D4.1. HUMAN CAPITAL RESOURCE STRATEGIES

GAP analysis

March 2022

Virve Kallioniemi-Chambers, Mervi Friman, Telle Hailikari, Siobhan Moane and Patrick Murray

Table of Contents

Figures:

1. RUN-EU PLUS consortium and researcher career development

Research and innovation activities are a defining hallmark of higher education – informing teaching and learning and adding to the global body of knowledge. These principles detailed within the European Code of Conduct for Research Integrity (ECoC) together with good research practices are essential for promoting and safeguarding culture of research integrity in RUN-EU PLUS.

RUN-EU PLUS brings together 7 regionally focused Institutions (more than 75.000 students and 8.000 staff), committed to societal transformation in their regions in the context of both new and emerging regional and global challenges, sustainable regional development and regional needs. The members have a regional as opposed to a city focus and have a proven track record in the delivery of future and advanced skills activities in teaching, learning, research and engagement relevant to societal challenges including future industry, sustainable development, environment and climate change, ageing population and social inclusion. RUN-EU through the RUN-EU PLUS coordinated support action is committed to building research capacity and scale through the development of research human capital, facilitating research activity and opportunities linked to education and enterprise with a regional orientation. Researchers are the most important asset of the RUN-EU research system.

The participating institutions in RUN-EU PLUS represent a broad range of different types of higher education institutions including technical Universities, polytechnic institutes and Universities of Applied Sciences, sharing a common background in successful collaboration with industry and regional stakeholders in applied education and research projects, inducing societal impact and transformation. Due to their regional focus, in building the researcher career development strategy, support and career paths in the consortium, the vision is that the strengths of each institution will be visible and benefit in building the common vision strategy and activities with this topic. The seven partners in the RUN-EU PLUS are the following:

- [Technological University of the Shannon: Midlands Midwest](#) (TUS, Ireland)
- [Vorarlberg University of Applied Sciences](#) (FHV, Austria)
- [Széchenyi István University](#) (ZHE, Hungary)
- [Häme University of Applied Sciences](#) (HAMK, Finland)
- [NHL Stenden University of Applied Sciences](#) (NHL Stenden, Netherlands)
- [Polytechnic of Cavado and Ave](#) (IPCA, Portugal)
- [Polytechnic of Leiria](#) (IPL, Portugal)

The individual partners of the RUN-EU alliance are all at different points on the pathway to provide continuity of the researcher career. The stated aim of the consortium is to increase the quality and quantity of research programmes paying attention also to

different national regulatory, legal and accreditation procedures in this field. International reports demonstrate that attractive conditions afforded to researchers have a strong positive correlation on the quality of their research outputs. Valuing human research capital is evidential as a critical factor in reaping economic and societal rewards from investment in research. We will develop a Research Career Development Programme adhering to the European charter and code principles as part of this project to support our researchers in identifying clear personal career paths which will encourage inter-sectoral, interdisciplinary and international mobility during their careers. Implementation of this framework will enable achievement of our project objective to develop a stronger research and innovation system served by the creation and communication of a valid and robust research career framework essential to deliver on our obligations as part of the European Research Area (ERA) within the overall European University strategic focus. Furthermore, this framework will ensure delivery of best value, maximising research outputs for research funds invested and taking into consideration, best international practice.

As part of our research career development programme, we aim to support, encourage and advocate women in Research and Innovation (R&I) and career advancement within the RUN-EU participant network, following commission recommendations on gender balance and equality. The European Charter views teaching as an essential means for structuring and disseminating knowledge and as such is an invaluable option within our researcher career paths. Researcher career prospects and how researchers are aware of these are the issues that Universities are already paying attention to. The goal is that researchers will have both good competences in transferable skills and possibilities to plan their career and learning paths towards it. Enhanced and more visible career prospects also contribute to the building of a positive public attitude towards the researcher profession, and thereby encourage more young people to embark on careers in research. By this work we aim to strengthen the attractiveness of researcher career paths and encourage more young people to embark on careers in research in the consortium and in Europe.

This report is the summary of the self-audit and gap analysis between the current researcher career development framework practices across the RUN-EU consortium. The report will be a base in the RUN-EU PLUS project to introduce a research career evaluation system to reward researchers and research excellence at all career development stages and the base to plan researcher career programme.

2. Information Collection Methodology

The information on the current practices in the frame of the researcher career development practices was gathered from the RUN-EU PLUS partners by use of the template. The audit plan and associated audit document template was agreed by the work package 4 (WP 4) members and disseminated. The partners were also asked to inform on the template how their information was gathered.

Carrying out the audits at our respective member institutions involved a consultative process engaging all members of the research community coupled with those administrative and financial functions as appropriate. The process descriptions from the partners confirms that the views presented in this report are not only one person's individual views but more the ones shared by some key actors that are involved in the career development activities at the University. In all members the voice of the researchers as members of the overall research community was essential to developing our knowledge framework. In one University the report was prepared by the Head of Research and was also discussed internally with the HR department and the responsible person for RUN-EU PLUS in the international office. Three Universities described that the sources for the information were existing internal documents and internal websites, emails and interviews with the HR department, as well as internal training department. Also research managers, research support staff and academic managers were invited to participate in the process. One University describes that representative from doctoral programs, faculties, HR department, project office, centre of international programs and rector's office were involved.

The focus in this report is on the audit of the researcher career frameworks and identifiable gaps within the alliance. The information provided for each of the alliance members on the templates is available for all the partners on the project Teams environment ensuring that the information in details can be used with the following project tasks.

The template covered the questions of researcher recruitment, training, mobile career development and employment, re-and up-skilling through lifelong learning and future employment opportunities. Best practice in attracting young talent (i.e., masters/PhD researchers) was also addressed (detailed Annex 1). The report provides an overall picture of these practices, highlighting some good practices and the gaps that the partners have identified within these more specific areas. The overall setting for the current practices is the different legislative frameworks – both national and European - to promote scientific research careers in each of the regions. This will be discussed in the first chapter of the results. The following chapters consist of the overall picture and identify GAPS under more specific themes. The partners were asked to summarise

themselves in the end of the template the information they provided. In the end of the report one chapter before the discussion part puts these summaries together.

The report enables the RUN-EU network and potential other readers to use it as one sounding board when building and boosting the researcher career development in the type of universities that don't have strong history of researcher careers.

