once allowed for gradual progression and specialization, is now intersecting with a dynamic and fast-changing environment where interdisciplinary knowledge, agility, and lifelong learning are critical for success.

The increasing speed of change presents both challenges and opportunities for research careers. On one hand, researchers must keep pace with new methodologies, emerging technologies, and evolving industry demands. On the other hand, these rapid advancements open new career pathways beyond academia, including roles in industry R&D, entrepreneurship, policymaking, and science communication.

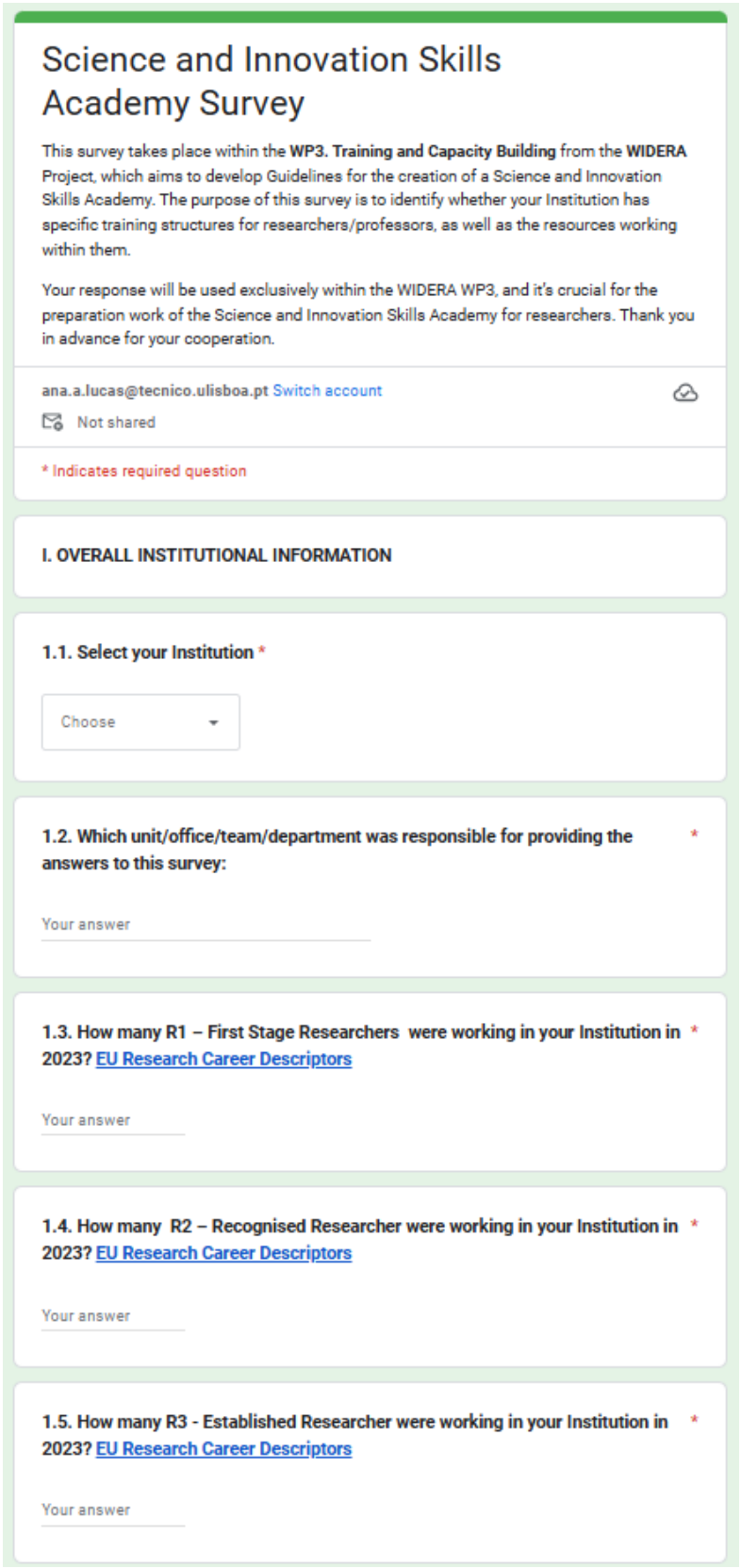
As a result, career development services must remain agile and responsive to emerging trends. Future priorities will include:

- Lifelong Learning & Continuous Skills Development: ensuring that researchers have access to ongoing training opportunities throughout their careers, adapting to new methodologies, technologies, and funding landscapes. Emphasizing adaptability through upskilling and reskilling programs tailored to emerging scientific and technological trends.
- Interdisciplinary Training: encouraging cross-sectoral and cross-disciplinary knowledge exchange to prepare researchers for careers in diverse fields.
- Hybrid and Digital Learning Models: expanding the use of virtual career coaching, AI-driven career guidance tools, and digital mentorship programs to increase accessibility and scalability. Embedding innovation management methodologies, such as design thinking and agile research approaches, into career training programs.
- Stronger Industry-Academia Links: enhancing cooperation between universities, research organizations, and businesses to provide researchers with real-world experience, innovation-driven career pathways, and entrepreneurship support.
- Diversity, Equity, and Inclusion (DEI): continuing efforts to create inclusive and equitable career development frameworks that address systemic barriers and ensure equal opportunities for all researchers.

- Global and European Integration: strengthening transnational partnerships through programs like Horizon Europe, Erasmus+, and Euraxess, allowing for shared resources, mobility opportunities, and international career networks.

By embedding adaptability and innovation into the core of SISA's career development strategy, institutions can future-proof their researcher training programs and ensure that Europe remains a global leader in research excellence and innovation.

Appendix A - SISA Partners Survey



Science and Innovation Skills Academy Survey

This survey takes place within the **WP3. Training and Capacity Building** from the **WIDERA** Project, which aims to develop Guidelines for the creation of a Science and Innovation Skills Academy. The purpose of this survey is to identify whether your Institution has specific training structures for researchers/professors, as well as the resources working within them.

Your response will be used exclusively within the WIDERA WP3, and it's crucial for the preparation work of the Science and Innovation Skills Academy for researchers. Thank you in advance for your cooperation.

ana.a.lucas@tecnico.ulisboa.pt Switch account

Not shared

* Indicates required question

I. OVERALL INSTITUTIONAL INFORMATION

1.1. Select your Institution *

Choose

1.2. Which unit/office/team/department was responsible for providing the answers to this survey: *

Your answer

1.3. How many R1 – First Stage Researchers were working in your Institution in 2023? EU Research Career Descriptors *

Your answer

1.4. How many R2 – Recognised Researcher were working in your Institution in 2023? EU Research Career Descriptors *

Your answer

1.5. How many R3 - Established Researcher were working in your Institution in 2023? EU Research Career Descriptors *

Your answer

1.6. How many R4 - Leading Researcher were working in your Institution in 2023? EU Research Career Descriptors *

Your answer

1.7. Does your Institution have a specific unit/office/team that supports the researchers career development? *

- ◯ Yes. If yes, can you share in the question bellow how it's named, and its website (if available)?
- ◯ No
- ◯ Other:

1.7.1. If you have answered YES to Q1.7. can you share in the question bellow how it's named, and its website (if available)

Your answer

1.8. Does your Institution provide support to the researchers regarding: *

- ☐ Publications and participation in Scientific Events
- ☐ Submitting applications
- ☐ Science Communication
- ☐ Other:

II. EXISTING TRAINING STRUCTURES

2.1. Which training structure is available in your Institution: *

- ◯ We have a training office/unit specific for researchers/professors
- ◯ We have a training office/unit but it's for all the professionals' (staff, professors and researchers)
- ◯ We don't have a training office/unit in our Institution
- ◯ Other:

2.2. Does your institution have a specific Regulation for the Training Structure(s)? *

- ◯ Yes → If yes, can you share it in the bellow question?
- ◯ No

2.2.1. If you have answered YES to Q2.2 can you share the link to the specific Regulation for the Training Structures?

Your answer

2.3. Who manages the training structure responsible for researchers/professors professional training? *

- ◯ The Institution Management Board
- ◯ The Scientific Council/Board
- ◯ The Executive Committee
- ◯ The HR Department
- ◯ Other:

2.4. Indicate the number of human resources working in the training structure:

Director (decision making and management duties) *

Your answer

Coordinator (management duties) *

Your answer

Trainers (training duties) *

Your answer

Administrative Staff (admin duties to support the trainings and the unit) *

Your answer

Technical Staff (tech staff to support the trainings) *

Your answer

2.5. Select the training physical structures available in your Institution to support the trainings actions: *

- [ ] Training Rooms
- [ ] Training Rooms with Computers
- [ ] Research Room/Facilities
- [ ] Laboratories
- [ ] Auditoriums
- [ ] Other: _____

III. TRAINING PLAN, PROGRAMMES AND ASSESSMENT

3.1. Indicate which thematic training areas you consider to be the most important and necessary, for Researchers:

Career Progression

- [ ] Application & interviews
- [ ] Finding Funding & Opportunities
- [ ] Proactive Planning & Networking
- [ ] Other: _____

Research Expertise

- [ ] Research Methods & Techniques
- [ ] Broader disciplinary knowledge
- [ ] Ethical & Legal Requirements
- [ ] Foreign e Programming Languages
- [ ] Writing Project Proposals
- [ ] Other: _____

Engaging Others

- [ ] Writing and Presenting with Impact
- [ ] Teaching and Supervision
- [ ] Collaboration & Teamwork
- [ ] Leadership & Mentoring
- [ ] Writing Scientific Papers
- [ ] Other: _____

Personal Effectiveness

- [ ] Time & Project Management
- [ ] Information Management & ICT
- [ ] Creative Thinking & Problem Solving
- [ ] Self-leadership & resilience
- [ ] Other: _____

3.2. Does your Institution have a yearly training plan for researchers/professors? *

- ○ Yes → If yes, who is responsible for its development, and can you share it in the question bellow?
- ○ No

3.2.1. If you answered YES to question above, can you identify who is responsible for the development of the training plan and can you share it with us?

Your answer

3.3. When training is provided by your Institution or by an external organization, which modality is preferred? Select all that apply, or use the "Other" option: *

- [ ] On-site
- [ ] On-line
- [ ] Blended learning
- [ ] On-job
- [ ] Other: _____

3.4. Does your Institution apply a training needs survey to the researchers/professors? *

- ◯ Yes
- ◯ No
- ◯ Other: _____

3.5. Are the training actions subject to a satisfaction survey? *

- ◯ Yes
- ◯ No
- ◯ Other: _____

3.6. Are the training actions subject to an impact assessment? *

- ◯ Yes
- ◯ No
- ◯ Other: _____

Submit Clear form

Appendix B - Unite! Partners TTO's Description

University Partner	TTO Structure	Mission & Objectives	Key Activities	Services Offered	Innovation ecosystem	Recurring event
Non-Widening						
Aalto University	University Department	To maximize the societal impact of research, education, and activities by efficiently transferring technology and knowledge for societal benefit.	IP Management, Technology Licensing, Startup Creation, Research Commercialization, Industry-Academia Collaboration	Consultancy, Events, Networking, Mentoring	Strong connections in Helsinki region;	Demo Day - Annual event where startups present their innovations to investors and partners.
KTH	University Department	Supports students, researchers, and employees to develop new ideas and turn them into impactful solutions, fostering technological progress and entrepreneurship	Intellectual Property Management, Technology Licensing, Startup Creation and Support, Research Commercialisation, Industry-Academia Collaboration	Consultancy Services, Events and Networking, Facilities and Resources, Individual Support and Mentoring	KTH Holding, Rise Europe, and university-led initiatives	**KTH Innovation Collide** - Four times a year. **Demo Day** - Annual event where startups present their innovations to investors and partners.
UPC	University Department	Encourages and facilitates research staff participation in innovation, knowledge transfer, and technology projects, enhancing research and	Intellectual Property Management, Technology Licensing, Startup Creation and Support, Research Commercialisation, Industry-Academia Collaboration	Trainings, Consultancy Services, Events and Networking, Facilities and Resources, Individual Support and Mentoring	ASTP,	**4YFN MWC** - Annual event showcasing startups in the mobile industry.