3. Researcher Recruitment

3.1. Policies governing research careers

There is variety between partner Universities regarding the policies and national guidelines. The information given by the RUN-EU PLUS partner Universities shows variation in the number of relevant policies guiding research recruitment possibilities. Some countries report several, clear policies and legislation regarding researcher careers. For example, some countries have systematic programmes to support the recruitment of PhD students on a yearly basis, have clear guidelines regarding the salary level of university researchers and frameworks for researcher career development and employment, accreditation of research training, laws on national excellence in higher education, laws for common programs for doctoral programmes etc.
By national laws regarding higher education, Technological University of the Shannon, Midlands Midwest (TUS, Ireland) and Széchenyi István University (ZHE, Hungary) are allowed to award a PhD degree, but most of the partners cannot. However, they are allowed to act as host Universities and supervisors.

Most of the partner Universities also have national career monitoring surveys or public registers of researchers/PhD holders working in research positions. These surveys may go by different names and are administered by different parties (Ministries, Academies), but have the same purpose of providing information on education and post-education placements in different sectors. Some member Universities did not have any national career monitoring surveys taking place.

3.2 Recruitment practices

It is clear that there are different mechanisms across the alliance to recruit doctoral candidates and researchers. Promising doctoral candidates are recruited from masters study courses or from members' own research networks. Researchers are often recruited through open calls in common platforms or from within individual Universities. There are usually clear prerequisite requirements for recruiting (e.g., having a masters degree/PhD depending on the level of the position, having the expertise and /or relevant research/industrial experience needed for the research position etc.). In IPCA for example the in-house regulations require that to open a position to recruit guest assistants or guest professors, the selection criteria, and the selection process, and how the results are arrived at must be disclosed. Similarly at TUS the recruitment planning request process has similar procedures and generally will require an open interview process with internal and at least one external panel member with the overall process overseen by the Human Resource and Finance functions in partnership with the Graduate Research Office.

Some partner Universities do not distinguish between doctoral candidates and researcher recruitment, some Universities do not recruit doctoral candidates at all. In

Hungary, national laws guide the process of recruiting researchers. In SZE the researcher is hired directly in the department which then serve as direct institutional units for the researcher and every researcher has different teaching/researching portfolio. In TUS, a distinction is made between contract researchers on externally funded projects which have secure funding and self-funding applications which are received directly from interested graduates. The recruitment of postgraduate researchers is done by the Research Office and the academic council and advertised via the Research Office. Post-graduate students are then registered as students of academic departments.

Despite the constraint of not being able to provide doctoral programmes, in many of the partner Universities there is on-going partnerships and collaboration with other Universities in joint research and innovation or regarding PhD degrees whereby research candidates at doctoral level are co-supervised with partnering Universities. In many partner Universities there is a clear aim to reinforce permanent research staff within the University.

In most of the partner Universities gender and diversity issues have been considered by, for example, having a gender and diversity manager as a part of the selection committee, or by having gender, inclusion and diversity plans. Some have very specific guidelines regarding working conditions, access to employment, parenting, harassment and on how to raise awareness on gender issues and diversity in curricula and research. In some Universities the intention is to take gender aspects into account as such but there is no specific policy for that.

3.3 Recognised researcher grades

In most of the partner Universities, 3 to 5 different research grades are identified. There is variation in the titles of the different research grades which makes it difficult to make comparisons between the partner Universities, e.g., research trainee, research assistant, junior researcher, auxiliary researcher, principal researcher, researcher-coordinator, teacher-researcher, new post doc, experienced post doc, research fellow, senior research fellow. Nearly all partner Universities recognise research assistant as the first level research position. An exception to this is one partner University in which research assistants are not hired at all. Interestingly, in some of the universities a masters degree is a requirement for research assistant position whereas in some it is considered as a post doc position and a PhD is required.

It appears that in many of the partner Universities there are clear and established research grades, and with clearly defined job descriptions whereas in some of the partner Universities the path to research career is not as clear or is still in the process of being established. Some partner Universities have research positions which require a masters level degree whereas in most of the partner Universities different research positions are recognized only for PhD holders. In one of the partner Universities there are three teacher-researcher grades which all require a masters degree. Nearly but not all partner Universities recognise the positions of assistant professor, associate

professor, adjunct professor and full professor which require a PhD degree and completion of a successful habilitation procedure.

3.4 Attracting young talent

The partner Universities have different means of attracting young researchers. Many partner Universities identify the most promising masters and PhD students during their studies and start the conversations about PhD studies or integration into on-going research projects. Young researchers are also recruited via expos, events or fairs or in international associations. Also, different platforms or social media (e.g., LinkedIn) are used to advertise calls for open research positions, the calls are displayed on websites, circulated in e-mail by the careers, research and alumni offices. International talents are also attracted by offering academic programs in English at all academic levels or by using alumni as international ambassadors in priority markets.

The partner Universities differed in their target group: in some Universities the focus was on attracting individuals from other countries and nationalities whereas in some the focus is more on attracting national staff or staff from within the University.

3.5 Identified GAPS in Researcher Recruitment

GAP themes	Explanation
Lack of general attractive programs to researcher career/ No clear path for research career positions	Lack of coherent aligned RCFs and personal development plan for researchers across the EU.
Hiring researchers from industry	The salaries that are paid in industry are far higher than the ones a university can offer.
Hiring network	It would be good to have a network with different Universities within which it is possible to higher talents. Sometimes, the talents leave their study University just because they want to see a different University as well so it would be great to have a platform within RUN-EU PLUS on which job offers can be spread throughout the consortium.
Hiring process	Too bureaucratic and complex; candidates also can be committed to studies that delays the process
The legal impossibility to offer PhD degrees	The binary model of higher education
Recruitment of researchers from outside the University	Researchers with a doctoral degree want to keep the focus in research instead of education. There is also limited budget to recruit researchers with a doctoral degree as professors.
Lack of general attractive programs to researcher	Lack of coherent aligned RCFs and personal development plan for researchers across the EU.

career/ No clear path for research career positions	
International advertising of postgraduate positions	More international advertising of postgraduate positions using Euraxess would be beneficial and advertising the opportunities on the RUN-EU website/RUN-EU social media channels.
Research positions and their job descriptions are not clearly established	The research career and research opportunities should be made more visible for students already during their studies and provide them with necessary skills to do high-quality research.
The focus of the research is on short term, customer-oriented applied research	This poses challenges for researchers to develop their own expertise and does not attract researchers holding a PhD degree and wanting to develop their expertise in a certain field.

4. Scientific profile and volume of researchers

4.1 Research fields now and shared fields in future

The current scientific profiles of the Universities are the following:

FHV Research Centre Business Informatics, Research Centre Energy, Research Centre Microtechnology, Research Centre User Centred Technology, Research Group Empirical Social Sciences.
HAMK Bioeconomy, Education, Intelligent Services, Technology.
IPCA Healthcare, Industry, Environment and security, Accounting and taxation, Design, Tourism and hospitality, Business management.
IP LEIRIA Social Sciences and Humanities, Exact Sciences and Engineering, Natural and Environmental Sciences, Life Sciences and Health.
NHL-STENDEN Service Economy, Smart Sustainable Industries, Vital Regions.
SZE Law and Political Sciences; Business and Economics; Automotive Engineering; Mechanical Engineering, Informatics and Electrical Engineering; Architecture Civil Engineering and Transport Sciences; Health and Sport Sciences; Performance Arts; Humanities, Education and Social Sciences; Agricultural and Food Sciences.
TUS Creative Art, Design and Materials Thinking, Food & Biotechnology, Tourism, IOT & Cybersecurity, Advanced Manufacturing, Climate Change – Circular Economy & Decarbonisation, Education & Social Sciences.

The identified shared research areas in RUN-EU are visualised in the **Figure 1**.

Figure 1 RUN-EU 8 future-looking joint RUN-EU RDI teams indicative research areas

4.2 Researchers with different roles and task profiles

The number of researchers within the alliance members vary from 70 to 200. Researchers are in many different roles and positions from research assistant/doctoral candidate, postdoc, senior postdoc, senior postdoc with management function and research centre leaders. Besides the full-time researchers, there are also different technicians (e.g., administrative, lab technicians, science communication and management) and other structures to support research in its laboratories and research centres.

Some partners have very clear and detailed lists of the researcher tasks. The responsibilities associated with each researcher grade are included in the work descriptions of all partners. These include tasks contributing to the RDI pipeline development, grant writing, peer review paper submission, research project application preparation and submission, project management, and operationalisation of research protocols (either in the laboratories or field work) and mentoring of junior researchers and students, writing up reports and presenting findings in scientific journals, conducting fieldwork and tests when required.

The practices by which researchers directly impacted on the competences and learning of students at our universities include supervising internal and external masters theses in the subject area of the research group, teaching in the specific subject areas, supervising doctoral students and integrating new doctoral students into the research

group, cooperation in the evaluation and design of the courses offered. Researchers are also invited to give seminars, advanced courses and open lectures, to attract students to pursue further studies and to develop master thesis. For example, postdocs at FHV teach in respective B.Sc. or M.Sc. study courses. Research assistants and PhD candidates are allowed to teach as well. For researchers, the maximum share of teaching compared to research is 40%. If more teaching is done, the candidate must apply officially for a lecturer position. Similarly at TUS researchers are actively encouraged to engage in research student project supervision and mentoring. Generally, all postdocs supervise B.Sc. and M.Sc. students whereas all senior postdocs supervise PhD candidates.

4.3 Identified GAPS in Scientific profile and volume of researchers

GAP themes	Explanation
Lack of coherent career models that shows a clear way how to progress the next higher position	The small number of doctorates with professional experience in industry. Researchers limited possibilities to focus their work, too many projects going on. Lack of researchers and infrastructures.
Under-representation of contracted PhD researchers in the overall research staff	Financial and legal constraints for hiring, and dependence on external funding applications and opportunities. No clarity for academic teaching activities/tasks of researchers. Senior researchers are relatively low level compared to others (generational exchange is ongoing).
Gap between the amount of research projects and the opportunity for teacher-researchers to participate	Research careers legislation outdated. Education is primary and research projects come and go; it is difficult to give time for research and space in academic schedules. Gap between the amount of time professors can spend on tasks within education, besides all the other tasks they have, due to an employment of 0.5 FTE and the relative short amount of time professors are in place.

5. Financial and other resources for Research

5.1. General observations

Both national and international funding is used in all RUN-EU Universities. The national funding sources are mainly ministries whereas the international funding is mostly from different EU funding instruments. Private funding for research projects coming from companies is possible but to varying degrees depending on the alliance member. So, the volume of research staff is strongly dependent on the success of external funding resources. There are some interesting examples of focused financing for researchers in different levels of their career as well as combining of teaching and research. For example, in SZE the call for individual researchers and research teams were launched with five sub-programmes. The Postdoctoral Excellence scheme supports early-stage researchers who have obtained a scientific degree within five years. The Young Researcher Excellence scheme helps individuals to start their own research topic and set up their own research team. More experienced researchers and their teams can request funding in a scheme that follows the 30-year-old traditions of the Thematic Research Projects scheme. But it is noted also that project-based financing disrupts the long-term planning and specialization to certain research topic.

The resources and facilities for conducting research, such as research equipment, software, other infrastructures, etc. are of a satisfactory level but maintaining this level is a concern. External funding is not always permitted to use in supporting resource infrastructure, so the financing must be found from the University basic budget.

5.2 Identified GAPS in Financial and other resources

GAP themes	Explanation
Extra challenges for a small University to be successful in large projects	To foster high class research at small Universities it would be good to have special calls for small Universities to compete. The role of background support offices in applying for funding essential.
Limited budget available for research and academy directors	The limited amount of time a professor has to conduct research and the trouble they sometimes meet with the efforts to get teacher-researchers involved in research activities. The necessity to file for grants for any extra budget puts pressure on the research that can be conducted within the University.
All research equipment and personnel are directly funded from external (national/international/industry) research funding sources.	Research support staff not funded directly from project budgets which draws funding away from investment in research facilities etc. Much time and effort are spent in securing continuation funding to ensure continued employment of research staff.

6. Administrative research structures and services

6.1. General observations

The information given by RUN–EU PLUS partners highlights variation of the research service names (e.g., Research Services, Project Office, The Graduate Studies and Research Office (GRO)) and how broadly one research service unit is required to cover all support for researchers. The University has a multidisciplinary team (library and information services, strategic communications, IT services, data protection officer, project services, research integrity support, publication services, data services, technology transfer, project management and researcher recruitment) that provide administrative research support services. The team can have a shared contact email address and a ticketing system. On the other hand, e.g., one unit at the University can concentrate on the pre-award activities in supporting researchers, and the financial office takes care of the administrative tasks when the project has got funding. The partners also clarify different fields for support services operation, e.g., research funding and contracts, research governance, ethics, publishing. There is also some variation how the target groups of the research services are defined. For example, some partners mention that the postgraduate students are also their target group besides individual researchers, research groups and faculties.