		technological progress.				
PoliTO	Multiple TTO Structures (university department, subsidiary company and cluster)	Fosters innovation by connecting researchers with industry, supporting spin-offs, and facilitating technology transfer through IP management and commercializatio n	Intellectual Property Management, Technology Licensing, Startup Creation and Support, Industry-Academia Collaboration	Trainings, Consultancy Services, Individual Support and Mentoring	Partnership with various industries, cooperation with finance and technology networks	TSD - Tech Share Day - Annual conference. Fundraising & Matchmaking Events - Regular events at I3P Incubator.
Grenoble INP-UGA	University Departmen t	Aims to improve intellectual property management and enhance research valorization by bringing together multiple entities to increase efficiency in serving users and fostering partnerships	Intellectual Property Management, Technology Licensing, Industry-Academia Collaboration, Research Commercializatio n	Consultancy Services, Individual Support and Mentoring	Part of the Grenoble Alpes innovation ecosystem, collaborating with UGA, Grenoble INP - UGA, Floralis, and INPG Entreprise SA	Unite and Inovalo360 Winter School on Innovation and Valorization - Annual event in January.
TuGraz	University Departmen t	Supports TU Graz researchers in turning inventions into market-ready technologies through patenting, licensing, and commercializatio n	Intellectual Property Management, Research Commercialisatio n	Trainings, Individual Support and Mentoring	ASTP membership, Cooperation with Austrian Patent Office	Lectures Inventions, Patents and Technology Exploitation Internal Training: Protect and Exploit Your Scientific Results

TuDarmstadt	Multiple TTO Structures (university departments and independent entities)	Supports academics and start-up founders by helping to commercialize research outcomes, build sustainable companies, and form partnerships with business. Offers workspaces and expert support to startups in chemistry, biotechnology, and materials science.	Intellectual Property Management, Technology Licensing, Startup Creation and Support, Industry-Academia Collaboration	Trainings, Consultancy Services, Events and Networking Opportunities, Facilities and Resources Access, Individual Support and Mentoring	Part of the regional startup ecosystem	Start-up and Innovation Day - Trade exhibition, talks, and networking. Ideas Competition. Founders Exchange - Networking event.
Widening						
ULisboa	Several university departments	The TTO ecosystem at ULisboa focuses on fostering entrepreneurship, managing intellectual property, and connecting research with industry to drive innovation and economic impact.	IP management, startup support, research commercialization, industry collaboration	Consultancy, career workshops, talent search, startup incubation	Collaborations with incubators, EIT Health, EIT InnoEnergy, and research networks at ULisboa.	IP Talks, Lab2Market @Tecnico, E.Awards@Tecnico, WebSummit, TecInnov, Alumni Sessions, Career Workshops, Talent Search Meetings, Workshops Tecnico-industry, and more.
Wroclaw Tech	Several university departments	Wroclaw Tech's TTO ecosystem supports innovation and	Startup creation, research commercialization, industry	Startup creation, research commercializ	Partnerships with Wrocław Technology	Grow Up Tech, Wrocław Tech Dates,

		entrepreneurship through incubation, research commercializatio n, and fostering industry-academia collaborations.	collaboration, tech licensing	ation, industry collaboration , tech licensing	Park, Lower Silesian Academic Incubator, HPK Network, and EEN.	Deep Tech Camp, Made in Wrocław, Forum of Medical Problems, Business-Science Mixer, AI Business Breakfasts, CyberTrust Congress, VERGOcity Congress, and more.