6.2 Identified GAPS in research support structures and activities

GAP themes	Explanation
Evaluation and reward system	Need for a researcher assessment and reward model.
Continuity of research staff and funding resources for support services	Continuity of the resources is not guaranteed because of the funding system models.
Additional resources and benchmarking models are needed to improve the project management and innovation structure.	An integrated management model is required to ensure a visible and manageable flow of information.
To apply for international research funding (incl. EU funding bodies) requires more resources	National funding is often easier and less resource demanding to apply for and secure than international funding.
Collaboration between support staff and researchers	The collaboration practices should be developed
Career services for researchers/career development and life-long learning support	Clear researcher career development services are missing.
More resources needed with data security issues, science communication and IT support	The needs to get support on this field have increased.

7. Research quality assurance practices

7.1. General observations

The reports show that on a national level the regulations about research integrity and ethics are adopted but they are not always sufficient to guide daily RDI activities. All partners have, variously organised, research ethic committee structures and codes of conduct for research integrity but not always additional guidelines. The duties of the committees vary from research-focused to wider ones. For example, in IPL the ethics committee is responsible for analysing ethical issues in the scope of actions, responsibilities and internal and external relations of the units that make up IPL. The task of the committee is also to conduct the members, specifically when they concern teaching, research, extension activities or other academic activities that may be of general interest to the Polytechnic.
In HAMK the tenure track model has been implemented. According to the model the tenure track proceeds based on merit-based mid-term evaluations and a final evaluation. Performance is assessed in the following areas:
• Merits related to research activities, such as successful research activities, obtaining funding and regular production of high-quality publications
• Management of R&D work and social impact, such as business cooperation and activities in the scientific community
• Teaching and thesis supervision.

Across the RUN-EU University the partners identify similar challenges in some research quality issues, especially the lack of guidelines regarding the evaluation of researchers – both from the viewpoint of selection and success. Publications are the most important evaluation criteria. The level of the journals is taken in account variously. There are observations that in RDI oriented UASs other indicators beside publications could be necessary. Strong effort to increase knowledge and utilization of Open Data is clear among the RUN-EU PLUS partners.

7.2. Identified GAPS in quality assurance

GAP themes	Explanation
Practices in Open Data availability	Awareness of the Open Data practices are not clear for researchers.
Regulation for evaluating the performance of researcher (evaluation procedures)	Lack of a strategy to monitor and encourage researchers to add all their scientific outputs to the Institutional Repository.
Updating of the quality assurance on RDI	More attention can be paid to specific topics such as ethics and research integrity.
Approval of new research masters and PhD programmes	Process can be drawn-out due to the scheduling of ethics committee and academic committees which approve them.

8. Research collaboration practices

8.1 Internal collaboration between the researchers

Internal collaboration takes place between the individuals, research units, centres, groups and faculties. In RUN-EU PLUS partner Universities collaboration is not structured or monitored heavily. The freedom and flexibility in building own collaboration has been left much to the researchers. Shared research interests are usually the starting point for collaboration, but some funding possibilities bring researchers together with the aim to build shared research teams. As many researchers work in the project according to one common practice researchers are allocated to specific projects, and for every project, it is defined a percentage of hours that every researcher should be working. This practice orientates the researchers input on one project.

Some institutional units like doctoral programs, innovation and competence centers, associations in the partner Universities have more abilities currently for internal and external research collaborations.

An example of one structured practice is when the collaboration is promoted within the research projects and within the research team. Continuous feedback is given to researchers and every researcher works with a supervisor, that is committed to facilitate the researchers work. Also, at least once per week there is a status meeting of the projects to discuss developments and difficulties and the next steps, to ensure continuous monitoring and collaboration between the team members to overcome difficulties and to discuss and idealise possible alternatives and approaches to the problematics under analysis.

Our information shows that RUN-EU PLUS Universities have many regular or non-regular internal events that have the goal to encourage for internal collaborations. They can be just formal or also informal time to be together (e.g., IP Leiria has "Bright Fridays – The Science of Making Science", IPCA has scientific talks (designated 2Ai Talks), scientific discussion forums (Journal Club) and small symposiums (Symposium of Applied Research).

The projects carry internal collaboration between researchers in the same organisation and with the support staff. Our data confirms that many researchers work heavily in the externally funded projects. The eligibility to apply certain funding can be connected to the demand to have interdisciplinary collaboration within the University (e.g., in TUS annual postgraduate scholarship calls prioritise interdisciplinary projects with inter-departmental supervision).

8.2 External collaboration with research stakeholders and partners

In the information given by the partners, it is clear that external collaboration is developed and established mostly on a personal level or via large network projects, like RUN-EU PLUS. External collaboration can be managed by one unit, e.g., in TUS through the Graduate Studies and Research Office.
In the RUN-EU network the Universities research Centres and Institutes have strong history of collaboration with other Universities of Applied Sciences, schools, public sector, industry and business. The research fields of the professors or in the RUN-EU network identified research area clusters define the collaboration. The goal is to engage partner researchers in the projects under development to ensure an integration and the achievement of the project deliverables.

External collaboration is encouraged by the special events in the RUN-EU PLUS Universities. By these events the goal is to connect the University researchers with the business environment, companies and stakeholders, incubators, accelerators, among others (e.g., in IPL). Regularly organised events bring continuity and stability for the collaboration (e.g., OPENIPCA (https://open.ipca.pt/) is organized annually, with open laboratories, to present all IPCA's facilities and structures for the entire community). The special centres or units promote the technological offer and existing knowledge of the University to companies and institutions. This interaction has the potential to identify new areas of emerging knowledge and external collaborations. Geographically the focus is not only regional, national or European but also global. E.g., in HAMK there is the Global Education team that aims to lead research-based design, implementation and assessment of innovative training services for global partners. The focus is on professional teacher education, leadership and digitalization.

Universities can use the electronic systems to collect information of the number and names of research stakeholder projects (e.g., in FHV). This is one indicator in the assessment of research impact. Also, the project reports (e.g., 'performance report') can be the mandatory input that need to be available for the evaluation purposes. These practices highlight the importance of the stakeholder collaboration, and all the researchers are emphasized to take part in external collaborations.

8.3 International and intersectoral mobility possibilities for the researchers

In RUN–EU, teacher and staff mobilities are used to develop staff international competencies, to create networks and to strengthen their research and teaching activities. RUN-EU PLUS will in future also increase the possibilities for the researchers

to get experiences on teaching international student groups and the mobility periods abroad are strategically linked to the competence development of the researchers.

It is common in the partner Universities that researchers use Erasmus mobility programme possibilities. Mobility is funded also e.g., Marie Sklodowski Curie Fellowship funding, Fulbright Scholarship, Career Break International Credit Mobility, Erasmus Mundus Joint Masters, Strategic Partnerships, Knowledge Alliances, Sectoral Alliances, Cooperation for Innovation in Higher Education. Regarding the Marie Sklodowski Curie Fellowship funding e.g., Portuguese Foundation for Science and Technology (FCT) encourages participation in Marie Curie Actions by providing complementary support available to Portuguese teams that have signed contracts with the European Commission for the following Marie Curie Actions: European and International Reintegration Grants, Industry/University Partnerships and Initial Training Networks.

Some partner universities provide an internal fund for mobility. Systematic practice is also to annually ask researchers their mobility plans and pay attention to the mobility requirements, such as valuable publication, and building university relations which is another important aspect in some university (e.g., SZE). The RUN-EU Discovery Mobility program also facilitates researcher and research knowledge exchange within our network.

8.4. Supervision practices and guidelines in collaboration

Doctoral education is a structured practice of collaboration between junior and senior researchers and is the essential part of the academic life. The collaborative supervision practices and guidelines are defined e.g., in contract agreements, applicable legislation, and applicable intellectual property rights regulations of cooperating parties. The mid-term audits (internal) are also arranged based on supervision and peer review (NHL Stenden).

In RUN–EU PLUS only two Universities (SZE and TUS) can currently provide doctoral degrees. In TUS bi-lateral agreements are signed between TUS and external partners which identifies the roles of the postgraduate student, TUS and the external partner and agrees terms in supervision responsibilities, finance, student hours to be committed to research, IP management, publication and confidentiality. If the collaboration is in the framework of a research and development project, it has its own supervision profile and practices (SZE).

Though some RUN–EU partner Universities cannot award PhD degrees, the researchers in these Universities engage in collaboration partnering awarding Universities. E.g., the RUN-EU researchers act as the second supervisor and on the organizational level the University can have an official supervision contract on PhD level with the other University abroad, e.g., FHV has the contract with the University of Agder in Norway.

8.5. Identified GAPS in Research Collaboration Practices

GAP themes	Explanation
Lack of PhD/Doctoral program	PhD/Doctoral education would provide structured collaboration with junior and senior researchers and networking both nationally and internationally.
Supervision training	Collaboration between junior and senior researchers would be good to be supported by supervision training, that is currently lacking.
Internationalisation possibilities and practices for all staff	All staff should get experiences on international collaboration; more information and directed actions to researchers would be relevant to engage the researchers in international collaborations e.g. RUN-EU Discovery mobility programme.
International collaboration requires also good practices, support and resources	Mobility visits abroad take time and financial resources are needed; in practice timetabling with other duties and commitment can be difficult to organise; good practices are needed.
Collaboration with researchers and support staff	More detailed and monitored attention on good practices in this kind of collaboration.
Continuity in collaboration	From the researcher career development perspective, the possibilities to build their own research network and maintain it can be crucial; the project life doesn't always allow this continuity.

9. Training for Researchers

9.1 The account of existing training programmes

Some partner Universities have extensive training possibilities for researchers whereas for others no formal training is organized for the researchers. One University offer training for those interested in PhD trajectory but training for other research positions is not available. Many partner universities are part of a university network/programme and through this collaboration the training (both long-term and short, advanced courses) is offered for researchers. In some partner Universities the training consists mainly of short courses on different topics for the researchers (e.g., HAMK) whereas in

others (e.g., TUS) there is an extensive postgraduate training programme available for researchers offering training on various topics (e.g., content related topics, research skills, research environment, research management and on various generic skills, such as communication skills, career management etc).

9.2 Identified GAPS in Training for researchers

A few gaps were identified by the partner Universities. Some partner Universities reported a lack of methodology and supervision courses or workshops on specific areas for researchers. It was also reported that advanced courses are not always available and often lack funding.

10. Other practices in supporting researcher's lifelong learning

10.1 Existing researcher career paths within the University

As mentioned earlier, some partner Universities offer transparent and continuous career development models, but many are still working in development. National laws and guidelines have impact on the possibilities of the career paths (possibility to offer doctoral education). In our data some national scientific research career regulations are over 20 years old and there is a clear need to update them. One example of the continuous career path is from FHV. On the B.Sc. program the students are combined with a student assistant position at one of the research centres, continuing with an M.Sc. course, then being employed as PhD candidate at a research centre. After graduation it is possible to stay as a postdoc and then develop to a senior postdoc. In all different steps it is possible to leave to another University or go to industry but in all steps, it is also possible to join FHV from another University or industry. In IPCA currently, the progression in the research careers is performed based on the national rules. Progressing between levels can be done through public international tenders or internal progression tenders.

TUS have systems in place and researchers are categorised into one of four categories as outlined below.

1.   Research Support track – this track would apply to staff who are not normally be in possession of level 8 degree which would prevent them from attaining PhD equivalence and entering the enterprise or research career track. This track is designed to acknowledge professional qualifications, which are normally obtained at level 6 or 7 coupled with relevant experience or service.
2.   Enterprise Career Track – this track would apply to those researchers whose focus is on the delivery of industry-based projects. This would normally be in support of

the TUS technology gateways or other industry relevant services or may be related to industry funded/co-funded research projects.

3.   Research Career Track – this track would be for those researchers who wish to remain as researchers or research managers. Entry onto this track would be highly selective as the focus is on research and research management rather than teaching, although it may involve knowledge transfer activities, and is therefore highly reliant on sustainable research income for long-term employment.

4.   Lecturing Career opportunities – employees who enter TUS as a researcher but wish to move into a lecturing career. There is currently no direct route to transfer from research to lecturing academic routes. Lecturing career opportunities will be filled by open competitions.

Salary payments are aligned to the IUA-THEA Research Career Development and Employment Framework and the European Career Framework (ECF) for researchers.

10.2 Progress in the researcher career path

In some partner Universities the researchers can make progress in their career path when opportunities arise. This depends on the external funding, retirement of the senior researchers etc. It is common that progression to a higher level is not automatic and appointment to a higher level only occurs through open competition where a researcher applies to an advertised researcher position. Now, PhD researchers can only progress in their careers e.g., by applying to new higher-level positions within the Universities or polytechnic institutions, when available. At the University there is also a lot 'silent knowledge' meaning that the researchers know what they are expected to make progress though it is not known where the information is documented.

In RUN-EU PLUS there is the need to strengthen the kind of career path in which researchers can progress from one level to the other after certain evaluation procedures.

10.3 Practices to identify and develop research skills and employment opportunities

In our data some good practices are described on this theme. E.g., in FHV annual employee appraisal, the "Competence Wheel" is used to identify strengths and competences to improve of each researcher. During the appraisal the executive and the researcher define few competencies which they focus on the upcoming year. Concrete measures to improve or strengthen those competences are part of the process as well.

In some partner Universities career support for the researchers is organized by one employee nominated in the HR department to be responsible for personal (career) development. This person also supports the departments by finding and eventually

organizing the right measures for the focused competences. Doctoral programs (if there are any) can be also in the key role to put together all the services for the career and personal development support (e.g., SZE). Regarding postgraduate research students are encouraged to complete a Personal Development Plan which is discussed with the supervisor(s) and a training plan is drawn up. In the case of researchers, the career planning is carried out e.g., with the project/line manager and career planning is included in the probationary review process. E.g., in SZE the Competence Centre is handing the career services and TUS has Careers and Employability service which offers support to all TUS students and graduates.

Different types of training activities promoting not only knowledge transfer from the experts but also the exchange of knowledge and skills between the different participants are organized for career development purposes. Workshops and advanced courses for the technical aspects of the research and training in transferable skills (e.g., mentoring, presentation/communication skills, teaching, academic writing, engaging policy makers, grant-writing) are examples from these practices. Training on research management and career planning can be offered which includes a skills audit, skills recognition and articulation for cv writing and interviews. Also, to support researchers to identify and develop their research skills, e.g., IPCA organizes events, such as scientific talks (designated 2Ai Talks), scientific discussion forums (Journal Club) and small symposiums (Symposium of Applied Research, http://web.ipca.pt/symposium/2021/). In these events researchers are involved in ideation processes to scout, scan and screen ideas for projects under development and for new projects. They also enhance the collaboration between the researchers and the identification of skill gaps they must overcome. The outcomes of these events and the identification of skill and resources gaps are discussed with the research unit director, to figure out ways to get the means to overcome the identified gaps.

Mentoring is mentioned as one career support method but is also a practice that could be developed further. For example, HAMK has an ongoing peer group mentoring project for managers. In this case peer mentoring is used for the general competence development with the aim it supports work-based learning, well-being at work and professional growth.

10.4 Identified GAPS in career support for researcher

GAP themes	Explanation
Financial challenges	Financial resources might be lacking for progression to a higher position, the researchers are offered short-term positions.

Legislation supporting researchers' career	The legislation supporting researchers career enhancement should be revised on national level.
How to ensure the continuity for the researchers when projects come to an end **Career planning service for researchers**	No dedicated career planning service for researchers exist now. Regulation for scientific careers is currently under creation and it will be released in 2022.
Tools for the identification of the researcher's skills	More use could be made of the existing classifications and structure of researcher skills (e.g., DORA framework).
Mentoring practices	Mentoring practices should be developed focusing on researcher professional growth. International collaboration in mentoring is lacking.

11. Conclusions

In RUN-EU Universities there are many ongoing development activities with the aim to strengthen researcher career paths. These processes and activities will be beneficial in the future work. The partners summarise some key challenges and goals in this work process. They are listed as the following:

- **National laws** define the features of the traditional Universities and the Universities of Applied Sciences. The defined role limits the possibilities to apply certain funding and possibilities to organise doctoral education.
- **Current funding systems** do not easily ensure long-term contracts for researchers. The research possibilities are often dependent on external funding and researchers must put a lot of time resources with the preparation of the proposals. Repeating uncertainty regarding the continuity of the contract brings some extra burden for researchers.
- **Salaries** e.g., in industry are often higher than the ones Universities can provide for the researchers. This decreases some attraction of the researcher positions in academia.
- **Lack of clear and attractive career paths** is the common situation in the most RUN-EU partner Universities. Many researchers are coming from masters degree programmes who develop work associated with the research projects. Guidelines to correctly define the research career and progression are missing. The clear paths would increase the awareness of the research possibilities and researcher positions at the University of applied sciences. Traditionally they are known more as organisations with the focus on teaching and education.
- **Project based research** opens rich possibilities to build networks. On the other hand, as the projects are funded temporally only for some years, **the possibilities to plan the scientific researcher career** in the specific field are **limited or unsure**.
- **The role of teaching in researcher tasks should be made visible** in the path steps.
- **International collaboration** is seen as essential part of the researcher's work, but it is also time consuming. Encouragement and good support and practices is the field that can be worked together in RUN-EU PLUS.
- **On the organisational level** it should be **developed better practices that provide time and space for the researchers for international activities.**
- **Researcher training programmes** are needed paying attention on both early stage and senior researchers.
- The RUN-EU Universities want to develop together **doctoral training and programmes**.

- **The supervision training** is needed, also **the guidelines** regarding the **supervisor roles and tasks.**
- **Researcher and research assessment structures** are under development in some partner Universities but generally there is the obvious need to develop it together. The criteria regarding to the research staff is mentioned as the challenge in the Universities.
- **Researcher career support and services may exist, but they could be developed to be clearer** in most of the partner Universities.
- In some Universities support services **need a better structure for project management and innovation** that converges all the information into a central repositorium.
- **Some more resources (staff and financial)** are wished in the partner Universities for the support services especially in the light of the skills and efforts the applications of the international research funding require.
- One challenge is related to **technology transfer** and **licensing of intellectual property rights**. It is essential to professional people working in this field to assure the Universities are using best practises and models to value the outcomes of research and development projects.
- **There is demand for research project opportunities, specially, in the field of Artificial Intelligence.** Artificial intelligence (AI) research shows potential to further our regional and national priorities, including economic needs, educational opportunities, quality of life, and security.

The identified challenges and gaps provide a strong base for discussions regarding researcher training programme and workshops in RUN-EU PLUS. The themes that will be discussed in planning the training programme include career development models, researcher career planning and stories, good practices in identifying the research skills, special knowledge in certain fields (e.g., intellectual property rights), research communication, good practices in internationalisation of the researcher including mobility possibilities, and supervision and pedagogical skills. Open Science and especially Open Data is the theme to be worked together including Risk Analysis as one important dimension in this. The theme is and will be discussed also in the other work package (WP5) of the RUN-EU PLUS project ensuring that the awareness of Open Science is increasing in the consortium. Regarding the researcher assessment practices there are themes to be discussed and benchmarked in the RUN-EU community. One following project deliverable will be the Research and Career Evaluation System. Besides publications, some other indicators will be in discussion in the context of applied sciences and practice-based research.

In our data the partners did not identify practices regarding gender and diversity themes as a gap. The partners have GEPs as required from the partners in Horizon 2020 projects,

but the implementation of these documents will be delivered in our RUN-EU PLUS workshops for our and indeed other researchers outside of the RUN-EU University.

The information gathered for this report will assist us in integrating career development paths into organisational structures and to the laws and guidelines on a national level. The skills and competence of the support staff is not explicitly discussed in our data, but it is obvious that there are requirements to update support skills and knowledge and motivation for the work etc. among this staff group. In RUN-EU PLUS it is good to pay attention besides researcher careers also to the possibilities of support staff to have opportunities to develop their skills and competence e.g., in international collaboration. The national laws and guidelines cannot be changed in the short-term period, but our information also refer to the importance of the close connection between ministries and higher education institutes in this field. The national laws regarding the researcher career frameworks should be updated regularly.

Several RUN-EU PLUS Universities profile themselves as Universities of Applied Sciences which means they are working life orientated Universities. The image carries the emphases on teaching, but not on research. On the other hand, in RUN-EU alliance there are also Universities that have profile both in applied and basic research. The challenge for RUN-EU Universities is to clarify the profile of the type of research they are already doing and strengthen its quality. The recruitment of new researchers is critical and how practice-based research orientation in different disciplines in interpreted in this task.

12. Discussion

Universities use a variety of strategies to achieve the goals of internationalisation and how they increase the mobility of the staff and students. There are also models developed to facilitate the internationalisation of research. Additionally, collaboration in international research among academic staff is strongly connected to the positional level (See e.g., Antelo 2012). The positions and titles of the researchers are important for the researcher when they apply for research funding and build the research network internationally.

A University's main tasks are research, teaching and societal interaction. Doctoral training combines the creation of new knowledge, the training of scientific experts and social impact based on research. It is a structured collaboration forum for early-stage researchers and for senior researchers. There have been large ongoing transformations within doctoral education over recent decades. These changes such as the number and internationalisation of doctoral researchers, the diversification of their backgrounds, reasons for studying and career trajectories have led to a situation where doctoral education is expected to provide knowledge and competence for the candidates in a broad framework (Taylor 2012). This requires broad knowledge and competencies also from supervisors such as transferable skills defined by Eurodoc (SuperProfDoc project 2017). Also, the development work of other Horizon Europe projects with the aim to develop collaborative doctoral education (e.g., DocEnhance 2020-2022) will be fruitful resources for RUN-EU PLUS.

Within the researcher career path in higher education the last ten years has seen the emergence of a new growing staff group, the so called 'third space' in HE. They have a research background but are working in development and support tasks at the University. They work closely with researchers in a collaborative fashion rather than just offering a standalone function (administrative functions). It is this overlap with academic researchers that make this staff a new type of third space professional in the higher education sector (Sufi 2021). This is the career path that could be made in RUN EU PLUS more visible for young researchers and for the support staff that work closely with researchers but don't hold doctoral degree themselves. Universities can also pay attention on this career path when they develop their recruitment strategy.

Bibliometric methods can be used to assess scientific publications and their authors, and this is common practice at the Universities. The current discussion on the European level in HE has raised the possible needs to broaden criteria. The responsible researcher evaluation brings broader elements to be discussed. For example, Academy of Finland describes that instead of journal-based metrics, the evaluation places greater emphasis on assessing the research plan and the applicant's competence (not based on quantitative indicators), as well as the scientific content and quality of the publications. In addition, the researcher's merits are assessed through a wide range of outputs and

the researcher's career, considering possible career breaks (Academy of Finland www-page.) The international reference is the Declaration on Research Assessment (DORA) that recognizes the need to improve the ways in which researchers and the outputs of scholarly research are evaluated. Dora has become a worldwide initiative covering all scholarly disciplines and all key stakeholders including funders, publishers, professional societies, institutions, and researchers (Dora www pages, https://sfdora.org/).

One big cultural and organisational challenge in Universities is the lack of time to be together and build authentic dialogue in finding new research ideas. The nature of academic work (e.g., Hassan 2015, Cornall, Cook, Daunton Salisbury & Thomas 2014) and efficiency requirements do not necessarily encourage researchers to seek training that requires long-term commitment. The academic freedom traditionally associated with universities in maintaining the motivation of researchers, and at least occasional experience of 'timeless time', is necessary. Researchers themselves estimate that success as a researcher means not only identifying and implementing objective success factors (e.g., obtaining complementary research funding, number of publications), but also the subjective success factors such as experience in the significance of research as adding something of a 'good' in society and maintaining the balance of one's own life (Sutherland 2017). In this understanding it is interesting and important task to develop collaboratively researcher career paths and possibilities for them in RUN-EU Universities.

13. REFERENCES

Academy of Finland. Responsible researcher evaluation. https://www.aka.fi/en/research-funding/responsible-science/responsible-researcher-evaluation/ 24.2.2022

Antelo, A. 2012. Internationalization of Research. Journal of International Education and Leadership Volume 2, Issue 1 Spring 2012. http://www.jielusa.org/home

Cornall, L., Cook, D., Daunton, L., Salisbury, J. & Thomas, B. (toim.) (2014). Academic Working Lives. Experience, Practice and Change. London: Bloombury, pp. 271–279.

European Commission, European Research Area (ERA), Steering Group Human Resources and Mobility (ERA SGHRM) (2011). Using the Principles for Innovative Doctoral Training as a Tool for Guiding Reforms of Doctoral Education in Europe. Report. https://cdn4.euraxess.org/sites/default/files/policy_library/sghrm_idtp_report_final.pdf

Hassan, R., (2015). When innovation becomes conformist. Academic research in network time. Teoksessa P. Gibbs, O-H. Ylijoki, C. Guzman-Valenzuela & R. Barnett (toim.) Universities in the flux of time. An exploration of time and temporality in University life. London: Routledge, pp. 79-93.

Horizon 2020 DocEnhance project, grant agreement no. 872483. Broadening PhD expertise through transferable skills. https://docenhance.eu/main-goals/

SuperProfDoc (2017), Insights from practice A handbook for supervisors of modern doctorate candidates, Erasmus+ project by European Council of Doctoral Candidates and Junior Researchers (Eurodoc). http://eurodoc.net/sites/default/files/news/2017/09/11/attachments/train-the-trainers-handbook.pdf

Sufi, Shoaib (2021) The Rise of a New Digital Third Space. Professional in Higher Education: Recognising Research Software Engineering. University of Manchester. Working paper. https://arxiv.org/ftp/arxiv/papers/2103/2103.01041.pdf

Sutherland, K. A. (2017). Constructions of success in academia: An early career perspective. Studies in Higher Education, 42(4), 743-759. Available http://www.tandfonline.com/doi/full/10.1080/03075079.2015.1072150

Taylor, S.E. (2012), "Changes in doctoral education: Implications for supervisors in developing early career researchers", International Journal for Researcher Development, Vol. 3 No. 2, pp. 118-138. https://doi.org/10.1108/17597511311316973

ANNEX I Themes and Questions in the template of the GAP analysis

D4.1. Human Capital Resource Strategies

GAP analysis

11th February 2022

[INSTITUTE NAME]

1. Policies governing research careers

Laws, guidelines, documents etc. on the national, which the University is committed to follow
and that define the possibilities to organise doctoral education and researcher training and the
researcher career support.
Also, do you have any national career monitoring surveys for the holders of master's and
doctoral degrees?

In the following themes the focus is on your University context:

2. Researcher Recruitment

2.1 Recruitment practices
Recruitment practices of
doctoral candidates
researchers
gender aspects in recruitment?

2.2 Recognised researcher grades
The recognized research levels or roles, e.g., research assistant, research officer, senior
researcher within your organization?

2.3 Attracting young talents
Practices in
attracting young talent (i.e., Masters/PhD researchers)
international recruitment

2.4 Identified GAPS in Researcher Recruitment

3. Scientific profile and volume of researchers
You could benefit the text from the RUN-EU PLUS Grant Agreement, Annex I: 3.3 Consortium
as a whole, Section 4: Members of the consortium

3.1 List of organization research fields

3.2 Number of researchers in different researcher roles or levels?

3.3 Researcher task profiles

3.4 Teaching and supervision tasks: the researcher's duties/ rights?
What are the practices by which researchers can have direct impact on the competences and
learning of students at your University? Do all researchers teach (e.g., at least 5%)? Other
transparent collaboration practices between researchers and students embedded in
researchers' tasks and profiles?

3.5 Identified GAPS in Scientific profile and volume of researchers

4. Financial and other resources for the Research

4.1 National and European/international funding?
(The answers for 4.1. and 4.2. clarify e.g., resources and competences to do regional, national and international research and to apply new resources.)

4.2 Public (national institutional) or private funding (a company)?

4.3 How are different research positions funded at each stage?
See theme 2.

4.4 What is the role of external funding in hiring new researchers and to do research?

4.5 What are the concrete resources and facilities for conducting research, e.g., research equipment, software, other infrastructures, etc.?

4.6 Identified GAPS in Financial and other resources of research

5. Administrative research structures

5.1 Research services
What are the target groups of the services: individual researchers, research groups, research centers, faculties, other?
How the services are structured?

5.2 Identified GAPS in Administrative Research Structures

6. Research quality assurance practices

6.1 Identify relevant guideline documents

6.2 Describe research ethics and integrity management

6.3 Describe how open science is managed

6.4 Outline the role of publications in research assessment

6.5 Explain research assessment procedures and research career evaluation system (if any)

6.6 Identified GAPS in Research Quality Assurance Practices

7. Research collaboration practices

7.1 Describe internal collaboration between the researchers
How internal collaboration is managed or structured? Any transparent practices?

7.2 Describe external collaboration with research stakeholders, partners
How external collaboration is monitored, developed, etc.?

7.3 Describe international and intersectoral mobility possibilities for the researchers

7.4 Describe supervision practices and guidelines in collaboration

7.5 Identified GAPS in Research Collaboration Practices

8. Training for Researchers

8.1 Give an account of existing training programmes
Programmes for doctoral and post-doctoral researchers? Supervision training?
See also RUN-EU PLUS Grant Agreement, Annex I, Section 4: Members of the consortium

8.2 Identified GAPS in Training for researchers

9. Other practices in supporting researchers re- and up-skilling through lifelong learning

9.1 Identify existing researcher career paths within the University

9.2 Describe how a researcher may progress from one level to the next
See also questions 2.2. and 6.5

9.3 Identify practices which support researchers to identify and develop their research skills

9.4 Identify practices which help researchers to map future employment opportunities
Do you have e.g., career services for researchers?

9.5 Identified GAPS in career support for researcher

10. Your conclusions?
Please, summarize the GAPs of the current and desired researcher career development
practices at your University. Also, how do you see, what are the main challenges for the
development work with practices? Are they like financial, administrative, legal, lack of human
resources, limited understanding of the researchers' potentials, etc.?

Shortly, how the information was gathered for this report at your University? (In writing the
report this information will help to describe the methodology in gathering the information
from the partners.

Thank you!

R+UN PLUS — REGIONAL UNIVERSITY NETWORK PLUS

EUROPEAN UNIVERSITY

TUS — Technological University of the Shannon: Midlands Midwest
Ollscoil Teicneolaíochta na Sionainne: Lár Tíre Iarthar Láir

POLITÉCNICO DE LEIRIA

HAMK — HÄMEEN AMMATTIKORKEAKOULU
HÄME UNIVERSITY OF APPLIED SCIENCES

IPCA — INSTITUTO POLITÉCNICO DO CÁVADO E DO AVE

SZÉCHENYI EGYETEM — UNIVERSITY OF GYŐR

NHL STENDEN — university of applied sciences

FH Vorarlberg — University of Applied Sciences